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GEORGE GEDDES, M.D.

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BY
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PREFACE

THE labour involved in the production of this book was undertaken under the conviction that it might be possible to prove by figures a reasonable hypothesis based upon a series of events narrated hereafter. I hope to satisfy the reader that the conviction was well founded, if his interest can be maintained throughout the calculations involved.

The series of events, vouched for by one whose veracity is above suspicion, is shortly as follows.

A primipara attended by a medical practitioner and a certificated midwife contracted puerperal septicæmia twelve hours after delivery.

Delivery was effected by the aid of forceps and lateral incisions into the vagina.

Two other cases of puerperal sepsis occurred in the practice of the midwife present; and in one of the two subsequent cases the doctor and midwife were present together.

The original case recovered. The other two cases died of puerperal septicæmia.

In the interval between the first and third case, the doctor delivered by podalic version a case of placenta prævia which made a good recovery.

Who should be held responsible for these deplorable fatalities—doctor; midwife; or both?

The reader shall judge, having exhausted the possible sources of infection in the light of the statistics contained herein.

G. G.

HEYWOOD, LANCS.
July, 1912.

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STATISTICS OF PUERPERAL FEVER AND ALLIED INFECTIOUS DISEASES

Part I.

ETIOLOGY OF PUERPERAL INFECTION.

DR. A. W. W. LEA, in his book* recently published, writes: "The organisms generally responsible for its (i.e., puerperal sepsis) occurrence in the severer forms are the streptococci pyogenes, and staphylococci aureus and albus," and that "anaerobic putrefactive bacteria are responsible for the sapræmic forms." Again, "The streptococcus of erysipelas, and the organisms frequently found associated with scarlet fever and diphtheria, are identical with those present in puerperal infection."

Other probable organisms of infection mentioned by Dr. Lea are the pneumococci and gonococci, the bacilli of typhoid and tetanus, also the bacterium coli.

The foregoing list of organisms may be assumed to include all those likely to produce puerperal infection. Our task involves the discovery of the sources from which they spring.

The varieties of streptococci and staphylococci abound in all forms of suppurating wounds, in boils, and in abscesses.

The incidence of, and infection by, diphtheria, scarlet fever, and erysipelas, are easily traced and accounted for by the notified cases of those infectious diseases.

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* "Puerperal Infection."

The remaining organisms cannot be traced by statistical methods, but inasmuch as they rarely cause puerperal infection, no attempt has been made to show their relationship to puerperal fever. The search after the sources of those organisms more closely associated with puerperal infection will necessitate the consideration of the acreage, population, births, puerperal fever, erysipelas, diphtheria, scarlet fever, medical practitioners, midwives, persons employed in factories and mines, etc., for the various districts included in our statistical review.

In order, therefore, to obviate repetition, it will be necessary to define exactly the terms upon which the calculations are based, and then, apart from the probability of convincing the reader of the accuracy of the deductions therefrom, there will be available for future reference a collection of facts and figures which, so far as I am aware, have never previously been analyzed and arranged in a form so interesting and instructive.

Acreage.—Under this head is given the area in statute acres of each district. Unless otherwise stated, the mean acreage for ten years is understood. If figures follow the acreage figures, they signify the number of acres to each person.

Population.—The census returns for 1901 and 1911 were utilized for the figures supplied, but it was considered expedient to state the total intercensal increase or decrease rather than the figures for 1911. The rates in the population column for 1901 represent the number of persons per acre, calculated for the mean acreage and population for the ten years. Those in the intercensal increase or decrease column signify the percentage increase or decrease for the ten years 1901–1911.

Births.—Where possible, the figures supplied represent the births registered for the ten years 1900–1909, and the birth-rate is calculated on the mean population for the same period.

Puerperal Fever.—The figures represent the cases notified or reported for the ten years 1900–1909. The figures in brackets represent fatal cases for the same period. In many instances, cases of puerperal fever are not notified, and the only record of their existence is to be found in the list of deaths from this disease in the various districts.

The fatal cases not previously notified are included in the total notified cases. The puerperal rate represents the mean rate for ten years per 1000 registered births.

The puerperal rate calculated according to the number of registered births is not strictly accurate, because the births of premature and still-born mature children are not registered. Superintendents of cemeteries, etc., grant permission for the burial of premature and still-born mature children upon the production of a certificate from a registered medical practitioner that the child was not born alive. It follows, therefore, that there must be many births after which puerperal fever may have intervened of which there is no record.

When the Notification of Births Act, 1907, is adopted generally, this source of error will practically cease, although even in those districts where it has been in operation, discrepancies exist between the number of births notified and registered.

We are compelled, therefore, to base our calculations upon the number of registered births, but inasmuch as every district is calculated on the same basis, our deductions are not affected thereby.

A period of six weeks is allowed for the registration of a birth, and if death occurred at any time within that period the death would be certified—under ordinary circumstances—by a medical practitioner, and registered with the birth at the same time. Every birth registered under such circumstances is necessarily included in our figures.

Puerperal fever is quite as likely to supervene after the birth of a premature or still-born child as after a normal birth, because manual or instrumental manipulations are frequently necessary in such cases, e.g., puerperal eclampsia, hydrocephalus, placenta prævia, etc. Such cases are frequently complicated by septic infection.

To this extent, therefore, our figures under the puerperal rate are vitiated unavoidably.

Erysipelas, Diphtheria, and Scarlet Fever are the only infectious diseases which, in our opinion, have a direct bearing upon the causation of puerperal infection. The figures represent the cases notified for ten years (1900–09). The rate under each is calculated on the mean population of

1000 persons living (1900–09). Diphtheria includes membranous croup.

Medical Men.—The numbers of medical men in each district are obtained from the Medical Directory (1905), and the rate represents the rate per 10,000 population for that year.

To estimate the population figures for 1905, add or subtract four-tenths (two-fifths) of the intercensal increase or decrease to or from the census population of 1901. This method of estimation is sufficiently accurate for our purpose, and it is simple.

In the nature of things, it is not absolutely accurate, nor can absolute accuracy be claimed for the estimate of the Registrar General, which cannot be more concisely described than in the words of Dr. Anderson, M.O.H. for Rochdale, who, in his report for 1909, writes: "The population of the borough is first estimated by arithmetical progression, assuming that the same rate of increase which occurred from the 1891 census to the 1901 census has been maintained from the last census to the present date; it is then multiplied by a factor obtained by dividing the population of England and Wales, estimated by geometrical progression, by the same population estimated by arithmetical progression."

The method we have employed is less liable to error, since we know the actual figures for 1901 and 1911, the former being four years earlier, and the latter five years later, than the year for which the estimation is made.

For a complete list of districts in each county under review where medical practitioners reside, see Appendix. It has been considered advisable to include the list in order (1) That the labour involved in its compilation may not be lost; (2) That the figures may be verified by anyone sufficiently interested to do so; (3) Because a similar list is not published elsewhere.

The numbers for each district must necessarily include medical men who, although registered, may not be in active practice. Some may have retired, while others may be engaged in business. In cities and large centres, many medical men are consultants, while others hold public appointments, e.g., certifying factory surgeons, medical officers of health, etc. The discrepancy arising from the

inclusion of those special classes is counterbalanced by assistants to general practitioners and resident surgeons to hospitals and other public institutions whose names would not appear in the local lists, since in the early stage of their career they constitute a mobile host with "no fixed place of abode."

Midwives.—This term means registered midwives. Prior to 1902, many legislative attempts were made to organize and improve the practice of midwifery. Legislation was opposed by many medical practitioners, particularly in Scotland, where the proportion of births attended by midwives is small compared with the proportion attended by midwives in England and Wales. The Midwives Act of 1902 does not apply to Scotland.

Many arguments could be adduced against the creation of a legalized form of unqualified medical practice such as has followed the passing of the Midwives Act in 1902. Nevertheless, one must take into account the fact that in many districts of England and Wales more than 50 per cent of the births are attended by midwives alone: in St. Helens (Lancs.) as many as 90 per cent. It seems preferable, therefore, that the practice of midwives should be under strict supervision, and that they should be taught the necessity of cleanliness and asepsis, rather than that the pre-existing chaotic and unscientific methods should be perpetuated.

There are three classes of midwives:—

1. *Bona-fide Midwives.*—This class includes those who claimed to be registered under the Act in virtue of having been in bona-fide practice for one year prior to the passing of the Act.

2. *Certificated Midwives,* which includes:—

(*a*). Those registered in virtue of a certificate obtained by examination prior to the Midwives Act, 1902.

(*b*). Those registered in virtue of a certificate obtained from the Central Midwives Board.

3. *Uncertified Midwives,* i.e., women practising, although not registered.

All midwives who wished to be registered were required to enter their names on the roll of the Central Midwives Board. The enrolment of practising and previously certificated midwives, without examination, ceased on the

31st March, 1905, the name or title of midwife being thereafter restricted to the women on the roll.

From 31st March, 1905, to 31st March, 1910, there were still in practice women classed as "uncertified," including (1) Those, probably many of them bona-fide, who, through neglect or some other cause, had failed to have their names entered in the midwives' roll; (2) Others, who could claim no qualification fitting them for registration. This "uncertified" class constitutes the uncertain quantity in any attempt to fix the responsibility for puerperal infection, for it includes the handy neighbour. After the 31st March, 1910, the practice of midwifery, "habitually and for gain," of uncertified women, except under supervision or in cases of emergency, was prohibited under a penalty not exceeding £10. This class must therefore be ignored in our figures, although their existence cannot be forgotten. The figures supplied are obtained, wherever possible, from the reports (1909) of the Medical Officers of Health. That no better source could be considered trustworthy will be admitted when one reads the following extract from the report of the M.O.H. for London (1909):—

"After correcting for removals and deaths . . . the number of certified midwives said to be resident in London in 1909 is reduced to 3,285. Of these, 537 gave notice of intention to practise during the year or for shorter periods. Many of the midwives who notified their intention to practise were connected with institutions, and did not continue to work in London during the whole year. . . . It may be estimated that at any given time during 1909, some 420 midwives were practising in London. This represents some 13 per cent of the midwives said to be resident in London. The remainder, for the most part, act as monthly or general nurses under the direction of medical practitioners . . . 140 women not certified were said to be practising in midwifery. . . . Some 900 or less (total births 116,559) may be taken as a fair estimate of the births attended by uncertified women who act entirely without a doctor; 30,000 to 35,000 births (i.e., one-quarter to one-third) are attended by midwives annually in London."

The midwives rate is calculated—like medical men—per 10,000 population for 1909.

Factories and Mines.—As will appear hereafter, the crucial point of my thesis hinges round the statistics of factories and mines. Unfortunately, the available statistics are meagre, and difficult of application for my purpose. I spared neither trouble nor expense to obtain information bearing on the subject. I posted circulars to every medical officer of health in Lancashire, and received replies from sixty-six out of a total of 143. The M.O.H. for every County Borough responded to my appeal, as did also those for the English, Welsh, and Scotch counties and boroughs included in my review; and I take this opportunity of expressing my gratitude to them, and to those Lancashire medical officers of health who sent replies, and especially to Dr. Sergeant, the County M.O.H., who gave me all the assistance in his power, including copies of his reports for the ten years 1900–1909. I am indebted also to the Chief Inspector of Factories for much information, as well as to Mr. G. Bellhouse, the Chief Inspector of Factories for the North-Western Factory District. The Chief Inspector of Mines also supplied information not obtainable from his reports, and for which I am very grateful.

