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THE MULTIPLIER AND CAPITAL WEALTH.

By MR. BERNARD MALLET, C.B., and MR. H. C. STRUTT.

[Read before the Royal Statistical Society, Tuesday, June 15, 1915,
the President, The Right Hon. LORD WELBY, G.C.B., in the Chair.]

It is now some years since attention was drawn, in a Paper read before the Royal Statistical Society by Mr. Bernard Mallet (on February 18, 1908), to a method of estimating Capital Wealth from the Estate Duty Statistics; and though the question has not received much serious discussion in this country since that date, it may, we think, be said that the method (which the Society will remember was first suggested by some remarks made by Sir Timothy Coghlan at a previous meeting) has been generally accepted as adequate for its strictly limited purpose—that of discovering a multiplier to be applied to our official figures. It is otherwise, however, with the results of the application of this method which was at the time, and has been since, rather rashly attempted. The supposed conclusions as to the amount of capital wealth deducible from the published estate duty figures were at once challenged by Sir Leo Chiozza Money, M.P., and Mr. A. L. Bowley as being far below the truth, the latter observing that “most people must have felt that somebody had robbed them of at least 2,000 millions” and that the Society was “now in full quest to find where that had gone and whether it ever existed.”

It is to be feared that this search, if it has been undertaken, has so far been unsuccessful; but Mr. Bowley at all events has followed it up in the most practical manner by showing the disproportion which exists between the amount of income-producing wealth derivable from the death duty figures by the use of the multiplier of 24 and the income from property revealed by the income tax statistics. So high a rate of interest had to be postulated if both sets of figures were accepted—something over 9 per cent.—that Mr. Bowley was fully justified in the criticism he made in his *Elementary Manual of Statistics*, page 182, when he observed:—

“Either then (1) the multiplier is too low, or (2) estates are undervalued for probate, or (3) very considerable sums pass *inter vivos* and do not come up for probate or (4) the income tax returns

“ contain income on property that is not subject to probate or (5)
 “ some part of the sums for companies should be transferred to
 “ earned income. It does not seem possible even when all these
 “ considerations are given full weight to bring the estates up to the
 “ incomes, and till this reconciliation is effected the total national
 “ capital cannot be safely estimated.”

It will appear rather in the nature of a bad joke to have selected a moment when the destruction of capital is proceeding in this and most other civilized States at a totally unexampled rate to dwell upon the gigantic totals of the period before the present war; but the author of the Paper of 1908 has naturally felt for some time that he would be wanting in respect, both to this Society and to the various eminent economists and statisticians who have attached importance to the argument by which he established a multiplier, if he did not at least attempt to meet such serious criticism as this; and for the purpose of comparison with the melancholy results which we may expect later on figures of this kind will have their interest. He would observe in the first place that in the Paper referred to he was rather concerned with the method to be adopted than with its application. He was aware that the amount of living capital produced by the actual multiplier arrived at fell far short of the usual estimates; but he was not so much concerned with results as with the principle, on which he invited the criticism of the Society; and he expressly stated in the course of the interesting discussion which took place on that occasion that the application of the method would require another Paper to deal with it at all satisfactorily. This was fully recognized by Sir Timothy Coghlan, Lord Eversley, Mr. Harper and others, who pointed out the difficulties as regards the amount of property shown by the death duties to which the multiplier was to be applied.

Apart, however, from the question of the application of the method on which, as well as on some of Mr. Bowley's other points, we shall offer some remarks at a later stage, there exists a strong reason for returning to the subject in the doubts which the writer of the original Paper has, in common with others, long felt as to the figure at which he provisionally established his multiplier in 1908. Granting that the method by which it was reached has on the whole obtained the assent of responsible statisticians, how about the data which he was obliged to use for his calculation? How far were the criticisms made seven years ago upon these data justified, and may not the later and more reliable sources of information now available give a different result, and thus afford some assistance in solving the difficulties which arise when it is sought

to reconcile the results of the application of the multiplier to death-duty figures with estimates of capital wealth arrived at in other ways ?

We may shortly recall the method by which the multiplier was found in the previous Paper. The value of estates left in a single year by deceased persons in certain small age groups was multiplied by the ratio of the living to the deaths for each age group (derived from the Registrar-General's general death-rates table) and the total of the several results so obtained was treated as the amount of property in the hands of the living. This total, divided by the aggregate of the estates left by the persons dying in the year at the different ages, formed the "multiplier," which was thus the ultimate ratio of the estates in the hands of the living to those of persons dying in a year. The numerical value of the multiplier for each of the two years 1905 and 1906 was found to be 24.06 and 23.78 respectively, and the multiplier therefore given as 24.

The first point to be looked at is the number of years taken in the calculation of property. Was this too small ? Two years only were available in 1908. Sir Matthew Nathan, lately Chairman of the Board of Inland Revenue, thought the question raised in this Paper of sufficient interest to authorize the work of classifying estates passing at death in age groups for publication in the Board's Annual Report, and we have therefore three more years, 1911, 1912 and 1913, upon which to work and with which to compare the two years previously taken.

Another defect appears to have been the decision to take the mean death-rate for the ten years from 1896 to 1905 for the calculation. It was indeed admitted that this might not sufficiently allow for the fall in the death-rate which had been in progress since the Census of 1901 ; and as will now be seen the effect on the multiplier has been such as was anticipated.

The recent Census has enabled us to revise both the estimates of population and the death-rates for the whole period 1901-11 ; and the new rates can now be applied to the figures of estates in 1905 and 1906. As these years are in the middle of the period referred to, an average has been taken of the number of persons living to one dying for that period in several age groups, and the results are compared in the following table with the corresponding figures used in 1908 :—

TABLE I.—*Registrar-General's figures. (Persons.)*

Ages.	Number living to 1 dying for the period from 1896 to 1905.	Number living to 1 dying for the period from 1901 to 1911.
0- 5	18·7	22·2
5-10	256·4	283·6
10-15	443·4	476·4
15-20	307·0	336·8
20-25	238·4	264·8
25-35	174·5	197·8
35-45	104·9	122·1
45-55	63·6	70·7
55-65	33·6	35·8
65-75	16·1	17·1
75 and upwards....	6·8	7·0

The decreased mortality during the latter period is obvious, and consequently the property in the hands of the living as corrected by multiplying by these higher figures gives a corresponding increase, as shown in Table II.

According to this revised calculation, then, the multiplier arrived at in 1908 was two points below the correct figure, and should have been put at 26 instead of 24.¹

In order to avoid a possible pitfall of a similar kind in the present calculations, we have worked with the death-rates of 1910, 1911 and 1912, instead of with a ten-year average ending with the years concerned. But the further question arises, also raised in the course of the discussion in 1908 and pressed by some of the speakers, whether there may not be a fallacy in applying mortality tables of the whole population to the limited class which owns realized property. Mr. Mallet admitted that this point required further investigation, but pleaded the absence of statistics of class mortality which could be used for his purpose, and doubted whether if they could be obtained they would alter the multiplier in any material degree. We have again considered this matter, unfortunately without meeting with success as regards class as opposed to occupational mortality. There appears to be no statistical information of at all a recent character either in this country or others which throws any real light upon it. Mr. Bowley and Mr. Harper suggested recourse to statistics which might perhaps be obtained from insurance companies, dealing as they do with a class which corresponds in many respects with that of property owners. But after some inquiry we have not been able to find any insurance figures which could help us, and there appears therefore to be no alternative to falling back on the figures of mortality based on the

¹ See, however, correction made in notes appended, p. 596.

TABLE II.

Ages.	Estates passing in 1905.	Estates passing in 1906.	Mr. Mallet's previous estimate.		Corrected estimate by use of later figures provided by Registrar-General.	
			Estates multiplied by ratio of living to dead to raise them to values of living property.		Estates multiplied by ratio of living to dead to raise them to values of living property.	
			1905.	1906.	1905.	1906.
0-5	4,275	2,000	79,945	37,400	94,905	44,400
5-10	6,297	54,390	1,614,600	13,946,000	1,785,800	15,425,000
10-15	7,744	7,670	3,433,700	3,400,900	3,689,300	3,654,000
15-20	34,135	21,090	10,479,500	6,474,700	11,497,000	7,103,100
20-25	345,290	223,920	82,319,000	53,383,000	91,434,000	59,293,000
25-35	2,124,200	1,921,680	370,670,000	335,340,000	420,180,000	380,110,000
35-45	8,755,900	7,013,750	918,500,000	735,750,000	1,069,100,000	856,390,000
45-55	17,861,000	25,017,500	1,104,180,000	1,591,100,000	1,227,400,000	1,768,700,000
55-65	38,861,000	43,083,000	1,305,700,000	1,447,600,000	1,391,200,000	1,542,400,000
65-75	65,372,000	74,514,000	1,052,490,000	1,199,700,000	1,117,900,000	1,274,200,000
75 and upwards	95,649,000	104,566,000	650,410,000	711,180,000	669,550,000	732,100,000
	228,520,841	256,445,000	5,499,876,745	6,097,912,000	6,003,881,000	6,639,420,000
Multiplier	....	....	24.06	23.78	26.27	25.89

occupation census of 1911, figures which are now being worked out in the General Registrar Office for publication in the Decennial Supplement for 1901-11. We considered some figures based on isolated selected occupations such as clergymen, barristers, solicitors, &c., and although the result would have been favourable for our purpose (see table below), we were of opinion that they gave too restricted a basis for a social class corresponding in any real sense with the classes owning property in this country. We then had resort to the assumption that the death-rate would be higher among the industrial classes, *i.e.*, among manual workers exposed to conditions of housing and so on less favourable to health and longevity than those prevailing in the richer classes. If this assumption were correct a classification which aimed at no more than eliminating the industrial masses seemed likely to give the nearest approach to what we sought. Fortunately, a rough classification of this kind already existed in an official publication, the *Seventy-Fifth Annual Report of the Registrar-General of Births, Deaths and Marriages in England*, p. xii. On that occasion the Superintendent of Statistics at the General Register Office, Dr. Stevenson, found a social classification of the population essential for the purpose of an investigation into infantile mortality, and accordingly divided the population into eight classes from the occupations returned at the census, Class I, the upper and middle class, comprising all occupation groups of which the majority of the number as tabulated at the census could be assumed to belong to these classes. It covers such occupations as commercial and railway clerks and insurance agents, but aims at excluding the artisan even though his wage may be higher than the clerk's. Classes 3 to 8 as a whole are meant to represent the working classes, Class 2 being intermediary between these and Class 1, and consisting of occupations such as shopkeeping. Class 3 is mainly composed of skilled workmen and Class 5 of unskilled, Class 4 being intermediary between these two; while Classes 6, 7, 8, textile workers, miners and agricultural labourers respectively, are distinguished separately and not treated as either skilled or unskilled or included in any of the Classes 3 to 5. The special class added to the table for comparison comprises clergymen, lawyers, doctors and "persons living on their own means." In presenting these figures, however, we may repeat the warning that the occupational description in the census, more especially in commerce and industry, gives no certain indication of social or economic position. "The farmer, for instance, may farm 10 acres or 1,000, and the draper or iron puddler may be the head of a large establishment or his

“lowest-paid assistant or labourer.” Yet the first-named would be included in Class 8, and neither of the others would be included in Class 1. All that can be said is that manual workers would in no case be included in Class 1, and that the millionaires or other property owners who would fall into the classes below it are so insignificant in number compared with the masses constituting those classes that their presumed superior longevity would not influence the mortality figure.

