



A Method of Estimating Capital Wealth from the Estate Duty Statistics

Author(s): Bernard Mallet

Source: *Journal of the Royal Statistical Society*, Vol. 71, No. 1 (Mar., 1908), pp. 65-101

Published by: Blackwell Publishing for the Royal Statistical Society

Stable URL: <http://www.jstor.org/stable/2339244>

Accessed: 22/01/2009 12:24

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

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

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

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



Royal Statistical Society and Blackwell Publishing are collaborating with JSTOR to digitize, preserve and extend access to *Journal of the Royal Statistical Society*.

<http://www.jstor.org>

*A METHOD of ESTIMATING CAPITAL WEALTH from the ESTATE
DUTY STATISTICS.*

By BERNARD MALLET.

[Read before the Royal Statistical Society, 18th February, 1908.

The Right Hon. Sir CHARLES W. DILKE, Bart., M.P., President, in the Chair.]

THE subject with which I propose to occupy your attention to-day is a very limited one, and I feel that a word of explanation, perhaps of apology, is due from me by way of preface. It was suggested to me by the discussion which arose in the paper by Mr. W. J. Harris and the Rev. K. A. Lake, read by Mr. Harris on the 18th December, 1906.¹ That paper was an attempt to arrive at a valuation of the realized wealth of the United Kingdom, for which purpose, as regards the most important part of the capital wealth of the country, that in the hands of private individuals, he relied on the statistics derived from the death duties. English statisticians have led the world in calculations of this kind, more especially, owing to the facilities afforded by the early establishment of an income tax in this country, in calculations of the national income; and I need not remind members of the Society of the labours of inquirers like Mr. Dudley Baxter, Mr. Leone Levi, Sir Robert Giffen, and Mr. A. L. Bowley in this connection, which have enabled us to reach a reliable statistical approximation of the national income of the United Kingdom, together with some notion of its distribution among the various classes of the community, the income tax paying class, the manual labour class, and the class intermediate between the two. But I think Messrs. Harris and Lake, and Mr. Chiozza Money in his "Riches and Poverty" (in which the question of the distribution of wealth in the community was handled in a very interesting manner), were the first who have published estimates of the national capital or wealth based on the death duty figures which have been available since the institution of the estate duty in 1894 by Sir William Harcourt. Previous inquirers, like Sir Robert Giffen in his standard book on the "Growth of Capital," were obliged to rely on the income tax returns, capitalizing the income under the different schedules at a certain number of years' purchase, a method which involved almost insuperable difficulties in respect to Schedule D.

But an essential preliminary to any trustworthy inference from the annual returns of property passing under the estate duty is

¹ *Journal*, vol. lxix, 1906, p. 709.

to discover a "multiplier" by which to calculate the amount of property owned by the living from the amount which comes under review in any particular years or series of years. No real agreement seems to have been arrived at among statisticians on this point; the discussion on Mr. Harris's paper indeed revealed the most startling differences of opinion, Mr. Harris giving the necessary multiplier at 29, which Mr. Coghlan combated as far too low, while Mr. A. H. Bailey raised it from 29 to 65, which, however, he reduced in his letter to the *Journal* (March, 1907, p. 130) to 55. Mr. C. Money, in "Riches and Poverty," assumed 30 as the multiplier. Finally, reference must be made to the discussion of this question before the Select Committee on the income tax in 1906, of which our President was Chairman. Mr. A. L. Bowley prepared for the Committee carefully thought out estimates of the distribution of income, and in one table, Appendix 2a of the Report (House of Commons, 365, 1906), comparing national capital as deduced from the estate duty statistics with income from income tax statistics, adopted 32 as the multiplier for the former, referring in his evidence to Lord Milner's hypothesis (made some years previously) that the figure might be 40 (Q. 1179 and 1180). Sir Henry Primrose stated that he had taken 30 in his own calculations, but admitted that the proper multiplier was a "very doubtful problem," in view of the various ratios, ranging between 30 and 40, which had been put forward (Q. 28—31). To bring home the effect of such differences of opinion, I may mention that Mr. Harris, on the strength of his multiplier of 29, put the accumulated wealth of the country, judging from the value of the property which came under the cognizance of the Estate Duty Office in 1905-06, at 7,893,015,463*l.*, while Mr. Bailey gave it as 14,776,560,000*l.* Between these two extreme limits there is room for the most disquieting discrepancies, and it is therefore a matter of some importance to ask whether they can in any way be explained, or whether any data exist for suggesting a multiplier which may be more generally accepted for these calculations.

It is somewhat remarkable that previous to the discussion I have referred to, no English statistician seems to have concerned himself with the question except Sir Robert Giffen, who many years ago suggested a possible figure but who, as far as I am aware, has not given any subsequent investigation to the matter. Those who, like Mr. Branford, have dealt with calculations of national wealth in foreign countries have used the figure 36 originally established for France by M. de Foville, the statistical pioneer on this question, and adopted by the Italian economist, Pantaleone (see "Journal

of the Royal Statistical Society," 1901, p. 383). The method favoured by those English statisticians who have dealt with the question has been to estimate the total wealth of the living from the wealth of those dying in a given year by the simple process of multiplying the latter figures by the ratio of living to dying persons. It is this method which Mr. Coghlan fell back upon when questioned before the Select Committee on Income Tax, 1906, failing the possibility of the more correct method which he suggested, and to which I shall recur. There being about 1 death in 45 among persons from 25 years of age upwards, he said, "I would assume, as "I believe Sir Robert Giffen assumed, that the wealth of the "country is forty-five times the value of the estates of deceased "persons." (Q. 1398). Mr. Bailey, with his figure of 55, adopted a similar method of calculation.

Mr. Coghlan, in a previous question (1394), himself suggested a criticism of this method, which seems to be fatal to it. The following table shows how the multiplier may be affected by the fact, of which the above assumption takes no account, that (as he expressed it) "the accumulated wealth of an individual increases with years, "and is usually greatest when a man dies." The figures of average property at the different ages at which death occurs are in this table purely imaginary:—

TABLE I.

1	2	3	4	5	6
Ages.	Mean Annual Deaths, 1896-1905.	Assumed Average Property at Death.	Total Property at Death.	Numbr Living to One Death (Multiplier).	Estimated Property of Living.
		£	£		Millions of £'s
20 and upwards (crude)	314,349·9	(400·4)	125,872,040	(59·1)	(7,439)
20—	12,980·9	150	1,947,135	238·4	464
25—	29,811·2	200	5,962,240	174·5	1,040
35—	37,684·9	250	9,421,225	104·9	988
45—	45,351·3	300	13,605,390	63·6	865
55—	57,435·2	400	22,974,080	33·6	772
65—	66,898·7	500	33,449,350	16·1	539
75 and upwards.....	64,187·7	600	38,512,620	6·8	262
20 and upwards (cor- rected)	314,349·9	(400·4)	125,872,040	(39·2)	4,930

The figures in the lines at top and bottom of the table that are arrived at *otherwise* than by summing the figures in the age-categories are enclosed in brackets. The figure 59·1 in the top line is the ratio of the total living to the total deaths per annum among persons of 20 and upwards, and the figure 31·6 in the bottom line is arrived at by dividing the property of the living (col. 6) by the property of the dying (col. 4).

Thus at the ages 25—35 it is assumed that the average wealth of those who died was 200*l.*, this gives a total of 5,962,240*l.* as the property of the 29,811·2 persons who died annually at those ages. Multiplying this by 174·5 (the number of living persons at the same age out of whom one death occurred) 1,040,000,000*l.* is found as the property of all living persons between 25 and 35. Treating each age-group in the same way, the total property of all who died annually is 125,872,040*l.*, and the aggregate property of the living estimated for each group separately is 4,930,000,000*l.* on 39·2 times the property of the dying.

If we substitute for the figures in column 3 the following assumed amounts of average property at death in age-groups :—100, 150, 250, 350, 500, 700, 900, we shall get a total property at death of 164,379,570*l.*, and an aggregate of property for the living of 9,715,000,000*l.*, or 31·6 times the property of the dying.

Thus, if property is distributed among persons of different ages in one way, the true multiplier is 39·2; whereas, if it is distributed in another way, the ratio becomes 31·6. Another kind of distribution would give yet another ratio. The “crude” method makes 59·1 the multiplier in all cases impartially. That this ratio should be a possible constant in coexistence with an indefinite number of ratios derived from different degrees of property-possession is in itself an indication that it is not germane as a measure of the movement of property *mortis causâ*. If, as we shall see, the actual figures confirm the assumption that “accumulated wealth increases with “years,” the method which Mr. Bailey adopted in his letter must therefore, I think, be discarded. It could only be correct if the average wealth of adults at all ages tended to be the same. But I shall return to this point.

The method adopted by foreign inquirers is to base the required multiplier on what is called the “duration of a generation.” The tradition since the days of Herodotus has, as M. de Foville remarks, been to count three generations to a century, and the estimates which have been made by modern statisticians of the normal duration of a generation defined, not as the average length of life, but as the “average survival of children over their parents,” does not differ widely from the traditional figure referred to. M. Adolphe Coste, in a valuable paper published in the “Journal de la Société de Statistique de Paris” (vol. 1899, p. 191—4), covers the whole ground of the French speculations on this subject. He shows by a simple equation (p. 191) that the average survival of children over their parents is equal to the age of the legitimate father (or of the natural mother) at the moment of the child’s birth. If a father is 33 at his son’s birth and dies at 60, the son inherits at

27 and enjoys the inheritance till 60. His survival has, therefore, been thirty-three years (60—27). Suppose that instead of the father dying at 60 he dies, say, at 50, would this change in the conditions shorten the term of the son's survivorship? The son would in that case be 17 at his father's death, and would survive thirty-three years, dying in his turn at 50. The conclusion is inevitable that the chief determining element in the length of a succession is the average age of the parents when the children are born. As M. Coste puts it: if P is the average age of the parent, M the average age of death, and S the survival of the son, then

$$S = M - (M - P) = M - M + P = P.$$

In France the age of parents at the birth of their children is known by the *état civil*, and it is therefore possible to calculate exactly the "duration of a generation" in this sense. Tonnier, in 1816, calculated it for Paris in this way at 33·31; Vacher, in 1882, on a wider basis, put it at 33·06. M. Victor Turquan, in 1896, found that the average of a male generation for 782·082 legitimate births was 34 years 1 month 6 days, and for a female generation for 73,809 illegitimate births 25 years 9 months. The proportional average between these legitimate and illegitimate births is equal to 33·37, which is equal to the "average survival." A variant of this calculation, and the one I find quoted by M. de Foville and Professor Coletti, is an earlier one made by M. Turquan in 1892, which gives the average age of fathers as 34 years 1 month 6 days, and mothers (legitimate births) 29 years 9 months 28 days, giving an average survival of children of nearly *thirty-two years*.

