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REPORT

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UPON

THE CONNECTION OF DISEASE

WITH

HABITS OF INTEMPERANCE.

Prepared for The Collective Investigation Committee of The British Medical Association

BY

ISAMBARD OWEN, M.D., M.A., F.R.C.P.

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REPORT UPON THE CONNECTION OF DISEASE WITH HABITS OF INTEMPERANCE.[1]

Prepared for the Collective Investigation Committee of the British Medical Association by

ISAMBARD OWEN, M.D., M.A., F.R.C.P.

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THE inquiry of the Collective Investigation Committee into the above subject was carried on from May 9th, 1885, to December 11th, 1886.

The form of inquiry-paper used was suggested by Dr. Edward Casey, of Windsor, who has taken a part in preparing the Report. It consisted essentially of a table containing seven columns. The table was divided horizontally into twenty-five spaces, and each space was distinguished by a numeral placed in the first column. The second, third, and fourth columns were headed, "Occupation or Social Position," "Age at Death," and "Cause of Death."

The contributor to the inquiry was requested to take his death certificate book for the past three years, and to fill in columns 2, 3, and 4 from the counterfoils of his certificates of males over 25 years of age, in order as they came.

In column 5 he was requested to append a mark signifying whether the deceased had ever suffered from gout or not, wherever such information was available.

In the 6th column he was requested to indicate the alcoholic habit of the deceased by an index-letter, A, B, C, D, or E, corresponding with the following scale of alcoholic classes:—

"*Class A.—Total Abstainers.*

"*Class B.—The Habitually Temperate.*—That is, men who drink small amounts, and only with meals, and rarely take spirits, except for medicinal purposes (the latter part of the definition not to apply to whisky drinking countries.)

"*Class C.—The Careless Drinkers.*—Men who, without being 'intemperate' or 'free drinkers,' yet do not confine themselves within a rigid rule; who do not demur to drinking spirits occasionally as a beverage; who may at times drink between meals, or even to the extent of intoxication occasionally, but who do not make these practices a habit; and, on the average, do not materially exceed what has been termed the 'physiological amount' of 1½ ounce of pure alcohol daily.

"*Class D.—The Free Drinkers.*—Men who 'drink a fair amount,' or 'take their wine freely,' habitually exceeding the physiological amount to a material extent but yet who cannot be called 'drunkards,' or considered to have forfeited a character for sobriety.

"*Class E.—The Decidedly Intemperate.*—'Drinking men,' 'hard drinkers,' and 'drunkards.'

"If a doubt exist to which of two classes a patient should be considered as belonging, he may be placed between the two by joining the letters, as AB or CD.

"If required, the duration of the patient's latest habits may be indicated; for example, as follows.

"A 3 yrs. } meaning a total abstainer the last three years of life;
"E prev. } decidedly intemperate previously."

The 7th column was devoted to further remarks on the cases.

In such an inquiry there are certain obvious possibilities of error.

1. There is the possibility of the cause of death being incorrectly stated, owing to difficulty of diagnosis; but the statement of the cause of death in this inquiry is drawn from the selfsame source which is relied on in the Registrar-General's returns, and the suspicion of error which attaches to this inquiry is no greater than that which may be held to vitiate the Registrar-General's statistics.

2. The individual's alcoholic habits may be incorrectly stated, either from want of accurate knowledge on the part of the contributor, or from his statement being biased by his views upon temperance questions. By this is meant that one man may entertain a more rigid standard of temperance than another, and place an individual in Class C, whom his fellow would include in Class B.

These errors were, however, foreseen, and provided against as far as was possible.

1. Each contributor was requested to leave a blank in the column if he were unable to index the individual with confidence; and, as a matter of fact, a large number of such blanks were left.

2. The meaning of the different classes was defined with as much accuracy as such a definition admitted of.

3. The contributors were allowed, when in doubt about the alcoholic class, to place the patient in an intermediate position between two classes. Thus, in addition to the five classes, four sub-classes were introduced, making altogether nine degrees upon the alcoholic scale. It might, the Committee thought, be fairly assumed that with so many divisions on the scale the place accorded to any individual would seldom be far removed from the right one, and that on the whole slight errors in one direction might be taken to counterbalance similar errors in another direction.

The inquiry was placed in the hands of all members of the Association, and 178, whose names are printed in an appendix (A), responded to it, forwarding 250 schedules of returns, including altogether 4,234 cases in which the alcoholic class was named, without counting those in which a blank was left.

The returns as received were copied out on fresh sheets, each case being placed under the heading of its respective alcoholic class. In making this classification, regard had to be paid to those cases in which the individual was stated to have altered his habits in the course of his life (see the form of inquiry paper above). Of such there were 118. Twelve of them are placed in a separate category as unclassified cases.

The claim of the remaining 106 to belong to particular classes was held on careful consideration not to be modified by the alteration in habits stated to have occurred. For instance, a man dying of chronic renal disease at the age of 75 is included in Class B, although stated to have drunk hard for eleven months before his death; and, on the other hand, a man who died of phthisis at the age of 27 is retained in Class E, though stated to have been a total abstainer for the last twelve months of life.

Of these 106 cases 3 are included in Class A, 5 in B, 1 in BC, 23 in C, 2 in CD, 25 in D, 4 in DE, and 43 in E. Details of them are given in an appendix (B).

THE ALCOHOLIC HABITS OF THE GENERAL AGGREGATE.

The aggregate of cases, being distributed into the respective classes, gives the following figures:—Class A, 122; AB, 54; B, 1,529; BC, 178; C, 977; CD, 112; D, 547; DE, 100; E, 603; unclassified, 12.

Translating these figures into percentage[2] parts of the aggregate, we get in Class A, 2.8.; in AB, 1.2; in B, 36.1; in BC, 4.2; in C, 23.0; in CD, 2.6; in D, 12.9; in DE, 2.3; in E, 14.2; and in the unclassified, 0.2 per cent.

TABLE I.—*Table showing the Number of Cases falling in each Class, and the Percentage* of each Class on the Aggregate of Cases.*

Class.	No. of Cases.		Percentage.
A	122	or	2.8 p.c. of 4,234
AB	54	or	1.2 p.c. "
B	1,529	or	36.1 p.c. "
BC	178	or	4.2 p.c. "
C	977	or	23.0 p.c. "
CD	112	or	2.6 p.c. "
D	547	or	12.9 p.c. "
DE	100	or	2.3 p.c. "
E	603	or	14.2 p.c. "
Unclassified	12	or	0.2 p.c. "
Total	4,234		

* Carried to one place only of decimals.

These figures may be somewhat differently arranged, as in Tables II, III, IV.

In Table II each sub-class is added into the class immediately succeeding; in Table III it is added into the class immediately preceding; and in Table IV it is divided between the preceding and the succeeding class.

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TABLE II.—*(Table I otherwise stated).*

Class.	No. of Cases.		Percentage.
A	122	or	2.8 p.c. of 4,234
B and AB ..	1,583	or	37.3 p.c. „
C and BC ..	1,155	or	27.2 p.c. „
D and CD ...	659	or	15.5 p.c. „
E and DE ...	703	or	16.6 p.c. „
Unclassified ...	12	or	0.2 p.c. „
Total ...	4,234		

TABLE III.—*(Table I otherwise stated.)*

Class.	No. of Cases.		Percentage.
A and AB ...	176	or	4.1 p.c. of 4,234
B and BC ...	1,707	or	40.3 p.c. „
C and CD ...	1,089	or	25.7 p.c. „
D and DE ...	647	or	15.2 p.c. „
E	603	or	14.2 p.c. „
Unclassified ...	12	or	0.2 p.c. „
Total ...	4,234		

TABLE IV.—*(Table I otherwise stated).*

Class.	No. of Cases.		Percentage.
A and half AB ...	149	or	3.4 p.c. of 4,234
B and half AB, BC	1,645	or	38.8 p.c. „
C and half BC, CD	1,122	or	26.4 p.c. „
D and half CD, DE	653	or	15.4 p.c. „
E and half DE ...	653	or	15.4 p.c. „
Unclassified ...	12	or	0.2 p.c. „

Roughly stated, it may be said that of the four thousand two hundred and odd individuals reported on—all, be it remembered, males over the age of 25—about 45 per cent. were habitually moderate in their alcoholic habits, 25 per cent. were careless, and 30 per cent. more or less distinctly intemperate (15 per cent. decidedly so).

OCCUPATIONS.

We have further classified the individuals in each class according to their respective occupations. As the numbers in most of the individual occupations are small, we have grouped them under the fourteen following heads: "Independent Property," "Professional Occupations," "Clerical Occupations" (the clerks, not the clergy, are here meant), "Mercantile Occupations," "Tradesmen," "Licensed Victuallers," "Artisans," "Labourers," "Driving Occupations," "Farming Occupations," "Soldiers," "Sailors," "Domestic Servants," "Miscellaneous Occupations," and "Blanks."

Table V shows the aggregate number of cases in each of these fourteen groups, and the percentage incidence of each group in the different alcoholic classes. At the head of the Table is placed the percentage incidence of the whole 4,222 classified cases, the twelve unclassified being neglected throughout.

TABLE V.—*Table showing the Aggregate Number of Cases in each of the Fourteen Occupation-groups, and the Percentage of each such Group in the several Alcoholic Classes A to E; with the Normal (or Total) Percentage Incidence prefixed for purposes of comparison.**

	Aggregate Number.	Percentage Falling in Class—								
		A.	AB.	B.	BC.	C.	CD.	D.	DE.	E.
Total	4222*	2.8	1.2	36.2	4.2	23.1	2.6	12.9	2.3	14.2
Independent	176	1.7	0.5	39.2	5.1	16.4	2.8	11.3	2.2	20.4
Professional occupations	242	5.3	0.8	47.9	4.1	16.1	4.1	9.5	2.4	9.5
Clerical occupations ...	176	2.8	2.8	45.4	2.2	21.02	1.7	14.2	2.2	7.3
Mercantile occupations ..	195	3.07	1.02	42.05	2.5	11.7	2.05	18.4	5.1	13.8
Tradesmen	378	3.7	1.3	37.8	3.9	13.2	4.4	14.5	3.9	16.9
Licensed Victuallers ...	159	—	—	11.3	2.5	13.8	1.2	25.7	5.03	40.2
Artisans	807	4.5	2.2	36.9	5.2	22.5	3.5	9.5	2.2	13.1
Labourers	1,185	2.1	0.9	36.7	2.9	31.05	2.1	11.8	1.1	10.9
Driving occupations ...	70	1.4	—	22.8	1.4	21.4	7.1	18.5	4.2	22.8
Farming occupations ...	333	1.5	0.6	39.9	5.4	26.1	0.3	12.9	3.0	10.2
Soldiers	47	4.2	—	14.8	2.1	36.1	6.3	8.5	2.1	25.5
Sailors	74	4.05	—	28.3	10.8	27.02	1.3	18.9	1.3	8.1
Domestic servants ...	115	0.8	0.8	20.0	6.08	33.9	0.8	15.6	0.8	20.8
Miscellaneous and blank‡	265	2.6	1.9	32.1	6.1	18.7	1.9	14.5	1.9	19.9

* The unclassified are here neglected. ‡ There were sixteen blanks.