Although I have not been able to make use of all the figures obtained in reference to factories, I have nevertheless included them where available in the particulars for each district, since the information may be useful to others. I have confined my calculations to the number of persons employed in factories, mines, and quarries, and have ignored the statistics of workshops and bakehouses, since those are common to all districts and are, besides, responsible for only a small proportion of accidents.

The figures of persons employed in factories (textile and non-textile) refer to the year 1907; those for mines and quarries are for the year 1909; and the rate represents the rate per 1000 of the population calculated for those years. The data upon which the calculations are based will be found in the Appendix. Mr. G. Bellhouse defines the distinction between factories and workshops as "roughly that in the former mechanical power is used, and in the latter it is not."

The figures of textile factories supplied for the various Lancashire districts were obtained from "Worrall's Directory" for 1909. The figures of factories (i.e., all

factories) were supplied by the M.O.H. of the districts concerned.

Accidents.—I shall not attempt to define an accident in law. Let it suffice that by an accident I shall be understood to mean an occurrence or event which causes an injury or death. I have confined myself to the consideration of four groups of accidents: factory, mining, quarry, and sundry.

Factory accidents are those which occur in textile or non-textile factories, and are reported to the Chief Inspector of Factories. This class includes all accidents reportable to certifying factory surgeons and factory inspectors.

Accidents reportable to certifying factory surgeons are those which may be defined roughly as preventable, while those reportable to inspectors are more or less trivial and incapacitate the worker for less than a period of seven days.

Factories are responsible for a large proportion of accidents, and such accidents being caused generally by machinery in motion, a large percentage of them produce wounds. Mr. Verney, one of the factory inspectors for the North-Western Division of England, read a paper on "Accidents" before the Royal Statistical Society, on January 18th, 1910. I have read a copy of that paper, which must have taken some hours to deliver. It was devoted mainly to "machinery" accidents in factories. Its perusal gives one some idea of the vast regions to be explored if one would plumb the depths of the simple word "accident."

Cotton cloth factories are of course textile factories, but as will be seen from the statistics of Lancashire factory districts, they are grouped for inspection purposes. For full particulars, see Appendix.

Mining Accidents.—This class includes accidents in coal, metalliferous, and "other" mines. The Chief Inspector of Mines assures me the great majority of such accidents cause wounds. The loss of life from mining accidents is appalling, and when a single accident kills hundreds of men it strikes the popular imagination. Such calamities, however, contribute only a small proportion of the total accidents in coal mines, as will be seen by a perusal of the mining statistics.

Sundry Accidents.—I have found it necessary to include in this class all the reported accidents in docks, wharves,

and quays, in 1909, in order to estimate roughly the probable number of accidents likely to occur in the docks, wharves, and quays of Liverpool and Manchester. I have estimated Liverpool's share as one-sixth of the total, and Manchester as one-sixteenth, and these figures are based on the volume of exports and imports, persons employed, etc. The total number reported during 1909 was 6,584 for the whole kingdom. It is not suggested that the figures approach any degree of accuracy, nor do they affect our deductions, since they constitute a small proportion of the total numbers ; nevertheless, they cannot be ignored as a factor in our calculations.

Accidents in quarries are given for some districts.

After a careful consideration of all the available facts and figures, I intentionally refrained from confusing the issue by including accidents common to every district, or only occurring at long intervals. In this category one may include railway accidents, accidents in workshops and bakehouses, accidents due to fire or explosions, accidents which may happen to any person in every-day life at home or in the streets, of which no record is kept.

There were 10,383 deaths during 1909 in England and Wales classified as violent deaths ; most of them could be described as accidental.

Accidents are interesting to us inasmuch as they cause wounds, and I hope to prove that wounds are the main source of puerperal infection. Wounds abound everywhere, but the factor which determines the frequency of puerperal fever in selected districts is, in my opinion, the wounds produced by accidents in factories and mines. Accidents due to machinery invariably cause wounds, and the wounds are generally lacerated, and require prolonged dressing at the hands of general practitioners. Unless the surgeon exercises great care to prevent his hands becoming contaminated by the discharges, he is sure to carry infective organisms to the next case of labour he attends. In the turmoil of general practice it is so easy to forget that one's hands have been in contact with infective material, and therefore the same care is not taken to ensure asepsis of the hands.

There is no doubt that accidents reportable to certifying factory surgeons are more likely to cause wounds than either

those reported to inspectors or those which prove fatal. Inspectors' accidents are usually slight, while fatal accidents frequently end fatally before the wound has had time to become septic; but since any accident may cause wounds, I have based my calculations on all accidents.

Since a period of ten years has been chosen for the statistics of puerperal fever, etc., and since the improvement in the Factory Acts has been the means of increasing the numbers of accidents reported, I have estimated the number of accidents in the various Lancashire factory districts from the number of persons employed in 1907. In the Appendix will be found a table of accident rates and tables of persons employed (adults, young persons, and children, male and female) in the various factory districts of England and Wales. By these tables we calculate the number of accidents in textile and non-textile factories for male and female adults, young persons, and children.

Example.—To estimate the number of accidents in Rochdale factory district :—

Males employed in textile factories	Adults	15,278	Total 20,790
	Young persons	4,526	
	Children	986	
Females " " " "	Adults	16,842	22,715
	Young persons	4,988	
	Children	885	
Males employed in non-textile factories	Adults	26,110	30,431
	Young persons	4,095	
	Children	226	
Females " " " "	Adults	3,993	5,446
	Young person	1,296	
	Children	157	
Males employed in C.C.F. (Manchester District)	Adults	16,228	20,926
	Young persons	3,775	
	Children	923	
Females " " (" ")	Adults	43,029	57,621
	Young persons	12,653	
	Children	1,939	

Multiply each total by the accident rate for each class, and divide by 1000, e.g. :—

$\frac{20,790 \times 11{\cdot}3}{1,000} = 234{\cdot}9$ $\quad$ $\frac{22,715 \times 3{\cdot}9}{1,000} = 88{\cdot}5$ $\quad$ $\frac{30,431 \times 26{\cdot}9}{1,000} = 818{\cdot}5$

$\frac{5,446 \times 4{\cdot}4}{1,000} = 23{\cdot}9$ $\quad$ $\frac{20,926 \times 11{\cdot}3}{1,000} = 236{\cdot}4$ $\quad$ $\frac{57,621 \times 3{\cdot}9}{1,000} = 224{\cdot}2$

234·9 + 88·5 + 818·5 + 23·9 = 1,165·7 total accidents in textile and non-textile factories.

236·4 + 224·2 = 460·6 total accidents in C.C.F. (Manchester District).

1165·7 + 169·3 = 1335·0 = total factory accidents in Rochdale District.

169·3 represents Rochdale's proportion of C.C.F. accidents based on the (1907) population of the Rochdale portion of the Manchester C.C.F. district, which also includes Bolton.

The total accidents in each factory district are estimated in the same manner as the foregoing example.

The same method is followed for the English counties. When the county is coterminous with a factory district the estimation is comparatively easy, but if it forms a part only of the factory district the estimation becomes more complicated, e.g., Berkshire : this county is included in the West London district, of which it forms a part. Therefore one must estimate the number of accidents in the whole West London district in the same way as for Rochdale. Having done so, one must calculate Berkshire's proportion. This has been done by calculating the population of Berkshire and West London for 1907 (Berkshire 189,630, West London 1,935,634). The population of Berkshire is practically one-tenth that of West London. We divide the total accidents (2220) by ten and obtain 222 accidents for Berkshire. If worked by proportion the figures are 217. The same allowance must be made even where the factory district corresponds with a registration county. The Derby Factory District corresponds with Derbyshire ; Derbyshire includes the city of Derby, which is not included in the administrative county, for which latter our figures for puerperal fever are obtained. The proportion of accidents for Derby must therefore be deducted from the total for Derbyshire when comparing the incidence of puerperal fever, and must vitiate the result. Anyone who attempts statistical work involving a comparison of figures in registration and administrative districts, will encounter difficulties due to the lack of correspondence between registration districts and administrative areas. Many medical officers of health deplore this lack of correspondence, and with a view to obviate the difficulty, the Registrar General has published the census figures for 1911 for both administrative and registration districts.

To understand the various existing areas into which the kingdom has been divided from time to time, is to know the history of local government. The term "county" (Fr. *comte*, Lat. *comitatus*) corresponds with shire, and the division into counties is "immediately superior" to the division into "hundreds," which latter division dates from feudal times. Some counties represent ancient Saxon kingdoms, e.g., Kent and Middlesex. The division into

shires began before the time of Alfred, and was probably completed under Edgar. Each county or shire comprised a number of hundreds.

By the Local Government Act of 1888 all duties purely relating to matters of local government in England and Wales were transferred to the county councils established by this Act, and hence arose administrative counties. Certain boroughs are exempted from the jurisdiction of the county councils and are called county boroughs. They retain their independence in virtue of being counties themselves before the Act of 1888, or of having by 1905 attained to a population of 50,000. There are seventy-one county boroughs in England and Wales, seventeen being in Lancashire. A similar division was extended to Scotland in 1889. To understand the difference between administrative counties and registration counties, one must go back to the year 1834, when Poor Law unions came into existence upon the passing of the Act known as the 4th and 5th Will. IV. Chap. 76. After that date Poor Law unions were formed under the direction of boards of guardians controlled by a central Board of Commissioners. In 1848 the Commissioners were superseded by a public Poor Law Board which became a Government department. In 1871 the Poor Law Board was abolished, and its powers transferred to the Local Government Board as it exists to-day.

In Scotland, parochial boards performed functions similar to the boards of guardians, and were controlled from Edinburgh by the Board of Supervision. The Local Government (Scotland) Act of 1894 transferred the powers, etc., of parochial boards to the newly created parish councils, and the Board of Supervision was abolished and replaced by the Local Government Board for Scotland.

A Registration Act was passed in 1836 and subsequently amended, the original Act and the amending Act being entitled the Births and Deaths Registration Acts 1836–74, the last and most important amending Act being entitled the 37 and 38 Vict. Chap. 88. The Poor Law unions were utilized for registration purposes, and the country was divided into registration districts coterminous with the Poor Law unions of the same name. There are forty-two registration counties in England, and thirteen in Wales, including Monmouthshire. The counties are divided into

registration districts (at the end of 1909 there were 634 registration districts), and these again into sub-districts (2015 in number). Each sub-district has a registrar of births and deaths. Registration counties, therefore, differ from administrative counties inasmuch *inter alia* as the former include county boroughs, while the latter do not.

Administrative counties are divided for public health purposes into boroughs (municipal), urban districts, and rural districts.

For the purposes of administering the Factory Acts of 1878, the county was formed into districts, and those districts were divided into factory districts coterminous with Poor Law unions.

Our legislators might profitably spend some time in devising some scheme of unification and thus prevent future figures from being lost in chaos.

My chief difficulty has been to compare statistics of factories with statistics of sanitary areas. Each department of State seems bent on elucidating facts peculiar to itself, and rightly so; and while courteously replying to every enquiry addressed to them, the replies are of little service. For instance, I feel certain that, were it possible to obtain a record of accidents in every sanitary area in Lancashire, it would be possible to show a direct numerical relationship between the number of accidents and the notifications of puerperal fever. But there is no such record, because the Factory Department is more interested in the type of machine responsible for the accident, than in the town in which the accident occurred.