The same line of speculation is followed by Professor F. Coletti in an important series of articles in the "*Riforma Sociale*" for March, April, and June, 1907. This economist describes the methods and conclusions of French and other statisticians on the subject. He dismisses as "infantile," methods which rest on the length of a physical generation, and confines himself mainly to discussing the methods falling under two classes according as it is sought to establish the length of an hereditary generation:—

- (1.) Directly by determining the mean survival of children over parents (de Foville), or:
- (2.) Indirectly by determining the comparative age of the parents, *i.e.*, their mean age at the birth of the children.

Under the second head fall the investigations of MM. Coste and Turquan in France and M. Rümelin in Germany. The last mentioned takes the formula = age of father at marriage + one year + half the difference of age between first born and last born, and thus gets the figures of

36½ for Germany | 35½ for England | 34½ for France.

With reference to M. Coste's formula quoted above, Professor Coletti points out that it fails unless both the "comparative age of the parents" and the "mean duration of life" are the same for the successive generations. The criticism is just because it is clear that, if the mean duration of life is undergoing a change, the heir will on an average outlive his predecessor by a corresponding period.

Taking this consideration into account, and working on the Italian figures of the duration of life, he gives a mean length of an hereditary generation in Italy as 32 years 3 months for 1882, and 34 years 11 months for 1901.

Finally, there is the "direct" method of M. de Foville. The following was this eminent statistician's original calculation which, though it is well known, should perhaps find a place in the present summary of various methods:—

- | | |
|---|-------------|
| (a.) Average interval of transmissions <i>inter vivos</i> and
<i>mortis causâ</i> (basis of French mortmain tax, 1849) } | = 20 years. |
| (b.) Average interval between transmissions of real
property <i>inter vivos</i> (French official calculation) } | = 45 years. |

This means that in nine hundred years there are—

$$\begin{aligned} (a') \quad \frac{900}{20} &= 45 \text{ transmissions } \textit{inter vivos} \text{ and } \textit{mortis causâ}. \\ (b') \quad \frac{900}{45} &= 20 \quad \text{,,} \quad \text{,,} \quad \text{only.} \\ (a'-b') &= 25 \quad \text{,,} \quad \textit{mortis causâ} \text{ only.} \end{aligned}$$

That is to say, transmissions *mortis causâ* occur on an average once in thirty-six years — $\frac{900}{25}$.

Professor Coletti's criticism upon this is as follows:—

The interval of twenty years (*a*) relates to all kinds of property, real and personal, whereas the interval of forty-five years (*b*) relates to real property only. Now it is known that transmissions of real property occur at longer intervals than do transmissions of personal property. Therefore, for real and personal property, the interval (*b*) should be something less than forty-five years, and the number of transmissions in nine hundred years more than 20(*b'*).

It follows that the number of transmissions *mortis causâ* (*a' - b'*) should be less than 25, and the interval between such transmissions more than 36.

Professor Coletti appears to think 36 is in itself a suspiciously high figure, and that a higher figure still would be a clear proof that M. de Foville's data were not reliable.

I may add that, in his most recent pronouncement, M. de Foville seems to have abandoned 36 as his multiplier, and to have adopted

M. Turquan's 1892 figure of 32 as that by which the annual devolution of property in France should be multiplied until it is found to be incorrect (see an article, on "La Richesse en France," in the "Revue Économique Internationale," 15th—20th April, 1906, p. 21). By so doing he seems to assume that the two methods are equivalent, whereas it would appear that M. de Foville's original method could hardly have aimed specifically at finding the length of a generation (which is M. Turquan's object), for in that case his inquiry would have been limited to the passing of property from parent to child. It aimed rather at discovering the average length of time during which a property owner holds property. In other words, he seems to have discarded a multiplier based on the average survivorship of heirs over their predecessors for what is not the same thing, viz., one based on the average survivorship of children over their parents.

Such, then, briefly described, are the chief results, so far as I have been able to trace them, of recent researches having for their object the discovery of the "duration of a generation" in modern communities. They seem to have arrived at the conclusion (based, however, on figures of the whole population, whether property owners or not) that the period of time between the date when an heir receives his inheritance and the date when he in his turn hands it on at his death to his heir may be put at from thirty-two to thirty-six years in Western Europe. But an obvious—though not, as we shall see, the most fundamental—difficulty arises when we seek to apply some such figure, as M. de Foville boldly does in his latest paper, as the multiplier for the annual devolution of property revealed by death duty statistics. For property passes, not only from father to son, but also collaterally from brother to brother, husband to wife, and so on.² M. de Foville notices this difficulty, only to pass it over as unimportant. It would, of course, have the effect of reducing the multiplier of 32 or 36 (or whatever figure might be taken as that of the duration of a generation); but, at the time when Mr. Harris read his paper, in December, 1906, I was inclined to assume, though I had previously accepted 32 as

² Some interesting figures, for what they may be worth, on this point (which is quite subsidiary to my main point) came out of the *succession duty* figures, to which reference is made later on. It was found in the 273 cases analysed, 252,000*l.*, out of a total of 405,000*l.* capital, or 62 per cent., was left to lineals. In order to verify this, the amount of property on which *legacy duty* was paid in the four years 1875, 1876, 1877, and 1879 (before the 1 per cent. on legacies to lineals was abolished in 1880) has been made. The total amount of property on which duty was paid over the counter at Somerset House in these years was nearly 322,000,000*l.*, and roughly, 60 per cent. went to lineals and 40 per cent. to other persons.

the most probable "multiplier," that a reduction to 29, or thereabouts (Mr. Harris's figure), would give a multiplier which might be applicable to our estate duty statistics, dealing as these do with property, real and personal, settled and unsettled, descending both lineally and collaterally.

Some observations, however, made by Mr. Coghlan on that occasion caused very grave doubt in my mind whether we had got to the bottom of the question if the object was to find a multiplier for our own estate duty figures of the annual devolution of property. He pointed out that the "only true way of ascertaining the wealth of those alive from the amount of wealth of those who died during a given period was to take into consideration the ages of the persons, both living and dying. If they could ascertain correctly the ages of the persons who died, and divide them into categories, and ascertain the amount of property left by persons in these categories, they could ascertain correctly the wealth of the community. If, for instance, they could say that the number of persons from 21 to 25 who died in a given period was so many, and the value of their property amounted to so much, and so with the different categories, then they could find the average wealth possessed by the persons in each category, and, multiplying the amount so ascertained by the numbers then living belonging to each category, they would arrive at the total wealth of the community."

Mr. Coghlan made a similar suggestion in his evidence before the Income Tax Committee (Q. 1396) and added that "as far as this country is concerned any such calculation is entirely out of the question as the data on which it depends do not exist."

These observations seemed to me at the time to give us a most valuable suggestion as to the method which might be followed in estimating accumulated wealth from death-duty statistics and in arriving at the proper "multiplier" for these statistics; and I thought it was at least worth while to inquire whether our official statistical resources might not after all be equal to following it up. I found in the first place that the Registrar-General's department was able without difficulty to supply me with the ages of persons who died annually, arranged, as suggested, in groups, or the mean annual deaths in any age-group that might be desired, and the corresponding number of living persons to each annual death. This table at once revealed the wide divergence of the rate of mortality in the several age-groups and supplied the first requisite for the proposed calculation by giving a series of ratios by which the amounts of property passing annually in each of the corresponding age-group should be multiplied.

This second series of figures the Estate Duty Office has been able to furnish for a limited number of years owing to a suggestion which I had fortunately made a few years previously, that the age of the deceased person recorded on each "affidavit" presented for payment of estate duty in England (and Wales) should be noted in the department. But the full amount of an estate is not by any means invariably stated in the affidavit, which has to be supplemented in many cases from "accounts" rendered subsequently to the rendering of the affidavit, so that a considerable amount of clerical labour is involved in their adjustment, which cannot indeed be made after the lapse of a certain time. I have, therefore, not been able to give an analysis of the results for more than the two (calendar) years, 1905 and 1906. But the unadjusted results of the year 1904 correspond so closely with those of 1905 and 1906 that I may perhaps be safe in relying for the present on those two years only for my purpose, which is less that of stating positive conclusions than of indicating a method of computation, and obtaining the opinion of others upon its validity. If the method is accepted, further statistical data can easily be obtained later.

The tables in which the results obtained are set out may now be given:—

TABLE II.—*Registrar-General's Figures.*

Ages.	Mean Annual Deaths, 1896-1905.	Number Living to One Dying (Multiplier).	Ages.	Mean Annual Deaths, 1896-1905.	Number Living to One Dying (Multiplier).
0—5	199,876·9	18·7	35—45	37,684·9	104·9
5—10	13,740·7	256·4	45—55	45,351·3	63·6
10—15	7,604·3	443·4	55—65	57,435·2	33·6
15—20	10,583·2	307·0	65—75	66,898·7	16·1
20—25	12,980·9	238·4	75 and over	64,187·7	6·8
25—35	29,811·2	174·5			

TABLE III.—*Estates Liable to Duty, Calendar Year 1905 (England only).*
 [This table and the following table are from figures supplied by the Estate Duty Office of the Inland Revenue Department.]

