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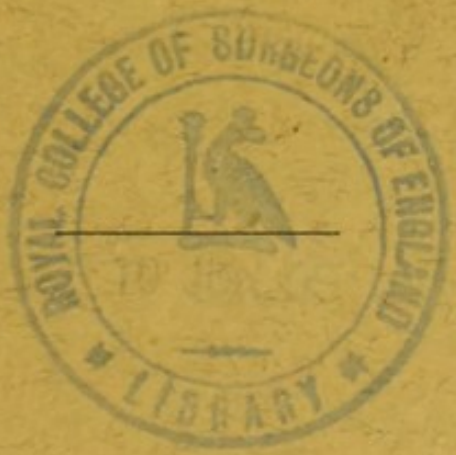
A. K. CHALMERS, M.D., D.P.H.(CAMB.),

Medical Officer of Health for the City of Glasgow.



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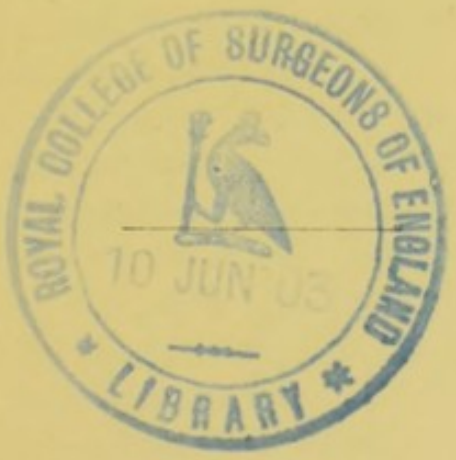

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[From the *Proceedings* of the Royal Philosophical Society of Glasgow.]

The Death-Rate in One Apartment Houses: An Enquiry based on the Census Returns of 1901.

By A. K. Chalmers, M.D., D.P.H.(Camb.), Medical Officer of Health for the City of Glasgow.[1]

[Read before the Society, 22nd April, 1903.]

Mr President and Gentlemen,—It is fitting that I should devote the opening words of this paper to acknowledging the honour which the members of the Sanitary and Social Economy Section of your Society have conferred upon me in selecting me as their President. Nor can I refrain from expressing my appreciation of the constant devotion to the work of that section which is displayed by its Secretary, Mr Buchanan, and which renders the work of the President almost a sinecure.

But in approaching the work which it becomes the duty of the President to undertake, I am conscious of no inconsiderable hesitation—a hesitation which arises from the knowledge that with similar opportunities I shall fail to devote them to the same high excellence of purpose that my predecessors have done. But I take courage in the recollection that the problems with which Sanitary Science and Social Economy concern themselves, have many aspects and few limitations.

Is it not the case that our material progress is creating for us new problems which it were at least unsafe to assume are to be solved without any revision of our methods.

Yesterday it was the cry of the children swelling in its pathos above the din of a recently introduced factory system and the cruelties of child labour; to-day it is the demand of Empire that our manhood shall be of the best.

We regard, it may be, with equanimity our rapidly declining birth-rate because it still so much exceeds the rate of deaths, but are we gaining in quality what we are losing in quantity, or have we simply better learned the art of protecting our children from danger. Are they stronger, if fewer, or is it that we are silent

[1] An Address as President of the Sanitary and Social Economy Section.

witnesses of the operation of some biological law of whose very existence we are scarcely yet conscious.

Or, again, do we often ask ourselves whither the increasing growth in number of our town populations, with its associated depletion of our rural districts, is tending? Let anyone betake himself to a calm perusal of the chapter "Realities at Home," in a recent work[1] and then ask himself whether the Author's description is true only of London, of which he writes, and has no counterpart in this and every other City population. For the new problem which the 20th Century brings is no mere repetition of the old. The need still remains, it is true, for dealing in detail with the scattered fragments of those grosser physical surroundings of life which stirred the philanthropy of Queen Victoria's age, and produced our Industrial, our Educational, our Sanitary Codes. But even were this accomplished is the end in sight?

Are there not already suggestions that what the Alienist calls mental disease, and the Sociologist the Neuroses of modern City life are but awaiting recognition from every form of activity which has the perfection of the race as its object.

Is the growing custom of a Saturday at golf, or a week-end in the country the outcome solely of an increasing desire for pleasure, or the timely recognition of a demand by the nervous system that the strain must be relaxed. Is the growing demand for ever varying forms of excitement, an indication of mental health or of an ill-developed and badly balanced brain. Have we learned only how to preserve life, while blind to the need for an increasing nerve power to develop it. If we have in some measure learned how to pick our steps warily through many of the causes of disease and ill-health, is it but as the child learns to walk unaided?

But while there is much here which tempts one to linger, my purpose to-night is a much more limited one.

The writer of a recent article in the *Contemporary Review*[2] contrasts, not inaptly, the perfection which is attainable in plant life when the botanist proceeds by a selection of the species possessing most abundantly those qualities which he wishes his

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[1] "The Heart of the Empire: Discussions of problems of Modern City Life in England." T. Fisher Unwin, 1902.