Table VI bears the same relation to Table V that Table IV does to Table I, that is to say, the sub-classes have been divided equally between the adjacent classes.

TABLE VI.—*The same as Table V, with the Sub-classes merged in the adjacent Classes.*

		A.	B.	C.	D.	E.
Total	4,222*	3.4	38.9	26.5	15.3	15.3
Independent...	176	1.9	41.9	20.3	13.8	21.5
Professional occupations...	242	5.7	50.3	20.1	12.7	10.7
Clerical occupations	176	4.2	47.9	22.9	16.1	8.4
Mercantile occupations	195	3.5	43.8	13.9	21.9	16.3
Tradesmen	378	4.3	40.3	17.3	18.6	18.8
Licensed victuallers	159	—	12.5	15.6	28.8	42.7
Artisans	807	5.6	40.6	26.8	12.3	14.2
Labourers	1,185	2.5	38.5	33.4	13.3	11.4
Driving occupations	70	1.4	23.5	25.6	24.1	24.9
Farming occupations	333	1.8	42.9	28.9	14.5	11.7
Soldiers	47	4.2	15.8	40.2	12.6	26.5
Sailors...	74	4.05	33.7	33.02	20.1	8.7
Domestic Servants	115	1.2	23.4	37.3	16.4	21.2
Miscellaneous and blank	265	3.5	36.0	22.6	16.3	20.8

* The unclassified are here neglected.

We have further constructed a table—Table VII—showing the relative alcoholic habits of the fourteen occupation-groups in a simpler but rougher manner. In this table the number of cases falling in the lower half of the alcoholic scale for each group is compared with that falling in the upper half of the scale. By the lower half of the scale is meant $A+AB+B+BC+\frac{1}{2}C$; by the higher half $E+DE+D+CD+\frac{1}{2}C$. The comparison is expressed in the form of a ratio, the lower half of the scale being taken as unity.

For the sake of convenience this ratio will be termed "the Ratio of Minor Drinking Habits," and the reverse ratio will be called "the Ratio of Major Drinking Habits," or more briefly, "the Ratio of Minor Habits" and "the Ratio of Major Habits."

In Table VII the occupation-groups are placed in the descending series of their ratios of minor habits; and the ratio for the whole 4,222 cases is placed at the head for comparison.

The table is divided by two gaps. First we have six groups in which the ratio of minor habits is higher than the normal; next, four in which it is lower than the normal, but still not less than unity; and finally, four groups in which the less temperate end of the scale exceeds the more temperate.

TABLE VII.—*Table showing the Ratio between the Cases falling in the Lower and those in the Higher Half of the Alcoholic Scale ("Ratio of Minor Habits") for each of the Fourteen Occupation-groups.*

(The lower half includes A, AB, B, BC, and half of C. The higher half includes E, DE, D, CD, and half of C.)

Ratio for all occupations	as 1 to 0.78
1. Professional occupations	„ 1 „ 0.51
2. Clerical occupations	„ 1 „ 0.57
3. Farming occupations	„ 1 „ 0.65
4. Artisans	„ 1 „ 0.66
5. Labourers	„ 1 „ 0.71
6. Sailors	„ 1 „ 0.76
7. Independent	„ 1 „ 0.83
8. Mercantile occupations	„ 1 „ 0.84
9. Tradesmen	„ 1 „ 0.87
10. Miscellaneous occupations	„ 1 „ 0.91
11. Domestic servants	„ 1 „ 1.25
12. Soldiers	„ 1 „ 1.60
13. Driving occupations	„ 1 „ 1.80
14. Licensed victuallers	„ 1 „ 3.81

Let us now inspect Tables VI and VII. It will be seen that the ratio of minor habits is highest in the "professional" group, being, in fact, nearly 2 to 1. On turning to Table VI we observe that this group scores highest of all in classes A and B, and lowest of all in classes D and E taken together.

Clerks, farmers, artisans, labourers, and sailors follow in order. It will be noted in Table VII that the clerks show the lowest

percentage of drunkards, but that the percentage of "free" and "careless" drinkers is higher than in the case of the professional men, this being at the expense of A and B.

The farmers show a low percentage of total abstainers, few drunkards, the average number of free drinkers, a larger than average percentage of temperate, but at the same time a larger than average percentage of "careless" drinkers.

Among the artisans a large proportion of teetotallers appears, but the ratio is made somewhat lower by the increasing percentage of drunkards.

Among labourers the tendency is to accumulation in the "careless" class, the proportion of free drinkers and drunkards being below the average.

Among sailors there is a fairly high percentage of teetotallers, but the "moderate" class is less well represented. This, however, appears to be in some measure due to the large proportion of dubious cases entered in BC (Table V). The drunkards are comparatively few (sailors get few opportunities of continued intemperance), but the "free" drinkers are in excess, and there is a considerable accumulation in the "careless" class.

Proceeding in the order of Table VII, men of independent property show a tendency to extremes, the drunkards and the moderate drinkers being the only classes which rise above the average.

The tendency among mercantile men is also rather to extremes, but less to drunkenness than to "free" drinking. The "careless" class is here the lowest of all.

Among tradesmen, also, the extreme classes are raised at the expense of the "careless," but the rise is rather more in the higher half of the scale than in the lower.

Among domestic servants the tendency is strongly upwards; the percentage of total abstainers is smallest of all, and that of moderate drinkers nearly the smallest, while C, D, and E are considerably swollen. Careless drinking is here most in vogue.

Among soldiers it is the "decidedly intemperate" who raise the ratio of major habits. Among the simply "free" drinkers they show the smallest percentage of all the groups; but the intermediate group of the "careless" amounts to 36 per cent., the highest of all; while the temperate have sunk to not quite 16 per cent., nearly the lowest of all. It is noticeable, however, that the percentage of abstainers is comparatively high. The group, it must be noticed, is a very small one, and is largely made up of pensioners and "retired" men.

Men engaged in driving occupations show a distinct tendency to the higher half of the scale, the decidedly intemperate being numerous, and the free drinkers much above the average.

Finally, the licensed victuallers and their assistants exhibit the most marked tendency towards the top of the scale, teetotallers being entirely absent, the percentage of moderate drinkers the lowest of all, those of free drinkers and drunkards a long way the highest of all, and the ratio of major habits nearly 4 to 1.

We have, further, taken all the individual occupations of which not less than twenty examples are reported, and have drawn out a table for them (Table VIII) on a similar plan to that of Table VII. As the aggregates were so low, we have not thought it worth while to construct a percentage table after the plan of Table V.

TABLE VIII.—*Table showing similar Ratios for certain special Occupations.*

PROFESSIONAL—	
Ministers of religion (47)	as 1 to 0.09
Scholastic occupations (29)	„ 1 „ 0.38
Officers in the army and navy (28) ...	„ 1 „ 0·47
Medical men (41)	„ 1 „ 0.57
Lawyers (31)	„ 1 „ 0.93
ARTISANS—	
Weavers (58)	„ 1 „ 0.43
Boot and shoe makers (61)	„ 1 „ 0.45
Tailors (69)	„ 1 „ 0.50
Carpenters and joiners (76)	„ 1 „ 0.76
Blacksmiths (39)	„ 1 „ 0.85
Painters (38)	„ 1 „ 0.90
Masons (58)...	„ 1 „ 1.07
LABOURERS—	
Agricultural and farm labourers (155) ...	„ 1 „ 0.45
Gardeners (67)	„ 1 „ 0.45
Miners (141)...	„ 1 „ 1.23
TRADESMEN—	
Butchers (59)	„ 1 „ 2.60
MISCELLANEOUS—	
Railway men (30)	as 1 to 0.42
Paupers (25)...	„ 1 „ 1.76
Travellers (20)	„ 1 „ 1.85

We notice in this table that the ministers of religion honourably head the whole list, not only of professional men, but of all occupations, showing a ratio of minor habits higher than 10 to 1.

Among professional men, schoolmasters follow; then officers in the army and navy; next medical men, whose ratio of minor habits is slightly below that of professional men generally, but considerably above that of the whole series; and, finally, lawyers, whose ratio of minor drinkers is very near unity, not much more than half of the general ratio of professional men, and considerably below that of the whole series.

Among artisans, we find weavers, boot and shoe makers, and tailors to be the most temperate. Carpenters and joiners almost touch the general ratio of the whole series. The blacksmiths and painters give a somewhat low ratio of minor habits, and in masons the higher half of the scale exceeds the lower.

Agricultural and farm labourers and gardeners appear as very temperate bodies of men, but miners show a ratio of major habits greater than unity.

Among tradesmen the occupation that stands out most prominently is that of the butcher, with a ratio of major habits as high as 2.6 to 1.

Railway men appear as a tolerably temperate body. The few paupers on the list have a high ratio of major habits, and one still higher is shown by commercial travellers.

It must be noted that in some cases the classification of special occupations was a little dubious. For instance, in the case of a "tailor," a "baker," or a "saddler" it was not clear whether the tradesman or the journeyman of that name was intended. In such cases the classification was decided by the probabilities of the case. The following is the list of the dubious cases, and the mode in which they have been settled: "No occupation" (27 cases) was entered under "independent property;" "engineer" (11) as "professional" (16), "business man" (1), "maltster" (3), "manager" (9), "organ builder" (1), "saltmaker" (1) as "mercantile"; "baker" (23), "coach" and "carriage builder" and "maker" (8), "decorator" (3), "gunmaker" (1), "harnessmaker" (4), "saddler" (7) as tradesmen; "basketmaker" (1), "bellhanger" (1), "boilermaker" (1), "blindmaker" (1), "blockmaker" (1), "boatbuilder" (1), "bookbinder" (1), "boot" and "shoemaker" and "cordwainer" (61), "brickmaker" (6), "capmaker" (2), "cabinetmaker" (13), "calico printer" (2), "chairmaker" (2), "clogger" (1), "cloth dresser and worker" (11), "cooper" (7), "currier" and "leather dresser" (3), "cutler" (3), "dyer" (5), "gasfitter" (1), "hatter" (2), "hurdlemaker" (1), "inkmaker" (1), "iron founder" (2), "locksmith" (12), "paperhanger" (4), pipemaker" (2), "printer" (13), "tailor" (69), "tinman (3), "watchmaker" (8) as artisans; "warehousemen" (16) as labourers; "pensioners," without further qualification (20), as soldiers.

AGES AT DEATH.

We now proceed to ascertain the average age at death for the individuals in each class. This is given in the following table. The table has been constructed simply by adding up in each class the ages given in the returns, which, it will be remembered, are the ages at death, and striking an average. The average age at death of the whole number is given at the foot of the table for purpose of comparison.

TABLE IX.—*Average Age at Death for each Class.*[2]

		Years.		Years.	Days.
Class A	.....	51.22	or	51	80
„ AB	.....	56.72	„	56	215
„ B	.....	62.13	„	62	50
„ BC	.....	62.42	„	62	155
„ C	.....	59.67	„	59	246
„ CD	.....	60.35	„	60	130
„ D	.....	57.59	„	57	216
„ DE	.....	53.64	„	53	233
„ E	.....	52.03	„	52	14
Unclassified	.....	60.91	„	60	334
Total	.....	58.92[3]		58	336

[2] It must be remembered that in the returns the years of life only are given, and not the odd days. To interpret Table IX correctly, therefore, we must say, not that the average age in Class A, for instance, is 51 years 80 days, but that it is somewhere between 51 years 80 days and 52 years 80 days.

