

countries, and there is a large leap before we spend 16s. 11d. per week, which is averaged by the United States. I take it that the aim of superintendents and committees should be to train the public to spend, year by year, and within certain limits, more and more upon their insane; and with judicious education the 15d. difference in the maintenance rate would, like a slowly growing cerebral tumour, be comfortably tolerated. We do not require to consider the cost of attendants' blocks, for they are built out of the Building and Repairs Fund. Only let superintendents who are unwilling to bring forward a large scheme all at once at any rate build upon an extensible plan, so that fresh attendants' blocks will not, after a few years, be a desideratum, when ideas have been enlarged, and more accommodation has become necessary.

To sum up, there is no doubt that until things are made more comfortable the status of the nursing staff cannot be raised. Duty hours and dietary are subjects which admit of gradual and almost imperceptible improvements, so that when the training school is ready, and life conditions have been made favourable, the final step of securing a better class of girl will be easy. In many directions a hopeful start has been, and is being, made; but combined is better than individual effort. I hope the matter will not be lost sight of altogether, although deprecating as strongly as anyone precipitate or premature action.

Ages and Death-rates of Lunatics in the District where "Accumulation" of Lunatics is most Advanced. By T. ALGERNON CHAPMAN, M.D. (*With Diagrams.*)

The statistics herewith presented as to an item or two of lunacy in Herefordshire have various interesting aspects. Perhaps the one that makes them of most value as elucidating an important side of lunacy statistics generally, and as bearing on the question of an increasing prevalence of lunacy, arises from their being those of the district that possesses the largest percentage of insane persons in England, and probably, therefore, in the world, and from their showing that the persons forming this larger percentage differ in some material respects from the lunacy of the country at large. In other words, the additional persons making the number larger are not more of the same sort, but are of a different class.

As showing the larger proportions of Herefordshire

lunacy it may be mentioned that the number of persons of unsound mind returned to the Registrar-General in the census returns of 1891 amounted to 336 in every 100,000 of the population of England. This number includes, of course, all such persons whether under any official cognizance or not, and no doubt includes many persons whom their relatives would not acknowledge to be insane under any less searching and confidential conditions. It, therefore, exceeds materially the number known to the Commissioners in Lunacy, which amounted to 302 per 100,000 on January 1st, 1893. Of these 302, 272 were pauper lunatics, and of these again 196 were maintained in asylums, and so it happens to simplify further comparisons with Herefordshire that the 196 is 72.1 per cent. of the 272, whilst the proportion of Herefordshire pauper lunatics in asylums was very nearly the same, viz., 71.3 per cent. of the total pauper lunatics of the county. In Herefordshire there were on January 1st, 1893, 460 pauper lunatics per 100,000 of population, to compare with 272 for England, and 328 per 100,000 in asylums, to compare with 196. This figure 328 is larger than for any other English county, and may be compared at the other extremity of the scale with 128 in Durham, 134 in Derbyshire, and 141 in Glamorganshire.

The Hereford patients appear to be much older than those in county asylums generally, and they present a much lower mortality. Both these aspects have become, year by year, more pronounced. It is also the case that in England generally lunatics in asylums are each year of a greater average age and that the mortality, especially if age is taken into account, is diminishing. It strongly illustrates the change thus going on, though it rather amuses one used to the exaggerated condition obtaining in Herefordshire, to find (in asylum reports) superintendents of asylums in counties with small proportions of lunatics, whose patients are of the younger ages and whose mortality is fairly high, deploring the change by which they are being inundated with aged and imbecile patients, and others of a somewhat hopeless but not acute type, and also that their permanent inmates are rapidly increasing in numbers. It is no doubt true that these asylums, having the furthest way to go in this movement, are making the earlier steps more rapidly and more evidently than those further on the way.

Herefordshire seems to have got furthest in this direction, though the indications are plain that it has still some way to go before the change is completed.

Why Herefordshire should be so advanced in this matter is in some points obscure, but there are some probable reasons evident enough. Herefordshire has possessed a lunatic asylum longer than many counties. Thirty years ago I knew several patients who could recollect Dr. Gilliland's Asylum at Hereford; I believe its history went back to the beginning of the century. The process of accumulation, therefore, began early. The most efficient cause, however, no doubt is to be found in Hereford being a county with a stationary or diminishing population, not that there is no natural increase of population, but that the whole increase migrates, not only leaving behind those most prone to insanity, but leaving them without the younger and more able members of their families, whose assistance might enable them to maintain their mental (and other) health, who in its failure might care for them at home, and who would themselves afford cases of younger age, and greater mortality (as well as curability).