Part II.

STATISTICS.

Abbreviations :—

Db. Births attended by medical practitioners.

Mb. Births attended by registered midwives.

Dpf. Cases of puerperal fever attended by medical practitioners.

Mpf. Cases of puerperal fever attended by midwives.

Wf. Persons employed in factories.

Wm. Persons employed in mines.

Wq. Persons employed in quarries.

Fs. All factories.

Ft. Textile factories.

Fnt. Non-textile factories.

The figures for Wf and Wm are obtained from the M.O's.H. unless followed by e, which for Wf signifies "Factory Returns," and for Wm "List of Mines, 1909."

The figures of Fs are from M.O's.H., and for Ft from "Worrall's Directory for Lancashire," 1909.

The figures of quarries are from "Mines and Quarries Output for 1909."

In districts where no statistics appear in the "Remarks" column, I have been unable to find any record of factories or mines, etc., in that district.

TABLES OF STATISTICS.

Figures in heavy type show the rates; the small type indicates the total number. Heavy figures in the first column show the number of acres per person. In districts where Factories (Fs) are recorded in the "Remarks" column, and no figures are given under "Persons Employed in Factories," no figures were obtainable from any source. If figures are shown under "Persons Employed in Factories," they include all persons in factories textile and non-textile; but if Ft (textile factories) are not recorded, the reader may assume there are no textile factories in those districts (i.e. in Lancashire). If no figures are given under "Persons Employed in Mines," the reader may assume there are no mines in those districts.

TABLE I.—STATISTICS OF MINING DISTRICTS.

Lancashire Urban Districts.

Lancashire Urban Districts, and Acreage	Population		Persons Employed				Ten Years 1900-1909					Remarks
	Per census 1901 and rate per acre	Increase + or Decrease − for 10 years 1901-1911 per cent	In Factories in 1909 per cent	In Mines in 1909 per cent	As Midwives in 1909 per 10,000 pop.	As Medical Men in 1905 per 10,000 pop.	Births Registered and rate per 1000 population	Puerperal Fever Cases. [Fatal ( )] per 1000 births	Erysipelas and rate per 1000 population	Diphtheria and rate per 1000 population	Scarlet Fever and rate per 1000 population	
Abram *Acreage* 1984	**3·2** 6306	**9·3** + 587	**0·08** 6	**39·** 2500	**7·3** 5	**1·5** 1	**35·6** 2321	**3·4** 7 (3)	**1·65** * 108	**3·5** * 229 *85 in 1901*	**6·5** * 426 *109 in 1903*	Fs 1 * 1901–1909
Adlington *Acreage* 1062	**4·2** 4523	**1·4** − 66	— —	**23·** 1036	**6·7** 3	**6·6** 3	**29·1** 1311	**4·5** 6 (4)	**1·71** 77	**5·0** * 225 *130 in 1902*	**4·9** * 223 *62 in 1902*	Fs 18 Ft 5 * 1901–1909
Ashton-in-Makerfield *Acreage* 6251	**3·1** 18687	**15·** 2853	**2·5** 485	**36·** 7166e	**7·06** 14	**2·5** 5	**36·7** 7237	**5·1** * 37 (12)	**0·91** * 181	**2·9** * 576 *Epidemic 1905–07*	**6·7** 1325 *Epidemic 1900 and '03*	Fs 18 * 1901–1909
Aspull *Acreage* 1906	**4·3** 8388	**1·3** − 112	— —	**14·** 1193e	**12·** 10	**2·3** 2	**35·8** 2994	**4·3** 13 (6)	**1·62** 136	**1·9** 165	**8·9** 724 *Epidemic 1901–03*	Ft 1
Atherton *Acreage* 2265	**7·5** 16211	**17·** + 2771	— —	**14·** 2393e	**3·4** 6	**5·2** 9	**32·5** 5585	**2·6** 15 (5)	**1·57** 260	**1·3** 222	**5·7** 992 *195 in 1903*	Ft 4
Audenshaw *Acreage* 1241	**6·0** 7216	**10·5** + 762	— —	**30·** 2306e	**3·8** 3	**0** 0	**24·8** 1862	**4·8** 9 (8)	**0·35** 25	**1·08** 81	**6·0** 449	Fs 34 Ft 1

Acreage 4596 **1·02**	4232	+ 672	—	970	5	1	1334	3 (1)	19	10	140 *32 cases in 1901*	
BLACKROD *Acreage* 2392	**16·** 3875	**0·5** + 21	**3·0** 130	**13·** 280 **21**[e] 840[e]	**7·7** 3	**5·1** 2	**30·7** 1195	**15·8** 19 (3)	**1·15** 45	**1·2** 48	**6·2** 244 *51 cases in 1903*	Fs 1
CHORLEY *Acreage* 3614	**7·7** 26852	**12·** + 3465	— —	**8·3** 2318[e]	**5·4** 16	**4·9** 14	**27·8** 7831	**1·7** 14 (11)	**0·45** 129	**0·4** 118 *23 cases in 1901*	**3·1** 879 *Epidemic 1902–04*	Ft 20
GOLBORNE *Acreage* 1679	**3·8** 6789	**2·** + 146	— —	**14·** 939[e]	**7·2** 5	**5·8** 4	**33·4** 2288	**1·3** 3 (3)	**0·97** 67	**1·4** 99	**2·3** 158 *42 cases in 1904*	Ft 2
HAYDOCK *Acreage* 2411	**3·7** 8575	**12·** + 1074	— —	**26·** 2344[e]	**5·3** 5	**5·5** 5	**39·7** 3563	**1·1** 5 (3)	**1·12** 101	**1·2** 111	**5·7** 512	Ft 0
HINDLEY *Acreage* 2612	**9·** 23504	**2·5** + 602	— —	**8·** 1675[e]	**5·8** 14	**2·1** 5	**31·8** 8229	**4·9** 41 (16)	**0·76** 198	**2·2** 592 *Epidemic 1901 and 1904*	**5·2** 1360 *355 cases in 1900*	Ft 4
INCE-IN-MAKERFIELD *Acreage* 2320	**9·** 21262	**3·6** + 776	— —	see Wigan	**3·2** 7	**1·3** 3	**39·07** 8415	**2·2** 19 (11)	**1·21** 262	**1·1** 251	**6·1** 1322	
KEARSLEY *Acreage* 1005	**9·** 9218	**4·9** + 458	— —	**7·** 600	**7·1** 7	**2·1** 2	**28·3** 2652	**2·6** 7 (5)	**0·37** 35	**0·8** 82	**4·8** 452 *97 cases in 1901*	Fs 12 Ft 3

TABLE I.—STATISTICS OF MINING DISTRICTS—*continued*

Lancashire Urban Districts—*continued.*

Lancashire Urban Districts, and Acreage	Population		Persons Employed				Ten Years—1900-1909					Remarks
	Per census 1901 and rate per acre	Increase + or Decrease - for 10 years 1901-1911 per cent	In Factories in 1909 per cent	In Mines in 1909 per cent	As Midwives in 1909 per 10,000 pop.	As Medical Men in 1905 per 10,000 pop.	Births Registered and rate per 1000 population	Puerperal Fever Cases. [Fatal ( )] per 1000 births	Erysipelas and rate per 1000 population	Diphtheria and rate per 1000 population	Scarlet Fever and rate per 1000 population	
Leigh (Borough) *Acreage* 6358	**6·** 40001	**12·** + 4108	— —	**17·** 7055e	**3·4** 15	**3·8** 16	**32·5** 13487	**2·2** 30 (17)	**0·83** 347	**0·6** 281	**7·2** 3002 *Epidemic 1903-05*	Ft 15
Little Hulton *Acreage* 1699	**4·** 7294	**11·** + 819	**5·** 350 to 400	**15·** 1158e M.O.H.*	**6·2** 5	**1·3** 1	**27·5** 2090	**4·7** 10 (4)	**0·63** 48	**1·5** 116	**6·2** 473	* Most of male pop. Ft 3
Little Lever *Acreage* 808	**6·** 5119	**15·** + 78	**19·** 985	**9·** 500	**3·8** 2	**3·8** 2	**27·3** 1405	**4·9** 7 (5)	**1·8** 93	**2·3** 120	**4·4** 230	Fs 17 Ft 3
Newton-in-Makerfield *Acreage* 3105	**5·5** 16699	**10·** + 1763	— —	**16·** 2800e	**4·9** 9	**5·7** 10	**32·1** 5562	**4·1** 23 (9)	**1·78** 310	**1·7** 318	**5·0** 866 *Epidemic 1901 and 1905*	
Skelmersdale *Acreage* 1942	**3·1** 5699	**19·** + 1123	— —	**26·** 1616e	**3·03** 2	**6·5** 4	**36·8** 2242	**6·6** 15 (4)	**0·57** 35	**0·8** 53	**4·7** 291	Ft 1
Standish-with-Langtree *Acreage* 3266	**2·03** 6303	**15·** + 977	— —	**15·** 1000e	**5·2** 4	**4·4** 3	**34·1** 2268	**5·7** 13 (0)	**2·52** 168	**1·8** 72	**6·4** 429	
Tyldesley-with-Shakerley *Acreage* 2490	**6·** 14843	**4·9** + 739	**11·** 1700	**26·** 4462 3975e	**2·5** 4	**5·2** 8	**32·6** 4933	**5·2** 26 (10)	**1·07** 162	**1·07** 161	**8·2** 1246	Fs 9 Ft 3

UPHOLLAND *Acreage* 4686	**1·** 4773	**9·** + 460	— —	**14·5** 719[e]	**7·7** 4	**6·05** 3	**33·3** 1645	**4·2** 7 (3)	**0·97** 48	**2·2** 111	**6·1** 305	
WEST-HOUGHTON *Acreage* 5560	**2·6** 14377	**6·** + 669	— —	**31·** 4569[e]	**9·4** 14	**2·05** 3	**32·4** 4736	**11·8** 56 (7)	**0·9** 137	**3·6** 535	**5·09** 732	Ft 4
WORSLEY *Acreage* 5342	**2·4** 12462	**11·** + 1444	— —	**23·** 3005[e]	**8·07** 11	**6·1** 8	**23·5** 3050	**2·9** 9 (4)	**0·9** 119	**1·6** 207	**5·6** 725	

Lancashire Rural Districts.

BARTON-UPON-IRWELL *Acreage* 6872	**1·2** 8065	**14·** + 1205	— —	**24·** 2000[e]	**3·3** 3	**3·5** 3	**25·4** 2158	**3·2*** 7 (7)	**0·93*** 81	**3·3** 287	**4·7** 402	* 1901–09
BLACKBURN *Acreage* 20590 **2·5**	8238	**14·** + 1198	— —	— —	**2·1** 2	**1·1** 1	**22·3** 1939	**1·5** 3 (3)	**0·38** 33	**1·3** 119	**4·1** 358	
CHORLEY *Acreage* 39988 **2·07**	19312	**11·3** + 2184	— —	**5·** 1185[e]	**2·3** 6	**2·9** 6	**26·8** 5398	**3·0** 16 (16)	**1·1** 227	**1·4** 288	**3·4** 693	
LEIGH *Acreage* 11574 **1·1**	8410	**19·** + 1667	— —	— —	**6·05** 6	**1·1** 1	**31·9** 2872	**3·1** 9 (7)	**0·8** 80	**0·7** 70	**5·6** 506	
WIGAN *Acreage* 11695 **1·9**	6045	**4·6** + 282	— —	**2·0** 148[e]	**6·3** 4	**1·6** 1	**29·8** 1831	**4·3** 8 (1)	**2·13** 131	**1·7** 110	**3·8** 234	

TABLE I.—STATISTICS OF MINING DISTRICTS—continued

Lancashire County Boroughs.