[3] Farr's *English Life Table*, No. 3, deduced from the population as shown by the censuses of 1841 and 1851, and the deaths registered during the years

It will be seen in this table that of the main classes the average age in B is the highest of all, and that a gradual diminution, amounting in all to rather more than ten years, takes place as we pass from B to E.

The smaller sub-classes, CD and DE, follow pretty fairly the descending series, the average of BC alone being a trifle above that of the class preceding it. Thus we may see as far as these cases go, that as the alcoholic habit increases the average duration of life diminishes. The difference in duration between the habitually temperate and the decidedly intemperate (both classes, be it remembered, having already passed the age of 25 years, and all who died below that age being excluded) amounts to a period of some ten years.

But the average age furnished by the total abstainers is somewhat startling, for we find that it is not only far below the average age attained by the moderate drinkers, but it is even a year below that reached by the decidedly intemperate. It must, however, be remembered in interpreting this figure correctly that the class of total abstainers is somewhat differently constituted from any of the other classes.

It will not, I think, be disputed that the total abstinence movements which have played so prominent a part in this country of late years have made many more converts among the young than among the middle-aged or elderly. If this is admitted, it will necessarily follow that the average age of total abstainers—I mean of living total abstainers—at any time during the three years covered by this inquiry, was considerably less than the average age of the rest of the community; so that the class of abstainers has contained a proportion much greater than the average of individuals susceptible to early death, or, to put it in another way, has had a greater average liability to early death, apart from any question of alcohol, than any of the other classes.[4]

These considerations are borne out to some extent by the tables immediately following. Table XII, for example, the construction of which will be presently described, shows that the stress of mortality among abstainers comes quite in the early years, especially before the age of 30 is reached. We have, therefore, constructed two fresh tables (Tables X and XI) on the model of Table IX. These two tables, to put it briefly, are repetitions of Table IX, but in the one all cases of death under 30 are omitted, and in the other all cases of death under 40.

TABLE X.—*Average Age at Death for each Class, Omitting all Cases of Death under 30.*

	Cases.		Years.		Years.	Days.
Class A	98,	average	57.31	or	57	115
„ AB	47,	„	61.19	„	61	69
„ B	1,433,	„	64.48	„	64	177
„ BC	173,	„	63.43	„	63	156
„ C	925,	„	61.52	„	61	189
„ CD	110,	„	61.009	„	61	3
„ D	525,	„	58.87	„	58	317
„ DE	96,	„	54.73	„	54	266
„ E	571,	„	53.42	„	53	155
Total	3,978,	„	60.87[5]	„	60	319

TABLE XI.—*Average Age at Death for each Class, Omitting all Cases of Death under 40.*

	Cases.		Years.		Years.	Days.
Class A	79,	average	62.74	or	62	270
„ AB	39,	„	66.84	„	66	306
„ B	1,294,	„	67.71	„	67	270
„ BC	154,	„	67.006	„	67	2
„ C	829,	„	64.65	„	64	237
„ CD	99,	„	64.12	„	64	43
„ D	464,	„	61.98	„	61	357
„ DE	78,	„	59.42	„	56	153
„ E	468,	„	57.47	„	57	259
Total	3,504,	„	64.41[6]	„	64	152

1838-54, gives the average age at death for males who have attained the age of 25 (England and Wales) as 61.12. The Supplement to the Forty-fifth Annual Report of the Registrar-General, 1885, calculating from the population as shown by the census of 1871 and the deaths registered in the years 1871-80, gives it (p. vii) as 60.68. The cases on which our report is based are chiefly furnished by England and Wales.

[4] It is probable that the average age at death shown by the other classes is affected to some degree by similar circumstances. If the alcoholic habit tends to increase, as generally supposed, from youth up to about 45 or 50 years of age (cf. Neison, *Journ. Statist. Soc.*, xiv, p. 216), the average age of the class of the population corresponding to our class B will be somewhat lower than that of the classes corresponding to C, D, and E. Our inquiry has taken no account of the age at which intemperate habits began in each case. This information we feared we should fail to obtain.

[5] Farr (*loc. cit.*): 62.76. Registrar-General (*loc. cit.*): 62.10.

[6] Farr (*loc. cit.*): 66.06. Registrar-General (*loc. cit.*): 65.30.

It will be seen that in Table X, though there is as much as 11 years difference between the average age of Class B and that of Class E, the difference between the average age of B and that of A is reduced to 7 years. In Table XI, while the averages for B and for E are 10 years apart, those of B and A are separated by little more than 5 years.

Decades.—We have further distributed the cases occurring in each class into their respective decades, that is to say, we have classified them according as the deaths occurred in the twenties, the thirties, the forties, and so on. Tables XII and XIII show this classification; but instead of giving the aggregate numbers we have reduced them, for convenience of comparison, to percentages. In Table XII is shown the percentage of each class falling in the several decades. In Table XIII, on the other hand, is shown the percentage of each decade falling in the several classes. One centenarian occurs in Class B. This case has been included in the nineties, so as not to complicate the table.

TABLE XII.—*Table of Decades, showing the Percentage of each Class falling in the several Decades.*

	Twenties	Thirties	Forties	Fifties	Sixties	Seventies	Eighties	Nineties
A	19.6	15.5	15.5	17.1	9.0	13.9	7.3	1.6
AB	12.9	14.8	5.5	18.5	22.2	16.6	5.5	3.7
B	6.2	9.0	10.0	12.4	20.2	24.2	15.9	1.6
BC	2.8	10.6	9.5	13.4	20.7	29.7	11.2	1.6
C	5.3	9.8	12.2	16.6	22.5	23.8	8.7	0.8
CD	1.7	9.8	12.5	15.1	29.4	23.2	7.2	0.8
D	4.0	11.1	14.8	21.5	23.5	17.7	6.5	0.5
DE	4.0	18.0	18.0	21.0	23.0	13.0	3.0	0.0
E	5.3	17.0	22.7	22.0	20.2	10.2	1.9	0.3
Total, including unclassified...	5.7	11.2	13.2	16.5	21.2	20.8	9.9	1.1

TABLE XIII.—*Table of Decades, showing the Percentage of each Decade falling in the several Classes.*

	A.	AB.	B.	BC.	C.	CD.	D.	DE.	E.	Unclassified.
Twenties.....	9.8	2.8	39.3	2.0	21.2	0.8	9.0	1.6	13.1	
Thirties	3.9	1.6	29.2	3.9	20.1	2.3	12.8	3.7	21.6	0.4
Forties.....	3.3	0.5	27.1	3.0	21.3	2.4	14.3	3.1	24.3	0.1
Fifties	3.0	1.4	27.2	3.4	23.2	2.4	16.8	3.0	19.0	0.2
Sixties	1.2	1.3	34.3	4.1	24.4	3.6	14.3	2.5	13.5	0.4
Seventies ...	1.9	1.0	42.2	6.0	26.3	2.9	10.9	1.4	7.0	
Eighties	2.1	0.7	57.7	4.7	20.1	1.9	8.5	0.7	2.8	0.7
Nineties	4.2	4.2	55.3	6.3	17.0	2.1	6.3	0.0	4.2	
Total.....	2.8	1.2	36.1	4.2	23.0	2.6	12.9	2.3	14.2	0.2

Table XIV is a modification of Table XIII, with the subclasses divided and added into the adjacent classes, in the same manner as has been done in Tables IV and VI.

TABLE XIV.—*The same as Table XIII, with the Subclasses Merged in their adjacent Classes.*

	A.	B.	C.	D.	E.	Unclassified.
Twenties	11.2	41.7	22.6	10.2	13.9	—
Thirties	4.7	31.9	23.1	15.7	23.4	0.4
Forties	3.5	28.8	24.0	17.0	25.8	0.1
Fifties	3.7	29.6	26.1	19.5	20.5	0.2
Sixties	1.8	36.9	28.2	17.3	14.7	0.4
Seventies	2.4	45.7	30.7	13.0	7.7	—
Eighties	2.4	60.3	23.3	9.7	3.1	0.7
Nineties	6.3	60.5	21.1	7.3	4.2	—
Total	3.4	38.8	26.4	15.3	15.3	0.2

On inspecting Table XII we observe that in Class B the stress of deaths falls in the sixties and seventies, especially in the latter, while nearly 16 per cent. are found in the eighties.

In Class C the stress is still in the sixties and seventies; but the preponderance of the seventies is less, and the eighties are reduced to about half the percentage seen in B. The forties and fifties here begin to mount.

In Class D the stress is in the fifties and sixties, especially

the sixties; the seventies and the decades above them have been markedly reduced, and the thirties as well as the forties begin to mount.

In Class E the eighties and nineties are in very slender proportion, the seventies have again fallen considerably, and the stress now lies in the forties, fifties, and sixties, but with a strong tendency towards the forties. The thirties have again mounted.

Taking the main classes alone, we see that in the thirties, forties, and fifties, the percentage of deaths steadily mounts from B to E; in the seventies, eighties, and nineties it as steadily falls, while in the sixties it remains nearly at a level, mounting slowly from B to D, and then falling to its original amount.

In the twenties the percentages are very small in all these four classes; in C and E the percentage is equal, in D it is slightly lower, and in B a little higher.

But when we look at Class A we see (as was stated above) that the stress of deaths lies between the twenties and the fifties, and that the percentage is highest of all—in fact, all but 20 per cent.—in the twenties. The sixties and seventies together show a lower percentage here than in any other class. The eighties, however, are above those of D and E, and nearly equal to those of C, and the nineties are equal to any but those in AB.

The Incidence of Particular Forms of Disease in the Several Classes.

We next proceed to investigate the connection of particular forms of disease with the different varieties of the alcoholic habit. This investigation must necessarily be divided into at least three parts; the deaths in youth must be considered separately from the deaths in middle life, and those again from the deaths in advanced age.

Two reasons require this division. In the first place, the same form of disease may differ altogether in its etiology according to the time of life at which it appears. A granular kidney, for example, occurring in a man of 30 will, in the majority of cases, possess an entirely different etiology to a similar lesion occurring at the age of 50.

In the second place, there are diseases which are especially prevalent in youth, diseases especially prevalent in middle life, and diseases especially prevalent in old age; but the average alcoholic habits of youth, of mid life, and of old age are very different, as will be seen at a glance by examining the headings of Tables XV, XVI, and XVII. It would, therefore, convey a totally wrong impression if the alcoholic habits of persons dying, for instance, from a disease of old age were to be compared with the average alcoholic habits of all ages together, and not with the alcoholic habits of elderly people alone.

And even further subdivision of this investigation than into three might have been advisable had the number of cases been sufficient. With those at our disposal the triple division was all that could be carried out.

