FINAL REPORT ON STATISTICS COMPILED FROM SCHEDULES.

Presented to the Tuberculosis Committee of the Medico-Psychological Association by the Honorary Secretary.
Approved and accepted February 10th, 1902.

GENTLEMEN,

I have the honour to present to you my Final Report on the statistics compiled from the schedules sent to the various superintendents.

Of the 203 schedules which were sent out to the medical superintendents of the asylums of Great Britain and Ireland, 111 were returned. Of these 83 were considered by the Committee as being sufficiently valuable to be used.

The statistics which have been tabulated and compiled from these 83 returns I now present to you (*vide* Appendix A).

The information has been arranged in two main Tables, A and B. Each of these Tables has been divided into four groups:

Group I.—County asylums of *England and Wales.*
Group II.—Borough, city, royal hospitals, metropolitan district, idiot, and naval and military asylums of *England and Wales.*
Group III.—Royal and district asylums of *Scotland.*
Group IV.—District and criminal asylums of *Ireland.*

In Group	I	statistics from	49	asylums	are shown.
„	II	„	17	„	„
„	III	„	10	„	„
„	IV	„	7	„	„
			83		

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Table A. Table A deals with the purely numerical data received from these asylums. These figures have been arranged in seven columns:

Column 1 shows the number of average daily residents during the five years 1895–9.

Column 2 shows the ratio per cent. to average daily residents of deaths from all causes during the five years.

Column 3 shows the ratio per cent. of deaths with active tubercle during the five years.

Column 4 shows the ratio per cent. of deaths from all causes during 1899.

Column 5 shows the ratio per cent. of deaths with active tubercle during 1899.

Columns 4A and 5A indicate the percentage-comparison between col. 4 and col. 2, and between col. 5 and col. 3 respectively.

Column 6 gives the average length of residence in asylums of those dying during 1899 with active tubercle.

Column 7 gives the form of insanity at death of the same cases.

Table B contains in columns (from 1 to 10) the remainder of the information received, and deals with the general hygienic conditions of the asylums, the average time spent by patients out of doors, the cubic space allotted to patients by day and night, the character of the population from which the patients are drawn, and like matters. This Table will be referred to in detail later.

Table A*. Table A* is a summary of Table A (cols. 1 to 5A), showing the average totals in the four groups.

This Table shows very clearly that the figures at our disposal represent, with a degree of accuracy never before attained, as far as I know, in asylum statistics, the true facts regarding the number of patients who die in the asylums of Great Britain and Ireland with active tubercle. This arises from the fact that we have been able to collect our information from two sources, first from death certification, and, secondly, from post-mortem examination. As has been previously pointed out,[1] the fallacy of the statistics on this subject which are given in the

[1] *Journ. Ment. Sci.*, January, 1900, p. 2.

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Commissioners' Blue Books arises chiefly from two sources: (*a*) The fact that the cause of death is certified in many cases in asylums before the post-mortem is made. (*b*) The fact that only one disease may be returned as a cause of death in the Commissioners' forms for the Blue Book.

It was pointed out in 1899 by both Dr. Crookshanks (1) and myself (2) that we had reason to believe that the proportion of cases dying in asylums with active tubercle to those shown in official returns stood in the relation of nearly 2 to 1. Here we find confirmation. While the ratio of deaths from all causes to average daily residents is, as worked out from the schedules, naturally the same as that to be found in the Blue Books, the ratio of deaths with active tubercle to average daily residents, comparing our figures (Table A*, cols. 3 and 5) with the Commissioners' official returns, stands thus:

Public asylums (England and Wales).	From Blue Book figures.	From schedules.
Average for five years (1895–9) . .	1·4 per cent.	2·1 per cent.
For year 1899	1·5 per cent.	2·3 per cent.

It will be noticed also from Table A* (col. 5A) that in each group of asylums in the United Kingdom, deaths with active tubercle show an increase when we compare the ratio in 1899 with the average ratio for the five years, 1895 to 1899. The highest increase occurs in Irish district asylums (·6 per cent.), and the lowest (·1 per cent.) in borough, city, etc., asylums, England and Wales. But, inasmuch as it will be seen from the same table (col. 4A) that there has been a corresponding increase in the ratio of deaths from all causes to average daily residents in these institutions, too much importance should not be attached to this point.