Lancashire County Boroughs, and Acreage	Population		Persons Employed				Ten Years—1900–1909					Remarks
	Per census 1901 and rate per acre	Increase + or Decrease − for 10 years 1901-1911 per cent	In Factories in 1909 per cent	In Mines in 1909 per cent	As Midwives in 1909 per 10,000 pop.	As Medical Men in 1905 per 10,000 pop.	Births Registered and rate per 1000 population	Puerperal Fever Cases, [Fatal ( )] per 1000 births	Erysipelas and rate per 1000 population	Diphtheria and rate per 1000 population	Scarlet Fever and rate per 1000 population	
St. Helens *Acreage* 7284	**12·** 84410	**14·** 12156	— —	**10·** 8728e	**4·9** 47	**2·7** 25	**36·6** 32036	**3·1** 100	**1·10** 967	**1·7** 1506	**6·9** 6079	1909 Mb 95% Db 5% Mpf 5 (1·7) Dpf 2 (13·2)
Wigan *Acreage* 5082 (1904)	**16·8** 82428	**8·** + 6743	**22·** 18350	**20·** 15000 18562e	**6·8** 60	**4·8** 41	**30·3** 25538	**3·4** 89	**0·79** 667	**0·4** 410	**4·2** 3564	Mb 66% Db 33% Ft 8 1909

Scotch Burghs.

Motherwell *Acreage* 1324	**23·** 31144	**29·6** 9234	— —	— —	None Registered	**4·** 15	**39·** 13059	**3·4** 45	**1·4** 487	**1·4** 493	**4·5** 1527	Mb about 13%

TABLE II.—STATISTICS OF MANUFACTURING DISTRICTS.

Lancashire Urban Districts.

LANCASHIRE URBAN DISTRICTS, and Acreage	POPULATION		PERSONS EMPLOYED				TEN YEARS 1900-1909					Remarks
	Per census 1901 and rate per acre	Increase + or Decrease − for 10 years 1901-1911 per cent	In Factories in 1909 per cent	In Mines in 1909 per cent	As Midwives in 1909 per 10,000 pop.	As Medical Men in 1905 per 10,000 pop.	Births Registered and rate per 1000 population	Puerperal Fever Cases, [Fatal ( )] per 1000 births	Erysipelas and rate per 1000 population	Diphtheria and rate per 1000 population	Scarlet Fever and rate per 1000 population	
ACCRINGTON (Borough) *Acreage* 3427	**12·0** 43122	**4·6** + 1909	— —	— —	**2·9** 13	**5·4** 24	**22·9** 10071	**3·9** 40 (28)	**0·66** 203 *	**0·6** 272 † *Epidemic 1906-08*	**3·6** 1582 *Epidemic 1903 and 1908*	Fs 60 Ft 20 (including Baxenden) * 1903-1909 † 1901-1909
ASHTON-UNDER-LYNE (Borough) *Acreage* 1346	**32·0** 43890	**2·9** + 1289	— —	**3.** 1500e	**3·7** 17	**6·3** 28	**26·6** 11817	**2·6** 31 (13)	**0·39** 173 *	**0·3** 136	**4·4** 1965 *Epidemic 1904*	Ft 32 * 1903-1909
BACUP (Borough) *Acreage* 6120	**3·6** 22505	**0·8** − 181	— —	**1·7** 389e	**2·2** 5	**4·9** 11	**23·5** 5279	**5·6** 30 (11)	**0·71** 160	**0·3** 80	**4·2** 956	Ft 22e
BARROWFORD *Acreage* 1385	**3·7** 4959	**11·** + 568	— —	— —	**1·8** 1	**1·9** 1	**24·5** 1264	**0·8** 1 (1)	**1·10** 57	**1·2** 65	**4·2** 217 *53 cases in 1907*	Ft 13e
BRIERFIELD *Acreage* 807	**9·** 7288	**13·** + 972	— —	— —	**1·2** 1	**3·9** 3	**24·6** 1877	**1·5** 3 (0)	**0·96** 74	**1·5** 118	**4·7** 363 *86 in 1901 86 in 1905*	Fte 24

TABLE II.—STATISTICS OF MANUFACTURING DISTRICTS—*continued.*

Lancashire Urban Districts—*continued.*

Lancashire Urban Districts, and Acreage	Population		Persons Employed				Ten Years—1900-1909					Remarks
	Per census 1901 and rate per acre	Increase + or Decrease − for 10 years 1901-1911 per cent	In Factories in 1909 per cent	In Mines in 1909 per cent	As Mid-wives in 1909 per 10,000 pop.	As Medical Men in 1905 per 10,000 pop.	Births Registered and rate per 1000 population	Puerperal Fever Cases. [Fatal ( )] per 1000 births	Erysipelas and rate per 1000 population	Diphtheria and rate per 1000 population	Scarlet Fever and rate per 1000 population	
Chadderton *Acreage* 3082	**8·** 24892	**13·** + 3413	see Oldham	— —	see Oldham	see Oldham	**28·1** 7437	**2·04** 15 (5)	**0·43** 114	**1·1** 297	**4·2** 1121 *206 cases in 1900 209 cases in 1905*	
Church *Acreage* 529	**12·** 6463	**6·** + 428	— —	— —	**1·5** 1	**1·4** 1	**24·6** 1630	**3·06** 5 (3)	**0·45** 30	**0·5** 36	**4·0** 269 *57 cases in 1901*	
Clayton-le-Moors *Acreage* 1059	**8·** 8153	**8·** + 718	**70·** 6000	**3·** 300	**4·5** 4	**3·5** 3	**27·9** 2353	**4·6** 11 (9)	**1·72** 145	**1·2** 103	**3·7** 311 *88 cases in 1902*	Fs 24 Ft 9
Clitheroe (Borough) *Acreage* 2385	**5·0** 11414	**9·** + 1086	— —	— —	**4·8** 6	**5·9** 7	**23·05** 2719	**2·9** 8 (6)	**0·32** 38	**0·3** 46 *Epidemic 1903-04*	**4·3** 514 *118 cases in 1901*	Ft 14
Colne (Borough) *Acreage* 5063	**4·** 23000	**11·** + 2693	**0·9** 247	— —	**3·1** 8	**4·5** 11	**25·0** 5994	**2·0** 12 (6)	**0·95** 228	**0·4** 99	**4·3** 1035	Fs 104 Ft 54
Crompton *Acres* 2865	**4·** 13427	**9·** + 1331	**6·** 6300	**2·** 260	**2·07** 3	**5·** 7	**23·3** 3244	**7·09** 23 (17)	**0·84** 106	**0·4** 61	**4·08** 567 *132 cases in 1906*	Fs 55

DARWEN *Acreage* 5959	**6·** 38212	**6·** + 2132	— —	**2·** 735[e]	**4·5** 18	**5·3** 21	**22·3** 8706	**3·3** 29 (15)	**0·58** 229	**1·7** 690 *Epidemic 1900-02*	**5·3** 2067 *Epidemic 1904-05*	Ft 36
DENTON *Acreage* 2594	**6·** 14934	**13·** + 1946	— —	— —	**5·7** 9	**5·03** 5	**24·6** 3851	**3·3** 13 (9)	**1·1** 161 (1901-09)	**0·6** 89 (1901-09)	**7·1** 1114 *Epidemic in 1907*	Ft 3
DROYLSDEN *Acreage* 1010	**11·7** 11087	**19·** + 2172	— —	— —	**4·6** 6	**1·6** 2	**28·4** 3370	**2·3** 8 (4)	**0·75** 88	**1·1** 134	**6·2** 739	
FAILSWORTH *Acreage* 1072	**13·** 14152	**13·** + 1848	— —	— —	**3·8** 6	**2·7** 4	**28·7** 4253	**2·5** 11 (7)	**0·31** 46	**0·69** 102	**3·5** 525 *114 cases in 1900*	Ft 20
FARNWORTH *Acreage* 1504	**17·** 25925	**8·** + 2217	— —	**1·** 300[e]	**7·2** 20	**3·3** 9	**27·3** 7299	**3·1** 23 (13)	**0·63** 170	**0·5** 148	**5·5** 1491 *Epidemic in 1903*	Ft 16
GREAT HARWOOD *Acreage* 2868	**4·** 12015	**14·** + 1802	— —	**2·5** 315[e]	**0·8** 1	**3·9** 5	**24·2** 3068	**4·2** 13 (6)	**0·84** 107	**0·8** 105	**6·1** 775 *165 cases in 1901*	Ft 13
HASLINGDEN (Borough) *Acreage* 8196	**2·2** 18543	**0·9** + 180	— —	— —	**2·6** 5	**5·8** 11	**21·2** 3947	**2·2** 9 (4)	**1·03** 193	**1·5** 278	**3·06** 570	Ft 29 (including Helmshore)
HEYWOOD *Acreage* 3660	**7·** 25458	**5·** + 1240	— —	— —	**4·5** 12	**3·5** 9	**23·5** 5969	**5·5** 33 (5)	**0·74** 134	**1·05** 246	**3·9** 801	Fs 64 Ft 47
HORWICH *Acreage* 3257	**4·7** 15084	**7·** + 1202	**25·** 4045	**0·4** 74[e]	**1·8** 3	**3·2** 5	**29·2** 4528	**2·2** 10 (2)	**1·29** 201	**2·4** 387 *Epidemic in 1900*	**7·3** 1140	Fs 12 Ft 4