Let us now look at the table giving the death-rates of the various classes above described, arranged in age groups:—

TABLE III.—*England and Wales. Males, 1910-12.*

Social class.	Standardised death-rate per 1,000 living aged 15 years and upwards.	Mean annual death-rate per 1,000 living.							
		15—	20—	25—	35—	45—	55—	65—	75 years and upwards.
I	12·55	1·82	3·19	4·15	6·75	12·75	27·14	58·18	133·27
II	13·93	1·82	3·24	4·62	7·72	13·87	27·39	61·28	171·21
III	14·75	2·12	3·38	4·19	7·28	14·25	30·12	69·60	183·39
IV	13·82	2·07	3·12	4·52	7·35	13·48	27·89	61·80	168·22
V	20·52	2·68	5·05	6·91	11·97	21·14	40·02	85·75	251·16
VI	17·32	2·65	3·74	4·21	6·88	14·72	34·70	88·03	240·06
VII	16·21	3·14	3·87	4·47	6·94	12·97	30·37	82·29	220·92
VIII	10·52	1·55	2·61	3·20	4·90	8·12	17·32	45·60	170·79
Special class	11·84	2·21	4·57	4·81	7·95	13·47	25·36	46·17	99·21
All males....	14·21	2·88	3·72	4·80	7·99	14·65	29·69	63·07	149·87

Note.—It should be mentioned that Class II, as defined in the Registrar-General's Annual Report, includes many unoccupied, numbering almost one seventh part of the entire class, among whom the death-rates are quite abnormal. Thus at ages 15-20 and 20-25 their death-rates are four to five times as high as the rate for all males of the same ages. This is doubtless due to the inclusion among the unoccupied of many who have never been able to follow an occupation on account of ill-health. On the other hand, at ages 55-65 their death-rate is only one-half, at 65-75 one-fifth, and at 75 and upwards one-ninth of the normal. This must be due to differences of statement in the census schedules and in the death registers, and no doubt also in part to the fact that in many institutions occupations were stated on the census schedules either inaccurately, or so vaguely, as to preclude definite classification. It has been thought advisable, therefore, to show in the above table the death-rates among Class II, excluding the “unoccupied.”

It will be seen that the figures on the whole support the hypothesis with which we started, though not so strikingly as might have been anticipated, that the death-rate is higher among the manual labour classes (with one notable exception) than in the classes above them. Agricultural labour, indeed, heads the list with the lowest death-rate, and if this class had been thrown into Classes 3, 4, or 5, would

have brought down the death-rate there. The special class of clergymen, doctors, lawyers and “persons living on their own means” stands next, and if this class had been less restricted or had shown greater divergence from Class 1 we should have been tempted to use it for our purpose, especially as the rates are low in the older ages in which the largest amounts of property pass. As it is, however, we have thought it safer to adopt Class 1, which rests on a much broader basis, as our standard, though we admit that in doing so we are perhaps understating the case for raising our multiplier. The death-rates for this Class 1 are quite appreciably better than those for “all males,” which would have been taken if we had followed the precedent of 1908.

Tables IV and V accordingly are based upon the death-rates of Social Class 1 and upon the estate duty figure of three recent years: 1911–12, 1912–13, and 1913–14.

TABLE IV.—*England and Wales. Males, 1910-12, giving the reciprocals of the death-rates in the calculations for Table V.*

Note.—The figures for ages under 15 refer to all males; those for ages over 15 refer to males of Social Class 1 (see page xli of Annual Report for 1911).

Ages.	Census population, 1911 × 3.	Deaths in three years 1910, 1911, 1912.	Number living to 1 death.
0—	5,808,339	238,060	24·40
5—	5,541,885	17,720	312·75
10—	5,242,893	10,044	521·99
15—	519,063	944	549·85
20—	533,241	1,702	313·30
25—	923,730	3,330	241·18
35—	753,426	5,086	148·14
45—	565,587	7,210	78·44
55—	355,683	9,655	36·84
65—	193,953	11,284	17·19
75 and upwards	72,057	9,603	7·50

In view of the probability that the mortality rates of Social Class 1 are somewhat higher than those which would apply to an exclusively propertied class, we are of opinion that this multiplier may justifiably be raised to 28²; and the result therefore of a careful reconsideration of the whole question in the light of the latest available information is to raise the multiplier by 4 points, a result due mainly to the lower rates of mortality now applicable to the calculations. The assumption that the classification of the amounts of estates in age

² As a result of criticisms made in the course of the discussion the figure of 28 has been found to be somewhat too low. Readers are therefore referred to Mr. Mallet's notes appended, p. 596, in which a further modification is suggested, raising the multiplier to 30.

TABLE V.—*Values of estates and multiplier. Years 1911-12, 1912-13, and 1913-14. England (and Wales) only.*
 Table showing (1) the values of estates left by persons who died in the years mentioned above, classified according to the ages of the deceased, and (2) the inferred amount of property in the possession of living persons, obtained by multiplying the amounts in (1) by the Registrar-General's ratios for the several age groups of the living to the number of those dying in a year.

Age groups.	1. 1911-12		2. 1912-13.		1913-14.	
	Values of estates of persons who died in the year.	Amount of property in the possession of the living.	Values of estates of persons who died in the year.	Amount of property in the possession of the living.	Values of estates of persons who died in the year.	Amount of property in the possession of the living.
0-5	5,698	138,910	3,219	78,543	3,640	88,816
5-10	18,969	5,392,500	11,086	3,467,100	2,109	653,600
10-15	28,443	14,847,000	34,509	18,013,000	8,593	4,485,400
15-20	37,309	20,514,000	28,717	15,790,000	33,464	18,400,000
20-25	470,460	147,400,000	595,190	186,470,000	451,570	141,480,000
25-35	2,325,100	560,770,000	1,883,800	454,330,000	2,578,500	621,880,000
35-45	6,022,800	892,220,000	6,678,000	989,280,000	6,344,100	939,810,000
45-55	17,364,000	1,362,100,000	16,747,000	1,313,700,000	16,955,000	1,330,000,000
55-65	35,083,000	1,292,500,000	48,151,000	1,773,900,000	46,874,000	1,726,800,000
65-75	71,570,000	1,230,300,000	66,114,000	1,136,500,000	70,412,000	1,210,400,000
Above 75	103,584,000	776,870,000	92,617,000	694,620,000	101,085,000	758,140,000
	236,509,774	6,303,592,410	232,863,521	6,586,148,643	244,747,976	6,752,143,816
	Multiplier for 1911-12. 6,303,592,110 — 236,509,774	27.6	Multiplier for 1912-13. 6,586,148,643 — 232,863,521	28.3	Multiplier for 1913-14. 6,752,143,816 — 244,747,976	27.6

Multiplier of average for the three years, $\frac{6,547,294,296}{238,040,424} = 27.5$.

groups for the two years 1905 and 1906 would be sufficiently representative has proved to be correct. The classification given in the preceding table shows no important features of difference, not even as regards the total amount of property passing in the year. It has often been noted that the estate duty figures show no growth corresponding in any way with the increase which has been in progress in the income tax assessments; and the explanation usually given is the great fall which has taken place in the value of all high-class securities which masks the increase of accumulated wealth. Another explanation would be an increase of the practice of gift *inter vivos*. But the total, whether high or low, makes no difference to the multiplier. Quite as interesting is the fact that the distribution of estates by ages shows singularly little variation from the earlier years. But the effect of recent dispositions or gifts *inter vivos*, supposed to have been stimulated by recent increases in the death duties, which would have altered the distribution of estates and so affected the multiplier (see below) would presumably not as yet have appeared in the statistics. The following tables show the distribution of the *numbers*, as distinguished from the *amounts*, of estates (assumed to be equivalent to the number of deceased persons) between the age groups in the three years:—

TABLE VI.—*Numbers of estates 1911-12, 1912-13, 1913-14.*
Year 1911-12.

(ENGLAND AND WALES ONLY.)

Showing (1) the number of deaths in the year, classified according to age, of persons possessing property liable to estate duty; (2) the ratio of the living to those dying in one year; and (3) the inferred number of living persons possessing estates corresponding to those of the persons who died in the year.

Age groups.	1. Number of deaths in the year 1911-12. (As above.)	2. Number of persons living to one death. (As above.)	3. Number of living persons having estates. (As above.)
0- 5	8	24·40	195
5-10	9	312·75	2,815
10-15	18	521·99	9,396
15-20	49	549·85	26,943
20-25	251	313·30	78,638
25-35	1,654	241·18	398,910
35-45	3,863	148·14	572,260
45-55	7,110	78·44	557,710
55-65	11,428	36·84	421,010
65-75 ...	15,856	17·19	272,560
Above 75	15,754	7·50	118,150
	56,000	—	2,458,587

$$\text{Multiplier for Numbers for 1911-12} = \frac{2,458,587}{56,000} = 43\cdot9$$

TABLE VI.—*Numbers of estates 1911-12, 1912-13, 1913-14—contd.*
(ENGLAND AND WALES ONLY.)

Year 1912-13.

Showing (1) the number of deaths in the year, classified according to age, of persons possessing property liable to estate duty; (2) the ratio of the living to those dying in one year, and (3) the inferred number of living persons possessing estates corresponding to those of the persons who died in the year.

Age groups.	1. Number of deaths in the year 1912-13. (As above.)	2. Number of persons living to one death in the year. (As above.)	3. Number of living persons having estates. (As above.)
0-5	7	24·40	171
5-10	10	312·75	3,128
10-15	12	521·99	6,264
15-20	46	549·85	25,293
20-25	238	313·30	74,566
25-35	1,684	241·18	406,140
35-45	3,916	148·14	580,110
45-55	7,009	78·44	549,870
55-65	11,518	36·84	424,330
65-75	15,677	17·19	269,490
Above 75	15,721	7·50	117,910
	55,838	—	2,457,072

$$\text{Multiplier} = \frac{2,457,072}{55,838} = 44 \cdot 0$$

Year 1913-14.

Showing (1) the number of deaths in the year, classified according to age, of persons possessing property liable to estate duty; (2) the ratio of the living to those dying in one year, and (3) the inferred number of living persons possessing estates corresponding to those of the persons who died in the year.

Age groups.	1. Number of deaths in the year 1913-14. (As above.)	2. Number of persons living to one death in the year. (As above.)	3. Number of living persons having estates. (As above.)
0-5	3	24·40	73
5-10	7	312·75	2,189
10-15	11	521·99	5,741
15-20	40	549·85	21,994
20-25	266	313·30	83,337
25-35	1,675	241·18	403,970
35-45	4,099	148·14	607,230
45-55	7,372	78·44	578,270
55-65	12,278	36·84	452,320
65-75	16,822	17·19	289,170
Above 75	16,678	7·50	125,080
	59,251	—	2,569,374

$$\text{Multiplier} = \frac{2,569,374}{59,251} = 43 \cdot 4$$

The multiplier for numbers is thus 43 to 44, or 16 points higher than the ratio of living property to property in the hands of those dying in a year ; the difference between the two ratios having proportionately increased from 13 as it was found to be in 1905 and 1906.