With regard to the incidence of tubercle in the various asylums (as shown in Table A, col. 5), I find that in the public asylums of England and Wales (Groups I and II) twenty-seven asylums out of sixty-six (41 per cent.) show a tubercular ratio which is above 2·3 per cent., the average ratio for these institutions.

(1) *Journ. Ment. Sci.*, October, 1899, p. 659.
(2) *Ibid.*, January, 1900.

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The asylums which stand highest are :

		Per cent.
County	Stafford county	8
	„ Burntwood	5
	Lanc., Rainhill	4·7
	Derby	4·6
	Northumberland	4·3
Borough, city, metropolitan district, etc.	Leavesden	3·8
	Newcastle city	3·4
	Middlesbro' borough	3·2

In Scotland (Group III) five asylums out of ten (50 per cent.) show a tubercular ratio above their average of 1·9 per cent.

The highest are :

	Per cent.
Roxburgh district	2·7
Perth (Murray's Royal)	2·4

In Ireland (Group IV) two asylums out of seven (28·6 per cent.) are over the average of 2·2 per cent.

The highest are :

	Per cent.
Limerick district	4·6
Cork	3·4

Length of residence in asylum.

In Table A, col. 6 shows that the AVERAGE LENGTH OF RESIDENCE in asylums of those cases dying with tubercle during 1899, was as follows :

	Both sexes.
England	$6\frac{2}{12}$ years.
Scotland	4 „
Ireland	$5\frac{1}{12}$ „

This gives an average length of residence for all asylums of Great Britain, for both sexes, of $5\frac{1}{12}$ years.

These figures have an important bearing upon the question as to whether the majority of patients are infected in asylums or bring the disease in with them, and will be alluded to later in connection with that point.

Form of insanity at death.

Col. 7 shows that the FORM OF INSANITY of the tubercular deaths during 1899 occurred in the following order of frequency. The average number of patients dying with active tubercle under each form of insanity in each asylum also works out as follows :

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In England:

		Average.
1.	Dement and Imbecile	17
2.	Mania	6
3.	Melancholia	4½
4.	General paralysis	3¾
5.	Epileptic	2¾

In Scotland:

1.	Dement and Imbecile	3½
2.	Mania, Melancholia	2¼
3.	Epileptic	¾
4.	General paralysis	1/10

In Ireland:

1.	Mania	7
2.	Dement and Imbecile	4¾
3.	Melancholia.	4¼

But the numbers are too small to enable one to draw any very definite conclusion from them.

The whole of the information contained in the schedules returned from eighty-three public asylums of Great Britain and Ireland is to be found in a concise and, it is hoped, a clear form in Tables A, A*, and B.

Coming now to Table B, it will be seen that it has been divided into four groups (as in Table A), dealing respectively with: Table B.

Group I. England and Wales, county asylums.
„ *II.* „ „ borough, city, etc., asylums.
„ *III.* Scotland.
„ *IV.* Ireland.

In the four groups the GENERAL HYGIENIC CONDITIONS relating to each asylum are arranged in ten columns:

Column 1 shows the tubercle death-rate.

Column 2 shows height of asylum above Ordnance data.

Column 3 shows nature of soil.

Column 4 shows average number of hours spent out of doors.

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Column 5 shows cubic space per patient by day and night.
Column 6 shows character of population.
Column 7 shows type of ventilation.
Column 8 shows type of heating.
Column 9 shows whether floors are scrubbed or polished.
Column 10 shows whether milk is sterilised or not.

General remarks.

It will be at once remarked that the facts contained in these columns are for the most part of very varying and dissimilar characters, and although it may justly be presumed that they all have collectively some definite influence upon the general health of an asylum, yet when these varying facts are regarded separately, as they apply to any particular asylum, it is found to be a matter of considerable difficulty to discover, and of still greater difficulty to demonstrate satisfactorily, what degree of importance is to be attached to any particular fact as regards its influence upon the incidence of a particular disease, such as tuberculosis.

For instance, one asylum may stand on a good soil, provide for its patients an air supply above the average, and carry out the most modern ideas as to heating, ventilation, and the cleaning of floors, etc., yet show an alarmingly high tubercular incidence rate.

Another asylum may be lacking in many or all of these advantages, and yet be comparatively free from tubercle.