[2] March 1903, "An old Scot's City." By Professor Geddes.

new forms to acquire, with the almost complete absence in the mass of mankind of those qualities of strength on the one hand and of beauty on the other, which in theory at least we regard as attainable by one sex or the other. Moreover, in the animal as in the vegetable kingdom each individual conforms to the standard of its species, and the average for practical purposes may be regarded as the normal. To this law of nature, mankind is the outstanding exception, and he asks, must we for ever rest satisfied with a normal attainment which falls so far below our ideal standard?

Let it be granted at once that the comparison may be objected to on the ground that the terms are not similar, that the production of plant life may be conditioned, almost entirely at will, by the experimenter, of human life, never; there remains the fact that despite a not inconsiderable knowledge of the circumstances on which healthy human life and development depend, it would only be by the most wilful exclusion of facts of every day observance were we to suggest that we have made any considerable advance towards realising them for many of our population.

It is true that during the last half century, to go no further back, we have had side by side with the steady growth of town populations, a decline in their death-rates which has been not only simultaneous but continuous, and that these afford some ground for believing that we are learning something of the conditions under which populations may be massed, and yet some semblance of an approach to the conditions of healthy existence for the individual maintained. Here to a certain extent we are testing the truth of a doctrine by its results, and although it might be suggested that some part of these are dependent not on improved environment, but on an altered age constitution of the population which favours low death-rates,[1] there is, I believe, solid ground for satisfaction in the advance which has been made. But the whole position of hygiene is being exposed to a new line of criticism, which is not only quite rational, but is of the highest practical importance. What, it is asked, lies behind this statement of reduced death-rates? Are the 5,000 lives now saved annually in every million of the population by reason of the reduction of the death rate from 22 per 1,000 to 17 in the last 40

[1] The greatest saving has been effected in the mortality of childhood, and the proportion of children is getting smaller.

years, recruited in any large measure to the manhood of the country. Is their preservation in any sense a national gain, or are we preserving the weakling and inflating our population with a surplusage of inefficients? Is it true, as has been suggested, that our reduced death-rate only means lives saved, and not also true that it implies a greater vitality for the remainder. The two propositions are essentially distinct, and I put them to you in this form because the following words of Mr Lecky in his work the "Map of Life" are deserving of the closest consideration.

"There is, however," he says, "some reason to believe that the diminution of disease and the prolongation of average human life are not necessarily or even generally accompanied by a corresponding improvement in general health, . . . an anæmic population free from serious illness, but living habitually at a low level of health, and with the depressed spirits and feeble capacity of enjoyment which such a condition produces, is far from an ideal state, and there is much reason to fear that this type is an increasing one. Many things in modern life . . . contribute to produce it, but two causes probably dominate all others. The one is to be found in sanitary science itself which enables great numbers of constitutionally weak children who, in other days would have died in infancy, to grow up and marry and propagate a feeble offspring. The other is the steady movement of population from the country to the towns. These two influence and powerfully tend to depress the vitality of a nation. Whether our improved standard of living and our much greater knowledge of sanitary conditions altogether counteract them is very doubtful."

So far as the criticism is general only it might be suggested that the answer lies—as I have indicated—in the assumption of an improved hygienic status, which a decreasing death-rate in most cases connotes; that where the general conditions result in the saving of some lives there is an associated higher level of healthiness attained by others who formerly were more accessible to disease.

The importance of the question, however, is too great to be left to mere generalisation, and indeed, against this we are guarded by the specific illustration which has been afforded us by Sir Frederick Maurice.[1] Two efficient soldiers out of five recruits

[1] A paper read before the Civic Society of Glasgow, November 1902. See also *Contemporary Review*, January, 1903.

is the picture which recruiting experience draws of the physical vigour of the ranks from which the army is drawn. Apply this figure to the unskilled labouring classes of our industrial population, and let us ask ourselves whether the cradle of an Imperial race is but a Statesman's dream.

Still another aspect of the question has grown up in the recent enquiry into the physical conditions of school children, and while we await with eagerness the issue of the completed report, sufficient indication of its tenour has already been afforded in press notices, to stimulate anticipation that it will afford additional means by which the value of our decreasing death-rates may be tested.[2]

It may be suggested that the argument of the critic is established in the illustrations which he adduces. The reduction in the death-rate is conceded, but the contention is that the vitality of our populations is not improved.

If the propositions appear at first sight contradictory, and yet both represent some element of ascertained fact, it were well to enquire whether the one may not also contain some element which will serve to explain the other.

I have therefore thought that it may interest you, as Members of a Society, which, during a century of continuous work, has repeatedly devoted itself to a consideration of questions which are local only in the sense that the illustrations are drawn from the life which surrounds you, if I invite your attention for a little to some factors in our death-rate which may help us to find some common approach to the contradictory propositions which we have been considering. My illustrations are taken from the variations presented in the death-rates among several classes or groups of our population, when they are arranged according to the several sizes of houses which they occupied during the Census year, 1901. Should I fail to enlist your sympathy with the subject, I would urge you to remember that its importance should not be gauged by imperfections in the manner in which it is presented to you.