We need not repeat the demonstration given in the earlier Paper of the reasons for this difference, and for the belief that a result derived from the consideration of numbers alone and ignoring the amount and movement of property (as also that of investigations such as those of the late M. de Foville and others on the "survivorship of heirs" or the "duration of a generation"), is inapplicable to calculations having for their object to estimate the realised wealth of a community³. But it is of interest to observe, before passing to the further considerations affecting the "amounts" multiplier, that the number of property owners in the United Kingdom, 1913-14, deduced from the "numbers" multiplier (43 to 44) $74,642 \times 43$, may be over three millions (*i.e.*, 3,209,606),⁴ and that even this number is exclusive of those numerous possessors of small estates, below 100*l.* in value, whether in Friendly Societies or Provident Institutions, or in furniture or cash, who escape the notice of the Inland Revenue Department. The satisfaction induced by such figures must be tempered by the knowledge that, according to an analysis of the various categories of the numbers and values of estates in 1911 and 1912, over 52 per cent. of the

³ It may be interesting to note, in confirmation of our method of obtaining the multiplier for numbers, the close resemblance of this method to that of obtaining the "expectation of life." The expectation of a life aged x is given by the following equations in the usual actuarial notation :—

$$\begin{aligned}
 e^0_x &= \frac{1}{2} + \frac{l_{x+1} + l_{x+2} \dots \dots \dots l_{w}}{l_x} \\
 &= \frac{l_x + l_{x+1} + \dots \dots \dots + l_w}{l_x} \\
 &= \frac{l_x + l_{x+1} + \dots \dots \dots + l_w}{d_x + d_{x+1} + \dots \dots \dots + d_w}
 \end{aligned}$$

and is open to two interpretations. It may mean the average after life of persons of the age of x , and this is its ordinary meaning ; but the form of the last equation, which has for its numerator the sum of the living persons of the age of x and upwards, and for its denominator the sum of the numbers of persons of the same ages dying in the year, is in exact resemblance with the method of obtaining the multiplier, and is obviously the ratio of the living population of x and upwards to those dying in the year. It is a mere detail of computation that "age groups" have been substituted for "years of age" in the calculation of the multiplier.

⁴ This figure would be somewhat increased if the multiplier for numbers is raised proportionately with that for amounts owing to the inclusion of the death-rate for females in the calculation. See appended notes, p. 596-7.

numbers dying in the year (and inferentially therefore of the living property owners) have estate of less than 500*l.* in value; and that the aggregate value of estates of this moiety of property owners is only 3.79 per cent. of the total property. According to the same calculation, persons owning estates up to the value of 5,000*l.*, who number 89.66 of the whole, possess only 21.31 per cent. of the total property passing at death.

It is perhaps of interest to note further that the number of owners of estates, according to these figures, of 1,000*l.* and over would amount to something over 1,200,000, a figure often suggested as that of the total number of income-tax payers. Many of these, perhaps the bulk of them, would be persons earning incomes or salaries as well; and there would be many among the 688,000 owners of estates between 1,000*l.* and 5,000*l.* who would not be income-tax payers; but this estimate for what it is worth seems to support the contention of those who hold that the number of income-tax payers is usually put too low.

Mr. Bowley's third point, as to the effect of gifts *inter vivos* on the estimate of property in the hands of the living, raises a question which, as it gravely impugns the validity of the whole method, must now be dealt with in some detail. The argument of those critics who assume that, since gifts *inter vivos* undoubtedly reduce the amount of property passing at death they would also reduce the inferred amount in the hands of the living, may perhaps be summed up as follows:—

“ The method of finding the property in the hands of the living
 “ by multiplying the estates passing at death by the reciprocal of the
 “ death-rate for each age group must result in a serious under-state-
 “ ment of the living property, as large sums are given by older estate
 “ holders to younger people before death. The estates of the donors
 “ are ‘ net ’ values on their death by reason of these gifts, and the
 “ recipients being younger people of good lives are almost invariably
 “ alive on the death of the donors. The gifts then finally disappear
 “ from estate duty statistics for each year, since they are not in-
 “ cluded in the donor's estates as disclosed at death, and the
 “ estates of the recipients are not included in the statistics for that
 “ year at all. The receiver of a gift may occasionally be caught by
 “ the death duty, but this would be very rare.”

The answer to these contentions is to be found in an analysis of M. Séailles' study of the French statistics of successions by Mr. Strutt in a Paper which appeared in this Society's *Journal* for June, 1910, and in his explanation of the discrepancy between the multiplier of 24 for England and that of 39 for France. This

discrepancy was plainly not caused by any corresponding differences in the general conditions of mortality prevailing in the two countries, which could not possibly lead to results so divergent; and the explanation, therefore, had to be sought elsewhere. According to M. Séailles' figures *fortunes* in France increase according to age until the age of 54 or 55 is reached. From this point, however, up to the age of 80 and upwards, they undergo a progressive diminution. In England, on the contrary, the values of estates, as recorded in Mr. Mallet's last Paper, were shown to increase progressively up to the most advanced ages. M. Séailles found an explanation for the continuous drop after 54 or 55 in the prevalence of *dots* and *inter vivos* gifts which elderly people in France are in the habit of making to the younger generation; and Mr. Strutt traced the consequences that would follow if the same general practice obtained in England. Taking the property in the hands of the living for 1906, as estimated by Mr. Mallet, he assumed that all persons between 55 and 65 years of age, with estates of the average value of 3,954*l.*, bestowed gifts of 1,000*l.* to persons between 25 and 35; and that all those in the more advanced age groups were equally generous to younger people.

The result of this supposed redistribution of wealth was to raise the multiplier from 24 to 36, which latter figure nearly reaches that of M. Séailles, and to reduce the values of estates passing by death from the actual amount of 256 million £ to a hypothetical figure of 175 million £. Owing, however, to the altered distribution of this smaller figure, it was found that its constituent items under the several age groups, when multiplied by the respective ratios of the living to the dead, led up to a total amount of property in the hands of the living *identical with that originally ascertained*. Hence the proposition was established that the practice of making gifts *inter vivos*, however prevalent, had no effect on the calculation of living property, although it would reduce the amount of property passing at death.

The point that the multiplier, as noticed above, was increased by this redistribution from 24 to 36 is noteworthy. The multiplier, and not the total amount of property in the hands of the living, is the true variable, and this multiplier is a quantity which appears in a quite remarkable manner to register, by its variation, the degree to which the practice of passing on property during life exists in a given community. We might go further and suggest that, provided the effects of a change in the rates of mortality were first taken into account, a rise in the figure of the multiplier as between one date and another would in itself afford a proof of an increase in the practice of gifts *inter vivos*.

Our supposed critic maintains that the gifts “ finally disappear “ from estate duty statistics for each year, for (1) they are not in the “ donors’ estates as disclosed at death, and (2) the the recipients’ “ estates are not included in the statistics for that year at all.”

As regards (1), he would say that Mr. Strutt should take, not the figure of 3,954*l.* (mentioned above), but a much larger figure, which would include the gifts *inter vivos* previously made by the persons now possessing reduced estates of this value. But why should the gifts that have actually been made reduce the living property, while those hypothetically bestowed by *all* the persons over 55 on a much more enormous scale leave the total unaffected? Why should the original figure of 6,098 million £ for living property be exactly reproduced from the reduced estate duty capital arising from the wholesale bestowal of gifts, as supposed in Mr. Strutt’s calculation, while the comparatively few gifts postulated by our critic have the effect of reducing it? It must not be forgotten, either, that as *all* propertied persons of 55 and upwards were supposed to make gifts, the hypothesis includes those extreme cases on which our critic lays stress, in which gifts are made to “ good ” lives. It embraces also those very extreme cases in which property is supposed in long-lived families to be handed from father to son and so to escape estate duty for generations.

As regards (2), the gist of the criticism appears to be that the gifts are made to good lives. Now it is a fact that the estate duty statistics for any given year include all estates above 100*l.* in value of persons dying in that year. The property recorded cannot consist exclusively of that of donors; it must therefore also include the property of those persons who, having received gifts in the past, have died in that year. Such property would naturally be enhanced by the value of these gifts which, therefore, would find their way on the death of the recipients into the estate duty figures. This conclusion can surely not be evaded by the suggestion that the recipient has the power to make over in his turn his gift to someone else before he dies. In the case of gifts on trusts, which visibly and separately appear in the affidavits for probate, this course would be impossible; and it would be an extreme supposition that in the case of absolute gifts the beneficiaries, dying as they do at all ages, could as a general rule evade their liability to estate duty by such timely gifts as might be based on an accurate prevision of their own deaths. The receivers of gifts must stand a certain chance of dying (at first a small one) from the moment of receipt. It is, in fact, *because* the receiver is “ caught occasionally ” that the gifts *are* included. Take the case of a gift bestowed by a person aged

over 75 upon another aged between 25 and 35. According to the Registrar-General's figures, given at the beginning of this Paper, 2 out of every 15 living persons of over 75 years old die in a year. This is a very appreciable rate of mortality, but when we turn to the age group of 25–35, we find that only 1 person dies out of every 241. Thus the donee stands a very small chance of dying in the year; but, small as it is, it is precisely sufficient to draw into the estate duty statistics sufficient property to compensate for the reduction of the estates of the age group of 75 and over.

If our argument is correct, it is unnecessary to labour the point that the recipients of these gifts are good lives, or that the receipt of gifts tends to lengthen the lives of the recipients. Gifts are made on all sorts of grounds other than those of the good health of the donee, and there is no reason to distinguish such donees from the category of other inheritors of estates who have already been treated in our calculations as a privileged class.

In order that there may be no misunderstanding as to the effects of gifts *inter vivos* on the calculation of property in possession of the living we may be allowed to append a simple mathematical demonstration of our case.

Let us suppose that a community exists the property owners of which absolutely abstain from making such gifts.

Let a, b, c, d , be the successive age groups from the youngest upwards, and A, B, C, D, be the values during a year of the estates passing on the death of persons of those ages. Then if the corresponding ratios of the living to those dying during a year are α, β, γ , and δ , we can form the following table, the fourth column of which shows the value of the estates in the hands of the living of the respective ages, as given above:—

1. Age group.	2. Value of estates passing by death in the year.	3. Registrar-General's ratios of the living to those dying in a year.	4. Value of estates in the hands of the living.
a	A	α	αA
b	B	β	βB
c	C	γ	γC
d	D	δ	δD
Total value of estates	A + B + C + D	Total value of "living" estates.	$\alpha A + \beta B + \gamma C$ + δD

The first three columns consist of data, and the fourth is inferential, but there can be no question that the values in this column are not subject to any modification by reason of gifts *inter vivos*, as by hypothesis no gifts have been bestowed.

Now let us assume that the elder portion of the community undergo a change of habit, and instead of keeping their wealth to themselves, bestow it freely on their children or on persons of a younger generation. In short, let all the persons of the comparatively advanced ages comprised in the age group d give half their property to the young people in the age group b .

It may be noted here that as *all* the propertied persons in the age group d act in this manner, the extreme cases in which property passes by gifts *inter vivos* from generation to generation without being caught by the estate duty have been duly included.

The following transformations would result from this change :—

The property in the hands of the living persons comprised in the age group d would be reduced from δD to $\frac{\delta D}{2}$, and the property in the hands of persons of the age b would be increased from βB to $\beta B + \frac{\delta D}{2}$. This is the immediate and essential consequence of the altered distribution arising from the gifts made, which obviously makes no difference in the total ; but we have to prove that the same total would be produced by operating on the diminished estate duty returns. Now the death-rate applicable to the age group b being $\frac{1}{\beta}$ the property passing by death in a year would for that age group be $B + \frac{\delta D}{2\beta}$, and the property passing by death for the age group d , which has a death-rate of $\frac{1}{\delta}$, would be $\frac{D}{2}$. We can now, therefore, retabulate column 2 of the preceding table in view of the altered conditions.

1.	2.
Age groups.	Value of estates passing by death in the year.
a	A
b	$B + \frac{\delta D}{2\beta}$
c	C
d	$\frac{D}{2}$
Total 	<hr style="width: 50%; margin: 0 auto;"/> $A + B + C + \frac{D}{2} \left(1 + \frac{\delta}{\beta}\right)$

Thus the total instead of being, as in the previous table, $A + B + C + D$, is $A + B + C + \frac{D}{2} \left(1 + \frac{\delta}{\beta}\right)$, and as δ is less than β , $\left(1 + \frac{\delta}{\beta}\right)$ is less than 2, and $\frac{D}{2} \left(1 + \frac{\delta}{\beta}\right)$ is less than D . Hence the

total disclosed, as the result of deaths in the year, is reduced in value, and the estate duty, if levied on the supposed community, would be diminished accordingly.