I entertain no doubt that the condition now obtaining in Herefordshire or one somewhat beyond it is that to which other counties are tending, and that even those now furthest from it would reach it after a certain interval, if their population ceased to be increased by immigration; that this progress should be held to indicate any increased liability to insanity can only be taken as the expression of unfamiliarity with these broad facts.

To turn, however, to the Herefordshire illustration of the fact that the somewhat advanced accumulation of patients existing in that county, whilst no doubt containing the same elements as the less advanced, contains a further and different element, that gives the total quite a different aspect.

In the last two Reports of the Commission in Lunacy there is a table (Table XV. of 46th, XIV. of 47th Report) showing, amongst other things, the ages of patients in county and borough asylums on December 31st, the number of deaths during the preceding year, and their ratios per 1,000 for each age.

As regards the mean age of patients resident in all county asylums on December 31st, 1891, it would appear to be M., 44·4; F., 46·9; both, 45·7. The mean age of patients in the Hereford Asylum has not been so low as this since 1876, when it was 46·7, probably not since the opening of the asylum. At present they are just five years older than the average of asylums, viz., M., 49·1; F., 52·5; both, 50·7.

Since 1882, the mean age has increased with trifling fluctuations as below :—

| Year. | Mean Age. | Year. | Mean Age. |
|-----------------|-----------|-----------------|-----------|
| Dec. 31st.—1882 | 47·6 | Dec. 31st.—1888 | 49·8 |
| „ 1883 | 48·8 | „ 1889 | 50·5 |
| „ 1884 | 49·0 | „ 1890 | 50·1 |
| „ 1885 | 49·6 | „ 1891 | 50·2 |
| „ 1886 | 49·9 | „ 1892 | 50·3 |
| „ 1887 | 50·1 | „ 1893 | 50·7 |

On comparing the ages of asylum patients, as given in the Commissioners' Report, with those in the Hereford Asylum, according to the classification there adopted, it became convenient to reduce each of them to percentages, first, however, in order to get a large enough number, taking the Hereford patients not for one year, but for each year since 1882, viz., 11 years, that happening to be the period for which I have the Hereford ages tabulated in the same way. It is to be observed that this gives the Hereford ages, not of to-day, but of, say, the middle of the period, *i.e.*, of five years ago.

When placed side by side, as under, it is obvious at a glance that Hereford is defective in the younger ages, whilst it has an excess of the higher ones.

TABLE A.—Comparison of the ages of patients in all English county and borough asylums, at December 31st, 1891, with those in Hereford Asylum, during the eleven years 1882-1893, the figures being the number per cent. at each age :—

| Ages. | MALES. | | FEMALES. | |
|----------|--------------------|--------------------|--------------------|--------------------|
| | All Asylums, 1891. | Hereford, 1882-93. | All Asylums, 1891. | Hereford, 1882-93. |
| Under 20 | 3·50 | 1·4 | 2·18 | ·78 |
| 20 to 24 | 5·40 | 4·1 | 4·37 | 2·78 |
| 25 „ 34 | 20·15 | 17·0 | 17·00 | 12·7 |
| 35 „ 44 | 24·77 | 22·7 | 23·25 | 19·5 |
| 45 „ 54 | 22·00 | 22·4 | 23·0 | 23·09 |
| 55 „ 64 | 14·5 | 18·4 | 17·1 | 19·6 |
| 65 „ 74 | 7·69 | 10·0 | 9·8 | 14·0 |
| 75 „ 84 | 1·7 | 3·5 | 2·56 | 6·4 |
| 85 | ·12 | ·14 | ·27 | 1·08 |

To make the facts more obvious to the eye, and so require less detailed comparison than by study of the figures, I have arranged them in diagrammatic form as Diagram I.

In this diagram the males and females are distinguished by the continuous line representing males, and the females by a dotted line.

The lines have similar contours, and all are very close together at or just before the position of 50 years of age. At earlier ages it will be seen that the Hereford lines are much the lowest, showing how much fewer patients we have at younger ages, especially from 25 to 45, the lines for Hereford being nearly parallel to those for all asylums, but far below them.