We have, therefore, divided the 4,234 cases into the three following groups, each distinguished by a Greek letter: α, deaths in the young, or those aged from 25 to 40; β, deaths in the middle-aged, or those from 40 to 65; γ, deaths in the elderly, or those from 65 upwards.[7] Group α contains 719 cases; Group β, 1,705 cases; Group γ, 1,810.

We next proceeded to construct a table for each group, classifying the cases of death from each form of disease under their respective alcoholic classes, just as has been done in Tables V and XIII.

Two difficulties had to be dealt with in this classification. The first was due to the different nomenclature employed by different contributors, on which point we shall speak further when we come to Table XV.

The second difficulty was owing to the entry, in many instances, of two or more pathological conditions against a single case. This second difficulty was treated by the observance of the following rules:—

1. If the several pathological conditions entered represented distinct and independent diseases, the case was entered under both heads. This, however, occurred in but very few instances.

2. If the second pathological condition mentioned was merely a symptom, result, or customary complication of the main one, as frequently occurred—such, for instance, as "hemiplegia" added to "apoplexy," "dropsy" given with "heart disease," or "gangrene" with "diabetes"—it was omitted altogether.

3. If pathological conditions were given, which, though independent, could presumably have had no material influence in producing death—such, for instance, as "rheumatism" with "cancer"—they were omitted altogether.

In a large number of cases the diagnosis given was of a vague character, such as "abdominal tumour," "paralysis." These cases were classified as cases of insufficient diagnosis.

Neglecting in each group those diseases of which less than twenty instances occurred, we proceeded to construct Table XV. This table shows for each disease quoted the total number of cases in the group, and the incidence of the disease in the different alcoholic classes. The incidence is given, to facilitate comparison, in percentages instead of in the actual numbers. At the head of each group is given the percentage incidence of the whole group in the different alcoholic classes.

Table XV.—*Table showing the Percentage Incidence of Deaths from Particular Forms of Disease in the different Alcoholic Classes for each Group—α, β, and γ.*

α. Deaths between 25 and 40 years of age.

Disease.*		A	AB	B	BC	C	CD	D	DE	E	Unclass.
Total.....	719	5.8	2.08	32.6	3.3	20.5	1.8	11.5	3.05	18.7	0.2
Bronchitis	20	5.0	—	20.0	—	25.0	—	15.0	5.0	30.0	—
Heart disease(valve)	39	2.5	2.5	38.4	2.5	12.8	—	15.3	2.5	20.5	2.5
Pneumonia	59	3.3	1.7	32.2	6.7	18.6	5.08	13.5	3.3	15.2	—
Tubercle...	334	6.5	2.3	36.2	2.09	23.3	1.7	10.1	2.9	14.3	—
Typhoid fever ...	33	9.09	—	33.3	3.03	24.2	—	15.1	3.03	12.1	—

β. Deaths between 40 and 65 years of age.

Disease.*		A	AB	B	BC	C	CD	D	DE	E	Unclass.
Total.....	1705	2.6	0.8	28.7	3.6	23.04	2.9	15.4	2.9	19.2	0.3
Apoplexy...	111	2.7	0.9	26.1	4.5	20.7	2.7	19.8	2.7	19.8	—
Bronchitis	144	2.7	—	25.0	4.1	27.7	4.1	15.9	2.08	18.05	—
Cirrhosis...	67	—	—	—	2.9	5.9	1.4	23.8	11.9	53.7	—
Diabetes ...	28	3.5	3.5	25.0	3.5	17.8	—	25.0	—	21.4	—
Heart dis. (wall) ...	35	—	—	31.4	—	31.4	—	20.0	2.8	14.2	—
Heart dis. (valve)...	182	4.9	1.6	26.3	3.8	24.1	3.3	18.1	3.3	13.7	0.5
Malignant disease...	116	4.3	17.2	37.06	7.7	23.2	2.5	8.6	0.8	12.9	0.8
Nerve decay	40	—	—	30.0	5.0	25.0	5.0	7.5	7.5	20.0	—
Pleurisy ...	23	4.3	—	30.4	—	26.08	8.7	13.04	—	17.04	—
Pneumonia	159	1.8	1.8	26.4	2.5	28.9	1.2	13.8	1.2	22.01	—
Renal dis. (chronic)	89	—	—	20.2	3.3	23.5	4.4	21.3	6.7	20.2	—
Tubercle...	275	2.5	0.3	34.9	1.8	21.09	4.0	14.5	2.1	18.3	0.3
Typhoid fever.....	21	—	—	28.5	4.7	33.3	—	23.8	—	9.5	—

γ. Deaths from 65 years upwards.

Disease.*		A	AB	B	BC	C	CD	D	DE	E	Unclass.
Total	1810	1.8	1.3	44.4	5.02	24.08	2.7	11.1	1.5	7.6	0.2
Apoplexy..	198	2.02	1.5	46.0	5.5	18.5	4.04	14.1	1.01	7.07	—
Arterial degeneration	24	—	—	29.1	4.1	29.1	4.1	20.8	4.1	8.3	—
Bronchitis	321	0.9	1.2	45.4	7.1	26.7	2.4	9.3	1.5	4.9	—
Cystitis	32	—	3.1	50.0	9.3	18.7	—	9.3	3.1	6.2	—
Diarrhœa..	32	3.1	3.1	43.7	6.2	25.0	—	6.2	—	12.5	—
Heart dis. (valve)...	160	0.6	1.2	39.3	4.3	25.0	1.8	15.6	1.8	10.0	—
Heart dis. (wall)	61	—	—	45.9	3.2	24.5	—	14.7	—	11.4	—
Intestinal obstructn.	21	4.7	—	42.8	4.7	33.3	—	9.5	—	4.7	—
Malignant disease ...	100	1.0	2.0	42.0	6.0	27.0	1.0	13.0	1.0	7.0	—
Nerve decay	67	7.4	—	34.3	4.4	25.3	2.9	10.4	1.4	13.4	—
Old age ...	287	3.8	0.3	52.2	3.8	25.7	2.7	5.2	1.03	4.1	0.6
Pneumonia	82	1.2	6.09	40.2	7.3	20.7	3.6	4.8	1.2	14.6	—
Prostatic disease ...	34	—	2.9	55.8	2.9	20.5	11.7	2.9	2.9	—	—
Renal dis. (chronic)	48	2.1	—	33.3	12.5	16.6	—	22.9	4.1	8.3	—
Tubercle...	35	—	—	37.1	—	34.2	—	11.4	—	17.1	—

[7] It will, of course, be understood that "young," "middle-aged," and "elderly" are here used in an arbitrary sense for the purpose of convenience.

* Those only are given of which at least 20 examples are found in one group, α, β, or γ.

Before proceeding further we must state the meaning conveyed by the nomenclature in the first column. We take the names in alphabetical order.

Apoplexy includes all cases entered as "apoplexy," "hemiplegia," "cerebral hæmorrhage," "sanguineous apoplexy;" also, in β, 2 "paralysis and coma;" and in γ, 2 "paralytic seizure," 1 "aphasic paralysis," 2 "congestive apoplexy," 1 "cerebral effusion."

Arterial degeneration (in γ only) includes "calcareous degeneration of arteries," "senile gangrene," "gangrene of foot," "gangrene of leg," and 1 case termed "gangrene" only. In these cases of "gangrene" there is no wound or injury assigned as the cause. They have therefore been taken to be also senile gangrene.

Bronchitis includes "bronchitis," "acute bronchitis," "chronic bronchitis," "capillary bronchitis," and "broncho-pneumonia;" also, in α, 1 case of "plastic bronchitis;" in β, 1 case of "catarrhal pneumonia."

Cirrhosis (in β only) includes "cirrhosis," "hypertrophic cirrhosis," "fibroid liver," "fibroid degeneration of liver;" also 2 "hepatic dropsy," 1 "liver disease and ascites," 1 "liver disease and dropsy," 1 "disease of stomach and liver; anasarca."

Cystitis (in γ only) includes "cystitis," "acute" and "chronic" ditto, and "catarrh of the bladder;" also 2 cases of "bladder disease," and 1 of "paralysis of the bladder."

Diabetes (in β only) includes "diabetes" and "diabetic coma."

Diarrhœa (in γ only) includes "diarrhœa," "intestinal catarrh," "enteritis," "gastro-enteritis," and 1 case of "British cholera."

Heart disease (valve).—This is a somewhat uncertain heading. In it have been included all the cases recorded as dying of "morbus cordis," or of "heart disease," or "cardiac disease," without further qualification, as well as disease "of the valves" and its different varieties when definitely stated. In α and β "cardiac dropsy" has also been entered under this heading, though in γ we have placed it under the next; it also includes, in α, 1 "cerebral embolism," 1 "hemiplegia from valve disease;" in β, 1 "atheroma and thickened valves," 1 "pulmonary embolism;" in γ, 1 "cardiac apoplexy," 2 "cerebral embolism," 1 "cardiac embolism,' 1 "paralysis from embolism."

Heart disease (wall) includes "fatty heart," "heart degeneration," "cardiac degeneration," "cardiac failure," "heart failure," "weak heart," "senile heart and dropsy," "hypertrophy of heart," "dilated heart," "hypertrophy and dilatation," "aneurysm of heart," "rupture from dilatation;" also, in α, "cardiac bronchitis," "cardiac asthma," and "cardiac dropsy;" in β, 8 "angina pectoris;" in γ, 2 "syncope."

Intestinal obstruction (in γ only) includes "intestinal obstruction,' "obstruction of bowel," "ileus," "intussusception," "stricture of ileum."

Malignant disease includes "cancer," "carcinoma," "scirrhus," "encephaloid," "epithelioma," "melanosis," "sarcoma," "malignant disease," "malignant tumour;" also, in β, 1 "lymphoma," 1 "lymphadenoma," 1 "general glandular enlargement;" in γ, 1 "lymphadenoma," 2 "rodent ulcer," 1 "stricture of œsophagus," 1 "stricture of pylorus," 1 "stricture of rectum."

Nerve decay (in β) includes "brain softening," "white brain softening," "atrophy of brain," "spinal atrophy," "nerve decay," "debility," "atrophy," "atheroma and paralysis," "brain disease and degeneration of arteries;" (in γ) includes "cerebral atrophy," "cerebral degeneration," "cerebral softening,"[8] "white" ditto, "chronic" ditto, "cerebro-spinal degeneration," "spinal atrophy," "cirrhosis of spinal cord," "atheroma of cerebral arteries," "degeneration of cerebral vessels," "general paralysis;" also 2 "old age and paralysis," 1 "senile dementia," 1 "chronic cerebral disease."

Old age (in γ only) includes "old age," "senility," "senile debility," "senile degeneration," "senile atrophy," "senile decay," "general decay," "gradual decay," natural decay," "decay of nature," "general decline," "general decline of bodily powers," "general debility," "debility," "exhaustion," "asthenia," "atrophy."

Pleurisy (in β only) includes "pleurisy," "pleuritis," "empyema," "pyo-pneumo-thorax" (1 case).

Pneumonia includes "pneumonia," "acute pneumonia," "pleuro-pneumonia."