Were it necessary to warn this audience against the errors of statistical inference, I should plead in defence of the limited time over which the rates have been calculated, the circumstance,

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[1] Report of the Royal Commission on Physical Training (Scotland), 1903, (since issued).

that only once in ten years are they available on a similarly ascertained basis, and that the range of probable error therein can be more accurately estimated than were I to have assumed the constancy of a population-factor over a period of years, with the knowledge that its proportions are gradually changing, and especially that in one apartment houses it is decreasing.

In dealing with the death-rate of large areas, it is customary, as you know, to sub-divide the total population into groups, with the object of ascertaining variations in the rate, which might reflect differences in the sanitary surroundings of each; and when we state the death-rate of Glasgow during last decade at 21·15 per 1,000, it is qualified by the knowledge that among the 33 sanitary sub-districts into which the City is divided, the rates range from 8 per 1,000 in Kelvinside, and 9 in Pollokshields West, to 31·8 in Brownfield, and 32·7 in Cowcaddens. It is right, however, to observe—although we need not linger over the fact—that variations in a death-rate may arise from circumstances not related to sanitation at all. The death-rate among male children under five in Glasgow, according to the New Life Table, was 86 per 1,000 living at these ages, and of female children 75, so that two populations, in which these formed a larger or a smaller proportion might have their death-rates increased or decreased without of necessity implying that their circumstances otherwise were different.

And as children at these ages form only 6 per cent. of the population of Kelvinside and Pollokshields, but nearly 12 per cent. of the population of the City as a whole, we should have to make correction for these differences before comparing the district rates with that of the City.

But in the present enquiry the endeavour has been, in the first place, to eliminate as far as possible the effect of external conditions, and to ask what part the house—considered simply as a place of residence—plays in the life history of its inmates, and to what extent its effect becomes an appreciable factor in the production of our death-rate.

For this purpose I have taken the population of the City at last Census, and arranged it in groups, distinguishing between the numbers occupying one, two, and three apartment houses, and those of all other sizes, and against each group I have placed the deaths occurring during the Census year, 1901, and their equivalent rates.

TABLE I.

GLASGOW, 1901.—DEATHS AND DEATH-RATES FROM "ALL" AND "CERTAIN" CAUSES IN HOUSES OF SEVERAL SIZES.

(1)	(2)	(3)		(4)		(5)		(6)	
SIZE OF HOUSES.	Census Population.	All Causes.		Zymotics.		Phthisis.		Respiratory Disease (including Croup)	
		Deaths.	Death-rate per 1000.	Deaths.	Death-rate per 1000.	Deaths.	Death-rate per 1000.	Deaths.	Death-rate per 1000.
1 Apartment, - - - -	104,128	3,405	32.7	771	7.4	247	2.4	792	7.6
2 Apartments, - - - -	348,731	7,418	21.3	1,576	4.5	620	1.8	1,600	4.6
3 Apartments, - - - -	151,754	2,081	13·7	290	1 9	178	1.2	362	2.4
4 Apartments and up, - -	136,511	1,533	11.2	139	1.0	99	0.7	272	2.0
Institutions and Harbour, - -	20,588	1,072	—	88	—	152	—	235	—
Not Traced, - - - -	—	207	—	10	—	48	—	41	—
CITY (including Institutions and Deaths not traced), - -	761,712	15,716	20.6	2,874	3.8	1,344	1.8	3,302	4·3

The contrast here presented in Column 3, at once arrests attention. In a year in which the death-rate for the City was barely 21 per 1,000—it is scarcely exceeded by that of our two apartment population (which forms 47 per cent. of the whole) and not measureably approached in the population occupying houses of larger size. Yet in this same year the rate among the one apartment population is 33 per 1,000, and this not in one district only, but calculated over nearly one seventh, (14·05 per cent.) of our population, distributed widely throughout the City.

In houses of all other sizes taken together it only slightly exceeds 17, and barely reaches 19 per 1,000 when the Institutional and Shipping population and deaths are included with them.[1]

It is scarcely necessary further to emphasise the contrast, but it may help us to appreciate the volume of our population to which this excessive death-rate of 33 per 1,000 applies if I suggest a few comparisons.

Taken collectively, in our one-roomed houses we have a population which in number exceeds that of any of the large town populations of Scotland, and among the principal towns is only surpassed by Edinburgh, Aberdeen, and Dundee; it equals in volume three times the combined population of our four worst sanitary districts, Cowcaddens, Port-Dundas, High Street and closes East, and Brownfield; and in the year with which I am dealing the death rate was exceeded in only two of them, Brownfield and Cowcaddens.[2]

It may well happen then that the contention of the critic that reduced death-rates are not necessarily or even generally accompanied by a corresponding improvement in general health, in reality means that the hygienic advance in recent years has been unequal, and that it has failed to reach no inconsiderable section of our town populations. If this be the case, it is of the most vital importance that we should realise it.

