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PART 1.—ORIGINAL ARTICLES.

The Local Distribution of Insanity and its Varieties in England and Wales, by T. S. CLOUSTON, M.D., Medical Superintendent of the Cumberland and Westmorland Asylum, Carlisle.

The way in which some diseases seem to confine themselves to particular localities and classes of persons, and the reasons for this have always been favourite studies in medicine; and year by year such questions attract more and more attention. The reason of this is obvious. Those problems have some of the definiteness of pure physical science about them: their study throws a direct light on the nature of disease, while their solution tends to its immediate prevention. Hence the prominence which they have assumed in the new branch of preventive medicine. There is scarcely any word which means so much in this science as the localisation of disease, in its active and in its passive phase. To know why a disease breaks out in a certain place, and to be able to keep it from spreading further may be said to be the two first aims of public medicine. The first thing to be done is, of course, definitely to connect the disease with its habitat. This can be done far more readily in the case of some diseases than in that of others, but there is no disease that is not more or less localised as to places or the class of persons whom it attacks. The weak points of man's constitution are so many, and the trials to which it is subjected vary so widely with locality, climate, food, work, and circumstances, that this must be so. The infinitely numerous seeds of disease and dissolution are of many species; and while each seed only germinates as it finds fit soil, each species also requires suitable conditions. This is as true in regard to the brain, and the departures from the normal performance of its higher functions, as in regard to every other organ of the body,

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though as yet but little attention has been directed to this fact. The wide series of diseases which are at present called Insanity prevail more in some places than in others, attack some classes of persons in preference to others, are hurried into actual development, or retarded where latent tendencies to them are in existence, by certain things which have a local prevalence, and they evidently assume one form rather than another through local influences. The extent to which this is the case is as surprising as it is certain. When one comes to look carefully into the reports of lunatic asylums in different parts of the country it is found that there are forms of brain disease (or varieties of insanity as they are called) present in abundance in one place which have almost no existence in another. Diseases of the brain which kill more than a third of all the patients in the asylums of some of our counties do but kill 5 per cent. of them in others. But I shall not anticipate the numerical proof of what I have been stating. This investigation must be very largely conducted on the numerical method, and fortunately the distribution of insanity and its varieties can be more thoroughly made out in this way than that of almost any other disease. When it attacks in a decided form any person in the classes which constitute nineteen-twentieths of the inhabitants of this country its treatment is so difficult and costly that if it is of long duration it almost necessarily must be done at the public expense. This implies that it is publicly recorded in the official documents of the Commissioners in Lunacy and the Poor Law Board. In this way a fairly trustworthy account can be got of the number of persons in every county and district of England and Scotland who are suffering from this disease in any one year. It is true that these numbers include also the persons who are chargeable to public funds on account of idiocy or marked imbecility, dating from birth, and the numbers of the latter cannot be distinguished in these documents from those who labour under insanity. But as congenital brain defect and acquired brain disease certainly have the closest connection hereditarily and in their essential nature, this does not seriously affect an investigation into the local occurrence of insanity founded on the numbers recorded in the official documents I have referred to. The numbers of the insane who are paid for out of their own funds or by their relations, and who appear in those documents as private patients, are left out of the account, because those numbers are comparatively small, and it is

impossible to fix correctly the local occurrence of this class of insanity, it being determined in these official records more by the presence or absence of the institutions for its treatment than anything else. This omission affects slightly the scientific accuracy of the results obtained, but does not affect their practical value and medical interest.

In the still more interesting but more difficult investigation of the local distribution of the different varieties of insanity, in other words the various diseases which are included under that name, the only reliable data are the facts recorded in the county and district asylum reports. Unfortunately, these are not all drawn up on one plan, no absolutely uniform nomenclature or classification is adopted, and they have not all as yet adopted the forms of statistical tables recommended by the Medico-Psychological Society, so that this part of the enquiry cannot be made so exhaustive or complete as the other. A sufficient number of uniform facts can, however, be got from the reports of asylums, scattered over the various parts of the country, on which to base fairly reliable generalisations. I shall endeavour to throw the numbers and facts into tabular forms as much as possible for the sake of reference.

The actual number of the pauper insane in each county and district I have taken as they stood on the 1st of January, 1871, because that is the record of lunatics nearest to the census of the 3rd of April of that year. The "Preliminary Report of the Census of 1871," issued by the Registrar-General, has been used. I have given in Table 1* (see next page), amongst other information, the proportion of lunatics for every 1000 of the population in every county in England and Wales. The rate for the whole of England and Wales is there seen to be 2·2 per 1000, but the departures from this rate are very striking indeed. The minimum of 1·3 (Durham) is only about three-fifths of the average, and little more than one-third of the maximum of 3·6 at which the county of Berkshire stands. It is an astonishing fact medically, that any non-infectious disease should be nearly three times as common in Berkshire as in Durham; while it is equally remarkable and interesting socially and economically. Durham would have 2,473 madmen and idiots instead of 893 if it had the same number in proportion to its

* A table of this kind is given in p. 14 of the 25th Report of the Commissioners in Lunacy, but on account of the numbers of the population of the various counties being put down probably from the Registrar's estimate instead of from the census returns (not then issued) the proportion of lunatics per 1000 is entirely incorrect.