1	2	3	4	5
Ages.	Amounts of Estates Passing in 1905, Classified according to the Ages of Deceased Persons.	Average Value of Estate, according to Age.	Estates Multiplied by Ratio of Living to Dead (see preceding Table) to Raise them to Values of Living Property.	Average Tenure of Property.
	£	£		
0 and under 5	4,275	535	79,945	$\left. \begin{array}{l} 5,499,876,745 \\ \hline 228,520,811 \\ \hline = 24\cdot06^* \end{array} \right\}$
5 " 10	6,297	2,759	1,614,600	
10 " 15	7,744	452	3,433,700	
15 " 20	34,135	787	10,479,500	
20 " 25	345,290	1,164	82,319,000	
25 " 35	2,124,200	1,161	370,670,000	
35 " 45	8,755,900	2,195	918,500,000	
45 " 55	17,361,000	2,650	1,104,180,000	
55 " 65	38,861,000	3,650	1,305,700,000	
65 " 75	65,372,000	4,714	1,052,490,000	
75 and over.....	95,649,000	6,618	650,410,000	
	228,520,841†	4,419	5,499,876,745	

TABLE IV.—*Estates, Calendar Year, 1906 (England only).*

1	2	3	4	5
Ages.	Amounts of Estates Passing in 1906, Classified According to the Ages of the Deceased Persons.	Average Value of the Estates According to Age.	Estates Multiplied by the Ratio of Living to Dead to Raise them to the Values of Living Property.	Average Tenure of Property.
	£	£		
0 and under 5	2,000	400	37,400	$\left. \begin{array}{l} 6,097,912,000 \\ \hline 256,445,000 \\ \hline = 23\cdot78^* \end{array} \right\}$
5 " 10	54,390	10,878	13,946,000	
10 " 15	7,670	697	3,400,900	
15 " 20	21,090	680	6,474,700	
20 " 25	223,920	829	53,383,000	
25 " 35	1,921,680	1,088	335,340,000	
35 " 45	7,013,750	1,779	735,750,000	
45 " 55	25,017,500	3,753	1,591,100,000	
55 " 65	43,083,000	3,954	1,447,600,000	
65 " 75	74,514,000	5,423	1,199,700,000	
75 and over	104,586,000	7,426	711,180,000	
	256,445,000†	4,988	6,097,912,000	

* The result is practically the same if the age-groups under 20 are omitted.

† The net capital value for the United Kingdom of estates passing in the financial years 1905-06 and 1906-07 was 272,172,947*l.* and 298,460,180*l.* respectively, and the corresponding numbers (*cf.* Table V below) 62,845 and 66,082.

The figures resulting from the above tables, viz., 24·06 and 23·78, are those which have induced me to put forward a figure of 24 or thereabouts as the "multiplier" sought for.

The data on which this figure is arrived at may be fairly criticised on one or two different grounds.

(1.) That the number of years in the calculation of the passing of property is too small. I can only answer that until the results for the year 1907, and perhaps some subsequent years, can be analysed I have had no alternative but to rely on the two years 1905 and 1906. The correspondence in the result produced by these two years perhaps justifies the assumption that further years will not show any large variation, and the number of deaths producing affidavits—over 51,000 in each year—gave a fairly wide basis for analysis.

(2.) That if a less number of years than the ten years 1896-97 to 1905-06 had been taken for the mortality table (three or four of the most recent years only for instance), a certain increase in the length of life might have been shown, and slightly higher multipliers obtained. I am advised, however, by competent authorities—and a glance at the figures for the separate years seems to confirm the advice—that I am safe in having taken the ten years' average with a census period in the middle of it; and in any case the difference in the result would have been very small.

(3.) That there may be a fallacy in applying mortality tables of the whole population to the comparatively small class which owns realised property. I do not think that statistical science has established a different rate of mortality for this class, and it must be remembered that the large infant mortality in the poorer classes would not affect the ratio obtained by applying mortality table figures to property, as the amount held by infants is almost inappreciable. But this is one of several points on which members of this Society are peculiarly qualified to give the assistance of their criticism.

I mention these possible qualifications of the conclusion which results from the preceding figures that the multiplier for our estate duty statistics must be placed at 24 or thereabouts, because I feel sure that it will be contested as being unduly low. It is certainly a good deal lower than any figure which has hitherto been put forward, but even if, as a result of a further revision of these sets of figures, it could be fractionally raised, it is not in considerations of this order that the explanation of the difference between the "multiplier" provisionally put forward in this paper and those suggested by other enquirers must be sought. That explanation lies, I think, in the fact already indicated that the element of property is the leading factor in the present calculation while it was absent from all the other calculations to which reference has been made, and in the influence which the distribution of the property of deceased persons under age groups, and the application

to them of the appropriate ratio of living to dying, has upon the result arrived at in the present instance.

It is probably sufficiently obvious that what is required as a multiplier for ascertaining from death duty statistics the total amount of property in the hands of living owners potentially liable to this taxation, is *the length of the average period during which a unit of property is held by one person*, and that to obtain this average period the *amounts of property* rather than the *numbers of persons* (even if obtained by means of the same age-group classification) are the figures to be operated upon. It might, however, be assumed—and, no doubt, has been assumed—by those who rely on M. de Foville's estimate for a "multiplier," as well as by those who have adopted the figures of the "duration of a generation" for the same purpose, that the results of the two methods would be identical. That this is not the case the following table appears to prove:—

TABLE V.—*Numbers (England only).**

Ages.	Numbers of Deceased.		Numbers Multiplied by the Coefficients in Table II to Raise them to the Number of Living Persons.		Ratio of Total Living to Total Deaths.	
	2	3	4	5	6	7
Col..... 1	1905.	1906.	1905.	1906.	1905.	1906.
0 and under 5	8	5	149	101	} 1,926,237 51,715 = 37·25	} 1,908,801 51,414 37·13
5 „ 10	2	5	585	1,381		
10 „ 15	17	11	7,590	4,777		
15 „ 20	43	31	13,313	9,591		
20 „ 25	297	270	70,736	64,461		
25 „ 35	1,832	1,766	319,420	308,110		
35 „ 45	3,992	3,942	418,510	413,370		
45 „ 55	6,554	6,666	416,690	423,970		
55 „ 65	10,648	10,894	357,720	366,050		
65 „ 75	13,868	13,740	223,250	221,210		
75 and over.....	14,454	14,084	98,274	95,780		
	51,715	51,414	1,926,237	1,908,801		

* The number of deceased persons is assumed to be practically equivalent to the number of estates given in the Inland Revenue Reports.

Note.—In Tables III, IV, and V, there are certain numerical discrepancies, of which some explanation seems desirable.

In the original figures presented by the Estate Duty Department, there was a relatively small number of estates in which particulars as to age were not given. This number was proportionally distributed among the age-groups, with the result that the adjusted figures in some instances contained fractions.

As Table V relates to *persons* or *individuals*, the nearest whole numbers are given in columns 2 and 3, but in order to obtain columns 4 and 5, the actual results of the adjustments were used instead of these whole numbers. Hence in both sets of columns the closest approach to accuracy is obtained at the expense of one or two slight numerical inconsistencies.

Similar remarks apply *mutatis mutandis* to columns 2 and 4 of Tables III and IV.

We get, therefore, as the ratio of living property-owners to those dying in a year, the figure 37 (a figure, it will be noticed, closely approaching that of M. de Foville's original estimate to which it is analogous), while the multiplier derived from dealing with the amounts of property in age-groups, is, as we have seen, 24. So that the difference between the two ratios is as great as 13. To all appearances this difference is permanent, for the results of the two separate years are too constant to make it probable that the statistics of future years would deviate to any considerable extent from the respective figures of 37 and 24.

The conclusion established, assuming that the statistics are sufficiently representative, that the rate of movement of property is more rapid than that of the movement of persons sounds rather like a paradox. But some numerical illustrations have been worked out for me which seem to suggest a reasonable explanation of the disparity, and incidentally tend to demonstrate the correctness of the lower figure as that of the required multiplier.

Take, to begin with, the averages of two extreme cases. In the first, property of 1,000,000*l.* is held by one person for ten years, and, in the second, property of 100*l.* is held by one person for thirty years. It is quite obvious that, regarding persons only, the average tenure is twenty years, while, regarding property only, the 100*l.* may be disregarded, and the average tenure is ten years only.

It would, however, be natural to suppose that in a large range of cases the two multipliers would tend towards an equality as is generally the case in weighted and unweighted averages, and a more specific examination of the actual figures is therefore advisable. If, then, we refer to the table of the average amount of property passing by death at each period of life, we find that the amount increases with the age. Thus, between the ages of 25 and 35, the average value of an estate is about 1,000*l.*, while for the ages of 75 and upwards the value reaches to about 7,000*l.* The inference suggested is embodied in the familiar truth, that ability and industry in a progressive community are constantly creating income, and that income is as constantly being transformed into capital.

From this point of view let us assume that estates are divided into two groups, namely, those which are inherited and those which are created during lifetime, bearing in mind, of course, that the distinction is obscured in actual life by the fact that inherited estates frequently increase in value, and thus partake partly of the nature of created estates. But for the purposes of analysis we may suppose that there is a sharp distinction between the two, and, on ascertaining what conclusions flow from that assumption, we may

make the necessary adjustment for what is arbitrary in our original premiss.

As regards *purely* inherited estates—that is, estates to which no increase accrue owing to the ability or the industry of the possessor—we may say that their values bear no relation to the ages at which they pass at death. The property, for instance, of a young man dying would on this hypothesis be as likely to be large as that of an old man. Consequently, the ratio of the number of living property owners of this class to those dying in the year would tend to equality with the ratio of the living property to that passing by death in the year. In short, so far as purely inherited property is concerned, our weighted and unweighted averages, or our ratios derived respectively from numbers and estates, would tend to be the same.

In order to give numerical precision to this idea, let us assume that one-half of the number of the estates passing by death in 1906 were estates of this character. Here I repeat the numbers of deceased persons possessing estates in 1906 and the corresponding numbers of living persons for that year, condensed for convenience from Table V into three age-groups.

TABLE VI.

Ages.	Number of Deceased Persons Possessing Estates.	Number of Living Property Holders.
0—25.....	322	80,311
25—55.....	12,374	1,145,450
55 and upwards.....	38,718	683,040
	51,414	1,908,801

Half the total number of the deceased, then, or 25,707, are assumed on death to have left estates inherited by them, and not to have increased or altered their value by any business ability or industry during life, but to have maintained them at the value they possessed when they received them.

Let it also be assumed that all the property belonging to persons under 25 is of this kind.

Then, if the ratio of the number of living “inherited estate-holders” to the number dying is roughly similar to the ratio of the movement of property, that is, 24, the distribution of the numbers into the three age-groups would be something like the following :—

TABLE VII.

Ages.	Number of "Inherited Property Holders" Dying in the Year.	Number of Living "Inherited Property Owners."
0—25.....	322	80,311
25—55.....	3,362	237,299
55 and upwards . . .	22,023	299,360
	25,707	616,970

The corresponding numbers of "created property-owners" is, of course, obtained by the deduction of these numbers from the totals already given, and stand as follows:—

TABLE VIII.

Ages.	Number of "Created Property Owners" Dying in the Year.	Number of Living "Created Property Owners."
0—25.....	0	0
25—55.....	9,012	908,151
55 and upwards.....	16,695	383,680
	25,707	1,291,831

It will be observed from a comparison of the two tables that the number of those dying, who created property between 25 and 55, is nearly three times the number of those who merely inherited property; while from 55 the number of those inherited is greater than that of those who created. Thus there is a great preponderance of the "created property" class in the younger middle ages of life. This preponderance is still more observable in the columns relating to the "living." In this we find that, while the numbers from 55 and upwards are not very different, the number in the 25 to 55 class for "created property" owners is more than three times as great as the corresponding number in the "inherited property" class.