	Population	Deaths	
[1] 1 Apartment	104,128.	3,405, D/R p. 1,000,	32·7
2 Apartment and upwards (including Inst. and Shipping,)	657,584.	12,253, ,,	18·6
City,	761,712	15,658	20·6

[2] In Brownfield with a population of 3,924, the death-rate in 1901 was 40·4; and in Cowcaddens with a population of 18,206 the rate was 33.4 per 1,000.

We need not take the figures as absolute factors. Extended over a series on both sides of a Census year, there would most probably occur fluctuations in both directions, but the difference is sufficiently great to call for more detailed examination.

But it may be advanced that the contrast which is here suggested is simply a fiction of figures, and that it represents no substantial fact which we can analyse and again reconstruct with the view of deducing some conclusions which may be of practical value. Can the number of deaths be verified, and is there not room for error in the several groupings of the population to which they are debited? As some of you are aware the Registrar General states the proportion of population occupying one apartment houses at last Census in excess of the number here given owing to a different interpretation being placed on the term "house."[1]

His number of one apartment houses at last Census was 42,623, and their population 123,866, while our local figure for houses is 32,709, and for population 104,128; but for the reasons indicated in the footnote I am disposed to regard the local statement as more accurately representing the numbers living under conditions of one-roomed occupancy. The question, however, is important only so far as it affects the probability of our death-rate being stated accurately. The Registrar General's method of classification has been uniform through several Census enumerations, our local method only since 1891.

When Dr Russell considered the question on a similar occasion before this Society in 1885, he had, for lack of more precise information, to assume that the number of persons then occupying one appartments bore the same relation to the whole population as the Registrar General had shown to exist in 1881. Applied to the one apartment deaths of 1885, this population gave a rate of almost 27 per 1,000. If similarly we applied the Registrar General's figure for the 1901 proportion to the one apartment deaths of that year, we should still get a rate of 27.5, and might be disposed to conclude that absolutely no improvement had

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[1] In classifying houses with regard to size and the number of persons occupying them the Registrar General regards as a "house" the house-room occupied by a "family;" and a "family" may consist of a "lodger" occupying one or more apartments, *e.g.*, A three apartment house in which there is a lodger occupying one room becomes in the Registrar General's table two houses—one of one and one of two apartments.

occurred during the interval, but rather the reverse. For several reasons this would, I think, be erroneous. Moreover, the local analysis of the 1891 Census showed that the proportion of the one appartment population had been decreasing, and that if applied to the 1885 estimate would have given a one apartment population of only 96,000. But as this would suggest that in the succeeding five years it was increased in numbers by 4,000, and again fell off during the following decade, by a corresponding number, I feel that it would be unsafe to construct any rate for 1885 on a similar basis to that which I have given for 1901.

For the moment the question which presses is less the relative movement than the absolute range of our one apartment death-rate, and in this reference to the varying methods by which it may be estimated, there is nothing which in any way abates the gravity with which we must regard it. But before finally accepting it, one or two points demand consideration.

QUESTION OF AGE DISTRIBUTION OF ONE APARTMENT POPULATION.

What is the age distribution of our one apartment population? Here, unfortunately, direct information is awanting, and we are in danger of travelling in a circle. Moreover the question is an important one, for it would be easy to construct an artificially arranged population, among whom a death-rate of 30 per 1,000 might quite reasonably occur without attracting special attention. I have already referred to the disturbing effect of a varying proportion of children under 5 years of age.

On the other hand it might be assumed, and indeed it has been suggested, that our one apartment population consists largely of widows or aged couples whose children have left the parental roof. The death-rate for males in Glasgow, at ages from 55 to 65 is 45 per 1,000 (New Life Table), and of females from 45 to 55, it is 21, so that again, with the proportion of the sexes which we have in Glasgow, were these houses so occupied, a death-rate approaching 30 per 1,000 could not be regarded as excessive. But a scrutiny of the age periods at which the deaths in one apartment houses occur, prevents us from assuming that they are occupied in excessive proportion by persons in advanced years, among whom a high death-rate might be expected. If we assume

that our one apartment population is similar in its age distribution to the average of the city, we shall be probably not very wide of the mark.

TABLE II.

GLASGOW, 1901.—DEATHS IN ONE APARTMENT HOUSES AT CERTAIN PERIODS OF LIFE WITH PERCENTAGE OF TOTAL DEATHS AT EACH AGE PERIOD, AND FOR COMPARISON THE PERCENTAGE OF DEATHS AT THE SAME AGE PERIODS IN HOUSES OF OTHER SIZES EXCLUSIVE OF INSTITUTIONS, AND IN THE CITY AS A WHOLE.

Age Periods.	Deaths in 1 Apt. Houses.	Percentage of Total Deaths.		
		1 Apts.*	2 Apts. and up.*	Whole City.
Under 1, - -	1,093	32.1	21.8	22.9
1 and under 5,	850	25.0	16.5	17.8
5 ,, 15,	131	3.8	5.8	5.1
15 ,, 20,	37	1.1	2.7	2.3
20 ,, 25,	87	2.6	3.5	3.1
25 ,, 60,	760	22.3	30.3	29.6
60 and up, - -	447	13.1	19.4	19.2
	3,405	100.0	100.0	100.0

* Excluding Institutions and Harbour.