TABLE I.

COUNTIES.	Population. 1871.	Lunatics. 1871.	Lunatics per 1000 of Popu- lation.	Per centage of increase of Population 1861—1871.	Paupers per 1000 of Popula- tion.
England and Wales.	22,704,108	50,637	2·2	13·1	47·8
Anglesey	50,919	91	1·8	—6·8	66·4
Bedford	146,256	377	2·6	8·1	72
Berks	196,445	713	3·6	11·5	73·1
Brecon	59,904	147	2·5	—3	54·9
Bucks	175,870	441	2·5	4·7	64·3
Cambridge	186,363	446	2·4	6	73·5
Cardigan	73,488	158	2·1	1·7	92
Carmarthen	116,944	309	2·7	4·6	51·1
Carnarvon	106,122	261	2·4	10·9	75·3
Chester	561,131	959	1·7	11	29·3
Cornwall	362,098	567	1·6	—2·3	50·7
Cumberland	220,245	463	2·1	7·3	30·9
Denbigh	104,266	147	1·4	3·4	62·5
Derby	380,538	597	1·6	12·2	24·5
Devon	600,814	1,438	2·4	2·8	58·6
Dorset	195,544	489	2·5	3·6	76·3
Durham	685,045	893	1·3	34·7	36·7
Essex	466,427	1,017	2·2	15·2	67·5
Flint	76,245	202	2·8	9·3	37·6
Glamorgan	396,010	685	1·7	24·6	50
Gloucester	534,320	1,492	2·8	10	52
Hereford	125,364	414	3·3	1·3	53
Herts	192,725	516	2·7	11·2	68·6
Hunt	63,672	134	2·1	—1	52
Kent	847,507	1,864	2·2	15·5	52
Lancashire	2,818,904	5,538	2	16	32·1
Leicester	268,764	805	3	13·2	47·4
Lincoln	436,163	867	2	5·8	50·1
Merioneth	74,369	108	2·3	21·6	78
Middlesex	2,538,882	7,312	2·9	15·1	51·6
Monmouth	195,391	547	2·7	11·9	58·8
Montgomery	67,789	197	2·9	1·3	73·5
Norfolk	438,511	1,135	2·6	·9	70·8
Northampton	243,896	622	2·5	7·1	63·5
Northumberland	386,959	773	2	12·8	43·8
Nottingham	319,956	786	2·5	8·9	44·8
Oxford	177,956	556	3·1	4·1	68·7
Pembroke	91,936	256	2·8	—4·5	61·7
Radnor	25,428	45	1·8	0	89·3
Rutland	22,070	51	2·3	1	60·8
Salop	248,064	695	2·8	2·9	43·5
Somerset	463,412	1,272	2·7	4·2	71·9
Southampton	543,837	1,312	2·4	12·9	58·3
Stafford	857,333	1,264	1·5	14·8	38
Suffolk	348,479	853	2·4	3·4	70·7
Surrey	1,090,270	2,590	2·4	31·2	51·6
Sussex	417,407	1,060	2·5	14·8	61·1
Warwick	633,902	1,486	2·3	12·8	35·8
Westmorland	65,005	131	2	6·9	32·8
Wilts	257,202	806	3·1	3·2	77·2
Worcester	338,848	1,088	3·2	12·2	41·1
York (East Riding)	313,301	585	1·9	10·6	30·7
York (North Riding)	291,589	436	1·5	18·9	28·1
York (West Riding)	1,831,223	2,641	1·5	21·5	31·1

population as Berkshire, and would pay £47,000 instead of £17,000 for their maintenance. Other things being equal, the race in Durham should be immensely better in health and vigour and morals through not having those 1500 extra lunatics, the children they would have begotten, and the tainted families in which they would have occurred.

For the explanation of this extraordinary difference in the production of lunacy in the various parts of England, it is evident that many things will have to be taken into consideration. The lunacy rate will have to be very carefully compared with the rate of occurrence of many other things in order to exhaust all the possibilities of causation, and reliable conclusions can only be come to by weighing carefully the medical and social meaning of the figures.

1. I shall first compare the proportion of lunacy with the rate of increase of the population in the various counties during the ten years from 1861 to 1871, and to throw still more light on the question, make the same comparison in regard to the larger areas constituting the registration divisions. The rate of increase of a population is a general fact of the most important kind, which shows the vigour of race, the social habits, the health, the presence of large towns, and, above all in England, the prosperity of a county. And the exact increase that ought to have taken place from the excess of births over deaths being known, it also shows the amount of emigration out of, or the immigration of a foreign element into any district. Both of these things are most important facts to be known, for those who leave a county naturally leave their insane relatives behind them, and they commonly belong to one of two classes. Either they are the best and most pushing of their class going to better themselves, or they are the worst and least pushing who go to the large towns to sink into pauperism and social misery. Some expect that counties to which such immigration takes place will find their natural level in regard to their number of lunatics in time, and the counties from which it has taken place would scarcely be expected to decrease in population and increase in lunacy for ever; this part of the question I shall test accurately by figures, and by a comparison of the growth of population and of that of lunacy respectively in the various counties.