But now if we multiply the above altered values, producing this diminished total, by the same ratios as before, to arrive at the property in the hands of the living we find that (with altered distribution) precisely the same total is produced, as is found in column 4 of the first table. Thus :—

1. Age group.	2. Altered value of estates passing by death in the year.	3. Registrar-General's ratios of the living to those dying in the year.	4. Value of estates in the hands of the living.
<i>a</i>	A	α	αA
<i>b</i>	$B + \frac{\delta D}{2\beta}$	β	$\beta B + \frac{\delta D}{2}$
<i>c</i>	C	γ	γC
<i>d</i>	$\frac{D}{2}$	δ	$\frac{\delta D}{2}$
Total....	$A + B + C + \frac{D}{2} \left(1 + \frac{\delta}{\beta}\right)$	Total (as before).	$\alpha A + \beta B + \gamma C + \delta D$

All we have assumed in the foregoing analysis is that the beneficiaries comprised in the group *b* are not exempt from the laws of mortality, but are subject to the usual conditions incidental to the general estate duty class to which they belong.

For these reasons it would in our opinion be difficult to maintain that any discrepancy between estimates based on the income-tax returns and those derived from the record of estates passing at death "can be explained in large measure by gifts before death" (see Mr. F. W. Hirst's edition of *Porter's Progress of the Nation*, p. 704). As for "various other methods of evading the death "duty," referred to in the same passage, and Mr. Bowley's suggestion that "estates are undervalued for death duty," those who are acquainted with the machinery of the Estate Duty Office will remain sceptical of so easy a solution of the problem, though some weight must be given to possible evasion and it may be admitted that even an approximate valuation of the item "furniture," or "household goods, pictures, china, linen, apparel, &c.," is hardly to be expected from any method of valuation. The only item of property which escapes estate duty is real property situated abroad and privately owned by people in this country.

The next task is to indicate the amount of capital passing at death to which our new multiple of 28 is applicable. Some

misconception may have been caused by the fact that the tables given in 1908 (as in the present Paper) refer exclusively to England and Wales, for which alone the classification of the amounts of estates passing at various ages is obtainable. If it is desired to get a total comparable with estimates for the United Kingdom, it is of course necessary to multiply the death-duty figures for the whole of the United Kingdom. Some other points have had to be considered, on one of which, affecting as it does a not inconsiderable total of property, we must submit the following observations before passing to the figures themselves.

Does the property passing by settlement at death remain in the hands of the beneficiaries for so long a period on the average as property passing freely, having regard to the limitation of settlements to persons "in being" and twenty-one years afterwards? It is obvious that if property is settled at the death of a testator on two or three persons in succession, all these persons (with an exception to be mentioned hereafter) must be "in being" when the settlement commences, whereas when property is left absolutely, the last beneficiary of the series under consideration may have been born many years after the death of the original testator.

The inference is, therefore, that such limitation must reduce the average length of tenure by persons holding settled property.

Owing to the fact that the property passing under settlement is not recorded in the estate duty statistics on the death of the beneficiaries, no precise information is available, and no direct comparison of the lengths of tenure of persons holding free and settled property is at present possible. But there are certain general considerations which may be of assistance in arriving at a conclusion on this point.

Firstly, we may point out the effect of the provision implied by the words "and twenty-one years afterwards." Property left in trust on the death of a testator, in many instances, passes to an unmarried daughter or niece with the provision that should she marry the reversion should on her death pass to her children, but should remain in trust till they attain twenty-one years of age. In this case it is obvious that the property follows the normal course of passing from one generation to another.

Secondly, a very frequent form of *inter vivos* settlement is a marriage settlement, in which each party settles his or her property on himself or herself for life, and on the death of one of the spouses to the survivor with ultimate reversion to the children. In this case it may be observed that as the action taken is, in effect, a

purely voluntary family arrangement, the property—at any rate that of the husband—reaches the same destination as it would in all probability have reached had it remained free property and been left by will.

Thirdly, the limitation by the law of settlement to persons “in being” would undoubtedly have the effect of reducing the average length of tenure of property left to two or more persons in succession.

To take an example. Property is left, say, by will in trust to three sisters and the survivors of them. As all the sisters are alive at the time of the passing of the property the tenure by the three sisters would be for the period known to actuaries as “the longest of three lives.” Had it been left to them absolutely in equal portions, each of them would have had the power of leaving her portion to a younger person. Although in many instances this course would not have been adopted, it is quite certain that on the whole the length tenure by the successive beneficiaries would be shortened by the terms of the settlement.

But, as the result of inquiry, it appears that with regard to the great bulk of property passing under settlement, there is one life tenant only after the death of the person on whose decease the property passes. The cases both in point of numbers and values in which property is left at death to two or more persons in succession are relatively inconsiderable when compared with those in which property is left to one person only, and in many instances of the latter, the beneficiary has an alternative power of appointment, which brings the property concerned still more in line with free property.

Speaking generally, the settlement of property is a family matter, and if we were dealing with numbers only, it might be said that property is more frequently left to wives under settlement than to persons of the next generation. But there is a great distinction to be observed between numbers and values. In the really large estates that count, in which ample provision exists both for wives, children, nieces, &c., the wives have already benefited by marriage settlement, and the settlements operating at death appear as a rule to be made in favour of the children, or at any rate in favour of persons of the younger generation.

It may also be pointed out that settlements are rarely made to strangers in blood, such as friends, servants, &c., who may be of the same generation as the settlors.

On the whole, it is concluded that the great bulk of settled property, passing by death, is left to one life tenant only who would

in any case be the beneficiary ; and that in the main it either reaches the same persons as it would have reached had it been free property, or else successively travels from one generation to another. In these circumstances it is thought that our multiplier of 28 may be used without serious error for determining the amount of such property in the hands of the living.

We are now in a position to give an estimate of the total capita in the hands of the living property owners in the United Kingdom, from the death-duty statistics for the three years 1911-12, 1912-13, and 1913-14 :—⁵

TABLE VII. —1911-12. *United Kingdom. Total capital in the hands of the living.*

N.B.—The estate duty figures include the capital values of the properties of which the Commissioners of Inland Revenue had notice, and, where duty is being paid by instalments, not merely the capital corresponding in amount to the first instalment. Probate duty is not payable in connection with deaths since 1894, and this duty is now mainly attributable to cases of reversionary interests falling into old estates.

Estate duty, net	£	278,869,000	£	278,869,000
Probate duty—				
Personalty	£	1,393,000		
Estimated realty	£	374,000		
		1,767,000		1,767,000
Estates not exceeding £100	£	917,000		917,000
<i>Settled property on which settlement estate duty has been paid, say</i>			50,000,000	
<i>Settled property exempt from estate duty (husbands and wives)</i>			15,000,000	
				65,000,000
				£346,053,000

Multiplying this total of property passing in the year at death by 28 we get the property in the hands of the living, viz. :—

$$£346,053,000 \times 28 = £9,689,500,000.$$

⁵ All the figures will, of course, be somewhat increased if the multiplier is raised from 28 to 30 as suggested in the appended notes, p. 595.

TABLE VII.—1912-13. *Total capital in the hands of the living—contd.*1912-13. *United Kingdom.*

	£	£	£
Estate duty, net ....	....		279,253,600
Probate duty—			
Personalty	1,293,000		
Estimated realty	353,000		
	1,646,000		1,646,000
Estates not exceeding £100 ....	....		909,000
<i>Settled property on which settlement estate duty has been paid (average of five years including 1912-13)</i>		50,000,000	
<i>Settled property exempt from settlement estate duty (husbands and wives)</i>		15,000,000	
			65,000,000
			£346,808,000

$$£346,808,000 \times 28 = £9,710,624,000.$$
1913-14. *United Kingdom.*

	£	£
Estate duty, net ....	....	296,430,000
Probate duty—		
Capital	1,430,000	
Estimated realty	390,000	
		1,820,000
Estates not exceeding £100	965,000	965,000
<i>Settled capital paying settlement estate duty, say</i>	50,000,000	
<i>Settled capital exempt (husbands and wives)</i>	15,000,000	
		60,000,000
		£359,215,000

$$£359,215,000 \times 28 = £10,058,000,000.$$

We have now reached the point at which we can begin, in however inadequate a fashion, to compare these results which should represent with a precision unattainable by any other means the amount of realised property of all kinds in private ownership, with the estimates which have so long held the field derived from the capitalisation of the income-tax assessments, a method which, as its author, the late Sir Robert Giffen, pointed out in a letter addressed to the Editors of the *Statistical Journal* upon Mr. Mallet's Paper in 1908, has some advantages and particularly that of facilitating comparisons with past times for which no death-duty statistics exist and with other countries where the same method has been applied.

The best figures stating the results of this method are those set out in Mr. Hirst's edition of *Porter's Progress of the Nation*, which gives Sir Robert Giffen's calculation for 1885 and calculations which are known as the *Economist* estimates for subsequent years, based on this method. It is perhaps unnecessary to repeat here the data for these calculations, and the number of years' purchase taken for the different kinds of income which are fully discussed in Giffen's *Growth of Capital* (1889) and in the above quoted volume of *Porter's Progress*.

In million £s.

	1885.	1895.	1905.	1909.
Land	1,691	1,385	1,306	1,300
Houses	1,927	2,318	3,024	3,284
Farmers' capital	520	368	340	348
Railways in United Kingdom	932	960	1,050	1,075
Mines, quarries, ironworks, gasworks, waterworks, canals, and other indus- tries separately distinguished	330	427	568	550
Other trade capital, public companies, firms, &c.	1,414	1,500	2,458	2,727
British capital invested abroad	1,302	1,600	2,025	2,332
Capitalised value of local loans guaran- teed by the rates	126	175	240	290
Capital of non-income tax payers	335	380	420	450
Furniture, &c.	960	1,000	1,000	1,000
Government and local property	500	550	605	630
Total	10,037	10,663	13,036	13,936

We may assume that on similar lines a total of at least 15,000 million £ would be put forward as the amount of capital wealth in the United Kingdom, or 5,000 million £ more than the figure established from the estate duty statistics by the use of the multiplier.

Some readjustments on both sides of the account must, however, be made in order to get a truer comparison of the figures.

1. There is at first sight one interesting if not numerically very important omission in the estate-duty figure, and that is a large part of the capital comprised in small estates under 100*l.* in value. The amount appearing in the statistics of the year 1913-14 under this head is 965,000*l.*, which, multiplied by 28, gives a ludicrously inadequate sum even if only the value of furniture and cash in the house are included. As a matter of fact, it is known that the vast majority of cases in which this is the only kind of property left by a deceased do not come under the notice of the Inland Revenue authorities at all, and an unknown sum, though of a non-income producing character, therefore falls to be added under this head.