If we confine our attention to the deaths occurring under 5 years, the contrast which the columns present might arise from a larger proportion of children at this age among our one apartment population, or from a higher rate of mortality prevailing among them, but in either case it would be fatal to the contention that the excessive death-rate of the one-apartment population as a whole is to be explained by causes natural to advanced life. Moreover the figure which represents the number of deaths among infants (1093) has its significance increased by considering the the proportion which they form of the total infantile deaths occurring in the City. In the year 1901 these numbered 3,602,

so that 30 per cent. of our infantile deaths occur among the 14 per cent. of our population who inhabit our one apartment houses. Apart from the operation of extraneous causes, this would require that the proportion of infants therein should be more than twice that of the City generally, which to say the least is unlikely

ONE APARTMENT DEATH-RATES IN DISTRICT GROUPS.

But if we fail to find any satisfactory explanation of the excessive death-rate of one apartment houses by assuming a special age distribution of their occupants, it may be suggested that a comparison of the various district rates will bring into prominence contrasts similar to those with which we are familiar in other respects, and which in general serve to distinguish between those districts which are regarded as sanitary and those which are not. In other words, if the criterion to be applied is solely one of external conditions, which may be controlled by the provision of ample free space, modern structure, and the prevention of external sources of nuisance and of insanitary conditions generally, we should expect to find this reflected in an amelioration of the death rate to a degree when it would cease to be a subject of remark. It is frequently advanced, and under conditions I am disposed to agree—that life in one room may be passed as healthily as elsewhere. The point has an academic importance, but all of us can readily apprehend the reason for the difference in the chemical results when the comparison is made between the air of a space mechanically ventilated for experimental purposes, and a corresponding allowance per head of air space in a household wherein the daily requirements of family life must be performed. We may accept the theory, and even admit that under conditions its practical application is possible. Our object, however, for the moment is not concerned with either aspect, but as practical men to ask ourselves whether to any appreciable extent our one apartment houses are occupied healthily. It is to be remembered that a considerable proportion of them are of quite recent origin. Mr Nisbet, our Master of Works, was good enough some time ago to supply me with the number of such houses for which linings had been granted by Dean of Guild Court during the 10 years ending August 1901, and they numbered 5,665. As the total number existing on the night of the census in March was 32,709, we shall not very much overstate the proportion which the new houses form

by putting it at 17 per cent., and the majority of this proportion would be built under the Building Regulations Act of 1892. Of these new houses 3,451 were built in the police districts C and F which in general correspond with our Eastern Sanitary Districts (Calton, Bridgeton, Bellgrove and Dennistoun, and Parkhead), on the one hand, and with Springburn and Possilpark on the other. If I stated to you that the largest of these Eastern Districts, Bellgrove and Dennistoun, with a population of over 79,000 and a general death-rate of 19 in 1901, had in the same year in its one apartment population, numbering over 11,000, a death-rate of 36, I should probably excite your surprise, but the statement would fail to convey to you any information as to the relative health value of the old and new house because I am unable to supplement it by any information regarding the proportion in which these exist in this district. As matter of fact, however, the bulk of the new one apartment houses in the Eastern District have been erected in Greenhead and Bridgeton, but here again in a one apartment population of 23,332, the death-rate is still 33 per 1,000. Again however, the proportions of new and old are awanting. But while we are unable to institute any comparison between one apartment houses on the lines which the Building Regulations establish, we may discover something of the effect attributable to external conditions by considering the variations in their death-rates in those districts which we regard as good or bad, as healthy or unhealthy, because of their high or low general death-rates.

In a table[1] which I had prepared to show this, the most striking feature, was the uniformly high level which these district rates presented, two only indeed showing a rate which was not in excess of the mean rate for the City, (*i.e.*, 20.7 per 1,000). But to this method of comparison objection might be taken that minute subdivisions of population introduce variations which are avoidable in larger groupings, and accordingly I present to you five groups which between them comprise all the sub-districts. The basis on which this grouping proceeds is the level of the general death-rate of individual districts, and is as follows :—

GROUP I. The average general death-rate of this group exceeds 30 per 1,000. It is composed of the districts of Brownfield, Cowcaddens, Port Dundas, and High Street and Closes East.

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[1] Appendix, Table A.

The lowest district death-rate of the group is 30 per 1,000—the highest 36.4. The total house population is 33,642; the one apartment population 7,685, or 22.8 per cent. The death-rate in houses of all sizes (excluding Institutions and Shipping) is 31.1 per 1,000. Among the one apartment population it is 41.2.

GROUP II. The average general death-rate here exceeds 25 per 1,000. The group consists of six districts, viz.:—High Street and Closes West, Calton, Bridgegate and Wynds, Barrowfield, Laurieston, and Gorbals. The lowest district rate is 25.8, the highest 29.3. The total house population is 81.855, the one apartment population 18.503, or 22.6 per cent. The death-rate in houses of all sizes is 25.8; in one apartment houses 35.9.