2. The next element of social statistics that seems to bear on the question, is the Pauperism of the counties and their Wealth. The former I shall easily compare, by showing

side by side the rate of lunacy and that of pauperism to the population in each county and district, and the latter in an imperfect way by showing the taxable wealth per person of the population. (See Tables I and II.) By this means the theory that our lunacy is largely the result of the same influences which have caused our pauperism can be tested, and the general relationship between the two, when looked at on a large scale, made out. The rate of wages of the working population, and their circumstances is another element that will be taken into account under this heading.

3. The influence of the amount and kind of Food and Drink, especially intoxicating drink, on the production of insanity, will next come under consideration.

4. Most diseases having more or less relation to the prevalent Occupations of a people, I shall next examine into the connection between the amount of insanity in the counties and districts, and the prevalent occupations of the inhabitants. I cannot pretend to do this quite fully, but I shall take all the reliable facts that can be got for the elucidation of this extremely interesting branch of the enquiry. The habits of the people come most naturally along with their occupations in their relation to this question. Nothing, certainly, can well be more important than to ascertain whether the husbandman or the cotton-spinner, the miner, or the wool-worker, is most subject to this disease.

5. Closely connected with this last is the next part of this question I shall investigate, viz., the influence of living in Cities or in the Country in the production of lunacy, and the crowded or scattered state of the population, as shown by the number to each square mile.

6. The very important but not very definite facts ascertainable in regard to the effect of Inter-marriages among small communities for many generations, may help to throw some light on the question, and will be taken into account, so far as the facts can be got.

7. The Geographical Position of the various counties and districts, in its relation to the amount of insanity in them, will form the next head of enquiry. The difference between the South and the North of England, between the hilly and plain districts, between those bordering on the sea and those inland, if there is any difference between any of these, would seem necessary to any complete investigation.

8. So far as it can be done, I shall also take the element of Race into the investigation, and see whether the descend-

ants of the Celt, the Englishman, or the Scandinavian, seem most liable to the disease.

9. The Healthiness or not of the counties, as shown by their death rates, and the connection of this with the amount of lunacy, will then be examined. The prevalence of Consumption, so far as this is known topographically, will also be compared with the prevalence of insanity in the same way.

10. As in individual cases there is often the closest connection between the presence of incipient insanity and the perpetration of Criminal acts, I shall compare the numbers who have been committed to prison in each county with the amount of insanity in it.

11. The relationship of the prevalence of insanity to the amount of Education, Culture, and Intelligence, so far as the latter can be estimated, will be considered.

12. Then there are certain accidental but very important facts that are well known to have an influence on the *recorded* lunacy of a district, which will demand examination, viz., 1. The presence of asylums. 2. The length of time these have been in existence in a district. 3. The distance of a district from the asylum. 4. The size of the parishes or unions.

13. Lastly, as a circumstance that directly affects, not the annual production, but the number of the insane in a county at any one time, we shall notice the presence or absence of Fatal Forms of Insanity in particular counties; in other words, the death-rate among the insane as compared with the numbers living. If 15 per cent. of all the insane die every year in one county, and only 10 in another, the annual production of the disease being the same, then at the end of ten years the latter will have a far higher rate per 1000 of the population than the former. This will lead to the second part of the enquiry, viz., the Occurrence and Local Distribution of the chief Varieties of Insanity.

1. *The Local Distribution of Insanity in relation to the Decennial Increase of the Population between 1861-71.*

The rate of increase of the population of England and Wales for the ten years between the census of 1861 and that of 1871 was 13 per cent. In Table I. is shown the rate of increase for each of the counties, and it is seen at a glance how enormous is the difference between them. Durham stands at 35 per cent., or more than a third, while Anglesey shows a decrease of 7 per cent. The first thing that

strikes one on looking at this rate of increase of the population, and comparing it with the lunacy rate (Table I.), is that if there is any relationship between the two, certainly it is not an absolutely strict one, the latter by no means varying to the same extent as the former. But a closer scrutiny does detect the fact that by far the most of the large counties that show a very large rate of increase of the population do also exhibit a very low rate of lunacy. Durham, Glamorgan, the West Riding of Yorkshire, Stafford, and Lancashire together, have only one lunatic to 600 of population, and together have increased more than twice the average amount; while Hunts, Brecon, Pembroke, Wilts, Hereford, Norfolk, Rutland, Dorset and Oxford, with half the average rate of increase, have one to every 350. As, however, the matter requires closer elucidation, I have in Table II. placed the counties in the order of their lunacy rate, dividing them into three classes. Taking the average rate of 2.2 of the pauper lunatics per 1000 of the population, and placing all the counties which have either that rate or are within 1.2 above or below it in one class, putting those which are below 2 per 1000 into another, and all those above 2.4 into a third, we have three classes, 1st, "below average;" 2nd, "average;" and 3rd, "above average." I have placed the counties in the exact order of their lunacy rate from the lowest to the highest, for easy reference. As the Welsh counties are so small, and, with the exception of Glamorgan, so uniform in general character, I have counted Glamorgan as one county, and the rest of Wales as another, thus making 44 counties in all.