To some extent, no doubt, these disparities result from the arbitrary assumption that half the numbers belong to one, and half to another of two sharply divided classes; but although the precise numerical results may not correspond with the facts the tendencies indicated by them are probably correct.

The inference is therefore suggested that from some age above 25, say from about 27 or 28, the propertied classes are recruited, and the numbers correspondingly disturbed, by a considerable influx of persons who have begun to create or acquire property, but that the *amount* of property acquired being relatively small to that acquired at later ages, the *values* of the estates at the younger ages

is comparatively unaffected. This suggestion is supported by a comparison of column 4 of Table IV and column 5 of Table V reduced to a common percentage standard in the following table. It will be remembered that the totals of these two columns are the amounts which, divided by the amount of the estates or the number of persons, produce the ratios of 24 and 37 respectively :—

TABLE IX.—*Percentages (1) of the Values of the Property Belonging to the Living, and (2) of the Numbers of Living Persons Presumed to Own Property in 1906.*

Ages.	Percentages of Property, 1906.	Percentages of Numbers, 1906.	Ages.	Percentages of Property, 1906.	Percentages of Numbers, 1906.
0—5.....	0·001	0·005	45—55	26·093	22·211
5—10.....	0·228	0·072	55—65	23·739	19·177
10—15.....	0·056	0·250	65—75	19·674	11·589
15—20.....	0·106	0·508	75 and upwards	11·663	5·018
20—25.....	0·875	3·378			
25—35.....	5·499	16·141			
35—45.....	12·066	21·656		100·000	100·000

It will be seen that in the ages from 25 to 45 the excess of the numbers is very marked. At some age between 45 and 55 the percentages would be equal, after which the numbers dwindle relatively to property. The consequence of this influx of numbers of “property-creating” persons into the lower ages of life where the ratio of the living to the dying is large, is to raise, artificially as it were, the final ratio of the total number of living to that of the dead beyond the ratio of 24, derived from values instead of numbers. This suggested explanation, if correct, seems to remove any doubt which might have been suggested by the divergence of the two ratios as to the propriety of adopting the latter figure as our multiplier of property passing by death in the year.

Before concluding I may perhaps refer to the results of another investigation made on quite different lines, which gives some confirmation to the multiplier propounded. Previous to 1894, the date of Sir William Harcourt’s Finance Act, the successors to real estate were charged with succession duty on the “present value” of an annuity for a life corresponding to the age on succeeding, the annual value of which was the income derived from the property.

On payment of the duty a chronological account was kept in the Inland Revenue Office in which several interesting particulars relating to the successions were recorded.

From this record 272 cases were taken in the order in which they were recorded, of which particulars are given in the following tables :—

TABLE X.—*Inquiry into 272 Cases of Succession to Real Property.*

- (1.) The incomes (bearing an invariable ratio to capital) classified according to the ages of the persons when they succeeded to the property by death of the predecessors.
- (2.) The same multiplied by the expectation of life proper to those ages.
- (3.) The sum of the items in (2) divided by the sum of the items in (1) giving the average length of time during which a unit of property remains in the same hands.

Age.	1 Incomes.	2 Incomes × Expectations.	Age.	1 Incomes.	2 Incomes × Expectations.
	£			£	
9.....	158·40	8,185·40	47.....	198·80	4,335·90
10.....	38·15	1,938·00	48.....	93·00	1,964·60
13.....	6·25	300·94	49.....	524·85	10,731·00
15.....	73·70	3,420·40	50.....	599·05	11,843·00
16.....	564·00	25,687·00	51.....	7·70	147·11
18.....	765·00	33,568·00	52.....	463·85	8,555·60
19.....	162·00	6,974·90	53.....	111·90	1,991·30
20.....	498·20	21,039·00	54.....	7·20	123·52
21.....	183·00	7,579·00	55.....	169·40	2,797·60
22.....	166·20	6,747·80	56.....	723·02	11,489·00
23.....	29·20	1,162·00	57.....	170·65	2,607·50
24.....	1,166·90	45,492·00	58.....	155·67	2,285·20
25.....	288·35	11,012·00	59.....	342·82	4,832·10
26.....	284·60	10,641·00	60.....	154·20	2,084·00
27.....	19·55	715·43	61.....	10·35	134·03
28.....	249·45	8,931·40	62.....	29·04	360·25
29.....	64·00	2,240·60	63.....	60·05	712·18
30.....	232·50	7,958·50	65.....	117·80	1,272·80
31.....	107·91	3,609·00	67.....	54·32	532·34
32.....	267·95	8,753·90	68.....	34·45	321·25
33.....	248·55	7,928·70	69.....	320·60	2,840·50
34.....	301·30	9,382·50	70.....	527·35	4,437·60
35.....	219·05	6,654·70	73.....	33·55	240·55
36.....	239·85	7,107·90	74.....	88·30	599·56
37.....	351·15	10,146·00	75.....	4·64	29·81
38.....	126·90	3,574·10	76.....	166·00	1,008·46
39.....	523·95	14,377·00	77.....	56·20	322·59
40.....	144·68	3,867·30	78.....	137·10	744·46
41.....	197·95	5,149·70	79.....	9·35	47·92
42.....	301·87	7,640·30	80.....	40·20	194·37
43.....	494·57	12,167·00	81.....	26·22	119·69
44.....	37·42	894·34	86.....	10·00	34·20
45.....	661·30	15,342·00			
46.....	1,569·42	35,312·00			
				16,190·90	435,239·80

(3.) The fraction $\frac{435,240}{16,191} = 26\cdot9$.

Note.—The expectations in the table above and in Table XI are the mean of the male and female expectations for the decennial period from 1891 to 1900, and as there is some reason to suppose that there were more male than female successors, the averages of 26·9 and 24 are probably rather higher than they would have been if the male and female successions could have been separated.

TABLE XI.—*Persons.*

- (1.) The numbers of successors classified according to their ages when they succeeded to property by death of the predecessors.
- (2.) The same multiplied by the expectation of life proper to those ages.
- (3.) The sum of the items in (2) divided by the sum of the items in (1) giving the average expectation or length of time during which one person holds property after succession to it.

Age.	1 Number.	2 Number × Expectation.	Age.	1 Number.	2 Number × Expectation.	Age.	1 Number.	2 Number × Expectation.
9.....	2	103·35	36.....	6	177·81	59.....	9	126·85
10.....	2	101·60	37.....	6	173·37	60.....	4	54·06
13.....	1	48·15	38.....	3	84·50	61.....	2	25·90
15.....	1	46·41	39.....	9	246·96	62.....	4	49·62
16.....	2	91·09	40.....	5	133·65	63.....	3	35·58
18.....	1	43·88	41.....	7	182·10	65.....	5	54·03
19.....	3	129·17	42.....	7	177·17	67.....	3	29·40
20.....	1	42·23	43.....	4	98·40	68.....	2	18·65
21.....	3	124·24	44.....	2	47·80	69.....	2	17·72
22.....	3	121·80	45.....	12	278·40	70.....	3	25·25
23.....	1	39·80	46.....	13	292·50	73.....	2	14·34
24.....	5	194·92	47.....	6	130·86	74.....	2	13·58
25.....	6	229·14	48.....	5	105·62	75.....	1	6·43
26.....	6	224·34	49.....	9	184·01	76.....	4	24·80
27.....	3	109·79	50.....	12	237·24	77.....	2	11·48
28.....	6	214·83	51.....	2	38·21	78.....	1	5·43
29.....	2	70·02	52.....	4	73·78	79.....	2	10·25
30.....	3	102·69	53.....	4	71·18	80.....	3	14·51
31.....	4	133·78	54.....	2	34·31	81.....	2	9·13
32.....	8	261·36	55.....	7	115·60	86.....	1	3·42
33.....	6	191·40	56.....	4	63·56			
34.....	6	186·84	57.....	2	30·56			
35.....	3	91·14	58.....	6	88·08			
							272	6,517·57

(3.) The fraction $\frac{6,517·57}{272} = 24·0$.

The several *amounts* of income (supposed to bear a uniform ratio to capital) are in Table X grouped under the different ages, and were multiplied by the “expectations of life” proper to those ages, the products were then summed up, and divided by the total income, giving a mean expectation or length of tenure of 26·9.

The several *numbers* are similarly operated upon in Table XI, and give an average tenure of about 24·0.

In comparing these results with the results derived from the estate duty figures, it must be remembered that succession duty payable by way of life interest relates almost exclusively to land and houses, which classes of property pass more largely than personal property to lineals; and that as wives were not taxable on successions derived from their husbands, successions to them would

not usually be represented in the figures. For these reasons this inquiry might have been expected to give a number which, as applied to property and heirs generally, would be somewhat too high. It does, as a matter of fact, give a higher figure (26·9) than that which was derived from the estate duty statistics.

It should be added that the number of succession duty cases analysed is unfortunately, owing to consideration of time, very much smaller than would have been necessary if anything more than confirmation of the results of another inquiry had been desired. As it stands, however, and to the limited extent suggested by this remark, the secondary and far less authoritative inquiry does rather remarkably confirm the multiplier supplied by the estate duty investigation.

Another interesting point which emerges is the practical correspondence of the two ratios of persons and property, respectively; for it is a not unreasonable assumption that, had a larger area of cases been taken, the ratios now shown at 24 and 26·9 would have been found to coincide. This is what we should expect if the explanation suggested above of the disparity between the amounts of property and the number of persons (in Tables IV and V) is correct. For the succession duty tables are not disturbed, as the estate duty tables are, by the influence resulting from the creation of small but gradually increasing fortunes by comparatively young persons. These statistics are based on the expectation of life of successors when they inherited property, and before they had any opportunity of adding to their fortunes by industry or economy, and they, therefore, correspond to the imaginary class of inherited property owners in Table VII.

To sum up, I suggest the following conclusions from the statistics presented, tentatively as to actual figures, which might be somewhat affected if a wider range of years could be tested, but with some confidence as to the method adopted.

1. That property in this country, quantitatively considered, passes by deaths from one to another about once in twenty-four years, and that 24 is, therefore, the "multiplier" which should be used in estimating from the estate duty statistics the *amount of the property* in the hands of living owners which comes under the notice of Somerset House upon the death of its possessors; while a different multiplier, viz., 37, must be used if the *number* of such living property-owners is to be estimated from the table giving the number of estates.