GROUP III. The average general death-rate here exceeds 20 per 1,000. The group consists of 8 districts, viz.:—Greenhead and London Road, Monteith Row, St Andrew's Square, St Enoch Square, St Rollox, Anderston, Kingston, and Hutcheson Square. The lowest district rate here is 20.1, the highest 24.7. The total house population is 230,264; the one apartment population 41,834, or 18.2 per cent. The death-rate in houses of all sizes is here 21.5; in one apartment houses it is still 30.5.

GROUP IV. This group includes all the remaining districts of the Municipal area prior to the 1891 extension, viz.:—Bellgrove and Dennistoun, Exchange, Springburn and Rockvilla, Woodside, Blythswood, and Kelvinhaugh and Sandyford. The lowest district death-rate is 14.6, the highest 19 per 1.000 The total house population is 264,138; the one apartment population 28,564 or only 10.8 per cent. The death-rate in houses of all sizes is 17.8 per 1,000; in one apartment houses it is again 33.1.

GROUP V. This group consists of all the districts added to the Municipal area by the extension of 1891. The lowest district death-rate here is 8.3 per 1,000; the highest 17.9. The total house population is 133,380; the one apartment population 7,542, or only 5.6 per cent. The death-rate in houses of all sizes is 13.7 per 1,000; in one apartment houses 25.4.

These gradations will be more readily appreciated if they are placed in tabular form, and in order to indicate the portion of the general death-rate contributed to each group by its one apartment population, I have recast the deaths and house populations of each, excluding those referable to one apartments.

By an easy calculation this column can be made to show that

the death-rate in our worst district is raised 9 per cent by its one apartment population, and in the best within the older Municipal area, by 11 per cent.

TABLE III.

TABLE SHOWING GENERAL DEATH RATE; POPULATION IN ONE APARTMENT HOUSES AND THEIR PROPORTION TO TOTAL HOUSE POPULATION IN FIVE GROUPS OF DISTRICTS; AND ALSO DEATH-RATE IN ONE APARTMENT HOUSES IN EACH.

GROUP.	GENERAL DEATH RATE.		ONE APARTMENT.		
	In Houses of all Sizes, per 1,000.	In Houses exclusive of 1 Apartments.	Population.	Per Centage of Total Population (exclusive of Institutions).	Death-rate per 1,000.
I.	31.1	28.4	7,685	22.8	41.2
II.	25.8	22.9	18,503	22.6	35.9
III.	21.5	18.9	41,834	18.2	30.5
IV.	17.8	15.9	28,564	10.8	33.1
V.	13.7	13.0	7,542	5.6	25.4
CITY.	19.5	17.3	104,128	14.0	32.7

It will arrest attention here that the grading is interrupted by the one apartment death-rate of Group III., which is lower than that of the following group, although it has a higher general death-rate. Group IV is composed of the districts with the lowest general death-rates within the old Municipal area. On the average of 3 years, 1899-1901, the death-rate of Kelvinhaugh and Sandyford was 14.4 per 1,000—the lowest of all—and the highest in the group is Bellgrove and Dennistoun, with a general death-rate in the same period of 19, yet with the favourable external conditions which these rates indicate the one apartment death-rate is 35. The room density, *i.e.*, the number of persons per one apartment house is practically the same in both groups. It may be that some part of the difference depends on a larger proportion of young children in Group IV., but on this point no information is obtainable.

There is here then a suggestion of gradation which, however, depends chiefly on the relative positions of Groups I. and V. The rate in Maryhill, however, which contains 46 per cent. of the one apartment population of Group V., is 31 per 1,000, while its general death-rate during 10 years is only 17. But between them, Groups I. and V., only contain 15,227 of the one-room population, leaving 88,901 as the total one-roomed population within the old Municipal Boundaries save the 7,000 odd who inhabit the houses in the four Districts forming Group I. Among those there is nothing approaching the gradations which the death-rates in houses of all other sizes display. Between Group II. with a death-rate in two apartments and upwards of 23, and Group IV. with a rate of 16, there is a difference of 30 per cent.—while between the highest and lowest one apartment death rate in these groups the difference is only 14 per cent.

So far then as such conceptions of environment as may be represented by external sanitary circumstances contribute to a low death-rate, these figures indicate that their operation is opposed by some other factor which has as yet escaped definition. As I have said, the most striking feature in connection with the one apartment death-rate is that it is uniformly high. Of the 33 Sanitary Districts into which the City is divided, in 9 only does it fall below 30 per 1,000, and in four only is it lower than 25. None fall lower than the average general death-rate for the City.

SOME FEATURES OF THE ONE APARTMENT DEATH-RATE.