Yet, again, in other asylums—and this applies to some with a high as well as to some with a low tubercular death-rate—the hygienic conditions may be neither wholly good nor wholly bad, but simply conflicting. In all cases the difficulty was to find a common denominator. My duty, however, was, if possible, to so arrange these varying facts that definite conclusions might be drawn from them, and then to present these conclusions in a way that would be convincing, not only to you as a Committee, but to those who will read your final report. It was not until I had studied and worked at these tables for some time that I fully realised that it was quite impossible, from the facts at our disposal, to state dogmatically why Asylum Y should have a higher tubercular death-rate than Asylum Z.

On the other hand, it appeared possible that one might be able to suggest why one set or group of asylums differed from

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another set or group in this respect. The question then arose as to what basis was the best to use as a standard of comparison—a basis which would give the most accurate results in the clearest way without an embarrassing complexity of tables and charts.

After trying many methods, I decided that it was advisable to adopt the method presented in the accompanying tables.

The asylums in each of the four groups in Table B have been divided into two divisions.

In each division the asylums are arranged in the progressive order of their tubercular death-rate.

Division I.—Contains the asylums in which the tubercular death-rate is below the average tubercular death-rate for that group.

Division II.—Those asylums in which the tubercular death-rate is above the average.

On the line immediately below the titles of the various columns in each division is given the averages for the whole group, while on the bottom line appear the averages for the division itself.

Thus, in the first group (Table B 1) (with a general average tubercular death-rate of 2·4 per cent.) twenty-eight county asylums of England and Wales, whose tubercular death-rates range from ·5 per cent., to 2·2 per cent., are compared with twenty-one in which the death-rate ranges from 2·4 per cent. to 8 per cent.

In the second group (Table B 2) (with a general average tubercular death-rate of 1·7 per cent.) seven city, borough, etc., asylums of England and Wales, with a tubercular death-rate ranging from ·1 per cent. to 1·3 per cent., are compared with ten ranging from 1·7 per cent. to 3·8 per cent.

In the third group (Table B 3) (with a general average tubercular death-rate of 1·9 per cent.) five royal and district asylums of Scotland, with a tubercular death-rate ranging from ·9 per cent. to 1·9 per cent., are compared with five ranging from 2·1 per cent. to 2·7 per cent.

In the fourth group (Table B 4) (with a general average tubercular death-rate of 2·2 per cent.) four district asylums of Ireland, with a tubercular death-rate ranging from ·6 per cent. to 2 per cent., are compared with three ranging from 2·2 per cent. to 4·6 per cent.

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Col. 2: Elevation of asylum.

We come now to the examination of the facts in detail in each group:

First, HEIGHT OF ASYLUM above Ordnance datum. Group 1 (Table B 1, col. 2). The general average elevation above O. D. is 213½ ft. The average for Division I is 158 ft., and for Division II is 280 ft.

Thus the asylums below the average death-rate (Division I) are situated on ground which is, on an average, 122 ft. lower than those with a higher rate (Division II).

In Group 2 (Table B 2, col. 2) a similar condition exists. The asylums in Division I are, on an average, 35 ft. lower than those with a higher death-rate in Division II.

In Group 3 (Table B 3, col. 2) the asylums in Division I stand, on an average, 235 ft. higher than those in Division II.

In Group 4 (Table B 4, col. 2), as the height above O. D. is given in only two cases out of seven, no average can be struck.

It would seem that no definite conclusion can be drawn from this particular column, inasmuch as only forty out of the eighty-three asylums give any information on this point; further, it is generally held that mere height above sea level has little effect upon the incidence of tubercle. Besides, we have no information regarding such important points as prevailing winds and the extent of shelter from them.

Character of soil.

The influence of the soil upon the health of the community living on it depends upon several factors—the slope of the land, the distance below the surface of the impermeable stratum, the depth of sub-soil water, and the efficiency of sub-soil drainage, for instance. On none of these points have we any information. In col. 3, Table B, however, we have some information respecting the character of the soil and sub-soil of the various asylums.

Regarded especially with reference to their effect upon the incidence of tubercle, these soils have been divided into "good" and "bad," according as they were considered to be porous, dry, and warm; or impervious, damp, and cold.