Again, after 50 the very reverse obtains; from 55 to 85 the lines are nearly parallel, but not so exactly as before, the Hereford lines here being highest, the excess of males culminating at 55-65, that of females being greatest from 65 to 75, and nearly as much on to 85.

In Diagram II. the figures are handled in a somewhat different manner.

It is assumed that the percentage of each age resident according to the collected figures for all asylums is a normal quantity, and is taken as a standard, viz., 100 per cent. Then the percentage at each age in Hereford Asylum (1882-1893) is calculated on this; thus the percentage of males in all asylums aged 75-84 is 1.7 of the total resident. The Hereford percentage is 3.5, hence 1.7 being taken as 100, 3.5 becomes 206.

The basis of Diagram II. is, therefore, a table as below:—

TABLE B. shows percentages which the proportion resident at each age in the Hereford Asylum (1882-1893) bears to the similar proportion in all asylums, 1891 (Commissioners' Report).

| Ages. | PERCENTAGES. | |
|----------|--------------|----------|
| | Males. | Females. |
| Under 20 | 40 | 36 |
| 20—24 | 76 | 63 |
| 25—34 | 84 | 75 |
| 35—44 | 91 | 84 |
| 45—54 | 101 | 104 |
| 55—64 | 127 | 115 |
| 65—74 | 130 | 143 |
| 75—84 | 206 | 250 |
| 85 | 116 | 381 |

This brings out very decidedly the paucity of patients at the younger ages and the excess at the elder. It makes evident also what is not obvious in Diagram I. without some study, that the proportionate defect on the one hand and excess on the other is greater as the extreme ages in either direction are reached. The exception in the males over 85 is due to the smallness of the figures here, viz., only 3, and is balanced by the undue excess in the preceding decade.

A curious feature in Diagram I., but without, so far as I can see, any meaning that I can attach to it, is that the ages of the male patients in the Hereford Asylum correspond very nearly to the ages of females in other asylums, or are even rather higher. It gives, however, an appreciable measure of the greater ages of these patients to those who are familiar with the fact of the greater age and longevity of female patients in asylums. The male patients take the position that females do generally, whilst the female patients are of proportionately greater age and longevity still.

TABLE C.—Patients resident and total deaths during 12 years, 1882-1893, in the Hereford County and City Asylum, arranged according to ages and the ratio per 1,000 of deaths to average number resident, with corresponding ratios for all Asylums for 1890 and 1891, taken from Commissioners' Reports, and for all England from Report of Registrar-General.

| MALES. | | | | | | FEMALES. | | | | |
|----------------|--------------------|---------|------------------|--|-------------|--------------------|---------|------------------|-------------------------|-------------|
| Ages. | Patients Resident. | Deaths. | Ratio per Mille. | Corresponding Ratio, C. in L. 1890-91. | Reg. Genrl. | Patients Resident. | Deaths. | Ratio per Mille. | Commissioners' figures. | Reg. Genrl. |
| 5-9 | 30 | 4 | 133.0 | 56. | 4.7 | 19 | 1 | 52.6 | 63 | 4.7 |
| 10-14 | | | | 76. | 2.9 | | | | 71 | 2.9 |
| 15-19 | | | | 80. | 4.3 | | | | 59 | 4.3 |
| 20-24 | 89 | 2 | 22.5 | 83. | 5.7 | 67 | 2 | 30.0 | 63 | 5.2 |
| 25-34 | 368 | 13 | 35.3 | 87. | 7.9 | 306 | 7 | 23.0 | 61 | 7.1 |
| 35-44 | 488 | 19 | 38.9 | 117. | 13.5 | 469 | 10 | 27.7 | 62 | 11.1 |
| 45-54 | 483 | 37 | 76.5 | 115. | 22.4 | 556 | 13 | 28.7 | 66 | 17.2 |
| 55-64 | 397 | 33 | 81.8 | 142. | 41.1 | 478 | 16 | 33.8 | 91 | 33.4 |
| 65-74 | 215 | 40 | 186.0 | 227. | 81.2 | 338 | 27 | 80.3 | 161 | 70.6 |
| 75-84 | 77 | 12 | 165.8 | 452. | 168.0 | 154 | 26 | 168.8 | 290 | 148.3 |
| 85 and upwards | 3 | 3 | 1000.0 | 698. | 327.1 | 25 | 14 | 560.0 | 467 | 300.6 |
| Totals ... | 2150 | 163 | 75.8 | 127.0 | 21.5 | 2405 | 122 | 50.6 | 83.8 | 19.0 |

If All Asylum Ages

69.5

39.0

If Hereford Ages

137.