Renal disease (chronic) includes "chronic renal disease," "Bright's disease," "chronic nephritis, "granular kidney," "chronic granular kidney," "gouty kidney," "renal degeneration," "cirrhosis of kidney," "fibroid degeneration of kidney," "degeneration of kidney," "interstitial nephritis," "chronic desquamative nephritis," "chronic albuminuria;" also, in β, 1 "albuminuria and gout;" in γ, 1 "gout and dropsy," 2 "albuminuria and uræmia."

Prostatic disease (in γ only) includes "prostatic disease," "prostatic troubles," "enlarged prostate," "disease of prostate," "prostatitis."

Tubercle includes "phthisis," "acute phthisis," "chronic phthisis," "laryngeal phthisis," "tracheal phthisis," "abdominal phthisis," "tuberculosis," "tubercle" of lungs, peritoneum, intestines, mesentery, and brain; also, in β, 1 "stonemasons' phthisis;" in γ, 1 "miners' phthisis."

Typhoid fever includes "typhoid fever," "enteric fever."

We have also constructed Table XVI, a modification of Table XV, made in the same manner as Table VI from Table V and Table XIV from Table XIII, by halving the subclasses between the adjacent classes.

We have also constructed Table XVII, showing the ratio of minor to major habits for each of the diseases quoted.

TABLE XVI.—*The same as Table XV, with the Subclasses merged in the Adjacent Classes.*

α. Deaths between 25 and 40.

Disease.		A.	B.	C.	D.	E.	Unclassed.
Total	719	6.8	35.2	23	13.9	20.2	0.2
Bronchitis	20	5.0	20.0	25.0	17.5	32.5	—
Heart disease (valve)...	39	3.7	40.8	14.0	16.5	21.7	2.5
Pneumonia	59	4.1	36.3	24.4	17.6	16.8	—
Tubercle	334	7.6	38.3	24.3	12.3	15.7	—
Typhoid fever	33	9.09	34.8	25.7	16.6	13.6	—

β. Deaths between 40 and 65.

Total	1,705	3.0	30.9	26.24	18.2	20.6	0.3
Apoplexy	111	3.1	28.7	24.2	22.4	21.1	—
Bronchitis	144	2.7	27.0	31.7	18.9	19.0	—
Cirrhosis...	67	—	1.4	8.0	30.4	59.6	—
Diabetes	28	5.2	28.4	19.5	25.0	21.4	—
Heart disease (wall) ...	35	—	31.4	31.4	21.4	15.6	—
Heart disease (valve)...	182	5.7	39.0	27.6	21.3	15.3	0.5
Malignant disease ...	116	12.9	49.4	28.2	10.2	13.3	0.8
Nerve decay	40	—	32.5	30.0	13.7	23.7	—
Pleurisy	23	4.3	30.4	30.3	17.3	17.04	—
Pneumonia	159	2.7	28.5	30.7	15.0	23.01	—
Renal disease (chronic)	89	—	21.8	27.3	27.8	23.5	—
Tubercle	275	2.6	35.9	23.9	17.5	19.0	0.3
Typhoid fever	21	—	30.8	35.6	23.8	9.5	—

γ. Deaths from 65 upwards.

Total	1,810	2.4	47.5	27.8	13.1	8.3	0.2
Apoplexy	198	2.7	49.4	23.2	16.6	7.5	—
Arterial degeneration ...	24	—	31.1	33.1	24.8	10.3	—
Bronchitis	321	1.5	49.5	31.4	11.2	5.6	—
Cystitis	32	1.5	55.8	23.3	10.8	7.7	—
Diarrhœa	32	4.6	48.3	28.1	6.2	12.5	—
Heart disease (valve) ...	160	1.2	42.0	28.0	17.4	10.9	—
Heart disease (wall) ...	61	—	47.5	26.1	14.7	11.4	—
Intestinal obstruction...	21	4.7	45.1	35.6	9.5	4.7	—
Malignant disease ...	100	2.0	46.0	30.5	14.0	7.5	—
Nerve decay	67	7.4	36.5	28.9	12.5	14.1	—
Old age	287	3.9	54.2	28.9	7.0	4.6	0.6
Pneumonia	82	4.2	46.8	26.1	7.2	15.2	—
Prostatic disease ...	31	1.4	58.6	27.7	10.1	1.4	—
Renal disease (chronic)	48	2.1	39.5	22.8	24.9	10.3	—
Tubercle	45	—	37.1	34.2	11.4	17.1	—

TABLE XVII.—*Table showing the Ratio between the Cases falling in the Lower and those in the Higher Half of the Alcoholic Scale, for the same Forms of Disease.*

α. In the Young, Aged from 25 to 40.

RATIO FOR THE WHOLE GROUP α, (390 to 327,* OR) 1 TO 0.8.

For tubercle (334 cases) ... ... 1 to 0.7

„ typhoid fever (33 cases) ... ... 1 „ 0.7

[8] Where such alternative terms as "cerebral softening," "brain softening," and "softening of the brain" occur together, they are considered as identical, and one only is quoted here.

For heart-valve disease (39 cases)	...	1 to 0.8
„ pneumonia (59 cases)	... ...	1 „ 0.9
„ bronchitis (20 cases)	... ...	1 „ 1.8

β. In the Middle-aged, from 40 to 65.

RATIO FOR THE WHOLE GROUP β, (811 TO 888,* OR) 1 TO 1.09.

For malignant disease (116 cases)	...	1 to 0.6
„ tubercle (275 cases)	... ...	1 „ 1.0
„ heart-valve disease (182 cases)	...	1 „ 1.04
„ pleurisy (23 cases) ...	... ...	1 „ 1.09
„ pneumonia (159 cases)	... ...	1 „ 1.1
„ bronchitis (144 cases)	... ...	1 „ 1.1
„ typhoid fever (21 cases)	... ...	1 „ 1.1
„ disease of heart-wall (35 cases)	...	1 „ 1.1
„ nerve decay (40 cases)	... ...	1 „ 1.1
„ apoplexy (111 cases)	... ...	1 „ 1.2
„ diabetes (28 cases) ...	... ...	1 „ 1.3
„ chronic renal disease (89 cases)	...	1 „ 1.8
„ cirrhosis (67 cases)...	... ...	1 „ 15.7

γ. In the Elderly, from 65 upwards.

RATIO FOR THE WHOLE GROUP γ, (1,171 TO 635*, OR) 1 TO 0.54

For old age and natural decay (287 cases)		1 to 0.36
„ cystitis (32 cases) ...	... ...	1 „ 0.39
„ diarrhœa (32 cases)...	... ...	1 „ 0.4
„ prostatic disease (34 cases) ...	...	1 „ 0.4
„ bronchitis (321 cases)	... ...	1 „ 0.4
„ apoplexy (198 cases)	... ...	1 „ 0.5
„ malignant disease (100 cases)	...	1 „ 0.5
„ pneumonia (82 cases)	... ...	1 „ 0.5
„ intestinal obstruction (21 cases)	...	1 „ 0.5
„ diseases of the heart-wall (61 cases) ...		1 „ 0.6
„ diseases of the heart-valves (160 cases)		1 „ 0.7
„ chronic renal disease (48 cases)	...	1 „ 0.7
„ nerve decay (67 cases)	... ...	1 „ 0.7
„ tubercle (35 cases) ...	... ...	1 „ 0.8
„ arterial degeneration (24 cases)	...	1 „ 1.1

* The twelve unclassified cases are omitted from these totals.

On looking through these tables we notice the following:

Cirrhosis, in group β, shows an overwhelming preponderance of major habits, their ratio to minor habits being nearly 16 to 1. In Table XV it will be seen that no case of cirrhosis occurs lower in the scale than BC, and very few below D, and more than 65 per cent. in E and D.

The few cases that occur in α and γ tell the same tale.

There is no other disease which shows anything like such a marked preponderance of intemperate habits as cirrhosis.

Next in order, but at a long distance behind, comes chronic renal disease, which in β gives a ratio of major habits of 1.8 to 1, nearly 2 to 1, or not far from double the normal ratio of the group. In γ the ratio of major habits is also large, though less strikingly so than in β.

In Table XV it will be seen that no case in β, and few in γ, occurs below B. Even the B's are few in both β and γ.

Cases of arterial degeneration, in which term senile gangrene is included, give in γ a major habit ratio of 1.1 to 1, as against about half that ratio for the whole group. The cases however are very few.

Apoplexy, on the other hand, gives a nearly normal ratio, both in β and γ. The percentages in Table XV will be seen also to correspond pretty closely with the normals. The numbers here are large.

Tubercle gives a ratio of major habits higher than the normal in γ, but not so high in α and β. This accords with the opinion generally held that senile phthisis is induced by alcoholic excess, but that at other times of life it has a retarding influence, if any, upon the production of tubercle. We must add, however, that the aggregate of phthisis in γ is not more than 35.

Disease of the heart valves, which in advanced life is to a large extent atheromatous, shows in γ a slight preponderance of major habits as compared with the normal ratio. In α and β the ratio is practically normal.

The same applies to diseases of the heart-wall.

Mr. Butlin's conclusions as to the absence of connection between alcoholic habits and the production of malignant disease are fully borne out here, and some countenance given to the belief that the use of alcohol hinders its formation for a time. In one hundred cases of malignant disease, in Group γ, the ratio is normal, though Table XV shows that there is a slight tendency towards careless drinking, C and BC being filled at the expense of A and B. In 116 cases in β the minor habits markedly predominate, the ratio being nearly double the normal, and A and B in Table XV being filled at the expense of D and E.

The mortality from pneumonia is not shown by these Tables to be markedly influenced by alcohol. In α (59 cases) the ratio of minor habits is barely below the normal. In β and γ (159 and 82 cases) it is about equivalent to the normal, though in Table XV a certain tendency towards the upper columns of the scale may be detected, E being in excess in both cases, and B in β. In γ, indeed, the percentage of the decidedly intemperate is almost double that of the normal.

In typhoid fever the proportion of minor habits is above the normal in α, and equal to the normal in β. The numbers however are few.

The elderly bronchitic patients show a slightly lower ratio of major habits than the normal. The middle-aged, in Table XV, exhibit a tendency towards careless drinking. In the young the minor habits are to the major as 1 to 1.8, and the proportion of drunkards is very high. There are, however, but a bare score of cases to draw from.

Prostatic disease and cystitis, of which, however, the cases are few, show a higher ratio of minor habits than the normal in group γ, the only one in which they appear.

In the few cases of diabetes that appear, the proportion of major habits is rather higher than the normal.

As one would have surmised, the highest ratio of minor to major habits in Group γ occurs in those said to have died simply of old age or natural decay.

GOUT.

The incidence of gout in the different classes is not shown in the above tables, which include only mortal diseases. A special column, it will be remembered, was devoted to gout in the inquiry paper, the question being put in reference to each case whether the person had ever suffered from gout or not.

In 1,268 of the 4,234 cases a blank was left, the reporter not possessing the desired information.

In the remaining 2,966 the fact was stated, as requested in the inquiry paper, by an affirmative or a negative mark. These 2,966 cases, being distributed into their respective classes and subclasses, give us the following results. The triple division into young, middle-aged, and elderly is again made in this table, the three groups being distinguished as before by the letters α, β, γ.