But there is besides a not inconsiderable amount of property of another kind. On April 20 last Sir Edward Brabrook gave the Society the following total of the funds of the several classes of Friendly Societies and other provident institutions to December 15, 1913, or other recent date :—

	£
Societies under the Friendly Societies Acts	67,110,668
Workmen's Compensation schemes	68,984
Trade unions	5,650,929
Building societies	66,379,666
Industrial and Provident societies	72,308,233
Loan societies	253,133
Railway savings banks.... ..	7,151,979
Trustee savings banks	71,342,901
Post Office savings banks	220,642,683
Total	510,909,176

Now, in practically all these cases there is statutory authority for dealing with properties under 100*l.* in value "without representation"; and as it may fairly be assumed that the bulk of this property is held by persons with a total property of less than 100*l.*, it is clear that this total is omitted from our estate-duty total figure. What sum may, under these two heads, be added to our 27 millions of properties under 100*l.* is a different question, and one which it is perhaps impossible to answer. We cannot, as we have seen, ascertain the amount of capital consisting of furniture and cash left by the poorer classes, and a large deduction on account of debts would have to be made from the above-quoted 510 million £ of Friendly Societies' capital—perhaps, on the analogy of the difference between the gross and net totals of the estates of less than 100*l.* coming under the notice of the Estate Duty Office, something approaching one-half of the amount. How much, further, of this undefined total would be income-producing and therefore comparable with any estimate which might be obtainable from the income tax assessments of these small estates? The *Economist* estimate, it may be noted, gives the capital of non-income-tax payers as 450 million £, but what proportion of this capital forms part of small estates under 100*l.* in value it is impossible to say, though it may be conjectured that it is comparatively small.

To deal with these considerations statistically is an undertaking from which we shrink. That there is a fair amount of capital in the hands of the working classes in the shape of the capital of Friendly Societies and provident institutions, and furniture, dress, cash, &c., is indisputable. Whether this total be put at 250 million £ or

500 million £ or more, it may be doubted whether any considerable portion of it is income-producing at all. We are therefore inclined to leave our estate-duty figure as it is, especially since to raise our 27 million £ to 50 or even 100 million £ would help us very little towards a reconciliation of the two totals.

2. *Furniture, &c.*—This stands in the *Economist* estimate at 1,000 million £. The corresponding heading in the estate-duty statistics (Household Goods, Pictures, China, Linen, Apparel, &c.) for 1913-14 is 9,753,589*l.*, which, multiplied by 28, gives in round figures 273 million £. Considering that the bulk of the furniture owned by the poor is not included in the latter total, and that the value of the household possessions belonging to the well-to-do must of necessity be undervalued, we are not in the least disposed to quarrel with the *Economist* estimate, which may well indeed be under the mark for an old country full of inherited wealth like England; but as all this value is conjectural and does not produce income we should omit it for purposes of comparison from both estimates. We should also omit from the estate-duty total various items in the death-duty statistics for 1913-14 as non-income producing—amounts, which, multiplied by 28 and added to the above 273 million £, will account for a total deduction of (in round figures) 1,000 million £, or more, from our total of 10,000 million £ of living property.

3. From the *Economist* total on the other hand must be deducted Government and local property, 670 million £, as not being property in private hands. In addition to this there would be a large amount of income included in the estimate which is not received by individuals but is in the hands of municipalities, such as gas and waterworks, investments, of mutual life and fire insurance companies with their reserve funds, the income of Chancery funds, trust funds, clubs, institutions, co-operative societies, foreigners, &c. Sir Henry Primrose estimated this in 1906 at 50 million £ at least. Capitalised at 25 years' purchase an annual sum, which may have somewhat increased since 1906 and may fairly be put at 60 million £ at the present time, would represent 1,300 million £. Under these two heads we could therefore deduct 1,970 million £ or say 2,000 million £ from the *Economist* estimate, or, including the estimate for furniture, 3,000 million £.

4. There seems to be some doubt whether the *Economist* calculation includes the National Debt. Sir Robert Giffen omitted it from his estimate, but said that he "should not censure very much" anyone who included it as part of the capital of the community. So much of it as is in the hands of private individuals certainly appears

in our estate-duty total. But as this amount before the war was probably small, not more than 200 or 300 million £, it is perhaps unnecessary to add a conjectural sum under this head to the *Economist* estimate.

Following the preceding comments we may therefore, perhaps, for the purpose of comparison, deduct from the *Economist* estimate of 15,000 million £, 3,000 million £, reducing it to 12,000 million £, and from our estate-duty total 1,000 million £, reducing it from 10,000 million £ to 9,000 million £. We are still left with a disparity of, roughly, 3,000 million £, a sum which would doubtless be further decreased by considerations of a kind not susceptible of numerical measurement, at all events without much more labour than we have been able to give to the matter. The "Local Property" of the last item in the *Economist* estimate, for instance, is already largely represented under lands and houses, the assessment under these heads covering all property liable to valuation for income tax purposes (see *57th Report of the Inland Revenue*, p. 105), and these are apparently capitalised without reference to repairs. The item "Houses" also, in the *Economist* figures, includes those premises held by public companies (except railway, mining and such companies as are separately assessed), and therefore the value of these is counted twice in the estimate. Apart from criticisms of this order, which throw doubt on the *Economist* estimate as too high, there is a further consideration involving some intricate and probably insoluble questions.

The estate duty calculations are concerned only with realised property, the produce no doubt to a large extent of personal labour and individual qualities and abilities, but property which can be, and is, valued at what it would fetch in the market at a particular moment. The income tax assessments contain not only the annual interest on all this property, but also the produce of personal exertion in every form. When Sir Robert Giffen undertook his original investigation there was much less facility than subsequent legislation has offered for distinguishing between earned and unearned income, but after eliminating all which could be discerned from the income-tax statistics as income from personal exertion he acted on the assumption, as regards the great bulk of the income assessed under Schedule D (Businesses, Professions, &c., not otherwise detailed), that only one-fifth of this was the result of capital. This method has presumably been followed in the *Economist* estimates for years subsequent to 1885, and considering the increasing preponderance of companies over persons and firms it cannot be held that this proportion is necessarily an over-estimate. All that can be said is that it is necessarily a speculative estimate. The estate-

duty figure of property passing at death on the other hand is not an estimate, speculative or otherwise. But how far it contains an element representing the effect of ability or personal effort in business is a question difficult to answer except in very general terms. The item under the head of "Goodwill," which does represent this element is insignificant. In § 60 (2) of the Finance (1909-10) Act, 1910, amending the valuation of property in certain particulars, there is a proviso that "where it is proved to the Commissioners that the value of the property has been depreciated by reason of the death of the deceased the Commissioners in fixing the price shall take such depreciation into account." These words no doubt define the practice and intention of excluding the taxation of property inflated in value by reason of the labour and ability of a deceased person; but the selling value of a property depending largely or mainly by personal effort must always be low. There is, for instance, practically no saleable goodwill in the case of the practice of an eminent medical specialist, whereas an ordinary practice depending on locality has a value more nearly corresponding to the income it produces. When we come to companies as distinguished from persons and firms the case is somewhat different. When a company has grown out of the enterprise of an individual the value of the capital thus created would no doubt appear in the value of the shares which would be taxed at the death of the founder at their market price, and in this sense his enterprise would have resulted in a capital which might or might not maintain its value after his death. In the case of long-established companies like banking, insurance or railway companies, it would be difficult to detect any element of value which could be definitely ascribed to personal effort. On the whole we may say that this element, from the nature of things, is more distinctly and automatically excluded from death-duty assessments than it can be by any process of speculative discrimination from assessments of income. How far such a conclusion gets us in the process of accounting for a discrepancy of some 3,000 million £ must remain a matter of doubt. Mr. Flux (see the note appended to his Final Report on the Census of Production, Cd. 6320, 1912, p. 36) thinks the difference between the results of applying the rival methods "may be in no small part due to the uncertainty necessarily attaching to the proportion in which the income under Schedule D is derived from capital." In Mr. Hirst's edition of *Porter's Progress*, p. 705, we are presented with two alternative explanations (or a combination of them)—either "that the evasion of the death duties is greater than is generally supposed," or that the "estimates of wealth obtained by capitalising

“income are too large.” We distrust the first of these alternatives, if only because evasion of the income tax is easier and probably more widely practised than evasion of the death duties.

We may now conclude this Paper by a closer attempt at a comparison between certain estate-duty and income-tax statistics with a view to testing the former by the amount of income from property, as shown by the income-tax assessments.

Any general discrepancy between the estate-duty and the income-tax figures is, as we have already suggested, extremely difficult to locate, since the same general headings in the two sets of figures do not cover identical areas. For example, Realty under Schedule A embraces *all* lands, houses, &c., while a similar heading under Estate Duty will not include Lands or Houses held by Public Companies or Firms.

Again, in Schedule D the profits of stocks, funds and shares in public companies is the more or less arbitrary assessable profit *before* distribution, while stocks and shares for estate duty purposes are those in the hands of private persons. Municipal profits, investments by clubs, co-operative societies, and insurance societies, and some portion of the income placed in reserve funds before the distribution of dividends are not represented in the Estate Duty statistics although assessed to income tax.

It is unnecessary to multiply instances of the difficulties underlying the comparison of apparently similar items, as there is one clear cut division in regard to incomes which may be approximately paralleled by a similar division in the estate-duty figures. This is the somewhat artificial distinction laid down by recent legislation between earned and unearned incomes. This must not be confused with the distinction between income earned by capital and that earned without capital, including the income of employés. An attempt to divide both the income-tax and the estate-duty figures on this latter basis would be attended with great difficulty. But it is comparatively easy to take out the income-tax figures of “un-earned” income in the technical sense of that term and compare them with corresponding figures derived from the statistics of estate duty. This unearned income consists chiefly of the profits of public companies, of stocks, funds, loans and other investments, and of the rental of lands, while the earned income is composed of the income of persons in business and firms, of employés, mercantile agents, professional persons, and of all other persons earning a livelihood with or without the assistance of capital.

In making the following classification of unearned income under the several schedules, certain facts have to be considered. The

income of the clergy from landed property has been withdrawn from Schedule A. A small allowance has been made under Schedule B (otherwise a schedule of "earned" income) for loans to farmers, &c., on the interest of which the "unearned" duty is paid. Schedule C is mainly an unearned schedule, but allowance has been made for payments, such as those to clergy. With regard to Schedule D the whole of the income of persons and firms, less about 5 million £ for charges such as royalties, interest on loans, annuities, &c., has been withdrawn (though a good deal of this is due to the possession of capital), leaving a balance consisting entirely of "unearned" income; and under Schedule E, an amount has been allowed for interest on loans and similar items.

The following are the estimated figures of unearned income for 1911-12 and 1912-13 :—

	1911-12.	1912-13.
	£	£
A	170,417,000	171,555,000
B	60,000	60,000
C	45,607,000	46,407,000
D	331,879,000	352,842,000
E	240,000	250,000
	548,203,000	571,114,000
Add estimates of unearned income exempt from income tax, say	45,000,000	45,000,000
	593,203,000	616,114,000

From each of these totals should be deducted a sum estimated at about 60 million £ for impersonal income, consisting of the income of such items as investments of insurance companies, a proportion of companies reserve funds, municipal profits, such as those on waterworks, gas and electric light works and tramways, the annual values of parochial and municipal buildings, Crown lands when let to tenants, the investments and property of co-operative societies, clubs, monasteries, &c., and other items of a miscellaneous nature.

The net sums of unearned income for the two years will therefore amount to 533,203,000*l.* and 556,114,000*l.* respectively.

