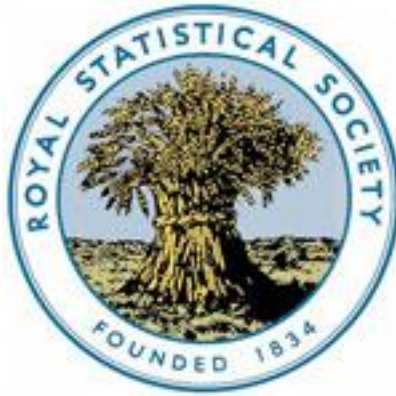


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MARCH, 1885.

POPULATION STATISTICS OF CHINA.

By SIR RICHARD TEMPLE, BART., G.C.S.I., D.C.L., LL.D., &c.[Read before the Statistical Society, 17th February, 1885. The PRESIDENT,
SIR RAWSON W. RAWSON, K.C.M.G., C.B., in the Chair.]

THE population of China has, from its vastness, long been among the marvels of the civilised world. Its numbers have been believed to exceed those of any other people, ancient or modern. But as scientific inquiry in recent times began to penetrate into Chinese regions, doubts arose as to the numbering of the people. The Government had from age to age been nominally ascertaining the number of its subjects, and setting forth the results of the supposed enumeration. But these results, instead of showing a steady decline or a steady increase, or such moderate fluctuations as could reasonably be understood, showed violent and almost incredible variations. Though some of these variations could be explained away by changes of territorial dominion, yet enough of them remained to excite scepticism regarding the reality of the enumeration. The official numbers have within the last century and a-half ranged from 436 to 363 millions,* the general idea probably being to the effect that the population is about 400 millions. But apart from scepticism arising from general grounds, we have of late been repeatedly warned by British authorities specially acquainted with China, that the so-called census in China cannot be depended upon, and that it is often only nominal. It must be added, however, that the number last published in China by official authority, about 350 millions, is much more moderate and apparently far more credible than the foregoing estimates.

Inasmuch as the number of the Chinese people is one of the most interesting, as well as one of the very largest, items in the population statistics of the world, it is well to see whether there are any means of testing it, and of forming some foundation of

* The population return of 1842 of 436 millions was an estimate, not a census. The highest *official census* was that of Kiaking, in the year 1812, and was 362,447,183.

probability on which an estimate can be built up. Now, fortunately, such means are supplied by the census made under the British Government in India. It is remarkable that the area of the two countries, India and China proper (exclusive of the Central Plateau), are about the same, that is, about $1\frac{1}{2}$ millions of square miles; in both countries there are long basins watered by great rivers, fertile deltas, broad plains, and numerous mountain chains, amidst the offshoots of which there are branching valleys, and, on the whole, many tracts that are thickly, together with many tracts that are thinly, inhabited. In both countries the population is most unequally distributed. Respecting India, the popular mind, considering the existence of teeming millions, which is a fact, imagines that the country is for the most part thickly populated, which is not the fact. The truth is that the country is for the most part thinly populated, but in some districts, even in some provinces, the population is dense, so dense indeed as to make up a tolerably high average for the whole area. The position of China proper is precisely similar. Both countries are under similar conditions, physical, ethnical, climatic, geographical. In both there is a strong tendency to multiplication of the race. In both the population loves to congregate in favoured districts, to settle down and multiply there till the land can scarcely sustain the growing multitudes, and to leave the less favoured districts with a scanty though hardy population.

As, then, we possess full data regarding the Indian people, collected at various times during the last generation, and further revised by a general census taken in 1881, we may fairly reckon what, according to Indian averages, the Chinese population is likely to be. From that which is known regarding the Indian population, we may proceed tentatively towards that which is not accurately known, or is almost unknown, regarding the Chinese population. That is a legitimate method of deduction in aid of a reasonable estimate of population statistics in China proper. This then is what I propose to attempt in the present paper.

The Chinese empire contains nearly $4\frac{1}{2}$ millions of square miles; consists of two main divisions, first, the Central Plateau, containing two-thirds of the whole area, and secondly, China proper, containing one-third.

The former, or the Central Plateau, is a wondrous region, comprising long chains of mountains, vast snow-fields, extensive lakes, wide-spreading deserts, together with some tracts of cultivation near rivers, and some broad uplands occupied by pastoral tribes. Its area is enormous, nearly 3 millions of square miles. There are no means of ascertaining exactly the population of such a region, and no known averages of India or of any other country are

applicable thereto. But we do know that the population is very scanty and, relatively to the area, is small in the extreme.

The latter, or China proper, has about $1\frac{1}{2}$ millions of square miles. This area, though far from being uniformly rich, has many fertile and densely peopled tracts, and sustains a population which, though unequally distributed, and far from being homogeneous, is one of the largest, if not absolutely the largest, under any one dominion in the world. It is to test the probable numbers of this great population that I propose to apply the averages deduced from the census of India.

In the first place, the average of the population in India is that of 184 souls to the square mile, the area being 1,377,450 square miles, and the population 253,941,309 of souls. If this average were applied to the area of China proper, or 1,533,650 square miles (exclusive of the Central Plateau), then the population would be estimated at 282,191,600 of souls.

But let us apply the Indian averages to the Chinese provinces in detail. There are eighteen of such provinces. Of these provinces, two, namely, Pechili and Shantung, are partly deltaic or alluvial, and one, Kiangsu, almost entirely so.

Three, namely, Chekiang, Fukien, and Kwantung, are littoral, lying along the shore of the Pacific Ocean.

Three, namely, Ganhwey, Hupi, and Honan, are rich inland provinces.

Four, namely, Hunan, Kiangsi, Kwangsi, and Kweichow, are inland provinces of lesser though considerable richness.