TABLE XVIII.—*Showing the Incidence of Gout in the Different Alcoholic Classes.*

	α			β			γ		
Class.	Total Cases.	Gout.	No Gout.	Total Cases.	Gout.	No Gout.	Total Cases.	Gout.	No Gout.
A ...	37	—	37	30	1	29	23	1	22
AB ...	7	—	7	9	1	8	12	1	11
B ...	180	2	178	308	21	287	603	75	528
BC ...	17	1	16	49	8	41	75	18	57
C ...	100	1	99	273	41	232	341	87	254
CD ...	8	—	8	37	7	30	33	13	20
D ...	46	4	42	181	63	118	154	75	79
DE ...	16	—	16	29	13	16	17	11	6
E ...	85	11	74	213	71	142	83	41	42

For the purpose of showing the incidence of gout in a more convenient form we have constructed Table XIX, showing in each group, α, β, and γ, the percentage of gouty cases upon the whole number reported upon in each class.

TABLE XIX.—*Showing in each Group, α, β, and γ, the Percentage of Gouty Cases upon the whole number reported upon in each Alcoholic Class.*

Class.	α	β	γ
A	0.0	3.3	4.3
AB.....	0.0	11.1	8.3
B	1.1	6.8	12.4
BC.....	5.8	16.3	24.0
C	1.0	15.0	25.5
CD	0.0	18.8	39.3
D	8.6	34.8	48.7
DE	0.0	44.8	64.7
E	12.9	33.3	49.3

The significance of these figures is such as hardly to require comment. We see, speaking generally, in each group the percentage steadily rising from A to E, the percentages being, as might be expected, higher in β than in α, and in γ than in β. It will be noted, however, that there is only a very slight rise from D to E, there being, indeed, a slight fall in the case of β, so that it would appear that prolonged "free" indulgence in alcoholic liquors carries the gouty tendency nearly to its height, there being no additional rise when the stage of habitual drunkenness is reached.

It must be remembered that the effects of indulgence in alcoholic liquors is here shown, not the effects of indulgence in pure alcohol. We have no information in most cases as to the kind of liquor consumed; but if the reader refers to Appendix A, he will see that the majority of the cases are reported from England and Wales, so that on the whole it is the effect of the kind of liquor consumed in England and Wales that is here shown. The same, of course, applies to Tables XV—XVII.

Tubercle.

A special interest attaches to the subject of tubercle, on account of the widely conflicting views held as to the action of alcohol upon the production and the progress of the disease. While some believe that alcohol takes a large share in the production of the disease, it has been taught by other authorities that exactly the reverse obtains: that drunkards and free drinkers are less liable to tubercular disease than the temperate, and that the administration of material amounts of alcohol is necessary, or at least desirable, in the treatment of the affection.

We have already seen from Table XVII that among those dying under 40 from tubercular disease the ratio of major habits is rather less than the normal of the group, that the same obtains in the middle-aged, but that among the elderly the ratio of major habits is considerably more than the normal of the group; and in Table XV we have seen that in Group α there is a slight excess of tubercle over the normal in Classes A and B, Classes D and E being deficient; while in Group β, though Class A is not in excess, Class B is markedly so, and both D and E slightly deficient.

Again, in the same Table, under the heading γ, we have seen that Class E is greatly in excess, and Classes A and B very deficient; so that it would seem, as we have above stated, that alcoholic habits were not inducive of tubercle in the young, but rather the reverse, while in the old they predisposed to the disease.

To place this most important subject in a clearer light we have taken both the total number of cases and the total number of cases of phthisis in each class for each group, and have constructed Table XXI, which shows for each group, and for each class, the percentage of individuals who have died from or with phthisis.

Table XX.—*Showing the Distribution of the Cases of Phthisis in the Different Classes for each Group, α, β, and γ, with the Aggregate Numbers of each such Class.*

Class.	α Phthisical Cases.	α All Cases.	β Phthisical Cases.	β All Cases.	γ Phthisical Cases.	γ All Cases.
A ...	22	42	7	46	0	34
AB ...	8	15	1	15	0	24
B ...	121	235	96	490	13	804
BC ...	7	24	5	63	0	91
C ...	78	148	58	393	12	436
CD ...	6	13	11	50	0	49
D ...	34	83	40	263	4	201
DE ...	10	22	6	50	0	28
E ...	48	135	50	329	6	139
Unclassified	0	2	1	6	0	4

Table XXI.—*Showing for α, β, and γ respectively the Percentage of Individuals in each Class who Died of, or with, Tubercular Disease.*

	In α	In β	In γ
In Class A ...	52.3 per cent.	15.2 per cent.	—
" AB ...	53.3 "	6.6 "	—
" B ...	51.4 "	19.5 "	1.6 per cent.
" BC ...	29.1 "	7.9 "	—
" C ...	52.7 "	14.7 "	2.7 "
" CD ...	46.1 "	22.0 "	—
" D ...	40.9 "	15.2 "	1.9 "
" DE ...	45.4 "	12.0 "	—
" E ...	35.5 "	15.1 "	4.3 "
Total ...	46.5 "	16.1 "	1.9 "

Here we see that among the young the percentage remains practically the same until Class C is reached, that it then falls somewhat rapidly, the percentage in E being but two-thirds of that in A.

In β the percentages are irregular, but on the whole they are nearly the same for the five main classes, B being somewhat in excess.

In γ we have no cases in A or AB, and the percentage is three times as great in E as it is in B. The numbers here, however, are very small.

On the whole, the results we have obtained certainly give some countenance to the belief that as regards the young alcoholic drinks act as a preventive of tubercle; but as regards the old they appear to favour the contrary opinion. In the middle-aged the two principles of action appear to neutralise each other.

Chronic Renal Disease.

It has been suggested that the influence of alcoholic beverages in the production of renal disease, which we believe ourselves to have ascertained, is of a secondary character, the kidney lesion being due to gout, which, as we have seen, is strongly induced by alcoholic liquors. In order to bring this as far as possible to the test, we have taken from the list of cases of chronic renal disease those in which the existence or non-existence of gout is stated. We have distributed these into a table (Table XXII) constructed on the exact plan of Table XVIII. This table shows the incidence of gout for the different alcoholic classes in cases dying of or with chronic renal disease alone. The numbers are very few, but, nevertheless, we have translated them into percentages (Table XXIII) for the sake of comparison with Table XIX.

Table XXII.—*Showing the Incidence of Gout for the different Alcoholic Classes in cases of Chronic Renal Disease.*

	α Total.	α Gout.	α No Gout.	β Total.	β Gout.	β No Gout.	γ Total.	γ Gout.	γ No Gout.
A	...	...	...	...	...	...	...	...	...
AB	...	...	...	...	...	...	...	...	...
B	2	...	2	11	3	8	11	4	7
BC	...	...	...	3	...	3	3	1	2
C	2	...	2	9	3	6	6	5	1
CD	...	...	...	1	...	1	...	...	...
D	...	...	...	11	7	4	4	3	1
DE	...	...	...	3	1	2	...	...	...
E	1	...	1	10	3	7	2	2	...

Table XXIII.—*Showing in each Group α, β, and γ, the percentage of Gout Cases upon the whole number reported on in each Alcoholic Class of cases of Chronic Renal Disease.*

	α	β	γ
A	...	...	...
AB	...	...	...
B	0.0	27.2	36.3
BC	...	0.0	33.3
C	0.0	33.3	83.3
CD	...	0.0	...
D	...	63.6	75.0
DE	...	33.3	...
E	0.0	30.0	100.0

Allowing for the very possible fallacy involved in the smallness of the numbers treated, Table XXIII certainly seems to bear out the supposition above alluded to, for the percentages of the main groups almost throughout are very considerably higher than those in Table XIX.

Summary.

On the whole, then, in addition to the information that we obtain from these returns as to the alcoholic habits of the inhabitants of this country, and as to the relative alcoholic habits of different occupations and classes, we may not unfairly claim to have placed upon a basis of fact the following conclusions:

1. That habitual indulgence in alcoholic liquors beyond the most moderate amounts has a distinct tendency to shorten life, the average shortening being roughly proportional to the degree of indulgence.

2. That of men who have passed the age of 25, the strictly temperate, on the average, live at least ten years longer than those who become decidedly intemperate. (We have not in these returns the means of coming to any conclusion as to the relative duration of life of total abstainers and habitually temperate drinkers of alcoholic liquors.)

3. That in the production of cirrhosis and gout alcoholic excess plays the very marked part which it has long been recognised as

doing; and that there is no other disease anything like so distinctly traceable to the effects of alcoholic liquors.

4. That, cirrhosis and gout apart, the effect of alcoholic liquors is rather to predispose the body towards the attacks of disease generally than to induce any special pathological lesion.

5. That in the etiology of chronic renal disease, alcoholic excess, or the gout which it induces, probably plays a special part.

6. That there is no ground for the belief that alcoholic excess leads in any special manner to the development of malignant disease, and some reason to think that it may delay its production.

7. That in the young alcoholic liquors seem rather to check than to induce the formation of tubercle; while in the old there is some reason to believe that the effects are reversed.

8. That the tendency to apoplexy is not in any special manner induced by alcohol.

9. That the tendency to bronchitis, unless, perhaps, in the young, is not affected in any special manner by alcoholic excess.

10. That the mortality from pneumonia, and probably that from typhoid fever also, is not especially affected by alcoholic habits.

11. That prostatic enlargement and the tendency to cystitis are not especially induced by alcoholic excess.

12. That total abstinence and habitual temperance augment considerably the chance of a death from old age or natural decay, without special pathological lesion.

It is very greatly to be regretted that the returns to this inquiry were not far more numerous than they actually were. The conclusions drawn from the inquiry would have had much more weight had we been able to base them upon an aggregate of ten or twenty thousand cases, instead of four thousand and odd only.

Should the publication of this report arouse sufficient fresh interest in the subject it would be possible to reissue the inquiry; but the Collective Investigation Committee would not feel justified in doing so without some decided expression of opinion by the members of the Association that the reissue should be made.

I have much pleasure in thanking Mr. Frederick Hendriks, F.S.S., Actuary of the Universal Life Assurance Society, and Mr. Frank B. Wyatt, Actuary of the Clergy Mutual Society, for information and references which they have afforded me, and in acknowledging the valuable aid rendered me throughout by my assistant, Mr. Joseph Perrott.

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Appendix B.—Distribution of the 118 cases in which the Alcoholic Habits were stated to have been changed during life.

The Italic Titles indicate the headings under which the cases come in Tables XV, XVI, and XVII. Cases not included in these Tables have no italic title given. A capital G. signifies that the Patient was reported to have suffered from Gout, the figure 0 that he was stated not to have so suffered.

Group α.