2. That no multiplier connecting the property of the living with that of those dying in a given year is trustworthy which depends upon the consideration of numbers alone. Great as is the general

interest attaching to the results of the investigations made by M. de Foville and others as to "survivorship of heirs" or the "duration of a generation," such results are inapplicable to calculations having for their object to estimate the realised wealth of a community, because they have one and all neglected the movement of property itself in deciding on the ratio.

I cannot sit down without expressing my obligations to one or two gentlemen whose assistance has facilitated the preparation of this paper, to Mr. A. C. Waters of the General Register Office, to Mr. Soward of the Estate Duty department, both of them Fellows of this Society; and finally to Mr. H. C. Strutt of the Accountant-General's branch of the Inland Revenue Department without whose skilled and zealous co-operation I should have had great difficulty in following up Mr. Coghlan's important suggestions, and who himself suggested the use which has been made of the succession duty statistics.

DISCUSSION *on* MR. BERNARD MALLET'S PAPER,

THE PRESIDENT, in opening the proceedings, announced that Mr. Mallet was prevented by official duties from reading the Paper, but that he would be present during the discussion.

The Paper was then read by SIR ATHELSTANE BAINES.

Mr. A. H. BAILEY said he was glad to have an opportunity of saying at once that his mode of arriving at a multiplier for the object of this Paper was wrong; and he wished to withdraw it, as he held that the principal suggestion by Mr. Coghlan was the only proper method of arriving at the value of the property. He did not know if the age of the person whose property was under consideration was in every case presented to the Revenue Department; but, if it were, and then a return were made for decennial periods, so that there would be six or seven classes, they would have the total property of persons at ages of, say, 30—40, 40—50, and so on. And, deducing by the Tables of Mortality from the numbers of these persons, the corresponding numbers living at those ages, they would have a proper multiplier for each decennial period, and the total of these products would form the required estimate of the value of the property. I think that the table adopted for the purpose should not be that of the general mortality of the whole country, but some such table as that of the mortality amongst the families of the peerage; or, perhaps, the mortality tables derived from the life assurance companies might be employed, differing as they do appreciably from the general mortality of the country.

Another point that was not taken into account was the large amount of property that paid no duty at all, and which does not pass at death by will or settlement, of which he might give an illustration. They all knew that the Prudential Assurance Company had two classes of business, ordinary and industrial, the latter taking weekly premiums only. By the last report it appeared that the income from the industrial branch was 6,500,000*l.* sterling, derived from 16,766,650 persons, the most common premium being a penny a week. It was evident that the aggregate of that property was something very considerable, but it was not taken any account of in the tables of Mr. Mallet's Paper.

Mr. COGHLAN said with reference to the statement that he had suggested a multiplier of "45," he would like to explain that he had never used it in estimating the wealth of a country from the value of property left by persons dying. It is true that before the year 1890 he had used the system of a fixed multiplier, which he adopted from Mulhall, but he speedily found that there was no sense in it. He had mentioned the figure "45" to the Income Tax Committee, on what he understood was the authority of Sir Robert Giffen; but

he himself would never dream of estimating the wealth of a country by so crude a method.

It had been a great pleasure to him to listen to this Paper, which was an extremely lucid and valuable contribution to the science of statistics, and he thought the discussion would do a large amount of good as a continuation of that which took place on Messrs. Harris and Lake's Paper. He did not think anyone would venture to impugn Mr. Mallet's method, but the resulting estimate depended entirely on the data supplied by the Estate Office. The accuracy of those data was supported in a remarkable manner by the succession duty figures, although, it is true, there were only 272 estates investigated. He should like to see the data on which Mr. Mallet had worked, and he hoped they would be published annually. There was a great gap between a multiplier of 55, mentioned by Mr. Bailey, but now abandoned, and one of 24. If Mr. Mallet's data were correct, the wealth of the United Kingdom represented only 175*l.* per inhabitant, which would be a revelation to most statisticians, and certainly knocked the bottom out of the assertions of those persons who contended that if the whole property of the community was equally divided amongst the population their future would be secure. He took it, however, that the author did not expect them to adopt this as an absolutely fixed multiplier, and to believe that the value of private property in England was less than 6,000,000,000*l.* sterling; he imagined the discussion should be as to methods, and not as to conclusions. With regard to the method, he did not think there could be two opinions that the one used by Mr. Mallet was logical and would give exact results if the original data were accurate. There were, however, certain qualifications, such as Mr. Bailey had suggested; and he might also suggest that probably the value of the estates was understated, and there were avoidances of duty, as it was impossible to believe that 175*l.* per head represented the wealth of England. Again, it would be improbable that this multiplier of "24" should be correct for other countries, even supposing the estate duty figures were absolutely to be relied on and included everything, it could be correct only for the two years investigated and for England. The previous day he received the New Zealand statistics for last year, and he found that the average amount passing at death was 2,900,000*l.*; twenty-four times that equalled, say, 70,000,000*l.* In the same year the unimproved value of land assessed for taxation was 117,000,000*l.*, and the improved value of land 203,000,000*l.* Those were not casual figures, but the actual amounts publicly assessed by the Government assessors. In this case it would seem that the improved value of land was practically three times what the whole property of the community would be as ascertained by a multiplier of "24"; and this was irrespective of stocks in warehouses, cattle, machinery, and all other forms of property, which would bring the total property value of New Zealand up to about 270,000,000*l.*, or nearly four times the value found by this method. Evidently, therefore, such a multiplier was not of universal application. The method illustrated in this Paper must be applied to each country according to its

circumstances, and the resultant multiplier would vary according to the age, constitution of the people, the prevalence of the practice of distributing property *inter vivos*, and other conditions. To take another illustration to show that a multiplier of "24" is not universal—in New South Wales from the last figures he found the amount passing at death was on an average 5,900,000*l.* per annum; taking a multiplier of 24, the total property of the community was 141,600,000*l.*, only equal to the unimproved value of the land, which was 136,000,000*l.*, the improved value being 264,000,000*l.*—twice the sum arrived at by this method.

The Paper afforded a great deal of food for thought. It was most important to have proper estimates of the wealth and income of a community, which could only be obtained by a complete elucidation of facts and methods, and the present was a most important contribution to the study of estimates of wealth.

Mr. L. G. CHIOZZA-MONEY, M.P., said he had made up his mind not to write or utter another word on this subject, but he confessed that he was tempted to say something, in spite of that resolution, on hearing this interesting Paper, especially as he had been greatly indebted to Mr. Mallet for his personal kindness to him, and for the way in which he always received inquiries with reference to official statistics. If all our public officials worked with as much zeal and ability as Mr. Mallet did, official statistics would be in a much better condition. He confessed himself in much the same difficulty as Mr. Coghlan with regard to the results obtained by Mr. Mallet's multiplier. Mr. Coghlan had only applied them to statistics with which he was peculiarly familiar, namely, statistics collected at the Antipodes. And, unfortunately, we had no such statistics in this country; but, at least, we had this—that the totals arrived at by Tables III and IV were, if he might say so, impossible. Whatever uncertainty there might be with regard to the wealth of the country, there could be no doubt or question that a sum of 5,500,000,000*l.* or 6,000,000,000*l.* was a very inadequate estimate. He might refer to the fact that Sir Robert Giffen, who made a number of calculations as to the wealth of the country based on the income tax statistics not long ago, if he remembered aright, said he did not think anybody would quarrel with him if he placed the total wealth of the United Kingdom at 15,000,000,000*l.* Of course it must be remembered that the figures given to-night were for England and Wales only, but the difference between that figure and the figure arrived at in these tables was so remarkable as to suggest that some very great error attached to the multiplier. The more he thought on this subject the less faith he had in multipliers. To take a hypothetical case. Suppose that a generation ago in this country there were 1,000,000 houses belonging to 1,000,000 individuals, and that since then not another house had been built; there would still, in that case, be 1,000,000 houses in the country. Now, if there had been lineal succession from one houseowner to another, then, in the present year, we should expect to find, roughly, 33,000 houses left by 33,000 individuals who died this year. Only

in that case would it be legitimate to multiply the number of houses left by a number, approximating to 30, representing a generation. But the number of houses in the country did not remain constant; there were houses built every year, and other new units of property came into existence every year. At any given time, therefore, we had not only all the property of the generation ago which had been passed on, as his hypothetical houses were, but all the additions or accumulations in the meantime. And the question was: How far did any multiplier which could be suggested on any system sufficiently take account of this accretion of property in the last generation. He wanted to know what number it would be legitimate to add to the multiplier representing the length of a generation, in order to get a figure which would truly represent, not merely the lumps of property passed on, but the new units of property formed in the meantime. His present conviction was that no such number could be legitimately suggested. Everything would depend upon the progress of the country and the rate at which wealth was accumulating. If it were true that of late years fortunes were made more rapidly than they used to be, there was no question whatever that they would have many new units of property brought into existence which the ordinary multiplier would take no account of. It was for this reason, he thought, that, when the "multiplier" method was adopted, they got, as they might expect to get, a valuation of property considerably less than what actually existed. With regard to the results arrived at in the present Paper, he pointed out that two figures he could quote which were sufficiently accurate to be reliable threw a great deal of doubt on the 6,000,000,000*l.* He did not think anyone would quarrel with a valuation of houses and business premises under Schedule A of the Income Tax Acts in taking them at only fifteen years' purchase. That gave a total of nearly 3,000,000,000*l.* alone in the United Kingdom.

Then, taking from the Statistical Abstract the amount of paid-up capital of all registered companies believed to be carrying on business in 1906, it was 2,003,000,000*l.* So that between the freehold houses of Schedule A of the Income Tax Acts and the record of companies with limited liability (many of which were no doubt rotten companies, but that was balanced by another consideration, to be referred to directly), we got as much as 5,000,000,000*l.* of property. It was quite true that as to the 2,000,000,000*l.* of joint stock company capital a great deal was nominal or bogus, but, on the other hand, that figure took no account of the enormous amount of capital employed by private traders. Those two figures alone, amounting to 5,000,000,000*l.* for the United Kingdom, showed, it seemed to him, the presence of a very big discrepancy in the result arrived at by the multiplier method. He confessed that he concluded in doubt, as he began, but he ventured to offer these few remarks in the hope that they might stimulate discussion.