31.69

101.4

36.23

The Commissioners' table gives us also the deaths at each age, and the calculated death-rates. I have worked out the same figures for Hereford for the available period (1882-1893, 11 years), and present them in the annexed Table C. I have added the death-rates for each age in all English county and borough asylums, taking the mean of the two years given by the Commissioners' table, omitting decimals as not being significant, and have also added the similar death-rates for all England as given by the Registrar-General and quoted by the Commissioners in Lunacy. It will be seen that except at the extreme ages of men and the oldest of women, less than 60 patients altogether, and therefore liable to the chances of variation in small numbers, the mortality at Hereford for males is very little more than half that in all other asylums, whilst for females it is as much less than half.

With the aid of these figures we can easily calculate what the relative death-rates would be were the age distributions identical. These I have calculated and appended to the table.

These figures are also placed in a graphic form in Diagrams III. and IV.

Taking Diagram III. for males, we see the line representing the whole country, taking a very regular sweep, showing that it deals with large enough numbers to give a correct return. The "All Asylums" line is fairly regular, indeed nearly as much so as that of the Registrar-General, if we take the rise at 35-40 to represent the mortality in asylums due to general paralysis.

I cannot help here calling attention to this instance (which statistics of insanity so frequently illustrate) of a strong indication that general paralysis is not an insanity at all. Paradoxical as this sounds, I am inclined to think it is quite true, and I find, on referring to Dr. Mickle's comprehensive work on the disease, that certain authorities have promulgated the same idea, not at all on statistical, but on pathological grounds. It may be a cancerous or a zymotic disease, or it may have other affinities, but it is not a disease depending on the neurotic diathesis, as most other insanities are. And so if you make any statistics of insanity general paralysis will usually appear as an aberrant nodule on them. It does not fall in with other cases as regards heredity; general paralytics agree with the general population and not with lunatics in being married or single, and

here the inclusion of general paralytics makes an irregular elevation on the death-rate curve.

The Hereford line is rather zigzag, showing the numbers are too small to give the proper form of the curve, but sufficient to indicate its general position; on the whole nearer to that of the general population than to that of all asylums.

When we take the same figures for females, as shown in Diagram IV., we find the line for all asylums takes a fairly regular sweep, being unaffected by general paralysis, whilst as regards the Hereford line the vagaries of small numbers do not appear to have had any very obvious effect, and it takes a fairly regular sweep, and is extremely remarkable as being very much closer to that of the general population than to that of asylums.

The greater age of the Hereford patients, together with our usually low mortality, would lead one to anticipate some such aspect of these diagrams, but I must say that till I had drawn them out I had not expected them to be as pronounced.

TABLE D.—Comparison of death-rates per 1,000, Hereford, 1873-93 (21 years), with all asylums mean of 1890 and 1891 as per Reports of Commissioners in Lunacy.

| HEREFORD, 1873-1893—21 years. | | | ALL ASYLUMS, Mean of 1890 and 1891. | | |
|----------------------------------|-------|---------|--|---------|-------|
| Ages. | Male. | Female. | Male. | Female. | Ages. |
| Under 20 | 60 | 22 | 56 | 63 | 5-9 |
| | | | 76 | 71 | 10-14 |
| | | | 80 | 59 | 15-19 |
| | | | 83 | 63 | 20-24 |
| 20-29 | 35 | 21 | 87 | 61 | 25-34 |
| 30-39 | 47 | 38 | 117 | 62 | 35-44 |
| 40-49 | 58 | 41 | 115 | 66 | 45-54 |
| 50-59 | 72 | 32 | 142 | 91 | 55-64 |
| 60-69 | 105 | 67 | 227 | 161 | 65-74 |
| 70-79 | 245 | 121 | 452 | 290 | 75-84 |
| 80- | 293 | 288 | 698 | 467 | 85- |

I have taken out also the figures since 1873, but having them classified somewhat differently, can only compare them