TABLE II.—STATISTICS OF MANUFACTURING DISTRICTS—*continued.*

Lancashire Urban Districts—*continued.*

Lancashire Urban Districts, and Acreage	Population		Persons Employed				Ten Years 1900–1909					Remarks
	Per census 1901 and rate per acre	Increase + or Decrease − for 10 years 1901–1911 per cent	In Factories in 1907 per cent	In Mines in 1909 per cent	As Midwives in 1909 per 10,000 pop.	As Medical Men in 1905 per 10,000 pop.	Births, Registered and rate per 1000 population	Puerperal Fever Cases. [Fatal ( )] per 1000 births	Erysipelas and rate per 1000 population	Diphtheria and rate per 1000 population	Scarlet Fever and rate per 1000 population	
Hurst *Acreage* 638	**11·5** 7145	**9·** + 713	— —	— —	**6·4** 5	**1·3** 1	**27·2** 2018	**3·4** 7 (4)	**0·20** 15	**0·1** 8	**4·9** 364 *Epidemic in 1902*	Ft 6
Lees *Acreage* 203	**17·8** 3621	**0·9** + 32	— —	— —	**10·9** 4	**11·01** 4	**28·4** 1033	**5·8** 6 (5)	**0·44** 16	**0·69** 25	**7·3** 266	
Littleborough *Acreage* 7853	**1·4** 11166	**4·8** + 539	**36·** 4138	**0·9** 111	**2·5** 3	**5·2** 6	**21·2** 2407	**2·07** 5 (0)	**0·46** 53	**1·6** 183	**4·1** 466 *141 cases in 1904*	Fs 74 Ft 13
Middleton (Borough) *Acreage* 4775	**5·4** 25178	**11·** + 2805	— —	— —	**4·7** 13	**4·9** 13	**23·4** 6236	**4·3** 27 (16)	**0·8** 210	**0·6** 179	**3·8** 1006	Ft 42
Milnrow *Acreage* 5198	**1·6** 8241	**4·** + 343	**30·** 2500	**1·** to **3·** 100-256e	**9.3** 8	**2·3** 2	**20·4** 1707	**8·7** 15 (10)	**1·08** 91	**1·02** 86	**3·4** 288	Fs 25 Ft 13
Mossley *Acreage* 3622	**3·6** 13452	**1·8** − 247	**25·** 3300	**0·07** 10	**3·7** 5	**7·4** 10	**21·6** 2896	**2·4** 7 (6)	**0·26** 36	**1·09** 146	**3·7** 498 *156 cases in 1901*	Fs 37 Ft 22
Nelson (Borough) *Acreage* 3466	**10·1** 32816	**23·** + 6669	— —	— —	**1·04** 4	**3·9** 14	**21·7** 7661	**1·4** 11 (4)	**0·75** 265	**0·7** 271	**5·2** 1850	Ft 108

PADIHAM *Acreage* 970	**13·2** 12205	**11·** 1432	**30·** 4045	**2·5** 339[e] at Altham	**2·4** 3	**5·5** 7	**26·5** 3372	**1·7** 6 (3)	**1·1** 142	**0·9** 115	**4·5** 580	Fs 6
PRESTWICH *Acreage* 2494	**3·9** 9779	**22·** + 2221	— —	— —	**5·1** 5	**18·** 18	**24·7** 2424	**4·1** 10 (2)	**0·47** 47	**2·4** 244 *79 cases in 1900*	**4·2** 416	Ft 3
RADCLIFFE *Acreage* 3098	**3·2** 25368	**2·8** + 717	— —	**5·** 1319[e]	**3·5** 9	**3·9** 10	**24·7** 6335	**2·2** 14 (7)	**1·29** 332	**0·9** 252	**4·3** 1120 *300 cases in 1904*	Ft 46
RAMSBOTTOM *Acreage* 6424	**2·4** 15920	**5·** − 773	— —	— —	**3·8** 6	**3·9** 6	**21·01** 3289	**2·4** 8 (2)	**0·07**☆ 10	**0·76**☆ 108 *37 cases in 1909*	**3·3** 522 *168 cases in 1909*	Fs 55 Ft 17 *1901-09
RAWTENSTALL (Borough) *Acreage* 9535	**3·** 31053	**1·7** − 537	— —	**0·8** 258[e]	**4·8** 15	**4·8** 15	**22·6** 7077	**5·08** 36 (13)	**0·94**☆ 237	**0·41**† 116	**3·4** 1072	Ft 11 *1901-09 (except 1902) †1901-09
RISHTON *Acreage* 2985	**2·4** 7031	**5·7** + 410	— —	**6·** 447[e]	**1·3** 1	**4·1** 3	**22·8** 1640	**6·7** 11 (3)	**1·98** 143	**1·4** 106	**4·6** 336	Ft 9
ROYTON *Acreage* 2145	**7·0** 14881	**14·** + 2188	— —	— —	**4·2** 7	**1·8** 3	**26·2** 4105	**3·1** 13 (4)	**0·9**☆ 128	**0·4**☆ 59	**5·5** 871	Fs 85 Ft 23[e] *1901-09
TRAWDEN *Acreage* 6815 **2·4**	2641	**12·** + 322	**4·** 1000	**1·7** 50	— —	— —	**25·7** 710	**1·4** 1	**0·65** 18	**0·07** 2	**5·04** 139	Ft 10
WARDLE *Acreage* 3192	**1·4** 4427	**6·6** + 293	— —	— 46	**6·4** 3	see Little-borough	**15·4** 701	**1·4** 1 (1)	**0·33** 15	**0·5** 23	**3·7** 168	

TABLE II.—STATISTICS OF MANUFACTURING DISTRICTS—*continued.*

Lancashire Urban Districts—*continued.*

Lancashire Urban Districts, and Acreage	Population		Persons Employed				Ten Years—1900-1909					Remarks
	Per census 1901 and rate per acre	Increase + or Decrease − for 10 years 1901-1911 per cent	In Factories in 1909 per cent	In Mines in 1909 per cent	As Mid-wives in 1909 per 10,000 pop.	As Medical Men in 1905 per 10,000 pop.	Births Registered and rate per 1000 population	Puerperal Fever Cases-[Fatal ( )] per 1000 births	Erysipelas and rate per 1000 population	Diphtheria and rate per 1000 population	Scarlet Fever and rate per 1000 population	
Whitworth *Acreage* 4485	**2·1** 9578	**7·3** − 706	— —	**0·9** 80e	**1·1** 1	**4·3** 4	**21·5** 2012	**2·4** 5 (2)	**1·59** 149	**0·5** 52	**2·5** 242	Fs 17
Widnes (Borough) *Acreage* 3110	**9·5** 28580	**10·** + 2964	— —	— —	**7·05** 21	**2·7** 8	**33·6** 9976	**1·9** 19 (11)	**0·59** 151	**0·9** 276	**3·3** 1001	Fs 65

Lancashire County Boroughs.

Barrow-in-Furness *Acreage* 11023	**5·3** 57586	**10·** + 6189	— —	— —	**1·4** 9	**4·1** 25	**31·1** 18437	**2·5** 46 (12)	**1·16** 688	**0·7** 428	**5·2** 3113	Mb 40%
Blackburn *Acreage* 7431	**17·5** 129216	**2·9** + 3848	**37·** 50000	**0·01** 20	**3·2** 53	**4·7** 70	**25·4** 33098	**4·3** 144 (64)	**0·71** 741 (1902-05)	**1·2** 1568	**6·5** 8463	Mb 55% Mpf 6 (3·4) Db 44·8% Dpf 5 (3·5) Fs 130 Ft 88
Bolton *Acreage* 15283	**11·** 168215	**7·9** + 12670	**26·** 47491	**1·3** 2505 (Census 1901)	**3·2** 58	**4·7** 82	**27·1** 46517	**2·1** 101	**0·43** 745	**0·6** 1078	**5·3** 9253	Mb 66% Mpf 1 (0·3) Db 33% Dpf 3 (1·8) Fs 355 Ft 83 (with Moses Gate)

BURNLEY *Acreage* 4015	**24·7** 97043	**9·5** + 9294	**28·** 30,000	**0·2** 2740 (Census 1901)	**2·7** 29	**5·3** 54	**28·2** 28033	**3·1** 89 (46)	**1·17** 1169	**0·9** 950	**4·9** 4931	Wm and Q 4244[e] Fs 162 Ft 93
BURY *Acreage* 5907	**9·8** 58029	**1·** + 620	— —	**0·02** 17	**4·1** 24	**4·4** 26	**22·5** 13134	**6·7** 89	**0·49** 286	**1·2** 707	**3·4** 1998	Mb 75% Db 25% Fs 50 Ft 33
OLDHAM *Acreage* 4729	**29·5** 137246	**8·** + 10249	— —	**0·2** 342[e]	**5·** 74	**5·8** 83	**26·2** 36659	**4·3** 158	**0·63** 886	**0·7** 1106	**5·0** 6997	Mb 59% Db 40% 1910 Ft 170
PRESTON *Acreage* 3721	**30·6** 112989	**3·6** + 4124	— —	— —	**4·7** 56	**5·7** 66	**28·8** 32909	**2·6** 88	**0·57** 656	**0·6** 718	**4·05** 4627	Mb 40% Ft 49
ROCHDALE *Acreage* 6446	**13·2** 83114	**10·** + 8323	— —	**0·009** 9[e]	**5·4** 49	**4·9** 43	**23·5** 20068	**4·4** 90 (35)	**0·74** 632	**0·7** 641	**2·9** 2528	1909 Mb 78·3 Db 21·7 Mpf 1 (0·3) Dpf 3 (6·6) Fs 377 Ft 82
WARRINGTON *Acreage* 3115	**26·** 64242	**12·** + 7936	**11·** 8586	— —	**4·** 28	**3·1** 21	**27·4** 23082	**3·3** 77	**0·55** 464	**0·6** 527	**3·6** 3039	1909 Mb 83% Db 17% Mpf 6 (3·1) Dpf 1 (2·7) Ft 3
English County Boroughs.												
LEICESTER *Acreage* 8586	**25·** 211579	**7·** + 15663	— —	— —	**1·1** 35	**3·5** 120	**27·4** 59086	**2·3** 140	**0·97** 2100	**1·8** 4043	**5·3** 11612	Mb 44% Mpf 2 (0·8) Db 55% Dpf 6 (1·9)

TABLE II.—STATISTICS OF MANUFACTURING DISTRICTS—continued.

Scotch Burghs.

Scotch Burghs, and Acreage	Population: Per census 1901 and rate per acre	Population: Increase + or Decrease − for 10 years 1901-1911 per cent	Persons Employed: In Factories in 1909 per cent	Persons Employed: In Mines in 1909 per cent	Persons Employed: As Midwives in 1909 per 10,000 pop.	Persons Employed: As Medical Men in 1905 per 10,000 pop.	Ten Years—1900-1909: Births Registered and rate per 1000 population	Puerperal Fever Cases. [Fatal ( )] per 1000 births	Erysipelas and rate per 1000 population	Diphtheria and rate per 1000 population	Scarlet Fever and rate per 1000 population	Remarks
Falkirk *Acreage* 1670	**17·** 29280	**14·** + 4289	**7·5** 2500	— —	None Registered	**4·9** 15	**35·4** 10765	**5·2** 57	**1·8** 547	**0·8** 268	**3·3** 1021	Fs 50
Glasgow *Acreage* 12669	**61·** 775594	**1·1** + 8861	— —	— —	None Registered	**9·** 744	**31·1** 243075	**4·0** 1010	**1·43** 11149	**1·2** 9425	**3·2** 24910	Fs 4467

English Administrative Counties.

Lancashire Urban Districts *Acreage* 350196	**3·3** 1358767	**10·3** + 140137	See Factory Districts, page 45	**4·2** 620	**5·3** 756	**29·4** 410809	**3·0** 1266	**0·8** 11839	**1·2** 17507	**5·3** 73985	1909 Mb 52% Db 48% Mpf 70 (3·1) Dpf 74 (3·5) Figures refer to whole county
Rural Districts *Acreage* 716333 **3·2**	219378	**9·6** + 21242		**0·0** 101	**0·0** 67	**25·2** 56812	**2·2** 125	**0·6** 1402	**1·1** 2582	**3·4** 8609	

TABLE III.—STATISTICS OF MIXED DISTRICTS.

Lancashire Urban Districts.