Turning to the estate-duty figures, the total property in the hands of the living is ascertained in the following manner :—

	1911-12.	1912-13.
	£	£
Estate duty capital, net	278,369,000	279,253,000
Probate duty, including an estimate of realty	1,767,000	1,646,000
Estates not exceeding £100....	917,000	909,000
Settled property on which settlement estate duty has been paid (say)	50,000,000	} 65,000,000
Settled property exempt from estate duty estimated at (property left by husbands to wives and <i>vice versa</i>)	15,000,000	
	346,053,000	346,808,000

These totals are the estimated values of property of all descriptions passing by death in one year, and when multiplied by 28 give the total values of property in the hands of living "estate duty" persons in those years, the amounts are :—

	1911-12.	1912-13.
	£	£
Property in the hands of the living	9,689,500,000	9,710,624,000

In order to ascertain the portions of these totals corresponding to the unearned income, the following items of property, either not producing income at all or else producing earned income only in connection with individual effort, should, it is suggested, be deducted :—

	1911-12.	1912-13.
	£	£
Cash at bank (three-fourths of total)	14,400,000	13,000,000
„ in house	600,000	500,000
Debts due to deceased, goodwill, insurance policies, household goods, stock-in-trade, partnership property income accrued at death ...	41,000,000	37,500,000
<i>Inter vivos</i> gifts, settled policies of insurance, settled household goods	4,000,000	4,000,000
Gross deductions	60,000,000	55,000,000
Corresponding net (say)	55,000,000	51,000,000

These deductions multiplied by 28 give the amounts to be deducted from the property in the hands of the living, as given above :—

	1911-12.	1912-13.
Deductions 55,000,000 <i>l.</i> × 28 and 51,000,000 <i>l.</i> × 28	£ 1,540,000,000	£ 1,428,000,000
Net capital producing unearned income	8,150,000,000	8,288,000,000
Unearned income (see above), cor- responding to net capital	533,000,000	556,114,000
Percentage	6·5	6·6

This percentage, though high, is a much nearer approximation to the probable percentage rates of the unearned income to the property which produces it than has been reached hitherto. A more searching analysis of these difficult figures might perhaps result in a closer approximation between the death duty and income tax results; but it would more probably demonstrate, what some of the preceding comments will have indicated, that no thoroughly satisfactory comparison between the two sets of figures is possible. The re-examination of the problem which we have undertaken has, however, left unshaken our conviction that a nearer approach to a true valuation of the realised property of this country is to be found in an estimate based on the total of such property passing at death than by any other method of calculation, provided that the estate-duty figures are, as we believe them to be, in the main reliable, and that the multiplier is established on sound principles and on the best obtainable data. On these latter points we may be allowed to hope that we have now made a further approach to a solution, though it may be regretted that the results of such applications of the method to the estate-duty statistics as we have attempted does not more fully correspond with those reached by other inquirers.

In conclusion we desire to express our thanks to Mr. F. Finch of the General Register Office, and to Mr. G. T. Nicholls of the Inland Revenue Department, for valuable assistance in connection with certain tables in this Paper.

DISCUSSION ON THE PAPER BY MR. BERNARD MALLET, C.B.,
AND MR. H. C. STRUTT.

SIR TIMOTHY COGLAN, in proposing a vote of thanks to the authors, said that he had listened to the reading of the Paper with extreme interest, and he congratulated Mr. Mallet and Mr. Strutt on the able manner in which their argument had been maintained. He thought they could conclude that the idea of establishing a figure for the wealth of the community by multiplying the valuations under probates by the number of persons living and dividing the result by the number dying the same year, would now be definitely abandoned. Unless one took into consideration the ages of the persons dying, it was quite impossible to arrive at a sound conclusion; this he thought was now absolutely demonstrated. Mr. Mallet's figures showed an estimate of wealth far below what it had been usual to accept, and he thought it was well at such a time as this that they should realise what was the taxable wealth of the country. It was a most essential thing that they should have no misapprehension on that point. It was extraordinary how prone were people who indulged in making estimates of the income and accumulated wealth of the community to allow themselves to be carried away by the most extravagant ideas. He had seen the value of property in England placed as high as 17,000 millions, and 15,000 millions was a very common estimate. He recollected when the Parliamentary Committee was inquiring as to the amount of income that would be available for super-tax, one important witness had placed the estimate at 250 millions per annum, while another distinguished member of the Society had put it at 220 millions. The actual sum assessed was 140 millions. No one who was a student of estimates of property and wealth could fail to notice the general tendency to over-estimate, and so mislead the persons in authority in this country. Mr. Mallet had pointed out that there was a rapid improvement in the value of estates with the advance in age, and it was neglect of this fundamental fact that vitiated the ordinary estimates of the value of the property of the community which were based on the value of property left at death. In support of Mr. Mallet, he had taken the liberty of presenting some calculations on figures recently sent to him of the amount of property left at death in Victoria and New South Wales. He had divided the figures, as near as he was able, into the groups fixed by Mr. Mallet; but with a distinction that Mr. Mallet had not made, namely, of separating the property of males from that of females. This it will be seen was a most important distinction :—

Number of persons (male and female) in Victoria and New South Wales, 1911-12, with average property of persons dying and estimated value of total property.

VICTORIA, 1911-12.

Age groups.	Males.			Females.		
	Number of persons.	Average property of persons dying 1911-12.	Estimated value of total property.	Number of persons.	Average property of persons dying 1911-12.	Estimated value of total property.
Under 21	284,885	3	854,655	280,028	1	280,028
21-29	100,931	119	12,010,789	107,573	42·5	4,571,852
30-39	86,686	306	26,525,816	93,783	111	10,409,913
40-49	83,957	631	52,976,867	81,477	217·5	17,721,247
50-59 ...	51,602	1,065	54,956,130	48,147	411·5	19,812,490
60-69 ...	25,390	1,265	32,118,350	27,089	408·5	10,930,411
70 and over	22,140	1,289	28,538,460	21,863	468	10,211,884
All ages	655,591	317	207,981,067	659,960	112	73,937,825

Average value of property passing in one year :—

Males, £6,668,324; females, £1,833,150; total, £8,501,474.

Multiplier :—Males, 31; females, 40·3; total, 33·1.

NEW SOUTH WALES, 1911-12.

Age groups.	Males.			Females.		
	Number of persons.	Average property of persons dying 1911-12.	Estimated value of total property.	Number of persons.	Average property of persons dying 1911-12.	Estimated value of total property.
Under 15	267,678	1	267,678	261,240	1	261,240
15-20	101,081	54	5,438,374	98,424	4	393,696
21-29 ...	146,944	183	26,890,752	138,975	116	16,121,100
30-39	119,977	342	41,032,134	111,140	204	22,672,560
40-49	98,091	698	68,467,518	81,431	260	21,172,060
50-59	67,241	870	58,449,670	51,115	301	15,385,615
60-69	35,579	1,279	45,505,471	29,508	432	12,747,456
70 and over	21,107	1,643	34,678,801	17,203	418	7,190,854
All ages	857,698	327	280,730,398	789,036	122	95,944,581

Average value of property passing in one year :—

Males, £8,509,244; females, £2,183,822; total, £10,693,066.

Multiplier :—Males, 33; females, 43·9; total, 35·2.

Taking the figures for Victoria, he found that the average property of persons dying in the two years 1911-12 amounted to 317*l.* for males and 12*l.* for females. There was a very serious difference between the two amounts. Proceeding to value the whole wealth

of the community, he found that the average value of property passing in one year was, for males 6,668,324*l.*, which gave a multiplier for males of 31, and, for females 1,833,150*l.*, which gave a multiplier of 40.3. Taking the total values, these gave 207,981,067*l.* for males and 73,937,825*l.* for females, or both together 281,918,892*l.*, from which they got a multiplier of 33.1. If, however, the age groups had not distinguished between males and females, the total property would have worked out at 289,050,116*l.*, which gave a multiplier of 34. Similarly for, New South Wales the multiplier for males was 33 and for females 43.9, and the multiplier for both 35.2. If, however, there had been no separation of males and females in the estimate the multiplier would have been 37.3. In the one case the multiplier would have been raised from 33.1 to 34 and in the other from 35.2 to 37.3. There cannot be any question but that the separate valuation of males and females was the more scientific. His criticism of Mr. Mallet's work was, that by his grouping of males and females together his multiplier of 28 was probably too high. That was really the only criticism which he offered on the paper, and, indeed, it was not a criticism at all. The work of the authors was so excellent, that he might be pardoned if he asked whether it might not be possible in the future for them to make a distinction in the probate returns between males and females. It was obvious that a most important change would take place in the result if worked out in that way. In conclusion, he begged to move a hearty vote of thanks be offered to Mr. Mallet and Mr. Strutt for the very able Paper they had put before the Society.

Mr. E. J. HARPER said it gave him great pleasure to have the opportunity of seconding the vote of thanks to Mr. Mallet and Mr. Strutt, whose Paper had added very greatly, it appeared to him, to the information which they laid before the Society in 1908. He particularly wished to congratulate Mr. Mallet on having discovered what appeared to him to be a distinctly better basis for getting at the death-rate among the propertied classes than the one he ventured to suggest seven years ago. It seemed to him the social analysis which he gave them was something very much better than any partial returns which were all they could hope to get from insurance companies. The table on p. 561 was undoubtedly a most interesting table to statisticians generally, apart from the particular question. It was interesting to note that apparently the longest-lived classes after the agricultural labourers were the professional classes. He congratulated Mr. Strutt especially on his analysis of the French statistics, which seemed to him to be an absolutely conclusive answer to the argument against which it was aimed; but there was one point on which it did not reassure him, that was, as to the increase of gifts *inter vivos*. It appeared to him that the figures given in the Paper rather indicated that that practice was on the increase. If they looked at the figures which Mr. Mallet had put before them in 1908, they would find

that the estates passing in 1905 amounted to 228 million £ and in 1906 to 256 million £. Then they saw from Table 5 that in 1911-12 the estates passing showed a total of 236 million £, in 1912-13 232 million £, and in 1913-14 244 million £. Neither of those three years was equal to the single year 1906. It appeared to him that in the intervening period there were influences at work which could have produced a considerable increase; whereas there was not only no increase, but there seemed to be a tendency to go the other way. It appeared to him that in default of any other explanation, the increased practice of gifts *inter vivos* must be held to account for some of it. The most interesting part of the Paper was the comparison between the earlier method of estimating national wealth, with regard to which the *Economist* figures were given on p. 577, and the method which Mr. Mallet had introduced to them. He was sorry to say that so far as his knowledge of the facts went, he was rather in the position of having to widen the margin of 3,000 million £ instead of helping Mr. Mallet to close it, as he would like to do; because, with regard to the first two items in the *Economist* table, the value of lands and houses, he was in a position to say that although no totals could yet be given resulting from the valuation of land under Part I of the Finance Act of 1910, still that valuation had proceeded far enough to enable him to say that the valuations shown there, namely, a total of 4,584 million £ for land and houses, was not sufficient. There would undoubtedly be an addition to the difference between the two bases instead of a reduction. On the other side he wished to make a suggestion, which he did with some hesitation as he had no data on which to go. He noticed that throughout the net values for estate duty were taken—that all the debts of the deceased were deducted before arriving at the value of the property passing. He was not quite sure whether that gave the most accurate result. Whether the deceased owed money or not, there was the property which he left behind him, and whether they ought not to take some middle figure between the gross and the net in order to get at the true value was a question he would like to see carried further. The most satisfactory part of the Paper, he said, notwithstanding all the additional information it gave them, was the statement at the end that there was plenty of room for further investigation. He hoped that Mr. Mallet, with the assistance of Mr. Strutt, would not give up that investigation, and that in view of the sadly altered figures which they must expect in the next few years, they would find them still continuing their labours in this field with even greater success than had marked their efforts hitherto.

MR. F. W. PETHICK LAWRENCE said he wished to make one suggestion and ask one question. The question was whether the writers had taken into consideration the fact that the age groups might still be too large, and whether it was possible, for instance, to cut them up into five-year periods instead of ten. He ventured to think that would make quite a considerable difference. Since he had been in the room he had experimented with Mr. Mallet's

table, taking two of his periods together and he found that it made the total very much larger. He ventured to think therefore that the true analysis, which was taking one year at a time, would probably result in a considerable reduction of the total. That would, of course, make the discrepancy larger.