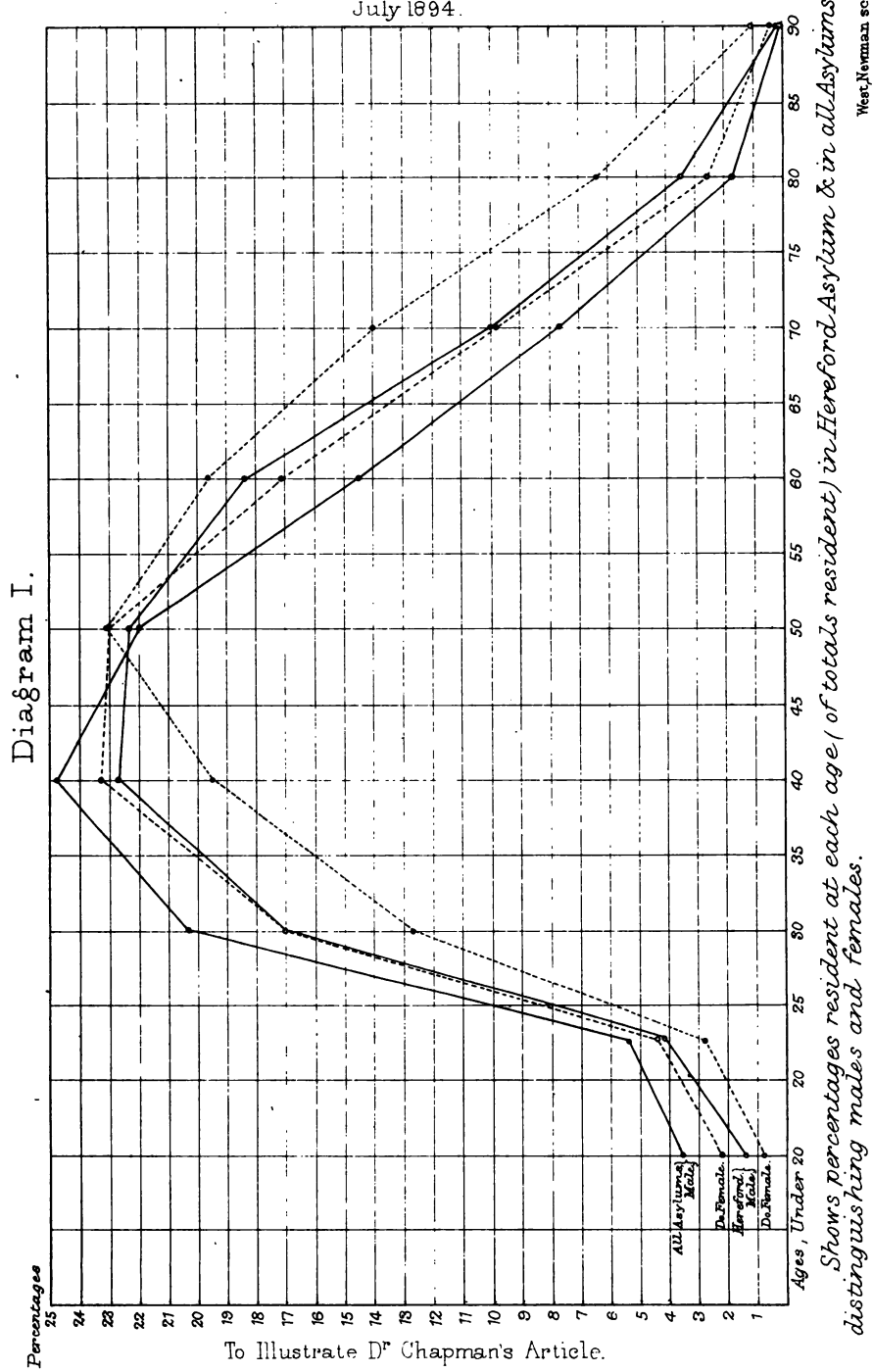