Apart from the three classes into which I have divided these, 18 of them are actually below the average lunacy rate, and 26 of them above it; Kent and Essex, which both stand at 2.2, being actually lower than the average, if these were carried out to two figures of a decimal. This irregularity in the numbers on either side of the average, results, of course, from the counties below the average being chiefly those with large populations.

In the first class, or that below the average lunacy rate, there are 9 counties, (counting the three Yorkshire Ridings as each a county) with a population of about five millions and a half, which had increased 17 per cent. in the ten years. Durham, Stafford, Yorkshire, Derby, Glamorgan, Chester, are all in this class. Five of the nine are largely above the average decennial rate of increase, three of them only very slightly

TABLE II.

FIRST CLASS. LUNACY UNDER AVERAGE. (From 1.3 to 2 per 1,000 of Population.) Nine Counties with a Population of 5,677,268.							SECOND CLASS. LUNACY ABOVE AVERAGE. (From 2 to 2.4 per 1,000 of Population.) Sixteen Counties with a Population of 9,660,714.							THIRD CLASS. LUNACY ABOVE AVERAGE. (From 2.4 to 3.6 per 1,000 of Population.) Nineteen Counties with a Population of 7,426,126.						
COUNTIES.	Lunatics per 1,000.	Decennial Increase of Population.	Lunatics.	Paupers per 1,000.	Taxable Wealth per Person.	COUNTIES.	Lunatics per 1,000.	Decennial Increase of Population.	Lunatics.	Paupers per 1,000.	Taxable Wealth per Person.	COUNTIES.	Lunatics per 1,000.	Decennial Increase of Population.	Lunatics.	Paupers per 1,000.	Taxable Wealth per Person.			
Durham	1.3	34.7	5.8	36.7	8 0	Lancashire ..	2	16	3.6	32.1	17 4	Bucks	2.5	4.7	-1.3	64.3	7 3			
Stafford	1.5	14.8	5.2	38	9 7	Lancashire ..	2	5.8	-6	50	17 0	Dorset	2.5	3.6	1.4	76.3	11 8			
York (W. Riding) ..	1.5	21.5	5.3	31.1	12 5	Northumber-land	2	12.8	2.1	43.8	13 1	Northampton ..	2.5	7.1	.2	63.5	13 8			
York (N. Riding) ..	1.5	18.9	5.2	23.1	12 5	Westmorland ..	2	6.9	0	32.8	12 2	Notts	2.5	8.9	.7	44.8	11 8			
Derby	1.6	12.2	2.5	24.5	14 8	Cumberland ..	2.1	7.3	.4	39	12 2	Sussex	2.5	14.8	5.7	61.1	12 5			
Cornwall	1.6	-2.3	-10	50.7	8 3	Westmorland ..	2.1	4.7	4.7	52	20 6	Beds	2.6	8.1	4.7	72	11 3			
Glamorgan	1.7	24.6	3.4	23.2	9 8	Huntingdon ..	2.2	15.2	4	47	11 6	Norfolk	2.6	.9	5.3	70.8	13 5			
Chester	1.7	11	3.4	23.2	8 8	Essex	2.2	15.5	14	52	11 2	Herts	2.7	11.2	4.7	68.6	12 7			
York (E. Riding) ..	1.9	10.6	5.2	30.7	12 5	Kent	2.2	15.5	14	52	11 2	Monmouth	2.7	11.9	4.7	58.8	8 5			
						Wales (except Glamorgan) ..	2.3	3.3	3.3	64.9	9 4	Somerset	2.7	4.2	4.7	71.9	17 5			
						Rutland	2.3	1	7.8	60.8	18 6	Gloucester	2.8	10	.5	52	7 8			
						Warwick	2.3	12.8	2.5	35.8	12 5	Salop	2.8	2.9	4.5	43.5	13 5			
						Cambridge	2.4	6	1	73.5	16 4	Middlesex	2.9	15.1	5.4	51.6	27 9			
						Devon	2.4	2.8	6.9	58.6	10 8	Leicester	3	13.2	8.1	47.4	13 1			
						Southampton ..	2.4	12.9	2.8	58.3	9 5	Oxford	3.1	4.1	4.8	68.7	14 1			
						Suffolk	2.4	3.4	3.4	70.7	12 5	Wilts	3.1	3.2	.9	77.2	14 1			
						Surrey	2.4	31.2	11	51.6	12 2	Worcester	3.2	12.2	2.6	41.1	11 5			
Averages for the Classes	1.5	17	4.4	34.6			2.2	13	3.8	48			2.8	9	3	58.2				
Average for all England and Wales	2.2	13.1	3.6	47.8	13 15		2.2	13.1	3.6	47.8	13 15		2.2	13.1	3.6	47.8	13 15			

below it; and in Cornwall, which is a decreasing county, the lunacy rate is dependant on other influences, which, as we shall see afterwards, only help to prove the general rule.