Four, namely, Shansi, Shensi, Kansu, and Yunnan, are hilly frontier provinces.

And lastly, one, namely, Szechuen, is partly rich and partly mountainous.

Let us consider these several groups of provinces separately.

The Pechili province is deltaic and alluvial in those portions of it which are near the mouth of the Peiho river and its affluents. Many of these streams run through the low country and converge at Tien-Tsien, whence the united river flows into the Pechili Gulf.

This region has been regarded as the most densely peopled part of China.* It is liable to wide-spreading inundations when the rising waters of the many streams fail to find a sufficient vent by the channel of the Peiho between Tien-Tsien and the gulf; indeed, the damage from these floods has been so great as to cause emigration, and thus to thin the population.

Its southern or lower division, about one-third of the whole, is generally lowland and rich. This division contains the two great

* But it may be equalled in density perhaps by the districts of Hankow and neighbourhood, at the junction of the Han river with the Yang-tse-Kiang.

towns of Peking and Tien-Tsien. But the upper, or northern division (about two-thirds of the whole) is highland or mountainous. At a short distance north of Peking there is the mountain range along the ridge of which runs the great "wall of China."

Now the lower division may be compared with the Indian province of Bengal, which is deltaic and alluvial, with a dense population of 505 to the square mile. The upper division may be compared to the Chutia Naghore province, a hilly tract adjacent to the Gangetic delta of Bengal, and has a population of 130 to the square mile. Thus we have in the province of Pechili—

The lower division, or 25,000 square miles, at 505 average, 12,625,000 souls.

The upper division, or 42,270 square miles, at 130 average, 5,495,100 souls.

Total, 67,270 square miles and 18,120,100 souls.

Next, the province of Shantung mainly consists of a mountainous projection jutting out into the ocean and dividing the deltas of the Hoang-ho and Yang-tse-Kiang. It is a classic land to the Chinese, being much frequented by pilgrims, but does not contain any great town. It comprises the lower course of the Hoang-ho; it is traversed by the great canal constructed to join artificially the natural water highways of the Hoang-ho and the Yang-tse-Kiang. To it then may be applied the Indian average of Bengal and Chutia Naghore together, namely, 408 to the square mile. This would give for Shantung, then, 53,760 square miles, at 408 to the square mile, 21,934,080 souls.

Then comes the province of Kiang-su, entirely deltaic and alluvial, which, if not on the whole the richest, is yet the most uniformly low-lying, fertile, cultivated, and prosperous province of China. It is traversed almost from end to end by the great canal. It contains the lower course and the mouth of the Yang-tse-Kiang. It has the great town of Shanghai. To it the Indian average of deltaic Bengal is fairly applicable.

Thus we have for Kiang-su 40,130 square miles, at 505 to the square mile, 20,265,650 souls.

Then we have the two littoral provinces extending down the coast of the Pacific, namely, Chekiang and Fukien (including the island of Formosa). They are partly mountainous or hilly, but have some plains and rich valleys; they contain tea-producing districts; they have the great towns of Hangchow, Ningpo, and Foochow.

With these may be compared the Indian territories of the Madras presidency, which also lie on or near the coast, with very rich tracts and some mountain ranges inland. The average density in the Madras presidency is 230 to the square mile; if this be

applied to these two Chinese provinces, we have for Chekiang, 35,660 square miles, at an average of 230 to the square mile, 8,201,800 souls; and Fukien, 53,480 square miles, at the same average, 12,300,400 souls.

Continuing our view down the Pacific coast, we see the province of Kwantung. That province is traversed by the Sei-Kiang river, and contains the estuary and the town of Canton, also the town of Macao. It is in part hilly, but has rich plains and valleys. It may be compared with the Gujerat province on the western coast of India, north of Bombay, which province has a population of 260 to the square mile; thus we have for the province of Kwantung, 104,190 square miles, at 260 to the square mile, 27,089,400 souls.

Leaving the Pacific coast, we take the inland provinces of China. Of these the foremost are, first Honan, containing the middle valley of the Hoang-ho; then Hupi and Ganhwey, containing the middle valley of the Yang-tse-Kiang, and touching the shores of the two great inland lakes. These provinces contain the large towns of Hankow and Suchao; they produce all the best and characteristic products of China, and are to be classed among the fertile agricultural districts of the world; they do not, however, form an unbroken champaign, being for the most part hilly, though intersected with rich plains and valleys. They are of course densely peopled. The best parts of them (say one-third of the whole) may be compared with the middle Gangetic basin of India, including Oudh and Behar, which is on the whole the finest part of India; then one-third being somewhat less good, may be compared with the North-western Provinces of India (exclusive of Oudh), or the upper Gangetic basin; lastly, the remaining one-third (being still less good) with the Punjab or the upper Indus basin. Now the average per square mile in Oudh and Behar is 511; in the North-western Provinces (exclusive of Oudh) 373, in the Punjab 176.

Thus we have for the three Chinese provinces the following estimate:—

	Square Miles.	Souls.
Honan	67,000	23,672,980
Hupi	70,450	24,891,607
Ganhwey	48,460	17,122,180

The next group of inland provinces consists of Hunan and Kiangsi; these comprise the shores of the two vast inland lakes Tungting and Poyang; they have several tea producing districts,

but they are intersected by hill ranges, with numerous spurs in all directions; they may be fitly compared with the Indian Punjab, which has several rugged or poorly cultivated tracts, but has also several rich and populous districts; it has just been seen that the Punjab average is 176 to the square mile.