In Class B (235 cases) are included two:—

Age 31, Pneumonia (*Pneumonia*), 0	C the last 6 months
,, 36, Phthisis (*Tubercle*), 0	A the last 3 years

In Class C (148 cases) are included three:—

Age 29, Phthisis (*Tubercle*), 0	E previously
,, 39, Urinary Fistula and Phthisis (*Tubercle*), 0... ...	B the last 3 years
,, 38, Cardiac Asthma and Bronchitis (*Disease of Heart Wall*), 0	D previously

In Class D (83 cases) are included five:

Age 32, Enteric Fever (*Typhoid Fever*), 0	E lately
,, 35, Locomotor Ataxy, 0	E at times
,, 28, Phthisis (*Tubercle*), 0	B lately
,, 29, Empyema (*Pleurisy*), 0	B the last 4 years

Age 34, Phthisis (*Tubercle*), *0* ... ... B the last 3 years
In Sub-class DE (22 cases) one is included:
Age 35, Meningitis from Injury, *0* ... ... E previously
In Class E (135 cases) are included three:—
Age 27, Pneumonia and Delirium Tremens (*Pneumonia*), *0* D till last 3 years
,, 27, Phthisis (*Tubercle*), *0* ... ... A the last year
,, 38, Hepatic Disease, *0*... ... ... A the last year

GROUP β.

In Class A (46 cases) one is included:—
Age 44, Phthisis (*Tubercle*), *0* ... ... B till last 7 years
In Class C (393 cases) are included twelve:
Age 61, Cardiac Degeneration (*Disease of the Heart Wall*), *0* ... ... B the last 5 years
,, 60, Albuminuria, *0* ... ... B lately
,, 59, Hæmatemesis, Liver Disease, *G.* ... ... D previously
,, 40, Bronchitis, Renal Dropsy, *G.* ... ... D at times
,, 57, Bronchitis, Asthma, Pleuro-pneumonia (*Bronchitis*), *G.* ... ... D previously
,, 49, Phthisis, Pleuro-pneumonia (*Tubercle*), *G.* ... D previously
,, 62, Diabetes, Bright's Disease, Carbuncle (*Diabetes*), *0* ... ... B the last 6 years
,, 49, Epilepsy, Apoplexy (*Apoplexy*) ... ... B lately
,, 49, Chronic Desquamative Nephritis, Uræmia (*Chronic Renal Disease*) ... ... B lately
,, 58, Renal Cancer (*Malignant Disease*), *0* ... ... A the last 2 years
,, 50, Chronic Bright's Disease and Dilatation of Heart (*Chronic Renal Disease*), *G.* ... ... A the last 4 years
,, 59, Heart Disease (*Disease of Heart Valves*), *G.*... ... B the last 3 years
In Class D (263 cases) are included twelve:—
Age 45, Epilepsy, *G.*... ... ... E at times
,, 54, Cancer of Stomach, Extreme Atrophy (*Malignant Disease*), *G.* ... ... E at times
,, 61, Bright's Disease (*Chronic Renal Disease*), *G.* ... E the last 4 years
,, 59, Fatty Heart, Congestion of Lungs, Dropsy (*Disease of Heart Wall*), *0* ... ... B the last 9 years
55, Pyæmia, *0* ... ... A the last 2 years
,, 53, Mitral Disease, Anasarca (*Disease of Heart Valves*), *0* B lately
,, 61, ,, ,, ,, ,, ,, ,, *0* E till last 20 years
,, 58, Chronic Granular Kidney, Uræmia (*Chronic Renal Disease*), *G.* ... ... BC lately
,, 47, Paralysis from Injury, Cystitis, *0* ... ... B the last 3 years
,, 64, Miners' Lung and Dropsy, *0* ... ... B the last 4 years
,, 51, Phthisis (*Tubercle*), *0* ... ... A lately
,, 45, Erysipelas, Pyæmia, *0* ... ... B the last 3 years
In Sub-class DE (50 cases) are included two:—
Age, 63, Chronic Bronchitis (*Bronchitis*) ... ... BC lately
,, 63, Chronic Liver Disease, Strangulated Hernia (operation), Diarrhœa, Exhaustion ... ... B lately
In Class E (329 cases) are included fourteen:—
Age, 56, Cancer of Liver (*Malignant Disease*), *0* ... ... D till last 2 years
,, 62, Heart Disease (*Disease of Heart Valves*), *G.* ... D till last 10 years
,, 51, ,, Bronchitis (*Disease of Heart Valves*), *G.* ... ... A the last 6 months
,, 52, Pyelitis, *G.*... ... ... B the last 2½ years
,, 41, Pneumonia (*Pneumonia*) ... ... A lately
,, 53, Chronic Disease of Stomach and Liver (?) Cirrhosis, *G.* ... ... B the last 6 years
,, 62, Sanguineous Apoplexy, Syphilis (*Apoplexy*) ... A the last 12 years.
,, 58, Bronchitis (*Bronchitis*), *0* ... ... B the last 2 years
,, 43, Epilepsy ... ... D previously
,, 57, Cancer of Stomach, Perforation (*Malignant Disease*), *0* ... ... A the last 5 years
,, 41, Chronic Phthisis (*Tubercle*), *0*... ... ... B the last 2 years
,, 62, Phthisis (*Tubercle*), *0* ... ... B the last 4 years
,, 54, Pneumonia (*Pneumonia*), *0* ... ... D lately
,, 60, Congestion of Liver, Asthma, Bronchitis, *0* ... A the last 10 years.

GROUP γ.

In Class A (34 cases) are included two:—
Age, 80, Old Age, Paralysis, *0* ... ... E lately.
,, 71, Bright's Disease (*Chronic Renal Disease*) ... ... B lately
In Class B (804 cases) are included three:—
Age, 75, Chronic Bright's Disease (*Chronic Renal Disease*) E the last 11 months
,, 73, Enlarged Prostate, Acute Cystitis (*Prostatic Disease*), *0* ... ... A till last 10 years
,, 86, Old Age (*Old Age*), *0* ... ... C previously.
In Sub-class BC (91 cases) one is included:—
Age 78, Apoplexy (*Apoplexy*), *0* ... ... B the last 3 years.
In Class C (436 cases) are included eight:—
Age, 79, Senile Decay, Partial Hemiplegia (*Apoplexy*) ... E lately
,, 73, Heart Disease, Bronchitis (*Disease of Heart Valves*) B the last 4 years
,, 78, Gradual Decay, Bronchitis (*Bronchitis*), *G.* ... B lately
,, 77, Dyspepsia, General Decline (*Old Age*) ... ... D lately
,, 80, Deranged Liver, Weak Heart, *G.* ... ... B lately
,, 65, Bronchitis (*Bronchitis*), *0* ... ... B lately
,, 74, Brain Softening (*Nerve Decay*), *G.* ... ... B the last 10 years
,, 77, Senectus (*Old Age*), *0* ... ... A lately.
In Sub-class CD (49 cases) are included two:—
Age, 69, Mania (inherited), *0* ... ... DC previously
,, 67, Fatty Heart, Hemiplegia, *0* ... ... B the last 10 years.
In Class D (201 cases) are included eight:—
Age, 69, Paralysis, *G.* ... ... A the last 3 years
,, 70, Anthrax, Diarrhœa ... ... E lately
,, 66, Cirrhosis of Liver, *G.* ... ... E previously
,, 71, Cardiac Disease (*Disease of Heart Valves*), *G* ... B lately
,, 68, Fatty Degeneration, Mitral Disease of Heart (*Disease of Heart Valves*, *0* ... ... C the last 3 years
,, 66, Phthisis (*Tubercle*) ... ... B lately
,, 74, Chronic Bronchitis, Heart Disease, Kidney Disease (Bright's), Dropsy (*Chronic Renal Disease*), *G.* B lately
,, 75 Bronchitis (*Bronchitis*), *G.* ... ... B the last 5 years.

In Sub-class DE (28 cases) one is included:—
Age, 71, Chronic Bright's Disease, Heart Disease (*Chronic Renal Disease*)... ... ... B lately
In Class E (139 cases) are included twenty-six:—
Age, 68, Pneumonia (*Pneumonia*), *0* ... ... D previously
,, 77, Cystitis (*Cystitis*), *G.* ... ... D previously
,, 67, Leucocythæmia, Dyspnœa, *0* ... ... B the last 4 years
,, 70, Bronchitis (*Bronchitis*), *0* ... ... B the last 3 years
,, 70, Heart Disease, Hypertrophy of Left Ventricle (*Disease of Heart Valves*), *0* ... ... B the last 3 years
,, 65, General Paralysis (*Nerve Decay*), *0* ... ... B the last 5 years
,, 79, Rheumatic Arthritis ... ... B lately
,, 70, Chronic Disease of Stomach and Bowel, *G.* ... D lately
,, 91, Senile Decay (*Old Age*) ... ... C lately
,, 73, ,, ,, ... B lately
,, 76, Congestion of Lungs, Heart Disease (*Disease of Heart Valves*) ... ... B lately
,, 71, Hepatitis, Pneumonia, *G.* ... ... D lately
,, 72, Albuminuria, *0* ... ... B lately
,, 67, Apoplexy (*Apoplexy*), *0* ... ... D the last 5 years
,, 72, Bronchitis (*Bronchitis*) ... ... B the last 10 years
,, 80, Chronic Bronchitis (*Bronchitis*), *0* ... ... A the last 3 years
,, 68, Mitral Deficiency, Bronchitis, Syncope (*Disease of Heart Valves*), *G.* ... ... C the last 5 years
,, 79, Hepatic Dropsy ... ... A the last 11 years
,, 74, Cerebral Softening (*Nerve Decay*), *0*... ... ... A the last 10-15 years
,, 84, Diabetes, *G.* ... ... B the last 5 years
,, 75, Fatty Degeneration of Heart, Bronchitis (*Disease of Heart Wall*), *G.* ... ... B the last 5 years
,, 65, Morbus Cordis, Dropsy (*Disease of Heart Valves*), *0* B the last 10 years
,, 85, Cerebral Apoplexy (*Apoplexy*), *0* ... ... B the last 4 years
,, 68, Miners' Phthisis (*Tubercle*), *0* ... ... B the last 3 months
,, 74, Bronchitis, Cardiac Disease (*Disease of Heart Valves*), *0* ... ... B the last 3 years
,, 70, Stricture of Pylorus (*Malignant Disease*), *0* ... B the last 4 years.

UNCLASSIFIED.

Age, 80, Old Age, *0* ... ... B; D till the last 30 years
,, 41, Phthisis, *0* ... ... B; D till the last 10 years
,, 64, Tabes Dorsalis, *0* ... ... B; D till the last 20 years
,, 62, Erysipelas, Heart Disease, *0* ... ... B; D previously
,, 83, Congestion of Lungs, *0* ... ... B; CD in prime of life
,, 89, Old Age, *0* ... ... B; D in working days
,, 38, Aortic Stenosis, Enlarged Liver *G.* ... ... B; E the last 3 years
,, 64, Stricture of Pylorus, *0* ... ... B; D previously
,, 66, Spastic Paralysis ... ... B; E previously
,, 55, Cancer ... ... E; A the last 10 years
,, 52, Brain Disease ... ... E; A the last 10 years
,, 37, Erysipelas ... ... E; A the last 7 years.

APPENDIX C.—PREVIOUS WORK IN THE SAME DIRECTION.

Two inquiries had previously been conducted upon somewhat similar lines; one by Mr. Neison, about forty years ago, and one by the Harveian Society of London in 1879 and 1880.