The second class of counties, or those with an average rate of lunacy, consist of 16, with a population of about nine millions and a half, that had increased 13 per cent. during the ten years, or as nearly as possible at the average rate for all England. Lancashire heads this class, having the lowest lunacy rate; and it includes Lincoln, Northumberland, Essex, Kent, Warwick, Devon, Hants, Suffolk, and Surrey. Eight of the 16 are actually lower than the lunacy rate for all England, and eight are higher, while five (all large counties), are above the average rate of increase of population, and 11 (which include all the small counties in this class) are below it.

The third class, or those above the average lunacy rate, are 19 in number, with a population of about seven millions and a half, which has only increased 9 per cent. during the 10 years. It consists chiefly of agricultural counties, but includes Middlesex, the chief metropolitan county, which differs from most of the other counties in England in regard to the want of connection between its decennial increase and its lunacy rate, but there are other influences which explain this. There are only 3 of those 19 counties that have a rate of increase of population above the average.

The general result is, that taking each of those groups of counties, the number of lunatics per 1,000 of the population is in a precisely inverse ratio to its rate of increase during the 10 years, a lunacy rate of 1.5 going with a rate of increase of 17 in the first, one of 2.2 with 13, and one of 2.8 with 9. This holds good with regard to most of the single counties too, but there are many exceptions, by far the most remarkable of which are the two metropolitan counties of Surrey and Middlesex, which are above the average in regard to their lunacy rate and also high in their decennial increase. More than half the Welsh counties, Cornwall, and six of the English agricultural counties, Lincoln, Hants, Rutland, Cambridge, Devon, and Suffolk, too, form an exception in the other direction, having low lunacy rates, and a low rate of decennial increase. The succeeding parts of the enquiry will, I think, explain both anomalies, and make these exceptions especially instructive as regards the causes of insanity.

We now take, not counties, but the registration divisions of the country, and examine the number of insane persons per

thousand of the population in each of them, as compared with their decennial increase, at the same time taking account of how this increase is made up; to what extent in the natural way from the excess of the births over the deaths during the ten years, and to what extent from the immigration of other persons who were born elsewhere. Those facts are shown in Table III. In the 5th column the decennial rate of increase is shown as actually ascertained from the census, and in the 6th column how much that increase is either above or below the "natural increase," or the excess of the births over the deaths. In the divisions where there were found to be more people at the end of the ten years than had been born there, the per centage of this excess over the natural increase is shown by a *plus* sign; in those where there were fewer persons, the per centage of this diminution is shown by a *minus* sign. All the divisions with a high *plus* per centage, therefore, had a large immigration into them of new stock from other places; all those with a high *minus* per centage lost through emigration a large number of the persons born in them during the ten years.

Beginning with the London Division we find that there the rate of lunacy is very high, 2·8, being the highest of all in fact, while the decennial rate of increase is also very high (16), though not so high as the South Eastern, York, and Northern Divisions. This increase of the population was due in a larger degree to the immigration of persons not born in the division than in the case of any other part of England, being 35 per cent. above it, or one immigrant for every two births. This fact, taken in conjunction with the very high lunacy rate, undoubtedly shows that the immigrants into London are for some reason quite as much subject to insanity, or more so, than those born there. The second or South Eastern Division, comprising the extra metropolitan parts of Surrey and Kent, Sussex, Hants, and Berks, shows a high lunacy rate (2·5), with also a high rate of decennial increase (17), and a large excess of increase (22 per cent.) over the births in the division. The third, or South Midland division, which includes the extra-metropolitan part of Middlesex, Herts, Bucks, Oxford, Northampton, Hants, Beds, and Cambridge shows a high lunacy rate (2·4), with an increase of population rather below the average (11·3), and also slightly below (18 per cent.) the number accounted for by the births. The fourth, or Eastern Division, comprising Essex, Suffolk, and Norfolk, has a high lunacy rate (2·5) with a decennial increase (6·6), only half the average of England, and about half the number of persons (48 per cent.) who

TABLE III.