The provinces then of Hunan and Kiangsi would, according to this, have the following population :—

	Square Miles.	Souls.
Hunan.....	83,000 at 176 to the sq. m.	14,608,000
Kiangsi	68,570 ,,	12,068,320

The adjoining group of inland provinces consists of Kwangsi and Kweichow. Their topography resembles that of the last two provinces, but they are inferior in natural capabilities, and have suffered from various special causes. To Kwangsi, which contains the upper valley of the Sei-Kiang, may be applied the Indian average of the Central Provinces, or 116; this would assign to Kwangsi a population of 9,077,000 souls for an area of 78,250 square miles. To Kweichow, which is inferior and very hilly, may be applied the Indian average of the Native States of the Bombay presidency, or 94; this would give to Kweichow a population of 6,067,700 souls for an area of 64,550 square miles.

We have heretofore been proceeding from east to west. Following this course we reach the three mountainous provinces on the western border of China proper and adjoining the great Plateau. These are Yunnan, Shansi, and Shensi; the first, Yunnan, comprises the upper basin of the Yang-tse-Kiang, and is generally mountainous; though possessing boundless capabilities, it has suffered much from special causes.

The next two, Shansi and Shensi, include nearly all the upper basin of the Hoang-ho, and they too are mountainous, being bounded on the north by the Great Wall. But they, though in many parts little cultivated or inhabited, have some strips or patches of fairly peopled country. To Shansi and Shensi may be fairly applied the Indian averages of the Central Provinces of India or of the Hyderabad Deccan, or of the Central India Agency; these are respectively 116, 120, and 123 to the square mile. All these Indian divisions have strips of fertile riverain land scattered among districts but little cultivated. Then to one half of Yunnan may be applied the above named average of 116, and to the other half the average of British Burma, namely 42.

Thus we obtain the following estimate :—

	Square Miles.	Souls.
Shansi	65,950 at 123	8,111,855
Shensi	81,190 „ 123	9,986,370
Yunnan { half	61,120 „ 116	7,100,360
„	61,120 „ 42	2,570,820 } 9,671,180

Next, adjoining Shensi, is the wild and extensive province of Kansu, which, though reckoned a part of China proper, belongs physically to the Central Plateau, and is in many parts a fearful desert. At least one-third of it must be uninhabited and may be left blank. To the remaining two-thirds may be applied the Indian averages of the Rajputana States, or 78 to the square mile, and of Sind, or 50 to the square mile; as both these large territories, though partly cultivated, are in many parts very thinly inhabited. Thus the area of Kansu, or 262,520 square miles, would have an estimated population of 11,200,768 souls, one-third being taken as desert absolutely, one-third at an average of 78 to the square mile, and one-third at an average of 50.

Lastly, there is Szechuen, next after Kansu the largest of the Chinese provinces, containing 166,800 square miles. It comprises a large part of the upper basin of the Yang-tse-Kiang and the basins of four considerable affluents. It is almost encircled with mountains, and on one side, the west, these mountains are snow-clad, forming part of the great Yungling system. But it has several large vales and one magnificent valley, all of which are fairly inhabited.

The character of this extensive province varies so much that a single average applied to the whole would lose some of its significance. It would seem fair to take for one-fourth the Indian average of Mysore, generally mountainous, or 169 to the square mile, for one-fourth the average of the Bombay Deccan uplands, or 145 to the square mile, for one-fourth the average, or 249 of the Central Punjab (including the divisions of Lahore, Amritsar, and Rawul Pindee), and for one-fourth the average of the Punjab Native States in the Himalayas, 103, or of Assam, in the midst of mountains, 103.

This would give—

	Souls.
$\frac{1}{4}$ of Szechuen or 41,700 square miles at 169	7,047,300
$\frac{1}{4}$ „ „ 145	6,046,500
$\frac{1}{4}$ „ „ 249	10,383,300
$\frac{1}{4}$ „ „ 103	4,295,100
	27,772,200

I must now summarise the estimates of population thus obtained as follows :—

Province.	Area.	Population. Souls.	Average per Square Mile.
Pechili.....	67,270	18,120,100	269
Shantung	53,760	21,934,080	408
Kiangsu	40,130	20,265,650	505
Chekiang.....	35,660	8,201,800	230
Fukien	53,480	12,300,400	230
Kwantung	104,190	27,089,400	260
Honan	67,000	23,672,980	353
Hupi	70,450	24,891,980	353
Ganhwey	48,460	17,122,180	353
Hunan	83,000	14,608,000	176
Kiangsi	68,570	12,068,320	176
Kwangsi	78,250	9,077,000	116
Kweichow	64,550	6,067,700	94
Yunnan	122,420	9,671,180	79
Shansi	65,950	8,111,815	123
Shensi	81,190	9,986,370	123
Kansu	262,520	11,200,768	42
Szechuen	166,800	27,772,200	166
Total	1,533,650	282,161,923	183

In round numbers, then, by an estimate formed upon known averages of India, the population of China proper would apparently amount to 282 millions, with a general incidence of 183 to the square mile, on an area of $1\frac{1}{2}$ million of square miles. This estimate will bear comparison with the latest official returns obtained from China, according to the following table :—

Province.	Population according to Estimate from Indian Averages.	Average per Square Mile.	Population according to Official Returns.	Average per Square Mile.
Pechili	18,120,100	269	28,000,000	416
Shantung	21,934,080	408	29,000,000	540
Kiangsu	20,265,650	505	37,800,000	941
Chekiang	8,201,800	230	8,100,000	227
Fukien	12,300,400	230	14,800,000	276
Kwantung.....	27,089,400	260	19,200,000	184
Honan	23,672,980	353	23,000,000	343
Hupi	24,891,980	353	27,400,000	389
Ganhwey	17,122,180	353	34,200,000	705
Hunan	14,608,000	176	18,700,000	225
Kiangsi	12,068,320	176	23,000,000	335
Kwangsi	9,077,000	116	7,300,000	93
Kweichow	6,067,700	94	5,300,000	82
Yunnan	9,671,180	79	5,600,009	45
Shansi	8,111,815	123	14,000,000	212
Shensi	9,986,370	123	10,200,000	125
Kansu	11,200,768	42	9,285,377	35
Szechuen	27,772,200	166	35,000,000	210
Total	282,161,923	183	349,885,386	227