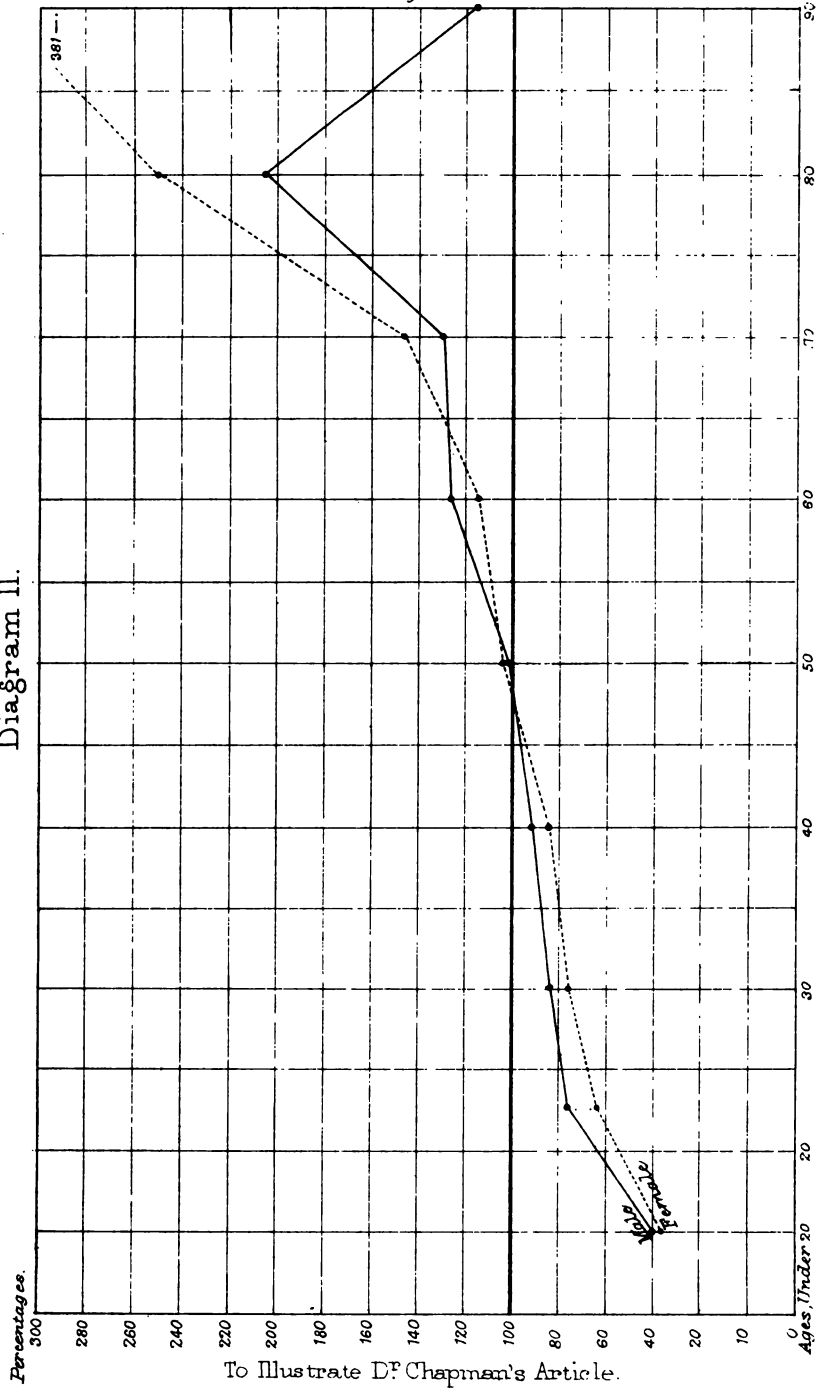