Registration Divisions.	Population.	Lunatics.	Lunatics per 1000 of Population.	Increase of Population 1861—71 Per cent.	Per cent- age Real Increase over or under Natural In- crease.	Paupers per 1000 of Popu- lation.	Persons per square mile.
1. LONDON— Metropolitan Mid- dlesex, Surrey, and Kent.	3,251,804	9094	2·8	16	+35	47	26,682
2. SOUTH EASTERN Extra-Metropolitan Surrey and Kent, Sussex, Hants, and Berks.	2,166,217	5428	2·5	17	+22	53	341
3. SOUTH MIDLAND Extra-Metropolitan Middlesex, Herts, Bucks, Oxford, Northampton, Hunts, Beds, and Cambridge.	1,442,567	3421	2·4	11	-18	63	288
4. EASTERN— Essex, Suffolk, Nor- folk.	1,218,257	3005	2·5	6·5	-48	71	243
5. SOUTH WESTERN Wilts, Dorset, Devon, Cornwall, and Som- erset.	1,879,898	4572	2·4	2·5	-80	66	241
6. WEST MIDLAND Gloucester, Here- ford, Salop, Staf- ford, Worcester, and Warwick.	2,720,003	6439	2·4	11	-26	44	442
7. NORTH MIDLAND Leicester, Rutland, Lincoln, Notts, and Derby.	1,406,823	3106	2·2	9	-35	44	354
8. NORTH WESTERN Cheshire and Lan- cashire.	3,382,590	6497	2	15	+24	32	1,082
9. YORK— Yorkshire.	2,395,299	3662	1·5	19	+33	33	419
10. NORTHERN— Durham, Northum- berland, Cumber- land, and West- morland.	1,414,066	2260	1·6	23	+32	40	259
11. WELSH— Monmouth and Wales.	1,426,584	3153	2·2	9·5	-29	64	178

formed the excess of births over the deaths had gone away. Coming to the South Western Division, which comprises Wilts, Dorset, Devon, Cornwall, and Somerset, we find still a high lunacy rate (2·4), a very small decennial increase (2·4), and 80 per cent. of the natural increase gone away. The West Midland Division, comprising Gloucester, Hereford, Salop, Stafford, Worcester, and Warwick, shows a lunacy rate above the average (2·4), an increase of population slightly below the average, and 26 per cent. of diminution of the excess of births. The North Midland Division (Leicester, Rutland, Lincoln, Notts, and Derby) is the first where we find the average lunacy rate (2·2). It has an increase of population below the average (9), and has lost 35 per cent. of its natural increase by emigration. The next three divisions, North Western (Cheshire and Lancashire), York (Yorkshire), and the Northern (Durham, Northumberland, Cumberland, and Westmorland) all show the same characteristics, viz., a lunacy rate much under the average (2, 1·5, and 1·6 respectively), an increase of population over the average (15, 19, and 23), and a large gain by immigration over the natural increase (24, 33, and 32 per cent.) The last division, the Welsh (Monmouth and Wales), has the average lunacy rate (2·2), an increase of population below the average (9·7), and a loss of its natural increase to the extent of 29 per cent.

These divisions being large, unequal in size, and many of them embracing counties and districts entirely diverse in regard to the occupations and circumstances and increase of the population, and arranged on no special plan, except contiguity and convenience of grouping, an examination of their lunacy rate and its relation to the increase of population is, in many respects, unsatisfactory. Its chief value lies in correcting the local idiosyncrasies of small counties by its larger grouping, and in the real similarity of a large number of the counties included in many of them. Certainly the London, South Midland, Eastern, South Western, North Western, York, and, to some extent, the Northern and Welsh divisions, have each distinctive and specific natural features, and, taking those divisions, their lunacy rate, their increase of population, and the extent to which this latter is accounted for by the excess of births over deaths, have definite relations. In the London Division there are causes which make the first exceed the ratio of the two others, and make them all to be above the average. In all the other divisions named the lunacy rate stands in inverse ratio to the two others, being high where they are low, and low where they are high.

Indeed this rule applies, more or less, in them all, except in the case of the metropolis and the adjacent counties.

The close connection between a rapidly increasing population and a small number of the insane being thus established in regard to by far the greater part of England, the next important point to be investigated is whether the increase of lunacy in any way corresponds with the decennial increase of the population in the various counties of England. This is a point which is by no means capable of such a satisfactory investigation as the preceding. The increase of the population in each county is a definite fact capable of absolute proof, explain it how we may; while the increase of lunacy in any county is a fact influenced variously by many circumstances. The presence of lunatic asylums and how long these have been in existence, their accessibility, the size of the unions, and the state of law, all these, as we shall see, influence it in the most material way. And in regard to the mere definition by the union medical officers of what constitutes an insane or imbecile person, and their enumeration, therefore, in their returns, we have a source of fallacy in comparing one county with another. A harmless simpleton might well wander about a country district and receive relief as an ordinary pauper who, in a more frequented locality, would certainly be put down among the list of lunatics.

Keeping these things in mind, we may now examine the facts as we find them recorded. In the year 1861 there were 35,709 pauper lunatics in England and Wales known to the Commissioners in Lunacy, and in the year 1871 there were 50,637, or a decennial increase of 41 per cent., and this increase has, on the whole, been a steady one from year to year. This is just about three times the increase of the population in that time, which we have seen was 13 per cent. Of course no one believes that lunacy has really increased during that time to that extent; but it might naturally be supposed that in the counties which have been increasing rapidly in population for a long time by immigration, if the tendency to the production of insanity was very much the same everywhere, the lunacy would be increasing in a greater ratio than in the rest of the country. It might be thought that in those places the newly arrived population would be all healthy at first, but in time would become subject to insanity as to other diseases. If this were so the numbers of insane in those counties would certainly show a far greater rate of increase than in those with no immigration. We shall see if this is the case.