The general conclusion may be that the latest Chinese returns, though probably in excess of the reality, do not seem to be extravagant or incredible on the whole if tested by the known averages of the Indian census. In three provinces only, Shantung, Kiangsu, and Ganhwey, do the Chinese returns seem excessive. In some provinces, on the other hand, the returns appear to be too low. The comparison between India and China proper is complete, as I have applied almost all the various averages of the Indian census.

There remains the question as to what may be the population of the Central Plateau mentioned in the beginning of this paper. So much of that vast region is sterile, or desert, or impossible for human habitation, and the existing population congregated here and there in this enormous space is so scattered, that the known averages of India are not applicable. It is certain however that the population is relatively very inconsiderable. The outcome of the best estimates that can be formed by explorers and geographers is to the effect that the population may for the whole plateau amount to 15 millions.

If these 15 millions for the Central Plateau be added to the 282 millions shown above for China proper, then the grand total for the Chinese empire would be 297 millions of souls.

The examination of Chinese population statistics will become interesting in many respects, but more particularly in regard to the prevalent opinion that China is much the most populous empire in the world, and that the followers of Buddhism greatly outnumber those of any other religion. If the estimate presented in this paper be at all near the truth, then the population of the Chinese empire hardly exceeds that of the British empire; and the Buddhists according to that view would not exceed in number the Christians so considerably as is commonly supposed.

DISCUSSION *on* SIR RICHARD TEMPLE'S PAPER.

THE PRESIDENT said that before the discussion began he wished to read a note which Sir Rutherford Alcock published in the "Contemporary Review" in December, 1880, in an article upon "China and its Foreign Relations." He regretted that Sir Rutherford's state of health prevented his being present at the meeting and taking part in the discussion, but the extract would show what were his views with regard to the credibility of the returns issued by Chinese authorities.

"I have seen lately criticisms on the commonly assumed population of the Chinese Empire. The Chinese are not without census returns, and as to their trustworthiness, we may feel certain that, as there is always a question of poll tax and military conscription in eastern countries, any error will not be on the side of exaggeration of actual numbers. No complete census of the empire appears to have been published since 1812—sixty-four years ago. But there are no less than twenty-one censuses on record since the year 1393 (the twenty-sixth of the reign of Hang-whan), besides several aggregate calculations by Chinese authors. Not to go further back than the censuses taken by the first emperor of the present dynasty in the eighteenth century, which were violently resisted by the Chinese, their object being to levy a poll tax upon all men between the ages of 16 and 60, and to get at the actual number of those fit for the army, we may safely assume that no excess over actual numbers would be returned. This was in 1711, and the next was taken at the time of Kienlung in 1753, and fairly corresponds with that of the previous period, as Dr. Wells Williams, the author of the 'Middle Kingdom,' assures us, who examined the whole subject very closely. Then followed a census taken in 1792, the year before Lord Macartney's embassy, the result of which was given by the Commissioner Chau as 333 millions. Possibly he may have had motives of national pride or vanity for exaggerating. But Dr. Morrison gives the numbers of the census (the nineteenth), as recorded in Chinese works, at 307,467,200; while the census of 1812 is considered by both Drs. Morrison and Bridgeman, both competent sinologues, as 'the most accurate that has yet been given of the population.' And this places the number at 362,476,188. These data, if they cannot be relied upon in the same way as those taken in Europe in the present day, are at all events worth more than the 'guesses of foreigners who have never been in the country, or travelled in it only very partially.' Finally there are three other tests in support of the authenticity and trustworthiness of such returns.

"1. The highest population ascribed to China is not greater than the country can support, or than other countries can show. Thus the area of the eighteen provinces is 1,348,870 square miles, and the average population therefore to the whole in 1812 would be 268 to every square mile. According to M'Culloch, who also called

in question the accuracy of the Chinese census, in the United Kingdom in 1831 there were 212 to the square mile; in Ireland, 249; in France in 1846, 223; in Lombardy in 1839, 260; in Belgium in 1836, 321; and in Lucca in 1839, 400.

"2. So as to the means of support. A report made to Kienlung in 1745 gives the area under cultivation at 595,598,221 acres, and a subsequent calculation places it at 640,570,221. This is about the same proportion as in England, or about 2 acres for the support of each individual; while in Ireland it is two persons to each acre, in France $1\frac{3}{4}$, in Holland $1\frac{1}{4}$ of an acre of cultivated land to each person.

"3. So again as to the rate of increase. Whether the starting point be the census taken about A.D. 1000, when the population was set down at 9,955,729, or that of 1711, there is nothing to throw doubt on the latest returns. From 1711 to 1753 the population increased 74,222,092, being a little more than 6 per cent. per annum for forty-two years, during which the southern provinces were brought into more complete subjugation; while from 1753 to 1792 the increase was only about $2\frac{1}{2}$ per cent. per annum for thirty-nine years, and from 1792 to 1812 the increase was 54,126,679, or an annual advance of not quite 1 per cent. for twenty years. At the same rate the population at present would be over 450 millions; but no one has assumed this to be the number. From such an estimate, according to rate of increase, would have to be deducted the overflow of Chinese in all directions—to the Indian Archipelago, Australia, California, &c., a couple of millions; for the waste of destructive civil wars, and two or more great famines, say 10 millions more; and we shall still have over 400 millions. If we compare the above rates of increase with those of countries in Europe, where the inhabitants are less prolific than in China, they will be found to be fully borne out. The 'Times' criticism, therefore, on the '400 millions of people,' and the 'third of the human race,' described as 'delicious rhetorical flourishes,' may be held sufficiently answered by reference to facts and figures, which are much less like 'rhetorical flourishes' than its own oracular comments."