But you may ask of what elements is the death-rate composed? Assume a community of over 100,000 persons with a death-rate over 30 per 1,000, in what direction would you look for proof that it arose from insanitary conditions. In other words, what are the tests of unhealthiness in populations. A high infantile mortality—excessive prevalence of zymotic[1] and of respiratory diseases—a high diarrhœal mortality. Our one apartment community complies with all these. It is true that we cannot state its infantile death-rate because the number of its births is unknown, but we have seen that little short of one-third (30 per

[1] 30 per cent. of the total deaths from Measles and Whooping Cough were in one apartment houses.

cent.) of the total infantile deaths in the City occur in one apartment houses. We also know that 31 per cent. of the total deaths under 5 years of age occur there, and if you refer again to Table I. you will see that its death-rate for zymotic diseases was 7.4 per 1,000; for Phthisis, 2.4; for Respiratory diseases (excluding Phthisis) 7.6 per 1,000, while the corresponding rates in two apartment houses were only 4.5, 1.8, and 4.6, and for the City 3.8, 1.8, and 4.3. Its diarrhœal deaths (appendix, table B) numbered 265, and formed 31 per cent. of the 861 which occurred in the City; and its diarrhœal death rate was 2,545 per million contrasted with 890 in houses of all other sizes.

Significant also are these other features which I quote to you without remark:—Of the total deaths occurring under 5 years of age, and uncertified because there had been no medical attendance, 42 per cent. occurred in one apartment houses: of the deaths of illegitimate children at the same ages in the City 38 per cent. occurred in our 1 roomed houses, and formed 10 per cent. of the deaths at these ages therein. The figures from which these rates are obtained are given in the following Table.

TABLE IV.

GLASGOW, 1901.—TOTAL DEATHS UNDER 5 YEARS, WITH THE NUMBER AND PER CENTAGE OF THESE ILLEGITIMATE AND UNCERTIFIED, IN HOUSES OF ONE APARTMENT AND IN ALL OTHER HOUSES, EXCLUSIVE OF INSTITUTIONS.

	1 Apartment.	Other Houses exclusive of Institutions.
Total Deaths under 5 Years, -	1,943	4,310
Illegitimate, - - - -	196	323
Uncertified, - - - -	112	156
Percentage Illegitimate, - -	10.1	7.5
Percentage Uncertified, - -	5.8	3.6

There is evidence then that while our one apartment death-rate is excessive, it has also some of the features which conbribute to persistence at a high level. During the 18 years which separate the two periods in which we have obtained glimpses of its

magnitude, it has yielded only to a limited extent to the operation of the forces which have helped to reduce the death-rate in houses of all other sizes by something like 20 per cent. It might almost be said to be refractory. Brownfield and Cowcaddens, which alone of all our districts maintain a general death-rate in excess of the City rate of 30 years ago, have a combined population of 22,000. Here is a population exceeding 100,000, with a death-rate almost equal to theirs in extent and of even greater significance.

With a death-rate which barely reaches 19 per 1,000, in all save one apartments, what ground is there for expecting that any marked reduction of our City rate will take place in the future, unless we can lay more effective siege to the causes on which our one apartment rate depends.

I have said nothing of the part played in its production by the room-density in our one apartment houses, *i.e.*, by the average number of persons in each. This is greater, as we know, than in our other houses; in the one apartments themselves it is greater in the suburban districts than within the older Municipal area, and District 31 (Possilpark and Barnhill) which stands third highest in order of density is third lowest in point of death-rate among houses of this class. Moreover, we know that in the large English cities with populations similar to our own, one apartment houses, in our sense of the term, scarcely exist in any appreciable proportion, yet their rates of general mortality usually exceed ours. This fact alone would require to be explained before we could accept the suggestion that the difference which we have found in their death-rates is dependent solely on the size of house. For after all is not the use to which the space is put quite as important as its extent. It would be contrary to my own knowledge and unjust to the many hundreds of families who live strenuous, cleanly, frugal, and God-fearing lives in our one apartment community, to suggest that one apartment houses are never occupied healthily ; the very knowledge but adds to the significance of the high death-rate which is present overhead. If we could compare the worst occupied one apartments with the best we should probably find as wide a variation as exists between the one apartment and the others taken together. The death-rates among our selected tenants in Improvement Trust and Workman's Dwellings Company Buildings attest this. But it is impossible to believe, with a tale of 33 deaths per 1,000 before us, that on

the average they are occupied healthily. And were reasons wanted, many lie ready to hand. But we should remember the physical restrictions which the one apartment imposes. It is and never can be anything else than more difficult to comply with the demands of healthy existence in them than in houses of larger size. In them the struggle is greater than elsewhere. And it is precisely among those who by education and training are least fitted to engage in the struggle that the demand falls.

For the problem has its evolutionary or biological aspect, and the danger which attends the use of one apartment houses lies, I am disposed to think, less in the wilful violation by its occupant of any law of hygiene which he knows of than in his ignorance that any such exists. Were he in the mass to appreciate them as thoroughly as some undoubtedly do, then I venture to think our one apartment death-rate would cease to constitute a problem.

It is of no little importance to ask how this is to be accomplished. Despite the critic I am disposed to hold that improved hygiene does mean improved physical vigour. But our comparisons show that a much larger number than we had probably been disposed to think are in some danger of being lost in the general advance. I have suggested that the question may have an evolutionary aspect. In this respect it is educational. If the one apartment requires not less but greater care to be healthily occupied, have we failed to keep this fact ever present to ourselves or to its inhabitant. We use the term one apartment for convenience, but does it not represent rather a manner of life than a mode of occupancy. We have many one roomed tenants in houses of larger size—many also who in our one-rooms reach standards both of hygiene and morality which guard us against any such arbitrary distinction as the simple question of size entails.