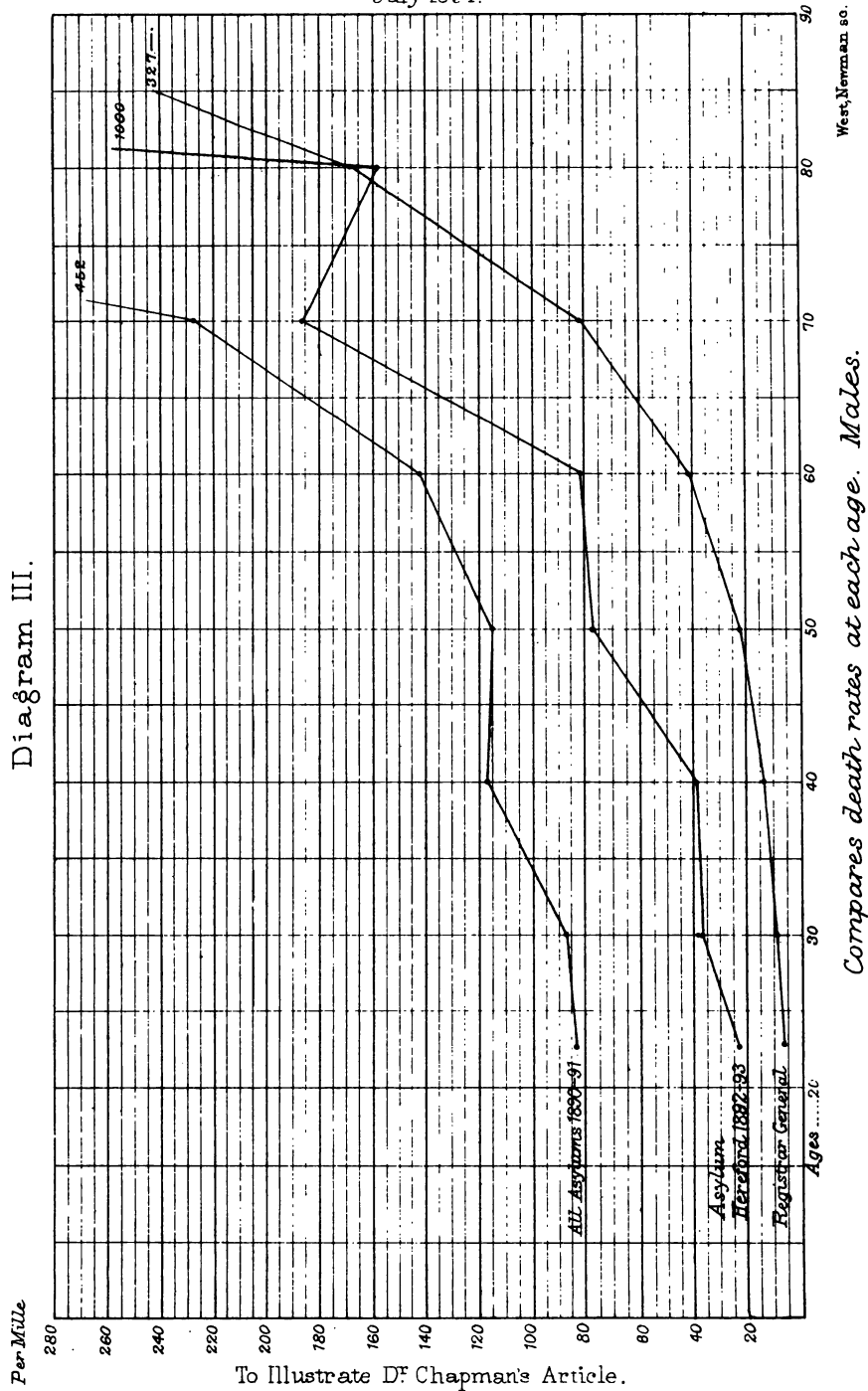
Diagram II.