I have not been able to procure correct returns of the actual number of the insane in each county in 1861, and very reliable returns are not to be got until the beginning of 1869. I have therefore taken the numbers of the insane in most of the counties at that time, and then at the beginning of 1872,* and have calculated the yearly increase at that rate. In some respects it is unsatisfactory to have so few years, and in others not so, for unquestionably of late the actual numbers of the insane and imbecile are better returned to the Poor Law Board and Commissioners, there being less obvious irregularity between the percentage different counties in that respect lately. The yearly increase of lunacy in all England for the last three years has been 3·6. I have shown the results in the 4th column of Table II. From that it can be seen that while the majority of the English counties that stood in the first class with low lunacy rates and a rapidly increasing population, are also found to have a rate of increase of lunacy above the average, yet this is not nearly in proportion to the rate of increase of the population. Durham, Stafford, Yorkshire, Lancashire, Surrey, Sussex, and Essex are yearly increasing in their number of lunatics to an extent considerably above the average, but on the other hand so are Beds, Herts, Hants, Salop, Leicester, Devon, Somerset, Oxford, and Berks. Durham increases at nearly thrice the average rate of England generally, while its lunacy only increases about a half more. Yorkshire and Lancashire increase in lunacy at about the same proportional rate as in population. The population of Glamorgan grows at twice the average rate, while its lunatics increase at only the average rate. A large number of the agricultural counties certainly show low rates of increase of both population and lunacy, such as Lincoln, Cambridge, Dorset, Northampton, Nottingham, Norfolk, Gloucester, and Wilts. Taking the counties of England throughout, there is no doubt that the rate of increase of lunacy corresponds in some slight degree to that of population, but the exceptions are so very numerous and striking that this cannot be laid down as a rule. The apparently enormous increase of lunacy in the metropolitan counties in the last three years is well known to have greatly resulted from the opening of the new asylums for imbeciles at Caterham and Leavesden.

Of the group of nine counties in the first class, with little lunacy and a fast-increasing population, in Table II., the rate

* In the case of the Metropolitan Counties, and certain others which had some of their lunatics scattered in asylums elsewhere, I cannot get quite accurate returns from the 1st January, 1869.

of increase of lunacy is above the average in five and below it in four. Of the 14 counties in the second or average class, in which it could be ascertained, seven were increasing above the average, seven below it; and of the 16 in the third, or high lunacy counties, in which it could be ascertained, eight were producing fresh lunacy every year above the average rate and eight below it. This shows how little the yearly increase of lunacy follows the yearly increase of the population in every district. The general average of the rate of increase for each class of counties taken together show 4·4 per cent. a-year as compared with 1·7 for the general population in the first class, 3·8 as compared with 1·3 in the second class, and 3 as compared with ·9 in the third class. (See Table II.)

2. *The Local Distribution of Insanity, in relation to the Pauperism and Wealth of the Counties of England and Wales.*

Pauperism.—In the beginning of the year 1871 there were 1,085,661 paupers in England and Wales, which was at the rate of 47·8 for each 1000 of the population. Still counting Glamorgan separate from the rest of Wales, we find that there were 15 of the 44 counties under this average (Table II.), while the other 29 are above it. We saw, in regard to the lunacy rate, there were 18 counties below the average and 26 above it; and when we examine the two lists a still stronger relationship than this close approximation of the numbers is found to exist; for 11 of the 15 with a low pauperism stand also in the list with a lunacy rate below the average. (See Table IV.) And these 11 counties contain a population of nine millions.

TABLE IV.

	No. of Counties.	Of which Pauperism was		Of which Taxable Property was	
		under Average in	over Average in	over Average per Person in	under Average per Person in
<i>First Class.</i> Lunacy under average.	9	7	2	1	8
<i>Second Class.</i> Lunacy average.	16	5	11	5	11
<i>Third Class.</i> Lunacy above average.	19	3	16	5	14
Totals.	44	15	29	11	33

Taking the three classes of counties (Table II.) as our basis, and examining them in regard to their proportion of pauperism, this is the result:—Of the 9 below average in regard to lunacy, 7 are below average in regard to pauperism. Of the 16 average in regard to the former, 5 were over average and 11 under in regard to the latter; and of the 19 above average in regard to the former 16 are above average in regard to the latter. These results are shown in Table IV. The very closest approximation, therefore, may be said to exist between the local distribution of the pauper lunacy and the ordinary pauperism of the country, looking at the counties generally; and if we proceed to examine the list still more minutely with reference to each county, we shall still find that this parallelism shows itself in a remarkable manner. Strange as it may appear, the one being a disease incidental to all human beings, and the other a mere result of social and economic causes, the range above and below the average of the rate of pauperism is almost exactly the same as that of the lunacy rate, in both cases going up about 63 per cent. above it, and falling to 41 per cent. below it in different counties. The one ranges from 47·8 per 1,000 (the average) up to 77·2 (Wilts), and down to 28·1 (York, North Riding) per 1,000, the other from 2·2 (the average) up to 3·6 and down to 1·3.