Lancashire Urban Districts, and Acreage	Population		Persons Employed				Ten Years 1900–1909					Remarks
	Per census 1901 and rate per acre	Increase + or Decrease − for 10 years 1901-1911 per cent	In Factories in 1909 per cent	In Mines in 1909 per cent	As Midwives in 1909 per 10,000 pop.	As Medical Men in 1905 per 10,000 pop.	Births Registered and rate per 1000 population	Puerperal Fever Cases, [Fatal ( )] per 1000 births	Erysipelas and rate per 1000 population	Diphtheria and rate per 1000 population	Scarlet Fever and rate per 1000 population	
Eccles (Borough) *Acreage* 2057	**18·** 34369	**22·** + 7577	— —	— —	**4·4** 18	**4·1** 15	**26·7** 9885	**2·1** 21 (13)	**0·5*** 150	**1·7** 652 *Epidemic in 1902-3*	**4·6** 1719 *Epidemic in 1900*	Ft 3 * 1902-09
Gorton *Acreage* 1147	**23·** 26564	— —	— —	— —	**4·** 10	Manchester Rate	**34·9** 9623	**2·2** 22 (8)	**0·62** 173	**0·6** 166	**5·1** 1411	The figures and rates are for 1900–1908. Included in City of Manchester, 1908.
Irlam *Acreage* 4620	**1·** 4335	**45·** + 1974	— —	— —	**8·4** 5	**3·9** 2	**31·2** 1571	**5·09** 8 (3)	**0·91** 46	**2·6** 131	**4·3** 218	
Lancaster (Borough) *Acreage* 3506	**11·5** 40329	**2·6** + 1085	— —	— —	**4·6** 19	**8·8** 36	**25·6** 10421	**2·1** 22 (11)	**0·5** 203	**1·2** 490	**4·6** 1898	Ft 2
Lathom and Burscough *Acreage* 13660 **1·9**	7113	**1·7** + 122	**2·** 150	— —	**6·9** 5	**4·1** 3	**28·1** 2071	**5·7** 12 (8)	**0·69** 50	**2·6** 188	**5·6** 402	Fs 3

TABLE III.—STATISTICS OF MIXED DISTRICTS—*continued.*

Lancashire Urban Districts—*continued*

Lancashire Urban Districts and Acreage	Population		Persons Employed				Ten Years 1900–1909					Remarks
	Per census 1901 and rate per acre	Increase + or Decrease − for 10 years 1901-1911 per cent	In Factories in 1909 per cent	In Mines in 1909 per cent	As Mid-wives in 1909 per 10,000 pop.	As Medical Men in 1905 per 10,000 pop.	Births, Registered and rate per 1000 population	Puerperal Fever Cases. [Fatal ()] per 1000 births	Erysipelas and rate per 1000 population	Diphtheria and rate per 1000 population	Scarlet Fever and rate per 1000 population	
Leyland *Acreage* 3735	**1·9** 6865	**17·** + 1225	— —	— —	**3·8** 3	**4·07** 3	**24·1** 1761	**3·4** 6 (4)	**1·05** 77	**0·2** 17	**5·5** 406 *188 cases in 1901*	Ft 3
Longridge *Acreage* 3285	**1·3** 4304	**0·8** + 36	— —	— —	— —	**6·9** 3	**28·1** 1214	**0·8** 1 (1)	**0·3** 13	**0·4** 18	**5·9** 258	
Norden *Acreage* 5358 **1·3**	3907	**3·** + 110	— —	**1·7** 70e	**5·2** 2 see Roch-dale	**2·5** 1 see Roch-dale	**20·3** 789	**3·8** 3 (2)	**0·46** 18	**1·08** 42	**1·6** 63	
Ormskirk *Acreage* 574	**12·3** 6857	**8·** + 552	— —	**7·** 500e	**5·4** 4	**12·7** 9	**28·5** 2011	**1·4** 3 (1)	**1·04** 74	**0·4** 29	**3·7** 267	
Orrell *Acreage* 1517	**3·5** 5436	**16·** + 882	**2·7** 170	— —	**6·5** 4	**1·7** 1	**32·6** 1873	**6·8** 13 (3)	**1·82** 105	**1·1** 64	**4·9** 286	Ft 2
Oswaldtwistle *Acreage* 4885	**3·** 14192	**10·** + 1528	— —	**3·0** 450e	**3·8** 6	**3·3** 5	**25·4** 3743	**3·2** 12 (7)	**0·66** 98	**0·8** 130	**3·2** 477 *100 cases in 1900*	Ft 12
Prescot *Acreage* 297	**26·** 7855	**3·6** + 299	— —	**2·5** 200e	**6·4** 5	**9·2** 7	**33·6** 2678	**2·2** 6 (3)	**1·01** 81	**0·9** 75	**5·5** 443	

RAINFORD *Acreage* 5877 **1·7**	3359	**4·** + 144	**1·6** 100	**17·** 600 663[e]	**11·5** 4	**5·8** 2	**29·7** 1013	**3·9** 4 (3)	**1·58** 54	**0·49** 17	**4·07** 139	
STRETFORD *Acreage* 3240	**10·6** 30436	**39·** + 12060	— —	— —	**3·2** 13	**3·1** 12	**21·9** 7610	**2·1** 16 (12)	**0·54** 169	**1·3** 476	**3·9** 1364	
SWINTON and PENDLEBURY *Acreage* 2282	**12·** 27005	**13·** + 3754	— —	**6·** 1864[e]	**2·3** 7	**2·1** 6	**29·9** 8479	**1·7** 15 (9)	**1·16*** 263	**2·6** 755	**7·08** 2005	Ft 10 *8 years
TOTTINGTON *Acreage* 2543	**2·4** 6118	**10·** + 651	**30·0** 2049	— —	**1·5** 1	**3·1** 2	**19·2** 1221	**1·6** 2 (2)	**0·15** 10	**2·0** 13	**5·3** 351	Fs 11
TURTON *Acreage* 17335 **1·3**	12355	**3·** + 296	— —	**0·3** 32[e]	**2·3** 3	**1·6** 2	**20·1** 2515	**0·7** 2 (2)	**0·41** 51	**1·5** 194	**4·6** 577	Ft 6
WATERLOO with SEAFORTH *Acreage* 952	**25·** 23102	**14·** + 3297	**0·3** 80	— —	**4·2** 11	**9·8** 24	**26·4** 6405	**1·2** 8 (2)	**0·6** 154	**1·09** 265	**4·0** 975	Fs 14
WHITEFIELD *Acreage* 1406	**4·** 6588	**5·7** + 379	— —	— —	**5·8** 4	**1·03** 7	**22·8** 1538	**1·9** 3 (2)	**0·89** 60	**1·8** 124	**7·4** 498	
WITHNELL *Acreage* 3705 **1·09**	3349	**1·5** + 51	— —	— —	**5·9** 2	**2·9** 1	**23·2** 786	**8·8** 7 (3)	**1·3** 44	**1·1** 38	**9·5** 322	Ft 1

Lancashire Rural Districts.

BURY *Acreage* 12014 **1·4**	**2·0** 8088	**11·8** + 955	— —	**2·0** 189[e]	— —	see Bury	**20·3** 1715	**4·08** 7 (2)	**0·3** 28	**1·1** 97	**3·2** 276	

TABLE III.—STATISTICS OF MIXED DISTRICTS—*continued.*

Lancashire County Boroughs.

Lancashire County Boroughs, and Acreage	Population: Per census 1901 and rate per acre	Population: Increase + or Decrease − for 10 years 1901-1911 per cent	Persons Employed: In Factories in 1909 per cent	Persons Employed: In Mines in 1909 per cent	Persons Employed: As Midwives in 1909 per 10,000 pop.	Persons Employed: As Medical Men in 1905 per 10,000 pop.	Ten Years 1900–1909: Births, Registered and rate per 1000 population	Puerperal Fever Cases. [Fatal ( )] per 1000 births	Erysipelas and rate per 1000 population	Diphtheria and rate per 1000 population	Scarlet Fever and rate per 1000 population	Remarks
Bootle *Acreage* 1946 (1906)	**33·4** 60235	**16·** + 9646	— —	— —	**4·2** 29	**6·3** 41	**32·3** 20279	**1·5** 31	**0·62** 391	**0·8** 539	**5·2** 3277	Mb 71% Db 29%
Liverpool *Acreage* 16619 (1905)	**42·6** 704134	**6·** + 42432	— —	— —	**4·5** 334	**6·5** 471	**33·1** 236822	**2·6** 620	**1·35** 9692	**1·3** 9613	**5·1** 36625	1909 Mb 72% Db 27% Mpf 34 (2·0) Dpf 28 (4·2)
Manchester *Acreage* 19059 (1905)	**39·** 644873	**10·** + 69554	— —	**0·2** 1569	**2·2** 158	**6·2** 561	**26·9** 178359	**3·8** 691	**0·46** 3111	**0·7** 5034	**3·9** 25931	1909 Mb 59% Db 41% Mpf 33 (3·1) Dpf 49 (6·6) Ft 39[e]
Salford *Acreage* 5202	**42·9** 320957	**3·2** 10423	— —	**5·** 1735[e]	**2·2** 51	see Manchester	**31·8** 71222	**3·1** 227	**0·74** 1665	**1·8** 4148	**4·9** 11023	1909 Mb 72% Db 27% Mpf 10 (2·04) Dpf 16 (8·5) Ft 15 Fs 37

English Administrative Counties.

Kent *Acreage:*				331*	**3·3***	**7·5***	**22·3*** *1908-09*	**1·7*** *1908-09*				* Whole county
Urban 115932	**5·** 641027	**10·3** + 66582	see Appendix	—	235	732	45611	59 (30)	—	—	—	
Rural 853202	**0·0** 295213	**6·1** + 18211		—	149							
	3·											

LONDON *Acreage* 74816	**60·** 4522961	**0·29** – 13306	see Appendix	— —	**1·0** 3285*	**12·** 5835	**28·1** 1271065	**2·09** 2666 (1761)	**1·04** 47100	**1·9** 87808	**4·01** 181445	1909 Mb 28% Db 72% Mpf 83 (2·4) Dpf 188 (2·2) * 537 gave notice of intention to practice.
NOTTINGHAM— Urban Districts *Acreage* 66827	**3·** 155995	**37·** + 58916	see Appendix	**1·0*** 37424	**5·9*** 195	**4·1*** 125	**34·04** 58124	**2·4** 141 (71)	**0·9** 1604	**1·3** 2276	**3·6** 6304	* Whole county Mb 42·8 (1909) Wq 786
Rural Districts *Acreage* 454613 **3·8**	118721	**8·** + 10503					**26·9** 32663	**1·6** 54 (39)	**0·6** 774	**1·02** 1243	**3·6** 4427	
SHROPSHIRE— Urban Districts *Acreage* 47058	**2·2** 106558	**3·** + 3115	see Appendix	**1·5*** 3780	**12·6** 310	**6·3** 150	**26·4** 28374	**2·1** 62 (24)	**0·47** 503	**1·02** 1101	**2·9** 3160	* Whole county Mb 70% Db 30% Wq 1440
Rural Districts *Acreage* 814744 **6·**	133225	**2·** + 3408		— —	Whole county	Whole county	**25·1** 33666	**2·09** 68 (30)	**0·40** 549	**0·8** 1115	**2·8** 3834	
DERBYSHIRE *Acreage* 645097 **1·1**	484846	**15·** + 75283	see Appendix	**10·** 56727	**7·5** 410	**4·9** 256	— —	**2·6** 428	**0·8** 4385	**1·3** 6440	**4·2** 21273	1909 Mb 58% Db 42% Mpf 34 (3·6) Dpf 28 (400) Wq 3842 (0·6)

TABLE IV.—STATISTICS OF RESIDENTIAL DISTRICTS.