Mr. A. L. BOWLEY said that most people, when they first saw this Paper must have felt that somebody had robbed them of at

least 2,000,000,000*l.*, and now the Society was in full quest to find where that was gone, or whether it ever existed.

He must thank the author for producing such an immensely valuable contribution to one of the most important questions that could be discussed. Perhaps one of the most important points was that just raised by Mr. Money, as to the growth of wealth. He could not speak with certainty on the arithmetical points he had put without further consideration, but he did not at all agree with his point of view. It was of course true that the wealth of the nation was growing (even if it had diminished by 2,000,000,000*l.* within the last week); but surely that would show itself in the estate duties. If we took a man who died leaving 500,000*l.* to-day, and could find the chances of death of such a man of similar circumstances and age, and if it were found that 1 in 50 of his circumstances and age was likely to die in the course of a year, then, if we multiplied that particular property by 50, we ought to arrive at the quantity of property in that category at the present time. The fact that after a time such large properties would grow was completely allowed for, as far as he could see, in the Paper; at any rate, that was his view at present. He had had access to this Paper for some time, and after trying to find a mistake in the multiplier, had completely failed. And now he had been for some days trying to find a mistake in the multiplicand. There he had not altogether failed, but he could not make it as big as he wanted. His difficulty was the divergence of the estimate obtained by multiplying the estate duty from other familiar estimates obtained by capitalising income. If he might refer to certain tables printed in the evidence taken by the Income Tax Committee, his views would be found there set out with some completeness. And, briefly, the difficulty was this: if they took the various incomes under Schedules A, C and D, they had to assume that those kinds of property were paying 8 per cent., if the multiplier 24 and the multiplicand were correct. The figures were in the same volume from which Mr. Mallet got his tables, and he submitted it was not for them, or possibly for Somerset House, to say which was right; but somehow they did not refer to the same things. It was possible, of course, with regard to the estate duties, that there were large sums which passed *inter vivos*, and people were not anxious to talk about them; but he did not think they could assume that for every 1*l.* bequeathed nearly 1*l.* passed before death, which was almost a necessary assumption to harmonize the statistics, because no one would be willing to admit a much higher rate than 4 per cent. for interest. But, certainly, something must be added. Again, as Mr. Money had pointed out elsewhere, it was possible that for the purpose of taxation estates were not valued at the full market value. There were two possibilities of screwing up the multiplicand, and then they must set to work to try either to screw down the income tax incomes or screw up the multiplier. Mr. Bailey had pointed out that the figures taken in the Paper were obviously not perfectly adapted to that multiplier. It was not at all certain, *à priori*, that the death-rate for persons who left property

above 100*l.* was the same as that of those who left no property ; and that surely was a matter for the insurance companies to discuss. Perhaps the Society might invite some persons especially cognisant with these matters to prepare a second table of numbers living and numbers dying who left as much as 100*l.* That might probably increase the multiplier slightly, it might be to 24·1 or to 26 or 27.

He should like to correct one misapprehension which might have arisen. The sum of money discussed in the Paper referred to England only, and only to estates over 100*l.* ; and therefore in no sense did the 5,000,000,000*l.* odd represent the whole wealth of the country, but only a particular part.

He was glad to see that Mr. Mallet was now present, because he wished to ask a question on Table VII. He could not understand how the numbers had been distributed ; the 51,000 total included two portions, and it appeared not to be a purely random distribution as arguments were based upon it. Perhaps the explanation was contained in the Paper ; but although he had read it carefully, he failed to find it.

The line of thought suggested would certainly lead to very interesting developments, apart from the immediate purpose of the Paper, namely, the establishment of the multiplier. The publication of these figures as regarded wealth in relation to age was of immense interest ; and he hoped that these details would be included in the future reports of the Inland Revenue Commissioners. Now that one of them had made such a successful exploration into the mass of material collected at Somerset House, he hoped that others would follow it up, for he believed that in that public building was contained the key to most of their problems. Another point of great interest was this : If you compared the number of persons of different ages who died leaving property with the total number who died, the relative numbers leaving property increased rapidly with age ; and the result was that persons over 65 had either a nice little property or absolutely none at all, and were candidates for old age pensions. It appeared that as one got old one either agglomerated wealth or the reverse. After all, his first difficulty was the most important. If they had to say there were 8*l.* of income to 100*l.* of property, as reckoned on this basis, it would profoundly modify the amount of incomes of persons with an income of over 5,000*l.* a year. If they assumed that for every 100*l.* which passed at death, there was 50*l.* which passed before death and escaped duty, then they would find that the rich were much richer than they thought, and that there was a larger number of incomes above 5,000*l.* a year. If, on the other hand, they had to say that somehow they had overestimated the income, then the opposite result would follow. It was rather too technical to go into then, but the relation between the total amount of capital and the amount scheduled as income had a very close relation to the distribution of wealth amongst different persons. As regards the estimates of the amount of incomes over 5,000*l.*, he found that you had either to add, or subtract, about 50,000,000*l.* from the category, merely from the doubt thrown on these estimates by this Paper.

Lord EVERSLEY said that he was not disposed to agree with Mr. Money in saying that the multiplier of 24 could not be an accurate figure, because the result brought out a total aggregate of property for the whole country which was far less than Sir R. Giffen had estimated. He always thought Sir R. Giffen's estimates rather exaggerated, but we must recollect that the property which came under contribution to estate duty was not the whole property of the country; a large quantity never came under it at all—all the property vested in the churches and corporations, and the very large amount which was handed over *inter vivos* in order to evade, if that was the proper expression, the duty. Even the eminent statesman under whose authority the estate duty was established—he did not mean Sir William Harcourt—disposed of a very large portion of his property to his children during his lifetime; and, from his own personal experience, he could say that a large proportion of property escaped duty in that way. One could not, therefore, compare the aggregate arrived at by any multiplier with the estimates made by eminent men. Having read this Paper carefully, he was disposed to agree with the general method of Mr. Mallet, and also with the conclusions. They seemed to him to bring out a number of interesting points, and, amongst them, the very large amount of property held by people of great age. Persons above the age of 65 owned nearly one-third of the whole property which came under the estate duty; their average estates were 6,000*l.*, whereas the average estates of people between 45 and 65 were only 4,000*l.* This seemed to show that of the realised wealth of the country a considerable part was due to the savings of people of advanced age. And he ventured to hope that Mr. Mallet would pursue his investigations a little further, and give them at some future time an estimate of the different kinds of property which came under the estate duty. Take, for instance, the investments in property abroad—he believed the Inland Revenue in one Report valued the income from money invested abroad at 91,000,000*l.* per annum.

The PRESIDENT said there was a very much higher estimate in the "Quarterly Review."

Lord EVERSLEY (continuing) said that if you took 91,000,000*l.* at an average rate of $4\frac{1}{2}$ per cent. it represented 2,000,000,000*l.* of money, which was equal to one-third of the aggregate arrived at in this Paper. He might also point out that amongst other deductions from the aggregate was the large amount of property in settlement which, he believed, was not "property" for the purpose of the estate duty, but only the life interest of the persons entitled to it. Therefore, a large addition must be made both in relation to personal and real property under that heading. Taking the aggregate of the figures arrived at by the author with whatever addition one might think fit to make in respect to the various matters referred to, the total did not seem very large in proportion to the population. With a population of 40,000,000, according to

Mr. Mallet's estimate, the property passing on death and subject to duty was 7,200,000,000*l.*, and the interest on that at 4 per cent. would be about 280,000,000*l.* a year. That, divided amongst 40,000,000, would be about 7*l.* a year for each, which did not seem a very large amount—it worked out to about only half-a-crown a week for each individual. Of course, that did not take into consideration income derived from professional efforts. Another point brought out was that they were already advancing to and arriving at a point where they could hardly expect to obtain very much more from the estate duty. The interest on the aggregate arrived at was 280,000,000*l.* a year, and the total death duties would be 13,000,000*l.* a year, which was 5 per cent. on the aggregate. Considering that they had an income tax which was even now 1*s.* in the pound, or another 5 per cent., that gave a total of 10 per cent. on the total realised property of the country. Whilst he had no theoretical objection to getting anything which could be got, there was a limit beyond which we could not expect to get very much. One limit was the possibility of evasion, which would tend to increase with greater temptation. Another possibility was that they might discourage accumulation, and a third was that many people having large estates, if the claims on their property at death were largely increased, might be disposed to go and live elsewhere, where they were not subject to such large demands.

The Rev. KENNETH A. LAKE said that both Mr. Harris and himself had been much pleased to read this Paper, and they congratulated the author on the result. At the time their Paper was published they were inclined to put the multiplier still lower than 29; but they were breaking new ground, and thought they had better not go too far. He would suggest, in all humility, that two years were hardly sufficient upon which to draw any definite conclusions; and probably the author did not mean them to fix on the figure of 24 as a definite result. It was possible to get extraordinary results by taking the average of a few years only, and, in order to obtain reliable conclusions, he thought it was necessary to wait until they could get an average of at least ten years, because the greater the average the more reliable the deduction. Mr. Mallet put the multiplier for real property at 36, but he considered that figure was rather too high, although, as a general rule, owners of real estates were longer lived than owners of personal property were. He thought it would be a good thing if they could get six or seven multipliers, by taking different ages and trying to strike an average between them. On page 77 Mr. Mallet took an extreme case of 1,000,000*l.* and 100*l.*, the one enjoyed for ten years and the other for thirty years; but they must remember that wealth tended to increase with years, whereas the expectation of life decreased. In considering the total arrived at, they must recollect that it was nothing like the total wealth of the country, and was not suggested to be, considering the enormous amount of personal property which was not accounted for in the statistics. There was all the property of those who died with less than 100*l.*, property in mortmain, in savings banks, trade

and friendly societies, and so on. It had been suggested that accretions of wealth were continually being made; but would they not be recorded from year to year in the death duties? If the death duties on an average were rising by 1 or 2 per cent. one might fairly infer that the wealth of the Kingdom was rising at that rate. But there was one thing to be said against that which was very familiar to the clergy—the question of dilapidations. While wealth was being increased in many ways it was also being decreased by depreciation. The total wealth, as Mr. Harris and he had estimated it, was far less than Sir R. Giffen's calculation; but, as they had pointed out, there had been a great deal of overlapping in his estimates. Property in settlement had been referred to; but was it not true that, after a lapse of years, the question of settled property did not affect the multiplier? Every year so much property was going into settlement, but every year some property was coming out of settlement. Personally he should not like to abandon the hope of finding a multiplier for estimating the wealth of the country; no one could hope to ascertain the exact total, but by patient working at figures and careful calculations they might in time arrive at a fairly accurate statement, and all credit was due to those who were investigating the matter.