Before the discussion began he would point out what were the differences in percentages between Sir Richard Temple's estimate founded upon the Indian census and the returns given by the Chinese Government. The province of Pechili contained the capital, Peking, and the town of Tien Tsien; Sir Richard Temple's estimate for that province fell short of the Chinese returns by 54 per cent.; for Shantung, which was next to Pechili, it fell short by 32 per cent.; for Kiangsu it fell short by 86 per cent.; for Chekiang the numbers were about equal; for Fukien, Sir Richard's estimate fell short by 20 per cent.; for Kwantung, in which Canton was situated, the estimate exceeded the returns by 41 per cent. He might here remark that the emigration from China had been chiefly from the provinces of Fukien and Kwantung. Sir Rutherford Alcock estimated the decrease there caused by emigration as 2 millions, and Sir John Bowring in 1857 spoke of it as from 2 to 3 millions. In Honan Sir Richard Temple's estimate was

3 per cent. more than the Chinese return; in Hupi 10 per cent. less; in Ganhwey there was a difference of exactly one-half; in Hunan the returns were 27 per cent. higher than the estimates; in Kiangsi 90 per cent. higher; in Kwangsi the returns were 19 per cent. less; in Kweichow 19 per cent. less; in Yunnan 42 per cent. less; in Shansi 71 per cent. more; in Shensi 16 per cent. more; in Kansu 26 per cent. less; in Szechuen 26 per cent. more; showing that Sir Richard's estimates founded on the Indian population were sometimes greater and sometimes less than the returns. The average difference of the whole is 24 less. The paper afforded a guide which might lead them to a correct conclusion, and he hoped that somebody who took an interest in the question would consider the subject, for during the two days since he had received Sir Richard Temple's paper, he had found that it was one of very great interest, and one which might be very usefully examined by anyone who had the time and the leisure to devote to it.

Professor DOUGLAS (British Museum) said he did not place so much faith in the Chinese census as Sir Rutherford Alcock was inclined to do. He regarded the censuses taken by the Chinese Government as untrustworthy, and he agreed with Sir Richard Temple in thinking that the only plan for getting at anything like an approximate idea of the population of China was by the comparative method. Sir Rutherford Alcock had mentioned two censuses taken in the years 1711 and 1753. The first was taken for the purpose of levying a poll tax and establishing a system of conscription, and on that occasion the returning officers gave the whole population of China as being about 28 millions. In 1753 another census was taken to form the basis of a system of relief to be granted in cases of emergency, and the returns then swelled to a total of 103 millions, the difference between the two censuses being something like 75 millions. He merely mentioned that as an instance of the untrustworthiness of Chinese censuses. Orientals as a rule took no interest in statistics, they never really troubled themselves about them, and they did not the least understand their value. Such a Society as the Statistical Society would have no *locus standi* whatever among them. If a conscientious official in China desired to make an authentic return on any statistical subject, he would have the greatest difficulties thrown in his way. Not long since, Mr. Baker told a story at the Geographical Society of a certain Chinese prefect who was ordered to make a return of the population of his prefecture. Being a conscientious man he carefully appointed deputies for the work, and among them sent two to take the census of a certain city, at the same time adopting means to prevent their holding any communication one with another, in order to insure a truthful return. On the completion of the work the two officers presented returns that were so completely divergent, that the prefect concluded they had been based simply on guess work, and handed the two deputies over to the governor of the province for punishment. Again he sent two others who more cunning than their predecessors, succeeded in communicating with one another, and agreed to return identical

numbers, viz., 20,401. This identity suggested as grave doubts in the mind of the prefect as the divergence of the earlier return had done, and he therefore took one of the deputies aside and said, "you say the population in the city is 20,401, now which was the one, a man or a woman?" The officer was so startled at the unexpected question that he acknowledged the fraud, and he with his fellow offender was also forwarded for punishment. But the prefect being determined not to be beaten decided to go himself. Meanwhile the people of the city had become so alarmed at the repeated arrival of deputies, and the intended arrival of the prefect, that on the news of his approach they left the city in a body and hid themselves in the fields. The prefect on entering the city found it therefore empty, and in despair at the result of his pertinacity he hung himself at the city gate, clenching in his hand the following return: "Wuming hiem. Men none; women none; children under 14 none; total none." But though a comparative method such as Sir Richard Temple had adopted might lead to an approximate estimate of the population, it could after all be only the merest approximation, since in a country such as China, large districts were repeatedly subject to depopulation from famine, flood, war, and pestilence. About eight or ten years ago in the provinces of Shansi and Shensi there was a famine which was said at the time, and he believed with some accuracy, to have swept off 9 million souls. That was an instance of the kind of processes that were constantly going on in different parts of the huge empire of China. In speaking of Shansi and Shensi Sir Richard Temple seemed to treat them rather too much as though they were mountainous provinces and nothing more, but as a matter of fact they were agriculturally very rich provinces. They were covered, as were also a great part of the province of Kansu and the northern part of Honan, with a deposit of loess, extending to a depth of from 50 to 200 feet. Loess was a light friable soil of a yellowish colour, and it was from the colour imparted to the waters of the Yellow river by the loess through which it ran, that it derived its name. It was so porous that water percolated through it with the greatest ease. The consequence was that throughout the whole district the water was considerably below the level of the surrounding country. One of the peculiarities of loess was that its cleavage was invariably vertical, the result being that the banks of the rivers which traversed it rose perpendicularly on either side, making travelling dangerous and road making difficult. On the other hand, these served the useful purpose of affording cave dwellings for the people, and were bored like rabbit warrens. The surface of the loess was fertile to a degree, the farmer had but to scratch the soil and throw in his seed, and in good seasons when rain was frequent and temperate he was rewarded with abundant crops. In dry seasons however, when there was no rain to moisten the ground and fertilise the seed, the light surfaced soil was easily blown away, and the grain exposed to sun and cold, failed to germinate. This was the cause of the many dreadful famines that had taken place in the loess country. Sir Richard Temple had estimated the population per square mile of Pechili above that of Kwantung. He (Professor