Lancashire Urban Districts.

LANCASHIRE URBAN DISTRICTS, and Acreage	POPULATION		PERSONS EMPLOYED				TEN YEARS—1900-1909					Remarks
	Per census 1901 and rate per acre	Increase + or Decrease − for 10 years 1901-1911 per cent	In Factories in 1909 per cent	In Mines in 1909 per cent	As Midwives in 1909 per 10,000 pop.	As Medical Men in 1905 per 10,000 pop.	Births Registered and rate per 1000 population	Puerperal Fever Cases. [Fatal ( )] per 1000 births	Erysipelas and rate per 1000 population	Diphtheria and rate per 1000 population	Scarlet Fever and rate per 1000 population	
ALLERTON *Acreage* 1589 **1·3**	1101	**19.** + 211	— —	— —	— —	see Liverpool	**20·5** 241	— —	**0·8** 1	**0·6** 8	**3·2** 38	
BIRKDALE *Acreage* 4316 (1911)	15511	**16·** + 2490	— —	— —	**4·** 7	**13·** 22	**19·5** 3199	**1·5** 5 (0)	**0·4*** 67	**0·04*** 8	**3·8** 626	* 1901-09
BISPHAM-WITH-NORBRECK (Created 1904) *Acreage* 1346	**1·2** 985	**12·7** + 1259	— —	— —	**4·6** 1	**5·7** 1	**9·1** 159	— —	— —	**0·2** 4	**1·9** 34	Statistics for 1905-09 Fs 2
CHILDWALL *Acreage* 830 **3·9**	219	**9·** − 21	— —	— —	— —	— —	**13·2** 28	— —	— —	**0·5** 1	**3·3** 7	
CROSTON *Acreage* 2347 **1·02**	2102	**2·7** − 61	— —	— —	— —	**9·6** 2	**22·6** 470	**8·5** 4 (2)	**0·28** 6	**0·9** 20	**2·2** 46	
DALTON-IN-FURNESS *Acreage* 7990	**1·7** 13020	**17·** − 2255	— —	**4·** 422e	**3·5** 4	**6·6** 8	**26·01** 3952	**3·8** 14 (8)	**1·05** 146	**1·2** 167	**3·9** 550	
FLEETWOOD *Acreage* 2510	**5·3** 12082	**31·** + 3794	— —	**1·5** 232e	**2·6** 4	**5·8** 8	**30·1** 4265	**2·3** 10 (2)	**0·55** 75	**0·5** 77	**3·8** 513 *Epidemic in 1902*	

FORMBY (Created 1905) *Acreage* 5427	**1·1** 5642	**5·2** − 308	— —	— —	**7·4** 4	**12·8** 7	**19·2** 582	**3·4** 2 (1)	**0·76** 23	**2·2** 68	**2·5** 78	Statistics for 1905-09
FULWOOD *Acreage* 2116	**1·5** 2870	**46·** + 1340	— —	— —	— —	**11·7** 4	**17·7** 593	**1·6** 2 (1)	**0·77** 26	**0·3** 11	**3·9** 133 *Epidemic in 1901*	
GRANGE-OVER-SANDS *Acreage* 1540	**1·1** 1993	**12·** + 239	**0·3** 6	— —	**4·5** 1	**24·0** 5	**6·9** 147	0	— —	**0·09** 2	**1·5** 32	Figures and rates for 1903-09
GREAT CROSBY *Acreage* 1907	**4·8** 7555	**62·** + 4719	**0·1** 13	— —	**3·5** 4	**4·2** 4	**21·4** 1976	**0·5** 1 (1)	**0·73** 68	**0·8** 82	**2·9** 270	Fs 3
HEATON NORRIS *Acreage* 1619	**6·** 9392	**19·** + 1848	**8·** 900	— —	**2·9** 3	**8·1** 8	**15·5** 1560	**3·2** 5 (2)	**0·51** 52	**0·4** 46	**3·4** 347	Fs 13
HEYSHAM *Acreage* 1835	**1·8** 3381	**0·9** − 31	— —	— —	**3·0** 1	— —	**20·7** 700	0	**0·47** 16	**0·6** 22	**3·8** 129	
HUYTON-WITH-ROBY *Acreage* 3035	**1·5** 4661	**2·** − 102	— —	— —	**6·5** 3	**12·9** 6	**24·7** 1143	**1·7** 2 (1)	**0·36** 17	**2·01** 93	**2·8** 130	
KIRKHAM *Acreage* 857	**4·3** 3693	**2·9** + 100	— —	— —	**2·6** 1	**8·03** 3	**28·5** 1066	**2·8** 3 (2)	**0·42** 16	**0·7** 28	**4·1** 155 *56 cases in 1902*	
LEVENSHULME *Acreage* 606	**23·** 11485	**70·** + 8115	**1·0** 200	— —	see Manchester	**7·8** 9 see Manchester	**29·1** 4178	**2·60** 11 (4)	**0·38** 55	**1·1** 170	**4·2** 615	

TABLE IV.—STATISTICS OF RESIDENTIAL DISTRICTS—*continued.*

Lancashire Urban Districts—*continued.*

Lancashire Urban Districts, and Acreage	Population		Persons Employed				Ten Years—1900-1909					Remarks
	Per census 1901 and rate per acre	Increase + or Decrease − for 10 years 1901-1911 per cent	In Factories in 1909 per cent	In Mines in 1909 per cent	As Mid-wives in 1909 per 10,000 pop.	As Medical Men in 1905 per 10,000 pop.	Births Register d and rate per 1000 population	Puerperal Fever Cases. [Fatal ( )] per 1000 births	Erysipelas and rate per 1000 population	Diphtheria and rate per 1000 population	Scarlet Fever and rate per 1000 population	
Litherland *Acreage* 857	**14·** 10592	**39·** + 4204	— —	— —	**3·6** 5	**2·4** 3	**39·7** 4796	**2·08** 10 (9)	**0·74** 90	**1·08** 131	**5·8** 708	
Little Crosby *Acreage* 1903 **2·9**	563	**49·** + 281	— —	— —	see Liver-pool	see Liver-pool	**17·6** 117	0	**0·45** 3	**0·9** 6	**0·9** 6	
Little Woolton *Acreage* 1389 **1·2**	1091	**1·** + 11	— —	— —	**9·** 1	**9·1** 1	**17·4** 191	0	**0·27** 3	**0·3** 4	**5·02** 56	
Lytham *Acreage* 2464	**3·2** 7185	**31·** + 2279	**7·** 650	— —	**2·2** 2	**13·5** 11	**17·9** 1429	**1·4** 2 (1)	**0·19** 15	**0·3** 25	**2·9** 236	Fs 8
Morecambe (Borough) *Acreage* 1801	**6·** 11798	**2·8** + 335	— —	— —	**4·9** 6	**10·** 12	**19·5** 2326	**1·2** 3 (3)	**0·62** 74	**0·8** 105	**6·2** 744 *287 in 1900*	Fs 37
Much Woolton *Acreage* 792	**5·8** 4731	**8·** − 411	— —	— —	**9·8** 4	**8·7** 4	**24·9** 1145	**1·7** 2 (2)	**0·43** 20	**0·6** 28	**4·2** 194	
Poulton-le-Fylde *Acreage* 915	**2·5** 2223	**9·** + 201	**0·5** 12	— —	**4·** 1	**30·** 7	**20·7** 478	0	**0·34*** 8	**1·08*** 25	**1·9*** 46	* 1901-09
Preesall-with-Hackinsall *Acreage* 3232 **1·4**	1423	**20·** + 295	— —	— —	— —	— —	**24·07** 371	0	**0·84*** 13	**1·7*** 27	**4·08*** 63	* 1901-09

St. Annes-on-the Sea *Acreage* 3342	**2·3** 6838	**43·** + 3002	**1·0** 97	— —	**1·08** 1	**14·9** 12	**17·8** 1407	**2·8** 4 (2)	**0·27** 22	**0·6** 49	**2·7** 214	Fs 28
Thornton *Acreage* 2996	**1·2** 3108	**5·0** + 1561	**15·** 650 or 700	— —	**6·8** 3	**2·6** 1	**27·06** 1010	**1·08** 2 (1)	**0·61** 23	**0·5** 22	**4·5** 168	Fs 7 Figures and rate for 1901-1909
Ulverston *Acreage* 3172	**3·1** 10064	**5·** - 512	— —	— —	**3·1** 3	**12·1** 12	**24·8** 2461	**2·4** 6 (2)	**0·65** 65	**3·02** 299	**2·6** 260	
Urmston *Acreage* 992	**7·1** 6594	**20·** + 1321	— —	— —	-- —	**11·2** 8	**23·6** 1667	**1·79** 3 (2)	**0·55** 39	**1·7** 124	**3·6** 256	
Walton-le-Dale *Acreage* 4658	**2·5** 11271	**9·** + 1081	— —	— —	**4·1** 5	**11·1** 13	**26·03** 3023	**1·9** 6 (2)	**0·4** 56	**0·8** 94	**3·4** 399	

Lancashire County Boroughs.

Blackpool *Acreage* 3495	**14·** 47348	**23·** + 11028	— —	— —	**4·2** 24	**8·5** 44	**22·6** 11353	**2·5** 29	**0·37** 189	**1·3** 654	**4·4** 2237	1909 Mb 40% Mpf 1 (2·4) Db 60% Dpf 3 (4·8) Fs 174
Southport *Acreage* 4233	**11·5** 48083	**7·4** 3567	— —	— —	**4·3** 22	**15·1** 75	**18·4** 9019	**1·9** 18	**0·55** 272	**0·6** 333	**3·9** 1912	1909 Mb 41% Db 59%

English County Boroughs.

Bath *Acreage* 3338	**14·** 49839	**1·8** + 890	— —	— —	**4·** 21	**18·** 92	**19·6** 9641	**2·3** 23	**0·64** 313	**1·06** 524	**1·8** 924	1909 Mb 61% Db 39%

TABLE IV.—STATISTICS OF RESIDENTIAL DISTRICTS—*continued.*

English County Boroughs—*continued.*

English County Boroughs, and Acreage	Population		Persons Employed				Ten Years—1900–1909					Remarks
	Per census 1901 and rate per acre	Increase + or Decrease − for 10 years 1901-1911 per cent	In Factories in 1909 per cent	In Mines in 1909 per cent	As Midwives in 1909 per 10,000 pop.	As Medical Men in 1905 per 10,000 pop.	Births Registered and rate per 1000 population	Puerperal Fever Cases. [Fatal ( )] per 1000 births	Erysipelas and rate per 1000 population	Diphtheria and rate per 1000 population	Scarlet Fever and rate per 1000 population	
Brighton *Acreage* 2620	**48·** 123478	**6·** + 7772	— —	— —	**2·3** 29	**19·9** 252	**23·07** 28933	**2·4** 71	**0·71** 894	**2·9** 3665	**2·03** 2549	
Croydon *Acreage* 9012	**15·** 133895	**26·** + 35664	— —	— —	**1·8** 30	**7·6** 113	**26·3** 37681	**2·60** 98	**0·53** 770	**2·1** 3108	**3·7** 4387	1909 Mb 31·7% Db 61% Mpf 2 (1·6) Dpf 11 (4·9) Fs 60
Hastings *Acreage* 4857	**13·** 65528	**6·6** - 4382	— —	— —	**1·7** 11	**16·3** 104	**18·8** 11655	**3·5** 41	**0·59** 382	**0·7** 488	**2·19** 1410	
Oxford *Acreage* 4719	**10·** 49336	**7·** + 3713	— —	— —	**5·9** 31	**13·9** 71	**21·8** 10963	**2·3** 26	**0·58** 294	**1·2** 631	**3·5** 1784	

TABLE V.—STATISTICS OF MIXED OR RESIDENTIAL DISTRICTS.