Mr. J. C. STAMP said that if anyone wanted encouragement as to the progress made by the Society, they might be recommended to read the Paper in 1894 by Sir W. J. Harris and compare it with the present Paper. They could see how they were groping about then for something tangible, and how much progress had been made by the investigators on the subject, particularly Mr. Mallet and Mr. Strutt, at the present day. He had had various opportunities of discussing with Mr. Strutt his important contribution on the subject of the reconciliation of the French and English multipliers, and the corollary that might be drawn—and which had been brought out so clearly in the present Paper—that the usually given excuse as to gifts *inter vivos* was not the chief reason for the “gap” they were attempting to bridge. Mr. Mallet had brought out very clearly that in his view those gifts *inter vivos* did not explain the gap; because as often as they reduced the estates (to be multiplied) by the amount of the gifts, so often went up the multiplier, and the two things simply came to the same result. He was acquainted with Mr. Strutt’s very ingenious mathematical demonstration of that fact, and for perhaps twelve months he remained perfectly content with it as final and conclusive. But of late, discussing the practical aspects of things in the world in general, he had come to distrust the assumptions underlying it, and he now believed that those assumptions were only to a very limited extent valid—in fact, were almost untenable. The reasons he had for that view were briefly as follows:—The first assumption was that in any given age-group addicted to making gifts *inter vivos*, those gifts were given indifferently by all members of that large group, and any lower age-group receiving such gifts also received them indifferently. The second assumption was, that the hand of death came along impartially to each age-group. He preferred to look at it in the way that each age-group was made up of two parts. If they could have a medical examination of all the persons living in that group, although they would not divide them exactly, one sub-group would be mainly those persons who had been in failing health, whom for a short title they might call the “likely-to-die” class. The other sub-group would be the healthy and strong class. The death-rate for that particular age-group was a composite of the two sub-groups, the high death-rate of the “likely-to-die” class, and the low death-rate of the “healthy” class. The same would apply to the age-group below. The assumption that the *inter vivos* gifts proceeded indifferently from the upper group to the lower group, in his judgment was unsound, after having discussed the matter with a number of people who were likely to know. The class of people who, with death duties looming they knew not exactly how near, but it might be

two or five years, were addicted to the *inter vivos giving*, would mainly be drawn from the "likely-to-die" class with the high death-rate. The class of people *receiving* such gifts were in the nature of things mainly those of the healthy class whose death-rate was low. Therefore the assumption that as fast as they took out of a high age-group certain gifts *inter vivos*, the death-rates operated impartially over that whole group and put them back into the multiplier at the earlier age-group was unsound, because they had a *diagonal* distribution from the "likely-to-die" class to the "unlikely-to-die" class in the lower region, and not an even distribution from one group to another. He was quite convinced that the habit of giving *inter vivos* should really be divided into two in any age-group, and the habit of receiving should also be divided into two in the lower age-group. To a very great extent that vitiated the argument, because the "giving" estates and "receiving" estates did not compensate on death-rates applying to the whole class. Although he was willing to subscribe to that mathematical proof up to two months ago, he felt now that it was doubtful, and there was still a great deal to be said for the argument that gifts *inter vivos* remained one of the reasons for the serious discrepancy, but he had made no attempt to measure its effect. The recipients were caught by a death-rate, truly, but not by the general death-rate. He said that there were far too many points in the useful analysis of Giffen's method for one to touch upon them all. Having been engaged for three or four years in preparing a work shortly to be published, on the application of income-tax statistics, he had attempted to assign to the main points raised by Mr. Mallet an actual quantitative value. But all he could possibly do now was to refer to one or two chief points. The inference in the second paragraph on p. 567 of the Paper was important. The statement "But this estimate for what it is worth seems to support the contention that those who hold that the number of income-tax payers is usually put too low" should be reversed. If they examined the figures properly the true inference was that that figure was too high. He could not give his reasons for it at length now, but one could ascertain by sampling, as he had done, the number of salaried persons who had other income, and the amount of that income. If they applied that to the data in front of them, he thought it would be very bold to say that the number of taxpayers established upon such excellent and strong grounds as not exceeding 1,200,000 should be altered merely on that somewhat shadowy proof. The second point he wished to make was with regard to Sir Robert Giffen's calculation referred to on p. 578, where the capital of non-income-tax payers was given as 450 million £. Mr. Crammond, in a recent Paper, had given a very large figure for that, and at the time he had entered a protest, as he did now, against it, because he was all against swelling the estimates of the capital account on the Giffen method. At the time Sir Robert Giffen had made it in 1878, it was made on a guess of Baxter's eleven years before, and he had said that he could

not give a better guess. If one examined the guess that Baxter had made, it was on very shaky evidence indeed. Everyone who had followed Sir Robert Giffen had put that figure up in proportion, until it had reached almost unreasonable bounds, and the only one who had shown any decent restraint at all was Sir Leo Chiozza Money, who put it at 100 million £ as an ample figure. Mr. Crammond had put 500 million £. His own view was that, having regard to the large items included in the amount of gross income-tax figures which were capitalised in the table above, it should not be at any rate more than 200 million £. Referring to the paragraph on p. 580, reading "The item 'houses,' also in the *Economist* figures, includes "those premises held by public companies (except railway, mining "and such companies as are separately assessed) and therefore "the value of these is counted twice in the same estimate," he thought that he might contradict that absolutely and definitely. The value of property in Schedule A was taken off before the profits were taken in Schedule D. It was the Schedule D profits which were capitalised, and in that sense it was quite wrong to say they were taken out twice. The real fallacy was that, having taken out the real property from the property of a company and capitalised that at a high number of years' purchase, it should lower the number of years' purchase to apply to the remaining fluid profits not arising from such capital. So that in that sense the number of years' purchase attached to the Schedule D profits was generally too high. Some of the main reasons why the Giffen figures should be reduced had not been touched upon, although this was a most excellent survey of the difficulties of the case. One thing was the big jump which took place under Giffen's principle in the national capital when a firm was turned into a limited company. What appeared in the national capital at something like 300*l.* would jump immediately to something like 2,000*l.* when a firm was turned into a limited company. The second point which had a very great influence on the reduction of the valuation was the fact that a large number of commercial losses were not represented in the Schedule D figures at all. There was a large hidden deduction to come off from the gross income-tax figures before it was capitalised. Referring to the statement on p. 583, first paragraph, with regard to Schedule D, the whole of the income of persons and firms, less about 5 million £ for charges such as royalties, had been withdrawn. He was inclined to think the 5 million £ was too small and ought to be at least 30 or 40 million £. With regard to the reference to municipal profits, such as those for waterworks, gas, and electric light works, and tramways, he might refer to a common fallacy that a large part of the income-tax figures consisting of profits in the hands of municipal undertakings should be excluded. The greater part of the value of municipal undertakings, and their profits, was paid in the form of interest to individuals. There was not the slightest difference between those cases and a limited company in respect of the interest. It was quite fallacious to say that a large part of income assessed to income tax was held

impersonally, because it was made up of municipal profits. It was distributed in the form of interest on loans in practically the same way. He also made a feeble protest, if he might be allowed to do so, with regard to the statement made on p. 582, that the evasion of estate duty was less than the evasion of the income tax. The statement made was "We distrust the first of these alternatives, "if only because evasion of the income tax is easier and probably "more widely practised than evasion of the death duties." He could only say that although it might appear to be so in the *number* of cases coming to notice, he thought that was very gravely open to question. If anybody wanted evidence upon that he suggested they should consult the evidence given before the Committee in 1905 on the evasion of income tax. If they worked out the same loss as a proportion of death duties, they would find it was a ridiculously low percentage to assign to the evasion of death duties. In conclusion, he wished to add to what had already been said by way of congratulation to the authors on another step forward. At the present time it was a very difficult and very important problem. They must not forget that when the Germans had the French at their mercy in 1870, they are said to have brought a rather glowing estimate of French wealth, drawn up by French statisticians, against the French, as evidence of what they could afford to pay. There was a little peril in being too swollen-headed over estimates of national wealth.

Mr. A. W. FLUX expressed his satisfaction and congratulations to Mr. Mallet and Mr. Strutt on the work they had been able to carry, as Mr. Stamp had said, one further step forward. One felt hesitation in differing from so great an authority as Sir Robert Giffen; but, nevertheless, if a figure of something like 12,000 million £ in place of 15,000 million £ could be well supported on other evidence, such as that of estate duties, personally he would be extremely well satisfied with that. This view was based on general impressions formed in the course of an attempt to estimate the amount of manufacturing capital in the country when preparing the report on the first census of production. Therefore he did not want to reconcile the two figures. He did not concern himself very much with trying to fill up the gap. In examining the income-tax method, one saw that the multipliers there used were very largely in the nature of guesses. If one took each section by itself, it was an estimate of how much a given item of income in income-tax statistics could be supposed to flow from realised wealth, and how much from personal earnings. All those uncertain estimates yielded an aggregate result, which would not necessarily have any greater certainty than each individual item. It may be that the errors of the one balanced the errors of the other; or it may be that they did not. Therefore, in spite of the respect they should all feel for the authority of Sir Robert Giffen, he did not think that they need feel they were attacking one of their sacred books in challenging the validity of those methods as compared with a method which was based more closely on actual records, and thus

came as near as could be to representing facts. There were one or two points he wished to draw attention to. The principal feature of each of these points had been touched on by earlier speakers. For example, Sir Timothy Coghlan had referred to the difference between the two sexes, and the effect that had on the multiplier. He himself had been considering the same point, and had found that the multiplier was about three units greater if the proportions of living to deaths were taken for both sexes together than if the proportions for males only were used. The effect on the multiplier to be used in practice would depend on the proportion of the estates of males to those of females. His calculations had been somewhat hastily made, but might indicate the approximate importance of bringing in the sex difference. Another point had been raised by one speaker as to the size of age-groups. That also had occupied his thoughts, because on the whole it was shown by the tables that the average estate left became larger the older the person who died. It was also true that the multiplier steadily got smaller the further on they went. So that obviously if they took each year within the ten-year group, with its appropriate value of estates and corresponding multiplier, they would get a smaller aggregate than by using the average ratio of living to dying and the aggregate value of estates in the ten-year period concerned. That unfortunately tended to the reduction of the figures, and he was not concerned in seeing them reduced. The conclusion he was led towards would not have induced him to look eagerly for means of reducing a figure of 10,000 million £. If he gathered the suggestion aright which was made in the third paragraph on p. 579 of the Paper, it was that, in comparing the *Economist's* total as it was called, a total which included Government and local property, in order to get on a basis of proper comparison with Mr. Mallet's total, they must omit that property from the aggregate. A point very like that which Mr. Stamp had taken came there, namely, that there did occur in Mr. Mallet's aggregate the value of local and Government securities passing by death. He could not say fully or exactly what they represented, but at any rate they represented a large part of the property held by those authorities; so that the estate duty returns would be concerned with a considerable proportion at any rate of that local and Government property. He was inclined to doubt whether the exclusion there was as much as at first sight it appeared to be. The small suggestions he had made were personal thoughts, and he was full of gratitude to Mr. Mallet and Mr. Strutt for placing a new and larger mass of materials in their hands for arriving at that very important total, the mass of their national wealth.