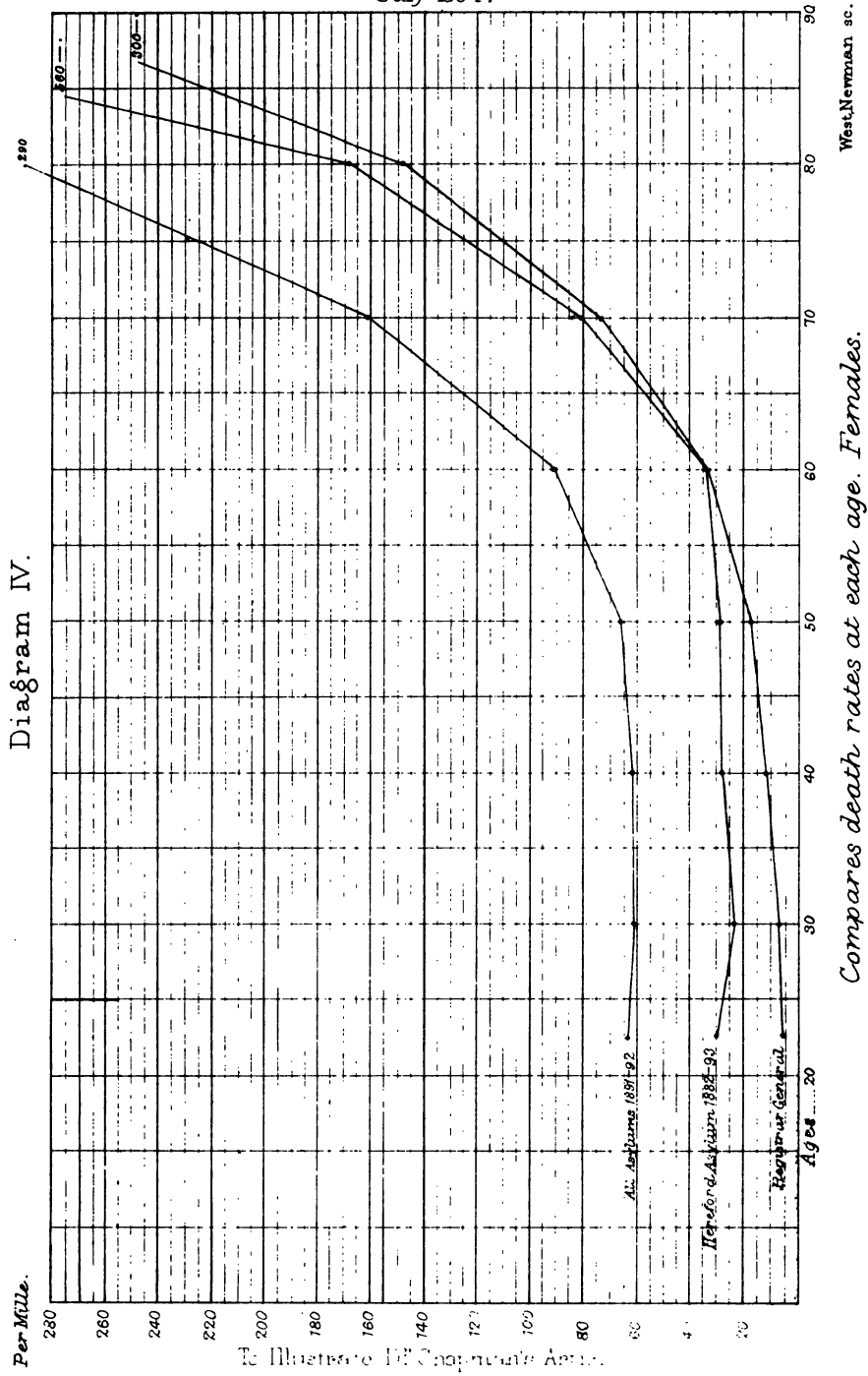


*Shows ratio which percentage resident at each age in Herford Asylum bears to normal percentage.
(All Asylums).*

West. N. 117. 117. 117.

To illustrate Dr Chapman's Article.





as in Table D. The general facts in this large number are much the same; but two points appear. Firstly, that the extreme ages, as in the others, have here (on the larger numbers) rates of mortality as markedly below those of all asylums as the other ages had on the smaller numbers, and also, as appears by putting them in diagrammatic form, the line of male mortality takes a smoother form. Secondly, especially in the female diagram, the figures are not quite so far from the all asylums line as in the line for 1882-93, in other words, the mortality has been lower in recent years.

There is, I think, some reason to attribute a portion of this low death-rate at all ages in the Hereford Asylum to certain conditions pertaining to the asylum that tend to longevity. This appeared a number of years ago when I collected some statistics as to the death-rates in different forms of mental disorder, when the Hereford rates were in most forms lower than those of the same forms in the other asylums whose statistics were examined. Some portion is also no doubt to be ascribed to the population of Herefordshire being a long-lived agricultural one. And there are probably other causes—indeed, the Hereford mortalities are so much nearer those of the general population than of an ordinary asylum population, that many causes, if not every possible cause, must be in action in that direction. The causes of most general interest are, however, no doubt those that depend on the long accumulation of patients in the asylum, and on sending there forms of insanity less frequently sent to asylums in other districts. One result of the accumulation is, that the residents are as five to the annual admissions, instead of the average $3\frac{1}{2}$; mortality being, as is well known, much larger during the early years of residence, even in the same form of insanity, whilst it is also the case that the longer residents tend to contain a larger proportion of imbeciles and others of low death-rates.

The greater ages also of the Hereford patients may be attributed in a considerable degree to Herefordshire longevity and to the emigration of the younger inhabitants; but that it is mainly due to accumulation is probable from its gradually increasing from 1867 till the present date, though even this may be doubted, and a large part of this effect may be attributed to more numerous aged admissions as time goes on.