But in the main the term may be retained to indicate an elementary stage in civic development, a stage in which the Scriptural injunction to wash and be clean has but limited currency.

In a pamphlet on the tenement house Legislation in New York, prepared for the Commission of 1900, by Mr Laurence Veiller, its secretary, I find the present law stated in the following terms :—"The owner of a tenement house was further required to thoroughly cleanse all the rooms and halls, stairs, floors, and windows, as well as the doors, walls, ceilings, privies, cesspools,

and drains of the house as often as the Board of Health might require." Further that, "whenever there should be more than eight families living in any tenement house in which the owner himself did not reside, there should be a janitor or housekeeper, or other responsible person living in the house, and having charge of the same, *and it was left to the discretion of the Board of Health to decide when such janitor or housekeeper should be required.*"

Then regarding the definition of a "tenement-house," I find it described as a building "which is occupied as the house or residence of three families or more living independently of each other, and doing their cooking on the premises; or a building occupied by two families or more upon one floor, so living, and working, and having a common right to the public parts of the building, that is the halls, stairways, yards."

It is always unsafe to discuss the value of a regulation apart from a knowledge of the special conditions which it was devised to deal with. It is still more unsafe to express an opinion as to its suitability in possibly differing circumstances.

But the policy expressed in this Legislation is sufficiently distinct from anything existing in this country, to make it well worth much careful enquiry.

Recognising the conditions which are apt to become associated with a given kind of occupancy, the Legislature of New York places the burden of their prevention on the owner. He must not only keep the premises clean—under conditions he may be required to appoint a caretaker for the purpose. The tenant is not relieved from the penalty of misconduct, but the owner is held responsible for the misuse of his house. It is an education for the tenant in cleanliness, and for the owner in the duties of ownership. It may have disadvantages—an additional burden on the management of small-sized houses may affect the supply. But there is a discriminating power in the Regulation which would place the burden only on the misused tenements. Compared with this our method is simple in aim, if cumbrous in operation. With us the penalty lies only on the tenant—there is no restriction placed on allowing the misuse of living room, which can only be occupied with intelligence and care.

APPENDIX—TABLE A.

GLASGOW, 1901.—POPULATION AND NUMBER OF DEATHS FROM ALL CAUSES IN HOUSES OF ONE APARTMENT IN EACH SANITARY DISTRICT.

DISTRICT.	Population	Deaths all Causes.	Death-rate per 100,000.
B	826	27	3,269
1	2,174	45	2,070
2	1,019	34	3,337
3	1,819	61	3,353
4	2,342	61	2,605
5	11,371	420	3,694
6	1,462	42	2 873
7	15,426	472	3,060
8	7,906	292	3,693
9	542	19	3,506
10	623	13	2,087
11	4,790	187	3,904
12	220	9	4,091
13	409	22	5,379
14	736	19	2,582
15	6,819	233	3,417
16	4,795	219	4,567
17	1,119	38	3,396
18	5,174	179	3,460
19	3,926	136	3,464
20	1,382	53	3,835
21	13,581	387	2,850
22	1,870	62	3,316
S. & R.	6,255	183	2,926
23	1,160	26	2,241
24	101	—	—
25	62	—	—
26	65	—	—
27	78	—	—
28	17	—	—
29	18	1	—
30	3,467	108	3,115
31	2,574	57	2,214
TOTALS,	104,128	3,405	3,270

APPENDIX—TABLE B.

GLASGOW, 1901.—DEATHS IN ONE APARTMENT HOUSES FROM CERTAIN CAUSES AND ALL CAUSES.

DISEASE.	NO. OF DEATHS.
Smallpox,	44
Diphtheria and M. Croup,	15
Scarlet Fever,	12
Typhus and Undefined Fever,	2
Enteric,	28
Measles,	148
Whooping Cough,	257
Diarrhœa,	265
Septic Diseases,	33
Phthisis,	247
Other Tubercular Diseases,	229
Cancer (Malignant Disease),	48
Diseases of Nervous System,	239
Diseases of Circulatory System,	168
Croup and Respiratory Diseases,	792
Violence,	99
Premature Birth,	141
All Other Causes,	638
TOTAL,	3,405

APPENDIX—TABLE C.

GLASGOW, 1901.—DEATHS FROM ALL CAUSES FOR EACH MONTH OF THE FIRST YEAR OF LIFE IN ONE APARTMENT HOUSES.

Under 1 month,	337	
" 2 "	108	
" 3 "	91	
		536
" 4 "	63	
" 5 "	61	
" 6 "	53	
		177
" 7 "	69	
" 8 "	53	
" 9 "	60	
" 10 "	78	
" 11 "	53	
" 12 "	68	
		380
Under 1 year,		1,093

137 of the Deaths under 1 month are from Premature Birth.