In the first, or "good," category come gravel, sand, limestone, or chalk; in the second, or "bad," list are clay, marl, and peat.

It may be pointed out here that the warmth of a soil is important, and generally corresponds to its porousness.

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The power of absorbing heat differs in different soils, and has been proved by Schübler to be as follows:

	(Standard 100.)
Sand with some lime . . .	100.
Pure sand	95·6.
Gypsum	72·2.
Clay	66·2.

Reverting to our table, it will be seen that in—

Col. 3: Soil.

Group 1.—Division I (Table B 1, col. 3), twenty-one asylums (or 78 per cent.) are on "good" soil, while only six asylums (or 22 per cent.) are on "bad."

In Division II, with the high tubercular death-rates, there are only six asylums (30 per cent.) on "good" soils, and fourteen asylums (70 per cent.) on "bad."

Group 2.—In Division I, five asylums (71 per cent.) are on "good" soils, and two (28 per cent.) are on "bad."

In Division II, "good," four (40 per cent.); "bad," six (60 per cent.).

Group 3.—In Division I, "good," three (75 per cent.); "bad," one (25 per cent.).

In Division II, "good," one (20 per cent.); "bad," four (80 per cent.).

Group 4.—In Division I, "good," three (75 per cent.); "bad," one (25 per cent.).

In Division II, "good," one (33 per cent.).; "bad," two (66 per cent.).

Taking the groups together the results stand thus—

	Division I.		Division II.	
	Good.	Bad.	Good.	Bad.
Group 1 . . .	78 per cent.	22 per cent.	30 per cent.	70 per cent.
„ 2 . . .	71 „ „	28 „ „	40 „ „	60 „ „
„ 3 . . .	75 „ „	25 „ „	20 „ „	80 „ „
„ 4 . . .	75 „ „	25 „ „	33 „ „	66 „ „
Average . . .	74 per cent.	25 per cent.	31 per cent.	69 per cent.

This shows an overwhelming majority for the whole king-

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dom of an average of 74 per cent. of "good" soils in Division I, against 31 per cent. of "good" soils in Division II. While there are only 25 per cent. of "bad" soils in Division I against 69 per cent. in Division II.

Looked at from another point of view, I find that the average tubercular death-rate in asylums on "good" soils is 19 per 1000, as compared with a tubercular death-rate of 30 per 1000 in those on "bad" soils.

Col. 4: Hours out of doors.

In col. 4, which gives the AVERAGE NUMBER OF HOURS spent daily by each patient OUT OF DOORS, both in and beyond airing courts, little disparity exists between Division I and Division II as far as the public asylums of England and Wales are concerned. In the county asylums (Group 1) the average is six hours in each division.

In city, borough, etc., asylums (Group 2) there is an average of half an hour more in Division II than in Division I.

In Scotland (Group 3), on the other hand, Division I shows an average of one hour per head more than Division II.

In Ireland (Group 4) the difference is still more marked.

Division I gives an average of 8½ hours as against 3⅔ hours in Division II.

Taking Scotland and Ireland together, therefore, we find that the patients in the asylums with the lower tubercular death-rates (Division I) were out of doors on an average seven hours, as compared with four hours in those asylums with the higher death-rate (Division II).

But this point need hardly be laboured, as the advantage of an abundance of exercise in the open air is universally acknowledged. On the other hand, the practical absence of disparity on this point between the two divisions of the English asylums seems to show that exercise in the open air is alone of small service in lowering the incidence of tubercle if the patients have to return to work and sleep in an atmosphere charged with the tubercle bacillus.

Col. 5: Cubic space.

We come now to the important question of CUBIC SPACE PER PATIENT by day and night. Col. 5 gives the figures under this head.

Group 1.—In Division I the average cubic space for each asylum is 499 cubic feet by day and 650 by night.

In Division II it is 483 by day and 618 by night.

Division I thus giving an average of 16 cubic feet

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by day and 32 cubic feet by night more per patient than Division II.

Group 2.—In Division I the average cubic space is 516 cubic feet by day and 699 by night.

In Division II it is 534 by day and 641 by night.

Division I thus giving an average of 18 cubic feet less by day, and 58 cubic feet more per patient by night than Division II.

Group 3.—In Division I the average cubic space is 453 by day and 843 by night.

In Division II it is 437 by day and 798 by night.