Mr. BERNARD MALLET, in reply, said he would have liked to have heard the criticisms go on for an hour or two longer, because certain questions had been dealt with which required attention in any future work on the subject. All the points that had been raised so far were worth considering and answering; but he was placed at rather a disadvantage in answering, owing to the lateness

of the hour and also to the absence of Mr. Strutt, who was not able to be present. From the very beginning Mr. Strutt had taken a very great interest in this question, and he (Mr. Mallet) would not have been able to get on without his assistance in working out the ideas and talking them over. He would have been glad if Mr. Strutt had been present to answer some of the conundrums he had taken so large a part in raising. In view of what Lord Welby had said with regard to time, he must confine himself to one or two very short comments. The points Sir Timothy Coghlan had raised about the deaths of males and females was important, and also the question raised by a subsequent speaker as to whether they ought not to have smaller age-groups. But at present he could not get other figures. In the estate duty figures there was no distinction made between males and females. He could not find out how many were deaths of men and how many of women. Perhaps the Australian figures might give some kind of analogy to go upon. Both those points were very important, because, as Mr. Flux had said, they would affect the multiplier. Mr. Stamp had raised some interesting points, especially with regard to the income-tax figures, which would have to be considered. Like Mr. Flux, he (Mr. Mallet) did not attach very great importance to reconciling the two totals. Even with a great deal of trouble, there was a great deal that one could not reconcile. It did not depress him to think the totals they arrived at by their plan were lower than the ones the *Economist* gave. He thought what Sir Timothy Coghlan had said about that was very true—that in, many ways these inflated estimates were a real danger. In conclusion, in thanking them for the vote of thanks they had passed, he said that the various comments which had been made would be conveyed to Mr. Strutt, and after they had discussed them together it would probably be convenient to embody their reply in a letter to the *Journal* which might be printed with the Discussion.

The vote of thanks was carried unanimously.

The following further notes have been received from Mr. Mallet :—

Owing to want of time and the unfortunate absence of my collaborator, Mr. Strutt, from illness, I was unable on the evening of the 15th ultimo to reply to some of the very useful criticisms made on the multiplier method of estimating capital wealth; and it seems desirable to complete as far as possible the discussion of a subject to which there is little likelihood of our being able to return within a reasonable period.

1. Sir Timothy Coghlan raised a point, the importance of which the figures he quoted proves us to have somewhat underestimated in our consideration of the subject, viz., the influence of the longevity of women on the calculation of a multiplier. Both he and Mr. Flux observed that the effect of taking this point into consideration would be to reduce the multiplier arrived at below the figure of 28. This, however, is a misconception arising from

our having failed to explain clearly what our procedure was. Sir Timothy shows the effect of—

(1) distinguishing in the different age-groups between the number of males and females and the amount of property held by them respectively; and

(2) applying (as I gather) a mixed rate of mortality for *persons* (males and females) to the total property without distinguishing between that held by males and females respectively. He is, of course, perfectly right in pointing out that the first method is the "more scientific." The second necessarily results in raising the multiplier beyond the true figure because the males (with a low multiplier compared with females) are not weighted for their great preponderance both in numbers and in amount of property. Unfortunately it is only this second method which could be applied to our figures because there appear to be no statistics showing the *amounts* of property left by males and females respectively. (From certain indication it may be conjectured that the *number* of women leaving property in this country may be about one-fourth of the total deaths among property owners.)

In my original calculation of the multiplier in 1908 the mortality rate for *persons* (*i.e.*, male + females) was used; and this was also adopted for the recalculation of the earlier multiplier in Table II of the present Paper. Both in the original and revised calculation the multiplier is therefore higher than it would have been if Sir Timothy's more scientific method could have been applied. It is also considerably higher than if the mortality rate for males only had been used. If this had been applied in Table II the multiplier would have stood for 1905 and 1906 respectively at 23.7 and 23.3 instead of at 26.27 and 25.89, which is the result of the "persons" mortality rate. The true multiplier on Sir Timothy's correct method would probably stand at something between these two results, say at 24.5 instead of at 26 for these two years.

In our calculation of the multiplier for more recent years in Table V, Mr. Strutt and I were obliged to use the reciprocal of the death-rate for *males*, as the occupational death-rate which we selected is only available for males. We evidently did not make this sufficiently clear. On Sir Timothy's showing, this vitiates comparison with the multiplier given in our Table II for 1905 and 1906 in which the death-rate for *persons* was used. Further, our multiplier of 28 is too low instead of being too high, as it would have been if we had used a "persons" mortality rate (as in Table II). If we had the data for separating the number of, and property left by, males and females this multiplier would be raised, though not raised so high as if we had used a mixed rate of mortality for persons. On the analogy of the calculations for New South Wales and Victoria we might put up the multiplier by one and a-half to two points; and we therefore think, after full consideration of the matter, that we shall be justified in giving the multiplier for these later years at 30 instead of 28. This will, of course, affect the subsequent

calculations of the amount of property in the hands of living owners. The figure, for instance, for 1913-14 would go up from 10,058 million £ to 10,776 million £. We are grateful to our critic for having given us the opportunity of making this correction.

We are more doubtful about the effect of another criticism made by Mr. Pethick Lawrence, who thought that if smaller age-groups had been taken, or, better still, the deaths had been classified by single ages, a lower multiplier would necessarily be shown. We have no means of testing this by actual experience as no such classification exists. To make it reliable and correct inequalities such a classification would have to extend over several years. But Dr. Snow has suggested to me that the results of this procedure may be obtained from the figures we gave by the ordinary processes of interpolation, and as he had no opportunity of mentioning this at the meeting, he has kindly allowed me to make use of the letter in which he has worked them out. "Thus, Table V, first column of figures, the estates of persons dying 55-65 is 35,083,000£. By interpolation of this and the adjacent figures (an ordinary parabola fitting areas) I find, roughly, that the estates for the individual years 55, 56, &c., to 64, were (000's omitted) 2,397, 2,595, 2,811, 3,045, 3,300, 3,572, 3,861, 4,171, 4,499, and 4,845, totalling to 35,096, sufficiently close.

"Then, for the ratio of the living to the dying, interpolation of the 36.84 (Table IV) and adjacent numbers gives the ratios for the individual years 55, 56, &c., as 52.80, 48.86, 45.14, 41.64, 38.36, 35.30, 32.46, 29.84, 27.44 and 25.26. Multiplying the corresponding numbers and adding for the ten years I get the estates of those living 55-65 to be 1,255,300,000£., slightly less than the figure for the composite group. For some of the other groups there might, I think, be an increase, but on the whole the total would probably not be largely altered, and the criticism, which I first thought was a weighty one, is probably of little account." Subject therefore to correction from any future investigation of this point, we have decided to leave our multiplier unaltered at the new figure of 30.

The question of the effect of *inter vivos* gifts has clearly not been exhausted by the observations we submitted. Scrutiny, however, of the actual figures, such as those of the proportions of property in different age-groups in successive years, and a general comparison such as that submitted a few years ago by Mr. Strutt with the distribution of property by age-groups shown by the French succession duty statutes do not appear to us to show that the practice has gone far enough in this country to affect the multiplier figure at all seriously. The stationary character of the total value of estates passing in recent years, a remarkable phenomenon alluded to by Mr. Harper, and mentioned in our Paper, is certainly believed to be largely accounted for by the continuous fall in the value of securities and investments. With regard to Mr. Stamp's criticism of our mathematical theorem as to the effect of gifts *inter vivos* on the calculation of living property, we congratulate him on having

carried the investigation one step further. We, too, made inquiries in well-informed quarters as to the general character of such gifts, and the conclusion derived from the information received was that they were made for many reasons, the motives arising generally (as in the case of settlements, or of free gifts to children on marriage, on going into business or professions) from affection, benevolence, the influence of custom, &c., and in some instances from a wish to escape the incidence of estate duty. We were led to believe, however, that the last class of case was very much rarer than is popularly supposed. Moreover, in the gifts enumerated to us as being most frequent and as constituting the great bulk of the property passing in this manner the motives actuating their bestowal did not appear to include considerations of the health either of the donor or of the donee, and from that circumstance we were led to infer that the prospects of life were similar to those assigned to the general estate duty class. In this connection it may also be observed with regard to gifts made in order to escape estate duty that the proviso that they must be bestowed more than three years before the death of the donor would *a priori* seem to appeal rather to persons with a higher than a lower prospect of life. Of two elderly persons, one of whom has grave doubts owing to the bad state of his health as to whether he will live three years and the other entertains a practical assurance, owing to precisely opposite conditions, that he will survive that period, the latter would have a greater prospect of escaping from estate duty than the former.

Reverting to the conclusion to which we were led that the prospects of life both of the donor and donee would be those of the general estate duty class, the circumstance escaped our attention, in the case of the donees, that at one end of the scale there would be persons of such delicacy that they would not be the recipients of capital gifts but would rather be supported out of the income of those interested in their welfare, while on the other hand, when the latter died, they would be likely to receive from them settled bequests insuring their maintenance.

These circumstances and perhaps others of a somewhat similar nature appear to justify Mr. Stamp's conclusion that for the class of donees a higher ratio should be taken than that ordinarily assigned to the estate duty class for the age-group concerned. But we think that the error involved would be much less than Mr. Stamp seems to suppose, because the estate duty class seems to be a very healthy class and would have relatively few persons in this category; and also because the actual objective prospects of the lives of individuals turn out in many instances to be very different from those which are assigned to them.

Mr. Stamp's contention that the expectation of the life of the donor should be reduced is, we confess, not so clear to us. Perhaps the desire to escape from the responsibilities connected with riches may induce elderly persons of low vitality to hand their possessions over to others. But in any case, whatever causes may operate in this direction, and we have no desire to minimise them, it does not appear to us that our theorem is rendered "untenable," to use

Mr. Stamp's expression, by reason of such discrepancies as have been indicated by him. Our main point remains unaffected. Up to the time at which this theorem was propounded the belief was held that the mere omission of gifts *inter vivos* from the probates of deceased donors had the precise result of eliminating from the calculated property in the hands of the living the whole of the gifts made by living donors of the same age; and there was no suspicion that the mode of calculation for obtaining the multiplier necessarily provided any compensation for this omission. The theorem has proved the existence of this automatic adjustment, and the sole question now left for consideration is whether this adjustment is complete, or whether there may not be some leakage due to the causes mentioned by Mr. Stamp. We are not disposed to think that such a leakage would be serious; and Mr. Stamp strikes a truer note when he says that the "recipients were caught by a "death-rate," although not the one assigned to them. With further study and investigation with regard to these points it is, at all events, not unreasonable to hope that a fair estimate might be made of the adjustments necessary to meet this possible leakage.

These notes have already extended to such a length that I am unable to deal with some of the interesting questions raised by the comparisons which we attempted with estimates of wealth derived from income-tax sources. Those raised by Mr. Stamp are of course important, and the point raised by Mr. Harper—whether we were right in taking the net values for estate duty throughout—may require some further consideration. No doubt in many of its details our comparison is susceptible of amendment, which I hope will be attempted by future inquirers; but when all is said I do not personally attach any great importance to a close reconciliation of figures arrived at by methods so different. For the purpose of estimating capital wealth it seems to me that sources of information dealing with capital (such as the estate duty statistics) are more appropriate than statistics bearing upon income, provided that a sound method of estimation can be agreed upon. Only one method would be superior, and that would be a direct valuation of the capital wealth of the country in all its forms, if such a gigantic operation were within the bounds of possibility. An instance of this would be the land valuation referred to by Mr. Harper. But the estate duty statistics from which we have worked are also the result of valuation at least as strict and practical as that over which Mr. Harper so ably presides, and if, as he tells us, his results do not tally with ours, and if we are not prepared to admit that our multiplier may be seriously at fault, the divergence must be due to differences of practice in the two systems of valuation. I fear I have no sufficient acquaintance with the intricacies of valuation to discuss this possibility, even if space allowed.

The following Candidates were elected Fellows of the Society :—

Archibald Kerr Chalmers, M.D.,
D.P.H.

James Bennett Guild.
W. R. John.