The great exceptions to the general rule in regard to the connection between the lunacy rate and the increase of population, which we saw to exist in the metropolitan and rural Welsh and certain other counties, do not exist in regard to the rate of pauperism; and the existence of a few individual exceptions, such as Essex, Cambridge, and Suffolk, which have comparatively low lunacy rates and high rates of pauperism, on the one hand, and Leicester, Worcester, and Salop, which are high in lunacy and about average in pauperism, does not invalidate a rule so generally applicable throughout England. Where a fact such as the unequal distribution of lunacy is dependent on many causes, and has relations to many natural and social phenomena in a diversified country like England, it never can run quite parallel to anything else.

The general correspondence of lunacy and pauperism appears in the registration divisions of England (Table III), as well as in the counties, and they follow each other closely, or not, in precisely the degree to which each division represents a homogeneous group of counties; the Metropolis

as usual forming an exception to all rules in regard to its lunacy rate. All the divisions which are above the average in regard to lunacy are also above the average in respect to pauperism, with the exceptions of the Metropolitan and West Midland.

Wealth.—When we come to examine the wealth of the various counties of England in relation to the pauper lunacy of those counties, we are met at the outset with a radical difficulty in the utterly unequal distribution of that wealth among different classes of the population. If we take all the taxable property as assessed under schedules A, B, and D, and calculate its amount per person of the population in the various counties, we see at once how little this represents the wealth that is generally distributed among the people. The richest counties in England show the least amount per head of the people, while some of the poorest show the greatest amount. The average for all England and Wales for the year 1870 was £13 15s. per head, and when we find Yorkshire, Durham, Glamorgan, Chester, Kent, and Surrey below this average, while Somerset, Wilts, Huntingdon, and Rutland are far above it (Table II), we see that this is an incorrect test of the wealth of the people. Of the nine counties at the head of the list, whose united population is increasing so enormously, only one shows a rate of taxable wealth above the average.

But when we come to apply the test of what we know to be the real wealth, or rather the ordinary rate of wages paid to the labouring classes in the various counties of England to the rate of lunacy of such counties, we see at once how close is the relationship. In all the Northern Counties the rate of wages is good, and in them all, whether agricultural or manufacturing, the rate of lunacy is low. The Eastern Counties of Lincoln and Essex, where wages are good are also low, while the Southern and Midland Counties of Dorset, Somerset, Wilts, Gloucester, Worcester, Oxford, Hereford, and Berks, where the wages are very low, produce far above the average amount of lunacy. Taking for comparison two parts of the same county differently situated, in regard to wages, the poor man's wealth, viz., rural Gloucestershire and Bristol, we find that while rural Gloucestershire with its labourers, too poor even to go where they could get double wages, except through Canon Girdlestone's charity, produces insanity at the rate of 3·3 per 1000 of its population, rich Bristol has only a rate of 1·7 per 1000, or about

one half as much. To show that this is not owing to mere employment, or the influence of town life, let us look at Newcastle as compared with rural Northumberland. There we know the agricultural labourers are better off and more comfortable, and get better wages than their class in any part of England. Newcastle had a population of 128,160 at the census of 1871 with 274 lunatics at that time, or at the rate of 2.2 per 1000. The rest of Northumberland had a population of 258,799 with 472 lunatics, or only at the rate of 1.9 per 1000. As might naturally have been expected the country shows itself more healthy than the town as regards even the production of insanity, other things being equal, and no doubt the chief of all those other things are good wages received by the labouring population, and all that they imply.

So far these investigations clearly show that, with certain exceptions, where the population of a county rapidly increases, its lunatics are few and do not increase so fast in proportion as the people, the reverse of this being generally true also; that lunacy goes hand in hand with pauperism all over the country, and that the presence of uniformly diffused wealth among a people certainly seems to lower the rate of production of mental disease.

(To be continued.)

Notes on Epilepsy, and its Pathological Consequences. By J. CRICHTON BROWNE, M.D. Edin., F.R.S.E., Medical Director West Riding Asylum, and Lecturer on Mental Diseases to the Leeds School of Medicine.

Although a certain number of those who are subject to epilepsy may pass through life without displaying any sensible diminution in mental capacity or power, it is nevertheless true that in a vast majority of the sufferers from this disease the mind is rapidly and seriously damaged by the recurrence of the seizures which are characteristic of it. Epilepsy, indeed, is one of the most prolific causes of insanity in this country, and fills our lunatic asylums with patients of a dangerous and intractable class. It would not, perhaps, be going too far to say that it invariably exerts a prejudicial influence on the minds of those who are afflicted by it, and that the statements which have been made to the contrary have arisen out of imperfect observation. Unfortunately, we have as yet no