Division I thus giving an average of 16 cubic feet by day and 45 cubic feet by night more per patient than Division II.

Group 4.—In Division I the average cubic space is 472 cubic feet by day and 697 by night.

In Division II it is 353 cubic feet by day and 600 by night.

Division I thus giving an average of 119 cubic feet more by day, and 97 cubic feet by night than Division II.

Taking all the groups together the results stand thus:

	Division I.		Division II.			
	Cubic feet.		Cubic feet.			
	By day.	By night.	By day.		By night.	
Group 1 . .	499	650	483	(− 16)	618	(− 32)
„ 2 . .	516	699	534	(+ 18)	741	(− 58)
„ 3 . .	453	843	437	(− 16)	798	(− 45)
„ 4 . .	472	697	353	(− 119)	600	(− 97)
Average . .	485	772	451		664	

It is at once apparent that, taking the asylums of Great Britain, those with the lower tubercular death-rate (Division I) provide on an average 34 cubic feet per patient more by day and 108 cubic feet per patient more by night than do those with the higher death-rate (Division II). Or, taking the cubic

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space by day and night together, the patients of asylums in Division I have, on an average, 142 cubic feet each more than those in asylums in Division II.

General remarks on cubic space.

It may be pointed out here that Parkes has laid it down—and his calculations are still quoted in the most modern books on hygiene—that the average healthy adult requires, per hour, 3000 cubic feet of air, and as it has been hitherto extremely difficult to ensure by the ordinary means of ventilation that the air in any room be entirely changed more than thrice in the hour without inconvenience to the occupant, it follows that every person should have in his sleeping room at any rate 1000 feet of cubic space.

It is acknowledged by sanitary engineers that a room of this space should not be more than 12 feet in height. Every healthy adult, then, should have at least 83 square feet of floor space allotted to him for sleeping on, and that would only be sufficient if the air were completely changed three times in the hour. For the unhealthy and sick, 100 square feet (giving 1200 cubic feet) per patient should probably be the minimum provided.

Over-crowding.

In this connection it may be pointed out that, according to the Commissioners' 54th Report for 1899 (Table II, col. E), it is admitted that, out of the seventy-nine County and County-Borough asylums in England and Wales, only forty-nine provide their patients with even the inadequate air supply upon which the Commissioners are supposed to insist. It is a lamentable fact that on January 1st, 1900, thirty of these seventy-nine asylums contained amongst them 1273 more patients than they were built for, or were sanctioned by the Commissioners to contain.

Col. 6: Character of population.

Passing to col. 6, Table B shows some interesting facts regarding the effect upon the tubercular death-rate of the CHARACTER OF THE POPULATION from which the patients are drawn.

It would be rational to assume that those patients who, previous to their admission to an asylum, had lived an outdoor life, and whose work had been chiefly of an agricultural kind, would be more likely to resist the attacks of the tubercle bacillus than those who were drawn from the unhealthy environment of the factory and the slum, and although the facts shown in this column run only on the broadest lines, and

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do not pretend to deal with the finer distinctions, yet it is interesting to find that, as far as the county asylums of England and Wales are concerned, our figures show a distinct difference between the susceptibility of the rustic and the town-dweller.

In Division I (Table B 1) there are thirteen asylums with a rural population, but there are only three such asylums in Division II.

Taking the character of the population as a basis, I find that the average tubercular death-rate is nearly twice as high in the asylums with an urban population as it is in those with an agricultural population, thus:

County asylums (England and Wales).	Asylums with agricultural population.	Asylums with urban population.	Asylums with mixed population.
Tubercular death-rate (per 1000)	16	30	25

Cols. 7 and 8: Ventilation; heating.

The results obtained from the remaining columns 7, 8, 9, and 10 cannot be considered to be striking. With regard to columns 7 and 8, for instance, the questions of VENTILATION AND HEATING are so complex and difficult, and involve so many considerations upon which we have no data here, that one could hardly have expected otherwise. The mere statement that an asylum is ventilated by natural means conveys no idea of the thoroughness with which it is done, neither have we here any means of knowing whether the artificial system adopted works efficiently or not.

Col. 9: "Cleaning" of floors.