Douglas) had been in both provinces, and he thought there could be no doubt whatever that the population of Kwantung was much denser than that of Pechili. The deltas of the rivers in Kwantung were exceedingly rich, and the population was large in proportion. On the other hand the delta of the Peiho was very poor, and largely impregnated with salt, so much so that for miles from the sea nothing, not even grass, would grow; it was merely a mud flat. Further inland wheat, millet, &c., were grown, but the delta was certainly not a rich one. To the province of Kweichow Sir Richard Temple gave a larger estimate than the Chinese, but he (Professor Douglas) thought the Chinese were right. Kweichow was an exceptional province; the climate was very unhealthy; the water was very bad, and the Chinese avoided it as much as possible. It was very mountainous, and was mainly inhabited by Miao-toze tribes. The Chinese population was very small, and would remain so as long as the conditions continued as they were. He thought Sir Richard Temple had made a mistake with regard to the area of Szechuen. In estimating the areas of some if not all the other provinces he had given them in statute square miles, whereas in the case of this province he had reckoned by geographical square miles. He (Professor Douglas) believed that the area of the province was 220,000 statute square miles instead of 168,800, and then the larger population estimate of the Chinese would be justified by Sir Richard Temple's calculations. He thought Sir Richard Temple was nearly right about the population of Yunnan. It was one of those unfortunate portions of the empire that had been more than decimated by rebellions and wars. Only a few years ago the Panthay rebels destroyed and depopulated whole districts of the province; but such was the recuperative power of the inhabitants, that already it was recovering from their ravages. Both agriculturally and as a metalliferous region it was extremely rich, and was capable of sustaining a very much larger population than it now possessed. But unfortunately it had little or no outlet for its produce. Englishmen had tried to reach it from Burmah, and the French had tried to do so from Tonquin; but both attempts had failed. Within the last few days however Mr. Colquhoun the traveller had pointed out that the true trade route to that and to the other south-western provinces of China was by way of the Shan States to the north of Siam, and had shown that there were neither political nor physical difficulties to prevent a railway being laid through the plains of Siam and the Shan States to the frontiers of China. This was an old road, and was well known as the golden road, from the fact that the wealthy Chinese traders passed along it into Siam. The towns through which it passed were rich and populous, and it was essentially a route which in the interests of the commerce of the world should be opened to all comers. If England did not lead the way in this enterprise, France would, and the result would be that in Tonquin and Cambodia French goods would be admitted on conditions which would make competition with them impossible. He was quite certain that the opening of the route to foreign commerce would give such an impetus to the trade of Yunnan, that the

population of that province would very speedily be doubled, trebled, and quadrupled.

The PRESIDENT said Sir Richard Temple had given the area of Kansu as 262,000 square miles, but in Sir John Bowring's statement, and in the map of China, it was only 78,000 square miles. It had generally been considered that Szechuen was the largest province of China, but the paper made Kansu 100,000 square miles larger.

Professor DOUGLAS said the boundaries of Kansu were very indefinite, extending far into Central Asia, and it was really impossible to say where it ended.

Sir R. TEMPLE said his estimates were taken from the "Statesman's Year Book," and were declared by Mr. Keltie to be derived from the most recent official returns in China.

Mr. FREDERICK HENDRIKS questioned whether Professor Douglas was well founded in the figures he had quoted respecting the Chinese censuses of the last century, which, he could venture to submit, from his recollection of what may be found on the subject in Duhalde and other French writers of that period, were not enumerations of the whole of the people, but nothing more than estimates of the number of males able to bear arms. Given then the number of fighting men between certain ages, a conjectural estimate could be made by the proportions it bore to the whole population male and female, and which would not, by this rough method of calculation, give a total inferior to the 300 or more millions of souls generally ascribed to China more than a century ago. Sir George Staunton, writing in 1797, said that the population might be taken at 333 millions. Now the last Chinese returns, as quoted in Sir Richard Temple's own paper, did not swell this total, although nearly ninety years had passed since the date of the Staunton estimate, by more than 17 millions, the figures being 350 millions. In the concluding part of his paper Sir R. Temple said that on the whole this Chinese return is not incredible or extravagant, although he had just before been shaking our confidence in its details, and had put forward his own view of the figures for each province, making a total for the whole Chinese Empire of only 282 millions instead of 350, or a reduction of say one-seventh. Surely the Chinese, when we come to detail, must be the best judges of which of their provinces are the most densely peopled; and one can scarcely understand why, for instance, they should so much over estimate, according to Sir R. Temple's view, the population of a province such as Kiangsu, as to put it at 37,800,000 instead of 20,265,650, a difference in excess of no less than 88 per cent. It could scarcely admit of doubt that the larger estimate of the two was rather more likely to approximate to the truth, than a mere guess based upon a supposed analogy with the particular density of population of a certain province in India; and we should hesitate to say that the

general rough correctness of the Chinese returns is really shaken by Sir R. Temple.