Major CRAIGIE said that more than thirty years ago, when he was much younger and more daring, he attempted to tackle the question of a multiplier; and in connection with estimates of the value of personal property, he had many opportunities of discussing the matter with earlier statisticians such as Mr. Dudley Baxter. Subsequently, he even had the hardihood to disagree with Sir R. Giffen on some of the results of his capitalisation estimates. What surprised him on looking at this admirable Paper was to find out that apparently whatever multiplier was suggested by recent statistics, they would not be able to reconcile the results with the big figures they obtained by trusting to the capitalisation of data resting on the income tax assessments. If this Paper were followed up, on the lines of Mr. Mallet's work, it would presumably give the real figure they wanted. But a longer series of data would be needed. At the period he referred to it was impossible to do what Mr. Mallet had done, because these detailed statistics did not exist, and now they only covered a few years. For the present, all inquirers were still more or less puzzled at the divergent results. During last autumn he had occasion to mention this subject to M. de Foville, at the International Statistical Institute at Copenhagen, and he fancied that he was not indisposed somewhat to modify his earlier impression, and to put his multiplier lower. He was pleased to hear what Lord Eversley had said on the subject of the estate duties, for there was no doubt from a practical point of view that they were in danger of checking the accumulation of wealth in this country by the heavy pressure of these duties. Speaking simply as a statistician, he would suggest that continuity of data was essential for these inquiries; and if they were going to alter too frequently the methods and the

rates of succession duties they would lose those continuous figures which the Inland Revenue Office now furnished, and which, in five or ten years' time, if there were only some finality, would throw a light on the blunders of himself and others who had been groping helplessly after the truth in earlier and darker times.

Mr. A. C. WATERS thought the principle on which Mr. Mallet had worked had been sufficiently discussed and, given the accuracy of the data, no method could be better. Everybody seemed to want to get a multiplier; but it appeared to him that the attempt was altogether wrong. What Mr. Mallet got by a thoroughly sound process was a quotient; and, in trying to use that as a multiplier, in his opinion Mr. Mallet went a step too far. For example, in Tables III and IV, in two successive years, he got 228,000,000*l.* and 256,000,000*l.* as the amount passing under estate duty. Supposing a multiplier were established—whether it was 24, 25 or 29 did not matter—and in another year he got 300,000,000*l.*; would he multiply that by the figure chosen and come to the conclusion that the wealth of the country had enormously increased? Or, if in the next year it was only 200,000,000*l.*, would he use the same multiplier and conclude that the wealth had terribly decreased? In fact, the great increase might be merely due to a heavy death-rate, and the decrease to a low death-rate. What was required was, not to establish a multiplier from the returns of one, two or ten years and apply it to other years, but to work out calculations on the same basis for each year. The quotient would vary a little, sometimes possibly only a decimal point, and sometimes more; but it seemed to him that the wealth of the country in each year could only be properly estimated by a separate calculation applied to the detailed statistics for each year, and not by using a quotient obtained from the figures of one year as a multiplier to apply to the figures of another year.

Mr. HARPER desired to emphasise the fact that the author had not attempted to arrive at any estimate of the actual national wealth. The chief value of the Paper lay in the fact that he had taken perhaps the most difficult point in connection with calculations that had been previously made in arriving at such an estimate; and, instead of travelling generally over the whole field, had applied himself so thoroughly to that one point that no speaker, except Mr. Waters, had attempted to attack in any way the results of his arguments or calculations. While there was no doubt a great deal to be said, from the point of view of theory, for Mr. Waters's view, that a high death-rate might upset the calculation, it did seem to him that if a sufficiently long period of years were taken, the error would be reduced to a very small minimum. It occurred to him to go to the insurance offices, and his friends there kindly furnished him with figures which went to show that the people who insured their lives (and who, to some extent, coincided with the people who left property behind them) on an average lived longer than was calculated in the Registrar-

General's Life Tables, and that the extra expectation of life was greatest in the very important age-period between 25 and 55, which Mr. Mallet had drawn attention to.¹

The PRESIDENT said his attention was drawn many years ago to this question with regard to the Australian statistics at the time when he was writing a book. He discussed it with statisticians of Victoria and New South Wales, and a considerable amount of correspondence passed on the subject. Mr. Coghlan had frankly admitted that in the early days of Australian statistics (although they were admirable), they would not on this particular point bear strict investigation. He (Sir Charles Dilke) was sorry to say that these rather rough-and-ready methods were still continued in the Victorian and New Zealand volumes distributed here last week. Of course, in Australia there was much greater knowledge of the facts than here; but he might repeat what he had said in that place before—that they were hoping for continued improvements in Government statistics, and that the inquiry about to begin, into the allocation of duties between Government offices, would include some provision for improved statistics. As regarded the Inland Revenue statistics a great deal had been done, largely owing to the efforts of the authorities of that Department. They had now to welcome the signs of immensely increased activity and knowledge, as this Paper testified. Before the Committee on the Income Tax, to which reference had been made, an immense deal of evidence was given on the point, and reference was made as to the great doubts which existed in Lord Milner's mind at the time he was advising Sir William Harcourt on the death duties. Careful inquiries had been made at that time, though the full results were not public, and it was stated in the evidence that Lord Milner found much difficulty, and made a number of hypotheses in consequence. He ultimately adopted forty years, instead of thirty-two which he had previously adopted. He took those hypotheses as being the only methods of accounting for discrepancies, and came to the conclusion that the capital wealth of the nation as stated was too small, and that a large amount escaped estate duty. Lord Milner gave much time and thought to this subject at that moment. Mr. Coghlan had made a similar reference to the difficulties of the investigation. They all knew that an improved state of things was coming about. The Income Tax Committee had been unanimous in calling attention to the deficiencies of the statistics and to the improvements which were necessary, and were doubtless now being made. The topics discussed that evening had gone far beyond the multiplier; and, while he did not feel competent to give a personal opinion on the multiplier, or to discuss the figures, there were certain points on which he would like to ask a question or two.

Mr. Mallet (on page 75) spoke of a certain increase in the length of life as possibly affecting the matter. He said there might be a fallacy in applying the mortality tables of the whole population to the comparatively small class who owned realised property, and he

¹ See table, page 101.

said: "I do not think that statistical science has established a different rate of mortality for this class, and it must be remembered that the large infant mortality in the poorer classes would not affect the ratio obtained by applying mortality table figures to property, as the amount held by infants is almost inappreciable." Surely infant mortality would affect this question, and was the basis of Mr. Coghlan's suggestion that there should be a classification in categories, in which the mortality of the chief classes should be separately established; because, notoriously, the statistics of the length of life were more affected by the mortality immediately after birth than by almost any other single cause. The fact would be familiar to Mr. Coghlan that the mortality of infants under one year in Melbourne produced at one time a great effect on the death-rate. Mr. Money, Lord Eversley, and Major Craigie had referred to questions which would lead them too far to discuss at present, but he wished to enter a caveat based on what he had learnt at the Income Tax Committee. That evidence led, not only him, but all his colleagues, either to modify or entirely alter the view they entertained as to the amount of property escaping income tax, and to-day his last illusion had disappeared. Whilst they could see from the evidence what an enormous amount of income escaped income tax, he always believed that with respect to the death duties they did succeed in obtaining accurate results, largely because they were there not depending upon what they could find out in the absence of a declaration by the individual, and were depending, not on a dead man, but on solicitors, trustees, and other persons who had, as a rule, very little interest in evading or avoiding payment, and who generally paid, he used to think, on everything of which the estate consisted. But the more they looked into the figures suggested by this Paper the more convinced he was that here, as in Australia, the totals would not bear investigation. Mr. Coghlan showed the effect produced by treating the multiplier as the main consideration in New Zealand and New South Wales, and the same thing would apply to Victoria. They must assume, therefore, that there was an enormous proportion of capital wealth which did not appear in the figures. All who had much experience amongst the poor were startled by the enormous sums of money, relatively to income, which passed in cash at the time of death, about which the last wishes of the deceased were observed with scrupulous care, but which never in any way came under the notice of the State. He believed that the more they investigated this subject the more they would find that, for one reason or another, a very large proportion of capital wealth did not come within these figures. The attention of the Committee was called to the avoidance of the tax by owners of property two or three years before their death, a fact which was notorious in places where rich men congregated. They all had friends who made no secret of the disposition that they or their fathers were making of property; and many of them thought that it was no wrong to the State and nothing of which any man should be ashamed, and that it caused property to pass into hands where it would be better used than by the very rich old men who held it.

Still, he could not agree with the conclusions which Lord Eversley and Major Craigie had drawn. There was no tendency to raise taxation in this country more rapidly than in others. The direct taxation by progressive income tax in the town of Hamburg, a resort of men of enormous wealth, was vastly higher than here, on account of the enormous addition to the tax for local objects. The income tax and the death duties, taken together, were rising in Germany and in France to figures we had not yet reached. One must also consider such startling cases as Monaco, where there was no direct taxation, and the neighbouring portions of certain communes of France, in which there was the highest direct taxation in the world, although not in a cumulative form. Yet no human being seemed to know it, and no one ever moved from the one into the other on account of the taxation, or left their property at death by will in the one place rather than in the other. He believed that the fear of evasion of duty by the removal of property was much exaggerated, and as that point had been raised by more than one speaker he wished simply to enter a personal caveat.