With regard to the question of METHOD OF FLOOR CLEANING (col. 9), only six asylums out of the eighty-three return scrubbing as the sole method. These six are among the county asylums of England and Wales. All the other asylums of Great Britain polish their floors either wholly or in part, so that no basis of comparison is afforded on this point. (The six scrubbed asylums have an average tubercular death-rate of 26 per 1000, and the polished 24 per 1000.)

Col. 10: Sterilisation of milk.

In col. 10 it will be seen that only eighteen out of the eighty-three asylums state that their milk is sterilised, and these eighteen are divided equally between Division I and

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Division II, so that no definite deduction can be drawn from this fact.

This completes the analysis of Table B.

I must now refer to the question (to which I have already alluded), *viz.* are the majority of the cases of tuberculosis produced in the asylum?

Duration of phthisis.

It has been already shown (Table A, col. 6) that those patients who died with active tubercle in the public asylums of Great Britain and Ireland during 1899 had been in residence, on an average, over five years (those in the county asylums of England and Wales having been inmates for over six years). About the average duration of phthisis various opinions have been expressed by experts. The mean duration has been thus stated:

"In 50 per cent. of cases less than nine months." (Louis.)

"Twenty-three months." (Louis and Boyle.)

"Two years." (Laennec and Andral.)

"Four years." (C. J. B. Williams and Sir J. Clark.)

"The average duration of 3500 cases attending the out-patient department of the Brompton Hospital was two years and nearly seven months." (Pollock.)

The general conclusion from a consideration of these facts and authorities is that by far the greater number of patients who die in asylums with active phthisis have acquired the disease in the institution.

It is not for a moment suggested that no patients enter asylums with the disease, but it is most strongly my opinion that the number of such patients is comparatively small, and that the large majority contract the disease after admission. If the contrary were the case, and the majority of cases were introduced from outside, it would be reasonable to argue that the tubercular death-rate in each of the county asylums of England and Wales would be likely to bear some relation to the tubercular death-rate of the particular county from which the majority of its patients were drawn. But I find that this is not the case.

The tubercular death-rate in each registration county was shown in the Registrar-General's sixty-second Annual Report for 1899 (Table 26) to be for 1899 (to estimated population in the middle of 1899) in England and Wales 1·3 per 1000, and it ranged from ·9 to 1·8 per 1000.

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The average tubercular death-rate for the asylums of these counties for 1899 (as shown in our table) was 24 per 1000, and ranged from 5 to 80 per 1000.

I find that there is not the faintest relation between the variations in the county tubercular death-rates and the variations in the tubercular death-rates in the corresponding asylums. This appears to me to be another strong reason for believing that a large proportion of patients contract tuberculosis in asylums.

In this connection I wish to make it quite clear that no comparison is being drawn between the tubercular death-rate outside and that in asylums, as not only are the circumstances vastly different, but the methods of obtaining the figures and results cannot with any propriety be compared.

Chart I. Age of asylum in relation to tubercle.

A further question to which I consider that considerable interest attaches is :

In how far does the age of the asylum affect the incidence of tubercle?

Upon arranging the asylums of Great Britain and Ireland in groups, according to their respective ages (Chart I), I find that the average tubercular death-rate gradually rises in direct ratio to the antiquity of the asylum.

Thus while the tubercular death-rate of asylums built less than twenty years ago stands at 18 per 1000, it reaches 28 per 1000 in those asylums built from eighty to a hundred years ago. It will also be observed that the tubercular death-rate rises about 10 per cent. for every twenty years added to the age of an asylum.

This may, of course, be accounted for, to a slight extent, by the general superiority of the modern asylum ; but, that being admitted, one cannot escape from the conclusion that the older a building of this kind is, the more opportunity it has, not only of becoming infected with the tubercle bacillus, but, by the general tendency to decay of its structure, of providing more and more suitable sites for its growth and dissemination.

Another reason seems to be that the older an asylum grows the more numerous becomes the residuum of hopeless wrecks, whose faulty habits are so inimical to the general sanitary conditions of their immediate surroundings.

Separation of recoverable patients.

This appears to me to be, among others, a strong reason for not classing the irrecoverable dement with the patient for

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whom recovery is to be expected. The modern tendency to provide a separate detached mental hospital for recoverable patients has certainly this marked merit, that quite apart from mental advantages, it prevents them from being exposed to the physical contamination of irrecoverable wreckage.