Mr. J. S. JEANS said it was pretty well known that the population of China was mainly agricultural, and if the rule applicable to other agricultural countries was applied to China, it would be found that the soil was scarcely capable of supporting such an enormous number as the official returns represented. It was true that India had a very dense population, but according to the census of that country the number of persons employed in commercial and industrial pursuits was infinitely larger than most people were prepared to believe. He had been perfectly astounded to find that there were over 400,000 iron and steel workers in India—a number in excess of that returned for this country, where nearly one-half of the whole quantity of iron made in the world was produced. Reference had been made to the opening up of the interior of China, and he was glad to say that there now seemed to be a better prospect than ever before of developing railways there. A project was now pending to connect four of the largest cities in China by railways, and although the difficulties to be encountered had hitherto been deemed insuperable in consequence of the great reverence of “John Chinaman” for his deceased ancestors, who were generally interred in some part of the garden or farm, yet those who had had opportunities of looking around them in China were of opinion that they could be overcome. The Chinese Government was in want of money, and if it could be raised in this country by syndicate or otherwise, he had reason to believe that it would not be long before a start was made in the construction of railways. If that were carried out the whole country would in course of time become accessible to British commerce, and the superstitious and conservative characteristics of the people might become very greatly modified. He had been a little disappointed to find that Sir Richard Temple had not given more details as to the general character of the population of China, upon which much that is interesting could be said.

Mr. CORNELIUS WALFORD said that on the whole he was disposed to think that Sir Richard Temple had presented statistics which would prove to be very useful. Hitherto there had been a halo of romance connected with Chinese statistics, and no one could tell how much of what he read belonged to the imagination of the writer. He had hoped to hear more about the river population, and Mr. Douglas had thrown a light upon that subject which he had not thought of before, but his observations would of course only apply to certain rivers. There were others on which whole families were said to live, thereby to a great extent escaping the duties of those in towns, and avoiding enumeration when they did not want to be enumerated. This river population was said to be one of the great problems to be dealt with in arriving at an understanding as to the population of China. He would be glad if any one could throw some light on the duration of human life in China, and there was one other subject that was of special interest

to him. We have been told that on the one hand the Chinese are the most frugal people in the world, and that on the other hand they are the most speculative. Every chance connected with human life which is capable of being insured against was said to be insured against by the Chinese. One branch of their insurance had struck him immensely, namely, what was called insurance against the cruelty of the tiger's tooth. It appeared to be a common occurrence for owners of property who had obligations as to fences, riparian rights, &c., to insure against the chance of being ruined by legal proceedings, under the designation just named.

Mr. H. M. PAUL said the last paragraph in the paper implied that the number of Christians in India was very considerable.

Sir R. TEMPLE said the allusion was to the number of Christians throughout the world, which was generally given at 260 or 270 millions.

Mr. DEMETRIUS BOULGER said the extraordinary increase that was alleged to have taken place in the population of China during the sixty years' reign of the Emperor Keen Lung, naturally led statisticians to doubt the accuracy of the Chinese returns. At the commencement of his reign the figures were said to be 60 millions, but before he died they had risen to 300 millions. The largest official census of China was taken in 1812, when the number was set down at 360 millions. Although that was very large, the estimates made by foreigners since then had been very much larger. During the last fifty years China had been visited by civil war, famine, and pestilence, and he should have thought those calamities would have decreased the population to a much greater extent than Sir Rutherford Alcock had stated. He was inclined to think the figures now closely approximated those given by Sir Richard Temple; but at the same time, while the standard which the paper applied to China might be accurate in the total result, it would probably not be applicable to special provinces, especially those along the valleys of the great rivers and the Grand Canal. For instance, he should be inclined to think that the Chinese estimates for Kiangsu and Ganhwey were more likely to be correct than those given by Sir R. Temple. It had been said that the population was agricultural, but the lower Gangetic valley was also agricultural. Mr. Jeans had said that there were 400,000 smiths in India, but that was only one-fifth per cent. of the population of India, and in the Gangetic valley there were 500 to the square mile. He thought the population of Kiangsu and along the Grand Canal was equally numerous, and in that case the total would be slightly higher than Sir R. Temple's figures, and slightly lower than those given in the last census return. All that could be hoped for was to approximate to the truth.

Mr. J. B. MARTIN said it was well known that the best census returns were subject to a considerable amount of error within

limits, but the facts stated by Professor Douglas showed that in this respect the extremes of east and west met. Perhaps there was no country where census statistics were taken with such elaborate care as in the United States. Americans were nothing if they did not do things on a large scale, and every township and city was interested in making its return as large as possible, partly from rivalry with its neighbours, and partly from the fact that the number of representatives in the legislature depended on the population. The census returns had therefore been sometimes regarded with a certain amount of doubt. He mentioned this to show that in accepting census returns the motives for which they were collected must always be taken into account. Whatever might be the population per square mile in China, the question was how far it pressed on the means of subsistence. Did the people eat rats, and cats, and dogs, and mice because they liked them, or because they had nothing else to eat? He regarded the question of Chinese emigration as one of the utmost importance, and within a generation or two it must command very great attention. The United States had found it a very burning question, and seemed to have made up their minds that they would not admit Chinamen. In the Australian colonies there was a very strong expression of feeling to the same effect; but he did not think the Chinaman would be kept out in the end by any restrictions which might be imposed.