Mr. MALLET, in reply, after apologising for his unavoidable absence in the earlier part of the evening, said that though he had unfortunately missed the first three speeches which had been made, he gathered that most of the authorities assembled had concurred in the method adopted. The most serious criticism (made, for instance, by Mr. Bowley) had been on the question whether the mortality tables for the whole population were applicable to the property-owning class; and, no doubt, that question required to be further investigated, but he did not think that further investigation on this point would be likely to alter the multiplier suggested in any material degree. With regard to the criticism that he had put forward figures based on two years only, there was a great deal of general similarity in the estate duty statistics taken over a series of years; and he doubted whether the results of the next two or three years would make any great difference. He had not considered the inferences that might be drawn from the Paper; he had strictly confined his attention to the multiplier itself, and at this late hour he had not time to go into all the consequential questions which had been raised, and which require another Paper to deal with at all satisfactorily. His object had been merely to try and lay a foundation for further investigations of the same kind as that of Mr. Harris. He sympathised with the disappointment which had been expressed as to the final figure being so low; and his only consolation was that the number of persons who owned property was rather increased by his calculations over that at which Mr. Money and others had adopted. If the multiplier 37 was adopted for the *number* of estates, and applied to an average of 65,000 deaths in the year, it was found that nearly 2,500,000 persons owned property in this country of over 100*l.* net, and this was double the maximum estimate of the total number of income tax payers he had ever heard suggested. The discussion had seemed to show that even if a multiplier were

agreed on, the multiplicand was a no less serious difficulty. An interesting point was how far estimates based on estate duty statistics could be confirmed by calculations based on income tax figures. Referring to Mr. Bowley's and Mr. Money's estimates of the national wealth, based on income tax and estate duty statistics, he remarked that Mr. Money had given the two calculations in his book, "Riches and Poverty"; and, by using a multiplier of 30, he got results not differing very seriously from each other. Mr. Bowley followed a different plan, and endeavoured to show what the rate of interest on estate duty capital worked out to, and he found it to be about 5 $\frac{2}{3}$ per cent., which Mr. Bowley thought too high. This want of correspondence was in both cases increased by the lower multiplier; but he thought explanations might be suggested if the matter was carefully examined, as it ought to be. There was necessarily the greatest possible uncertainty in both calculations, especially in the income tax calculation, for besides the pitfalls as to gross and net incomes which were not always easy to avoid, it was almost impossible to get at the amount of income from capital through the Income Tax Returns, owing to the doubt with regard to the profits of persons and firms under Schedule D, as to how much was due to capital, and how much to individual exertion. Mr. Chiozza Money assumed that half of these profits were due to capital, whilst Mr. Bowley put it at the figure usually put forward officially, namely, one-fifth. If Mr. Money had adopted the latter figure, his total of capital estimated on the income tax basis would have to come down by something like 1,000,000,000*l.*

As regarded the estate duty, several speakers had given reasons why the statistics ought not to be accepted as fully representing the total property of the living. He thought the question of avoidance of the duty was very important, and that it was impossible to estimate how much was legitimately avoided by the methods to which allusion had been made. But another point, which Lord Eversley mentioned, was also important in this connection, namely, the leniency with which settled property was treated under the Act of 1894 as compared with free personalty and realty. But for the fact that settled property paid duty only once in the course for settlement, so much more income-producing property would come annually under review. He had no reason to think that this would affect the multiplier, though it must affect the total to which the multiplier was applied. According to last year's figures, the total of free property was 283,000,000*l.* odd, and the settled property 41,500,000*l.*; and if it might be assumed, as a mere guess, that the latter figure would be doubled if it were not for this exemption, nearly 1,000,000,000*l.* might be added from this cause to the total when multiplied by 24. As to undervaluation, he doubted whether it was serious; at any rate, it could not apply to stocks and shares, though there might no doubt be some under valuation of furniture, household goods, pictures, and so on. On the whole, he should certainly take a calculation of capital wealth based on estate duty statistics as far more satisfactory than one based on capitalisation of income tax profits; and if the estimates which had been put forward by Sir Edward Brabrook and others of the realized property

owned by the poorer classes were near the mark, he thought that the amount of property inferred by means of a multiplier from the estate duty statistics might probably, subject, however, to the qualifications which had been mentioned, represent the great bulk of realized capital or property owned by private individuals in the country.

In answer to the question asked by Mr. Bowley, as to Table VII, he read the following note:—

Table VII was formed by re-classifying column 2 of Table IV into the three age-groups 0—25, 25—55, 55 and over, and multiplying throughout by the fraction $\frac{25707}{256,445,000}$, which gives a series proportionate to the figures in this column, with a total of 25,707 for the “number of inherited property holders dying in the year.”

The ratio of 24 being assumed for this class, the number 25,707 was multiplied by 24, giving a total of 616,970 for the total number of “living inherited property holders,” which was distributed among the three age-groups in the proportions indicated by the figures in column 4 of Table IV.

But by the hypothesis that all property owners up to 25 were “inherited property owners,” the *total* figures for this group (322 and 80,311, respectively, in Table VI) were inserted in Table VII, instead of the proportions only, as derived from the process indicated above, and the excess thus introduced into this age-group was deducted proportionally from the two following ones.

This last step (which may be open to comment), or some adjustment of a like character, was necessitated as a consequence of the insertion of the total figures up to 25; but, had the unadjusted figures been taken for the two age-groups affected, the inference drawn would have been unaffected. The whole object of these tables is to show tendencies rather than quantitative results.

In conclusion, Mr. Mallet expressed his grateful thanks for the kind remarks which had been made by the various speakers in the course of the deeply interesting discussion to which they had listened.

The following letter from Sir Robert Giffen has since been received:—

To the Editors of the Statistical Journal.

SIRS,—Not being able unfortunately to attend the reading of Mr. Mallet's paper, and the discussion that followed it, may I crave space for a very few remarks?

I desire to add my congratulations to those which Mr. Mallet received. Some of us who have made estimates of the amount of realised wealth belonging to the community of the United Kingdom, and of the increase of that wealth at different periods, have long recommended that an attempt should be made to throw light on the subject by a study of the death duty statistics. Clearly, if the amount of property passing at death can be ascertained and its proportion to the whole property in the country, we have some data with which to compare the results arrived at by other methods.

Mr. Mallet has carried us a certain way in doing this, ascertaining approximately the proportion of the property in individual hands passing at death to the whole property also in individual hands. This is a considerable step in advance. But there must be further steps. These would include an estimate obtained in some other way of the amount of property not in individual hands, and would also include a criticism of the valuations for the death duties themselves, where there may be a considerable amount of evasion. Great as the advance made by Mr. Mallet, I think he would be the first to admit, judging by the tone of his paper, that a great deal remains to be done for the improvement and adaptation of the methods of estimating from the death duty statistics.

What appears to me a desideratum, if this method is to be more followed, would be the establishment of a direct multiplier of the amount of property passing at death by means of a comparison of the amount of some one species of property known to be in existence, and the amount of such property passing at death in one year. The proportion thus ascertained for one kind of property, or the average proportion for two or three kinds of property, might then be applied to the whole annual valuation for the death duties. At present, I understand, the death duty statistics are not in such a form that this can be done. Different kinds of property are mixed up; there are valuations of interests in trusts which include a great variety of property. But the aim should be to get more and better statistics for the sake of the better administration of the death duties themselves.

It is obvious, also, that until the figures of the property valuation arrived at by means of the death duty statistics can be distributed, so as to show how much of each class of property is included, we have a more imperfect figure than we should have if classification were possible. The check in detail would be valuable, and would obviously facilitate comparisons arrived at by other methods which do give some classification.

The discussion had a very wide range owing to an impression among some of the speakers that the results arrived at showed real discrepancies from the results arrived at by the method of capitalising income tax assessments. The latter method was impugned on account of the assumed superiority of the method of calculating from the death duty statistics. So far as I am able to judge, however, there are no real discrepancies which it will not be possible to reconcile when there has been a farther study of the method of calculating from the death duty statistics. The method of capitalising the assessments to the income tax still appears to me, in any case, the more useful and trustworthy at present for several reasons. It shows the estimated distribution of property in the country as well as the aggregate amount; it can be checked in detail by those who are acquainted with the selling value of particular kinds of property; and it is quite indispensable in historical comparisons or in comparisons with other countries where the method of capitalising income has also been employed.

I am, &c.,

R. GIFFEN.

The following were elected Honorary Fellows of the Society :—

Yves Guyot.

| Dr. Richard van der Borgh.

The following were elected Fellows :—

Percy W. L. Ashley.

| Walter Thomas Layton.

ADDENDUM.—Table, handed in by Mr. Harper, showing Expectation of Life at Various Ages.—Males (see p. 94).

Age.	Registrar-General's Life-Table, based on Mortality of 1891-1900.	British Insurance Offices' Life-Table.		Age.	Registrar-General's Life-Table, based on Mortality of 1891-1900.	British Insurance Offices' Life-Table.	
		OM ₅ (Excluding First Five Years' Experience).	OM (Full Aggregate Data).			OM ₅ (Excluding First Five Years' Experience).	OM (Full Aggregate Data).
10	49·63	48·994	51·459	46	21·52	22·827	22·945
11	48·73	48·295	50·634	47	20·86	22·118	22·226
12	47·84	47·595	49·806	48	20·20	21·414	21·513
13	46·96	46·892	48·980	49	19·54	20·715	20·807
14	46·08	46·186	48·152				
15	45·21	45·476	47·323	50	18·90	20·022	20·107
16	44·34	44·763	46·493	51	18·26	19·337	19·414
17	43·50	44·048	45·665	52	17·63	18·657	18·729
18	42·67	43·331	44·836	53	17·01	17·986	18·051
19	41·84	42·610	44·009	54	16·40	17·323	17·382
				55	15·79	16·669	16·722
20	41·02	41·888	43·182	56	15·19	16·024	16·071
21	40·21	41·162	42·357	57	14·61	15·388	15·430
22	39·40	40·435	41·535	58	14·04	14·762	14·799
23	38·60	39·706	40·715	59	13·48	14·147	14·179
24	37·80	38·975	39·896				
25	37·01	38·242	39·083	60	12·93	13·543	13·571
26	36·22	37·507	38·271	61	12·39	12·950	12·974
27	35·43	36·771	37·464	62	11·87	12·370	12·390
28	34·64	36·034	36·661	63	11·35	11·802	11·819
29	33·85	35·296	35·861	64	10·84	11·247	11·261
				65	10·34	10·704	10·716
30	33·07	34·555	35·067	66	9·86	10·176	10·185
31	32·29	33·816	34·277	67	9·38	9·662	9·669
32	31·51	33·075	33·490	68	8·93	9·161	9·167
33	30·75	32·334	32·709	69	8·48	8·676	8·680
34	29·99	31·594	31·932				
35	29·24	30·854	31·159	70	8·05	8·205	8·208
36	28·50	30·114	30·391	71	7·64	7·749	7·751
37	27·77	29·375	29·626	72	7·24	7·308	7·310
38	27·05	28·638	28·867	73	6·86	6·883	6·884
39	26·34	27·903	28·111	74	6·50	6·473	6·474
				75	6·15	6·079	6·079
40	25·64	27·169	27·360	76	5·81	5·699	5·700
41	24·94	26·437	26·612	77	5·49	5·336	5·336
42	24·25	25·708	25·870	78	5·19	4·987	4·988
43	23·56	24·983	25·131	79	4·90	4·654	4·654
44	22·88	24·260	24·397				
45	22·20	23·541	23·668	80	4·62	4·336	4·337