Chart II. Number of patients in relation to tubercle.

I have also worked out the relation of the total number of patients in the public asylums of Great Britain and Ireland to their respective tubercular death-rates (Chart II) with most interesting results.

Arranging the various asylums in groups according to their average daily number resident, I find that the tubercular death-rate in those asylums with less than 300 patients is 17 per 1000, while those asylums which accommodate from 1100 to 2000 have an average tubercular death-rate of 29 per 1000.

The death-rate bears a direct ratio to the number of patients living in one institution, and as in the other chart (I) is seen to increase about 10 per cent. for every increase of 200 in the number of patients.

The herding together of large numbers of patients has frequently been protested against. Here the consequent results, on the incidence of tubercle at any rate, are clearly tabulated.

I have the honour to be, Gentlemen,

Your obedient servant,

(Signed) ERIC FRANCE,

Hon. Sec.

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APPENDIX A.

TABLES AND CHARTS.

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Chart 1.—*Relation of Age of Asylum to Tubercular Death-rate in 78 Public Asylums of Great Britain and Ireland.*

Age of Asylum (in years)	Under 20	21—40	41—60	61—80	81—100
Number of Asylums (78) ...	15	23	21	12	7
Tubercular death-rate (per 1000)	18	21	23	26	28

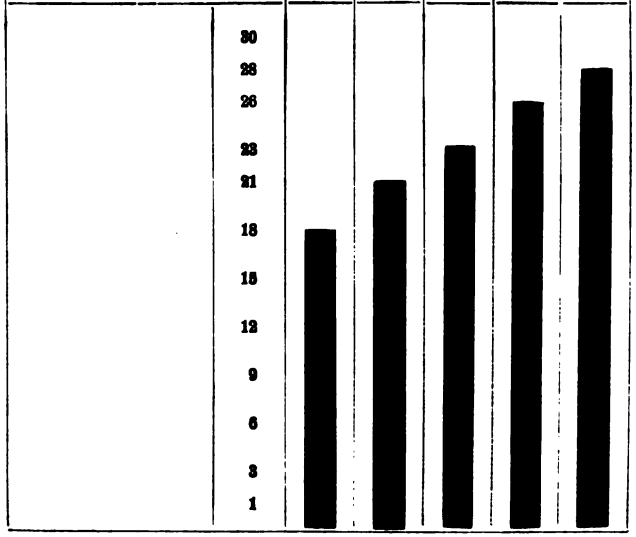
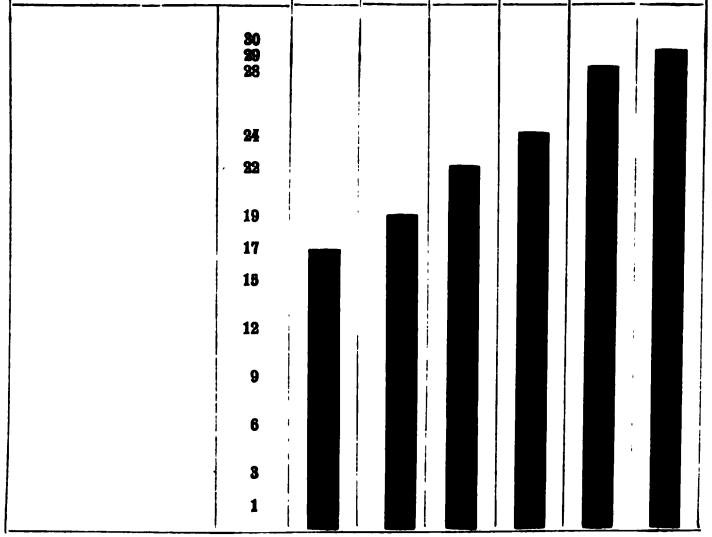


Chart 2.—*Relation of average number Resident to Tubercular Death-rate in 77 Public Asylums of Great Britain and Ireland.*

Average daily residents	Under 300	300—500	500—700	700—900	900—1100	1100—2000
Number of Asylums (77) ...	13	14	16	15	9	10
Tubercular death-rate (per 1000)	17	19	22	24	28	29



APPENDIX B.

(COPY OF SCHEDULE SENT TO MEDICAL SUPERINTENDENTS.)

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