Mr. Neison's paper On the Rate of Mortality among Persons of Intemperate Habits was read before the Statistical Society on June 16th, 1851, and published in Volume xiv of its journal, pages 200 *et seq.*

Mr. Neison's inquiry concerned only persons of decidedly intemperate habits, corresponding as far as possible to our Class E., the rate of mortality of whom he compared with the general rate for England and Wales. He did not take account, as our inquiry has done, of the minor degrees of the alcoholic habit. He included women as well as men. His inquiry paper particularly asked for a statement as to the duration of intemperance in each individual, an essential point for the purpose he had in view. He also inquired, and apparently obtained information, as to the kind of liquor taken.

Mr. Neison obtained and classified 357 complete cases, comprising 6,111.5 years of life during which intemperance was practised. In the result he showed that the rate of mortality among the intemperate was more than five times that of the general community between the ages of 21 and 30; more than four times as great from 31 to 50; nearly three times as great from 51 to 60; about twice as great from 61 to 80; and equivalent to it from 81 to 90.

Proceeding further, he showed that the equal chances of life of temperate and intemperate persons might be compared at different ages as in the following table.

At Age	An Intemperate Person has an equal chance of living to	A Temperate Person has an equal chance of living to
20	35.6 years	64.2 years
30	43.8 ,,	66.5 ,,
40	51.6 ,,	68.8 ,,
50	60.8 ,,	71.3 ,,
60	68.9 ,,	74.3 ,,

We have no direct means of comparing these results with our own, as the exact duration of the intemperate habit in each case was not asked for in our inquiry, which was not primarily designed with a view to vital statistics. We have been able only to reckon the average age at death of all individuals entered in

each alcoholic class. We have, however, extracted from Mr. Neison's Table 1 the aggregate age of the 347 individuals in his schedule who died over the age of 25, and have struck an average, which comes to 47.54 years, that is to say five years less than the average furnished by our Class E. The comparison, however, is not even yet a fair one, as Mr. Neison's schedule contains an unnamed proportion of women, who, on his showing, suffer more severely under the abuse of alcohol than men. It is doubtful, however, if the elimination of the female element would add more than two years at the outside to the average age at death of Mr. Neison's cases, and this would leave it still three years less than the average of our Class E. It is more than possible that in the earlier half of this century intemperance implied a much greater consumption of alcoholic liquor than it does in its ninth decade.[9]

Mr. Neison also found that the intemperate use of spirits was more hurtful than the like use of beer, but that immoderate indulgence in both was more injurious than the exclusive use of either. "Mechanics, working and labouring men," according to his figures, withstood the effects of intemperance better than "traders, dealers, and merchants," the latter better than "professional men and gentlemen," and all better than women.

As regards diseases, he found that "head diseases" (diseases of the nervous system) among the intemperate were greatly in excess of the general average. It must be noted, however, that more than half of this category is made up by delirium tremens. In our returns delirium tremens played a very much smaller part, so small, indeed, that it did not obtain admission as a distinct category into Table XV. This perhaps may be also a result of the diminished use of alcohol even among the intemperate since the year 1851. "Diseases of the Digestive Organs," a category which is somewhat largely made up of "liver disease and dropsy," "ascites," and "atrophy" of the liver, also showed a great excess. "Diseases of the respiratory organs" were relatively deficient; "phthisis" and "decline" do not appear to be in excess.

The Harveian Society appointed a committee in the early part of 1879 to investigate the extent of the mortality referable to alcohol, and its proportion to the mortality from all causes; the proportion in which it is distributed between the two sexes; the ages at which, and the occupations in which, it chiefly occurs; and the modes of death (*Report*, par. 2).

The plan of the inquiry paper, which the Committee sent to all general practitioners in London, was closely similar to that which our Committee adopted, but women were included as well as men.

The reporters were, as in our inquiry, requested to fill up the preliminary columns from the counterfoils of their death-certificate books. They were then requested to refer each case, if possible, to one of three categories: (A) Deaths in no wise due to alcohol, (B) deaths accelerated or partly caused by its abuse, and (C) deaths wholly due to it (JOURNAL, 1880, i, p. 177. *Report*, par. 12).

There is a somewhat odd confusion between facts and theories in the definition of these categories, but there is no doubt that a great deal of valuable information was obtained by means of the inquiry. Reports of 7,505 cases were obtained from private practice, which, with the addition of 1,172 infirmary and asylum cases, 646 hospital, and 677 inquest cases (about the normal proportion for London) brought the total of deaths up to 10,000 (*Report*, par. 10).

The Report of the Committee was published in the JOURNAL of January 20th, 1883, pp. 97 *et seq.* According to this report alcohol was stated to play some part in the causation of about 13 per cent. of all adult deaths, from 1½ to 4 per cent. appearing to be directly due to its action (pars. 15, 20). Females and males were nearly in normal proportion in the whole number of cases; but in Class B the males were nearly twice as numerous as the females; in Class C only about as 5 to 3. The Committee concluded that severer forms of intemperance were relatively more prevalent among women than the minor forms (par. 21).

The deaths in B were found to have taken place at an earlier age, and those in C at a much earlier age than in A. Three-fourths of Class C and two-thirds of Class B had died between the ages of 30 and 60, the normal proportion for the adult population being somewhat about one-half (par. 22).

The information obtained as to occupations only sufficed to show the preponderance of publicans in B and C (par. 24).

As regards the modes of death, the Committee reported: "We find, therefore, upon the whole, reason to think that, in the metropolis, the mortality among any considerable group of intemperate persons will differ from that generally prevailing among adults in the following important particulars — namely, a fourfold increase in the deaths from disease of the liver and chylopoietic viscera; a twofold increase in the deaths from disease of the kidney, a decrease of half as much again in those from heart disease, a marked increase in those from pneumonia and pleurisy, a considerable increase and an earlier occurrence of those from disease of the central nervous system; a marked decrease in those from bronchitis, asthma, emphysema, and congestion of lungs; a decrease nearly as great in those from phthisis, and a later occurrence, or at least termination, of the disease; a very large decrease in those from old age, with an increase in those referred to atrophy, debility, etc.; and the addition of a considerable group referred in general terms to alcoholism or chronic alcoholism, or resulting from accidents" (par. 45).

The Committee's conclusions under this head roughly correspond with our results as regards diseases of the liver, kidney, and nervous system, and also as regards old age and phthisis, but not as regards diseases of the heart, pneumonia, bronchitis, etc., "atrophy" and debility.

I have found no statistics supplying the deficiency of our results as regards a comparison between the longevity of total abstainers and moderate drinkers respectively. I am informed that the experience of the United Kingdom Temperance and General Provident Institution is undoubtedly favourable to the abstainers as compared with the rest of the community, but no detailed report has, I believe, been published.

I extract the following from *The Insurance and Finance Leader* of May, 1888.

"In his speech at the recent annual meeting of the Whittington, Mr. Bowser made some interesting remarks regarding the question of Temperance sections in Insurance Companies that are worth quoting. The experience of the Company since the last valuation and bonus in 1884 was that the rate of mortality in the ordinary section was 16.35 per 1,000 per year, while the rate in the Temperance section was 8.74 per 1,000 per year.

"'But,' he said, 'as the lives assured in the Temperance section are somewhat younger than in the other, because they commence the provident habit of paying for life assurance at an earlier age than others, I have separated those above thirty years and under fifty, and I find the difference not so much in favour of the Temperance section, but still considerable. I find the rate in the ordinary section is 10.05 per 1,000; in the Temperance section, 6.72 per 1,000.'

"Then, going deeper into the subject as to the causes of death, Mr. Bowser found that:

"'More than one-fourth of the whole number of deaths amongst the assured arises from various affections of the lungs and respiratory organs. The proportion in the Temperance section is slightly in excess of the ordinary section. About one-eighth of the deaths arise from various affections of the brain. Here, again, the mortality in the Temperance section is slightly in excess of the other. These two causes of death seem to show that the practice of teetotalers has but little influence on the rate of mortality from these causes. But when we come to the affection of the heart, of the stomach, of the liver, and of the kidneys, then the difference is most serious indeed. In the ordinary section the number who die of heart affections is nearly three times as many as those in the Temperance section, but of those who die of diseases of the stomach, of the kidneys, and kindred diseases, etc., the proportion is four times as many as those who die from the same causes in the Temperance section; still more, against the proportion of 32 per 1,000 persons in the ordinary section who have died directly of liver diseases, not one has died of such affections in the Temperance section. Again, the deaths by accidents of various kinds (including suicide) are in the proportion of one in the Temperance section, against thirteen in the ordinary section. These statistics are gathered from a number of assured lives; persons known to be intemperate are absolutely excluded when proposed for life assurance.'"

[9] "During the last quarter of a century, the drinking practices of society have much altered, and what is now commonly regarded as free living, would have some years since been looked upon as only moderation; so, in like manner may it be hoped that the usages of society will continue to improve, and, at no distant date, the habits now considered not to exceed the bounds of moderation be altogether unknown in polite and refined society. It is, therefore, possible that what has hitherto been regarded as intemperate habits, may differ very widely from that which may be looked upon as intemperate some years hence." Neison. *Loc. supra cit.*, page 201.

Dr. Casey has sent me the following table, exhibiting in parallel columns the comparative drinking habits of certain occupations as shown by our Report and the comparative mortality of males in the same occupations at the ages 25 to 65, as given by Dr. William Ogle in the *Supplement to the Forty-Fifth Report of the Registrar-General*, p. xxv. The figures in the first column are the percentages of the less temperate in each occupation, drawn from our Tables VI and VII and compared with the general percentage taken as 100. Those in the second column are from Dr. Ogle's table, the general mortality being reckoned as 100 instead of 1,000.

The figures in the second column for weavers, miners, and "driving occupations" are rough estimates only, as these categories are divided by Dr. Ogle into groups, of which the relative proportions are not ascertainable.

Dr. Ogle's figures are drawn from the returns for 1880-2.

	Ratio of the less Temperate. 100 = Average.	Comptve. Mortality at ages 25-65 (Ogle). 100 = General Mort. of Males at same ages.
Clergymen, etc	19	55.6
Schoolmasters	63	71.9
Weavers	69	94.2 (?)
Gardeners	71	59.9
Agricultural labourers	71	70.1
Shoemakers	71	92.1
Tailors	76	105.1
Medical men	82	112.2
Carpenters	98	82.0
Blacksmiths	104	97.3
Lawyers	110	84.2
Painters[1]	111	120.2
Masons and Bricklayers[2]	118	96.9
Miners	126	110.0 (?)
Commercial travellers[3]	148	94.8
Driving trades[4]	146	118.4 (?)
Butchers	165	117.0
Publicans[5]	181	152.1

[1] Plumbers and glaziers are included by Dr. Ogle, not by the Collective Investigation Committee.

[2] Builders are included by Dr. Ogle, not by the Collective Investigation Committee.

[3] Probably many travellers retire before advanced age.

[4] Grooms are included by Dr. Ogle, not by the Collective Investigation Committee.

[5] Potmen, barmen, etc., are included by the Collective Investigation Committee in its "Licensed Victualling" group. Dr. Ogle makes a separate category of "Inn and Hotel Servants," with a comparative mortality of 220.5.