The PRESIDENT said that he would only make a few observations. Sir Richard Temple had not gone beyond his original intention, which was to estimate the population of China by the population of India. He did not profess to go into any collateral questions, and therefore those who wished for information upon such subjects must look for them elsewhere. But there was one thing to which he particularly desired to call attention. Under any circumstances he thought they were justified in giving China a larger population than many persons were disposed to admit. The United States' minister had recently mentioned 250 millions as the probable population; while Sir Richard Temple calculated it at 282 millions, and did not think the latest official returns of 350 millions were extravagant. The discussion had been confined to China proper, and had not referred to Manchouria, Mongolia, or Thibet. In the *Journal of the Statistical Society* for March, 1857, there was a very interesting report on the population of China, by Sir John Bowring, who rather agreed with Sir Rutherford Alcock that a certain amount of credit must be allowed to the Chinese estimates. The latest Chinese return was for 1812, or seventy-three years ago. If the population was then 362 millions, and if it had increased at only 1 per cent., it would now be 625 millions. Taking the census of 1762, when it was stated at only 198 millions, and adding 1 per cent. for one hundred years, the numbers would be about 400 millions. In the United Kingdom there were about 300 souls to the square mile, and that rate would give 460 millions for China. Taking the average of British territory in India as 201 to the square mile, it would give 302 millions for China. Holland

had 330 souls to the square mile, at which rate China would have 506 millions. In Barbados the last census gave 1,033 to a square mile, and they were not crowded as in China; they did not eat dogs, cats, rats, and mice, and did not live upon rivers. Sir John Bowring wrote: "The enormous river population of China who live only in boats, who are born and educated, who marry, rear their families, and die, who, in a word, begin and end their existence on the water, and never have a dream of any shelter other than the roof, and who seldom tread except on the deck and boards of their sampans, show to what an extent the land is crowded, and how inadequate it is to maintain the cumberers of the soil. In the city of Canton alone it is estimated that 300,000 persons dwell upon the surface of the river, the boats, sometimes twenty or thirty deep, cover some miles, and have their wants supplied by ambulatory salesmen, who wend their way through every accessible passage." That would give an idea of the crowding of the population of China; and with regard to their supplies he said that they would never exist unless there were vast importations of rice and other food from other countries. The great advantage of Sir Richard Temple's paper was that it showed by a comparison with India a minimum, and it was to be hoped that some one who had sufficient time would take up the subject. He offered to Sir Richard Temple, on behalf of the meeting, their thanks for his valuable paper.

Sir RICHARD TEMPLE, in reply, said there was a large river population in India as well as in China, and he had applied the averages to districts similarly situated. With regard to the food of the Chinese, he should rather like some modern authority to verify the statements which were commonly accepted. No doubt the Chinese did eat many extraordinary things, but that was probably not from want of other food, and the statement with regard to large importations of food from abroad required verification by the trade returns. Mr. Martin had referred to Chinese emigration, but that was a subject beyond the scope of the paper. It should be remembered that only the men emigrated as a rule. The great objection that the Californian Americans urged against the Chinese was that they did not bring their wives and families with them, and always intended to return to their own country, so that it was impossible for them to become responsible citizens. That was one reason, probably, why all American moralists so greatly objected to having the Chinese in their midst. With regard to Mr. Jeans's remarks, it was scarcely within the scope of the Statistical Society to inquire into the character of the Chinese population. He was not altogether ignorant on that matter, and if Mr. Jeans would do him the honour of referring to certain papers which he read before the Royal Historical Society, he would learn his views with regard to it. He was glad to find that Mr. Douglas thoroughly appreciated the scientific character of the test which had been applied in the paper. No Englishman had ever administered government over a large number of Chinese, so that it was impossible to tell exactly how they would turn out; but the character of Indians was well known. Asiatics were decidedly un-statistical as well as un-

mechanical, and there was not the slightest chance of a Chinese census being worth the paper it was written upon, unless it was carefully supervised by Europeans. He had endeavoured to supply the means by which every one might judge for himself, and the only possibility of error was in the account he had given of the Chinese provinces. No living Englishman was competent to say with entire precision what the character of the interior of China was, and therefore the only question was as to whether his diagnosis of the different provinces of China was correct or not. There was a margin for mistake in that particular respect only, but if he was right on that point his averages were almost certain. With respect to the averages of France or England alluded to by the President, those were limited areas, and statistically it was not scientific to apply to vast areas averages drawn from small areas. The average of Europe per square mile was very inconsiderable compared with the average of England or Belgium, or any other highly populated country. The moment a large area was taken high mountains and barren regions must be included in which the population was very sparse. He felt there might be some doubt about his description of Shansi and Shensi. Professor Douglas considered that they were highly cultivated and densely populated because the soil was very fertile; but he did not think that it necessarily followed that because a country was fertile therefore it was densely populated, and he believed that his description of those provinces was not far from the truth—that there were parts highly cultivated and other parts that were not. One great reason for the reduction he had made in the Chinese return with regard to Pechili was that the whole of that province was not deltaic, a large part being mountainous. Moreover, the delta was not quite so rich as was commonly supposed. No doubt Kiangsu was very rich and populous, but he had taken an average of 505 per square mile, and surely that was a high figure for a large province. Could any scientific assembly believe the average which the Chinese return gave of 941 to the square mile? It was quite true that Honan, Hupi, and Ganhwey were rich provinces, but was it not the fact that there was a good deal of mountainous region in them? Errors arose because people only thought of the very rich tracts; but the whole area should be taken as known to geographers. With regard to Yunnan, where his calculation was in excess of the Chinese return, he considered that he had taken a low average. He had endeavoured to apply a scientific test, and that was worth much more than the so-called facts of Chinese authority. In fine, it were vain, in his view, to cite Chinese authority for statistics. He proceeded on the assumption that all such authority had been discredited. Therefore he had applied a different test, regarding the value of which a society of experts like the Statistical Society would be able to judge for itself.