Lancashire Urban Districts.

LANCASHIRE URBAN DISTRICTS, and Acreage	POPULATION		PERSONS EMPLOYED				TEN YEARS—1900-1909					Remarks
	Per census 1901 and rate per acre	Increase+ or Decrease− for 10 years 1901-1911 per cent	In Factories in 1909 per cent	In Mines in 1909 per cent	As Midwives in 1909 per 10,000 pop.	As Medical Men in 1905 per 10,000 pop.	BIRTHS Registered and rate per 1000 population	Puerperal Fever Cases. [Fatal ( )] per 1000 births	Erysipelas and rate per 1000 population	Diphtheria and rate per 1000 population	Scarlet Fever and rate per 1000 population	
CARNFORTH *Acreage* 1505	**2·3** 3040	**3·** + 102	— —	— —	0	**9·7** 3	**25·6** 790	**1·2** 1 (1)	**0·22** 7	**1·04** 32 *27 cases in 1900*	**3·6** 113 *58 cases in 1905*	

Scotch Burghs.

EDINBURGH *Acreage* 10877	**29·** 317459	**0·9** + 2856	— —	— —	None registered	**19·** 628	**26·6** 84720	**1·89*** 124	**1·13*** 2905	**1·9** 6059	**4·1** 13136	* 1902-09.

TABLE VI.—STATISTICS OF AGRICULTURAL OR RURAL DISTRICTS.

Lancashire Rural Districts.

LANCASHIRE RURAL DISTRICTS, and Acreage	POPULATION		PERSONS EMPLOYED				TEN YEARS—1900–1909					Remarks
	Per census 1901 and rate per acre	Increase + or Decrease − for 10 years 1901-1911 per cent	In Factories in 1909 per cent	In Mines in 1909 per cent	As Mid-wives in 1909 per 10,000 pop.	As Medical Men in 1905 per 10,000 pop.	BIRTHS Registered and rate per 1000 population	Puerperal Fever Cases. [Fatal ( )] per 1000 births	Erysipelas and rate per 1000 population	Diphtheria and rate per 1000 population	Scarlet Fever and rate per 1000 population	
BURNLEY *Acreage* 41097 (1901)	**2·3** 17470	**16·** + 2815	— —	**4·** 906[3]	— —	— —	**22·3** 3995	**4·3** 12 (3)	**0·7** 101	**0·6** 130	**4·4** 809	
CLITHEROE (Lancashire portion) *Acreage* 33459* **5·7**	5845	**9·** + 504	— —	— —	**1·6** 1	**4·9** 3	**21·2** 1282	**2·3** 3 (3)	**0·3** 19	**0·5** 35	**3·3** 199	* 1901
FYLDE *Acreage* 40114 (1901) **3·9**	10235	**13·** + 1342	— —	— —	**3·5** 4	**1·8** 2	**26·3** 2552	**3·5** 8 (5)	**0·2** 26	**1·3** 148	**2·9** 315	Statistics for 1901–09
GARSTANG *Acreage* 57380 **5·4**	10437	**2·** + 254	— —	— —	**0·9** 1	**3·7** 4	**22·4** 2129	**0·9** 2 (1)	**0·3** 37	**0·7** 77	**2·04** 215	Statistics for 1901–09
LANCASTER *Acreage* 54503 **6·**	8837	**2·8** + 248	— —	— —	**3·09** 3	**2·2** 2	**22·6** 1823	**1·09** 2 (1)	**0·25** 23	**0·7** 64	**3·7** 333	Statistics for 1901–09
LIMEHURST *Acreage* 4772	**2·1** 10338	**2·** + 226	— —	**2·** 266[01]	**4·8** 8	— —	**27·01** 2814	**1·4** 4 (4)	**0·1** 15	**0·5** 54	**4·8** 501	† At Bardsley
LUNESDALE *Acreage* 76267 **11·**	6948	**0·9** − 65	— —	— —	**2·9** 2	**2·8** 2	**21·5** 1495	**0·7** 1 (1)	**0·3** 26	**0·8** 57	**2·8** 196	
PRESTON *Acreage* 52929 **3·**	15997	**15·** + 2504	— —	— —	**5·5** 10	**6·4** 11	**24·6** 4151	**1·9** 8 (8)	**0·35** 59	**0·7** 121	**3·3** 570	Wq 5
SEFTON (1901) *Acreage* 16949 **2·9**	5808	**2·3** + 135	— —	— —	**3·3** 2	**1·7** 1	**38·9** 2283	**1·7** 4 (2)	**0·90** 53	**1·2** 72	**5·4** 320	

ULVERSTON *Acreage* 127871 **7·**	17716	**3·9** − 696	— —	— —	**1·7** 3	**5·1** 9	**21·9** 3842	**1·8** 7 (3)	**0·51** 90	**1·02** 179	**4·2** 539	
WARRINGTON *Acreage* 19360 **1·6**	10496	**30·** + 3251	— —	**0·2** 27[e]	**9·9** 13	**5·9** 7	**25·8** 3006	**1·3** 4 (2)	**0·8** 96	**1·06** 124	**3·5** 416	
WEST LANCS. *Acreage* 69051 (1921) **3·5**	19689	**5·** + 995	— —	**1·5** 300[e]	**6·3** 13	**2·9** 6	**27·9** 5608	**4·3** 24 (14)	**0·8** 110	**0·9** 144	**5·3** 894	
WHISTON *Acreage* 31281 **1·5**	18961	**11·** + 2238	**9·** 2000	**3·6** 750[e]	**9·6** 20	**4·02** 8	**25·3** 5004	**1·3** 7 (6)	**0·48** 95	**1·1** 228	**3·7** 744	
English Administrative Counties.												
BERKSHIRE *Acreage* 456491 **2·5**	180354	**8·** + 15460	see Appendix	see Appendix	**6·** 122	**9·** 186	**22·8** 42187	**2·6** 99 (41)	**0·60** 1060	**1·4** 2550	**2·2** 3934	1909 Mb 33·5% Mpf 3 (2·1) Db 66·5% Dpf 8 (2·8) Wq 170
BEDFORDSHIRE (Ex Bedford) *Acreage* 303500 **1·7**	171707	**13·** + 22918	see Appendix	see Appendix	**2·1** 40	**3·8** 71	**23·4** 41689	**1·5** 26 (15)	**1·0** 1775	**1·1** 2100	**2·5** 4446	1909 Mb 42·3% Db 57·7% Mpf 1 (0·5) Dpf 7 (2·9)
ESSEX (Ex West Ham) *Acreage* 974849 **1·1**	816640	**30·** + 245360	see Appendix	see Appendix	**3·** 302	**4·** 382	**27·9** 244257	**1·8** 446 (212)	**0·88** 7733	**2·1** 18849	**4·2** 37245	
GLOUCESTERSHIRE *Acreage* 786020 (1910) **2·1**	321442	**2·3** + 7595	see Appendix	**3·** 8584	**8·4** 278	**7·3** 240	**22·3** 72013	**2·04** 147 (85)	**0·56** 1823	**1·5** 4871	**2·9** 9471	1909 Mb 49·8% Db 50·2% Mpf 4 (1·1) Dpf 8 (2·2)
WILTSHIRE *Acreage* 864105 (1911)	**3·** 271394	**5·** + 15482	see Appendix	see Appendix	**8·** 230	**5·4** 151	**24·5** 67659	**1·8** 125	**0·59** 1644	**1·2** 3494	**2·8** 7879	1909 Mb 55% Db 44% Mpf 5 (1·5) Dpf 6 (2·2)

TABLE VII.—STATISTICS OF SEAPORTS.

English County Boroughs.

English County Boroughs, and Acreage.	Population		Persons Employed		Ten Years 1900-1909					Remarks (Year 1909)
	Per census 1901 and rate per acre	Increase + or Decrease − for 10 years 1901-1911 per cent	As Mid-wives in 1909 per 10,000 pop.	As Medical Men in 1905 per 10,000 pop.	Births Registered and rate per 1000 population	Puerperal Fever Cases. [Fatal ( )] per 1000 births	Erysipelas and rate per 1000 population	Diphtheria and rate per 1000 population	Scarlet Fever and rate per 1000 population	
Gateshead *Acreage* 3254	**3·5** 109888	**6·** +7040	**1·7** 20	**3·8** 43	**35·6** 39802	**1·2** 50 (36)	**0·69** 777	**0·7** 875	**3·6** 4088	Mb 24·5 Db 75·5 Mpf 11 (0·08) Dpf 6 (2·0)
Grimsby *Acreage* 3260	**20·** 63138	**18·** + 11525	**2·6** 19	**4·1** 28	**31·1** 20576	**2·3** 49 (21)	**0·57** 242	**2·4** 1609	**4·1** 2749 700 in 1902	Mb 40% Mpf 4 (4·5) Db 60% Dpf 6 (4·5)
Middlesbrough *Acreage* 2824	**33·** 91302	**14·** +13485	**2·0** 21	**4·3** 39	**36·6** 34727	**2·01** 70 (23)	**0·83** 786	**1·1** 1118	**3·5** 3821	Mb 49% Mpf 1 (0·59) Db 53% Dpf 1 (0·50)
Newport (Mon.) *Acreage* 5020 (1908)	**16·** 67270	**24·** + 16430	**6·2** 50	**5·5** 41	**32·7** 23385	**2·2** 53	**0·57** 409	**1·4** 1049	**4·6** 3312	Mb 66% Mpf 1 (0·6) Db 34% Dpf 2 (2·4) Fs 48
Newcastle-on-Tyne *Acreage* 8459	**31·** 247023 (1911)	**8·** +19648	**1·** 27	**7·** 180	**30·1** 75891	**0·6** 52 (26)	**0·69** 1748	**1·03** 2588	**3·4** 8725	Mpf 5 (3·3) Dpf 10 (4·2)
South Shields *Acreage* 2399 (1909)	**45·** 100858	**7·** + 7791	**2·6** 28	**4·7** 49	**34·4** 35365	**1·2** 44	**0·91** 937	**0·8** 872	**4·6** 4819 1263 (01)	Mb 43% Mpf 3 (2·06) Db 57% Dpf 1 (0·51)
Southampton *Ac.* 4501) Land 1316) Water	**2·3** 104824	**13·** + 14215	**3·0** 36	**7·5** 83	**28·3** 29837	**1·7** 52 (30)	**0·58** 612	**1·8** 1926	**2·3** 2482	Mb 65% Mpf 3 (2·09) Db 31% Dpf 1 (5·3) Fs 109
Tynemouth *Acreage* 4288	**12·1** 57366	**14·** + 7456	**1·7** 10	6etc see N'castle	**33·5** 17867	**1·4** 25 (16)	**1·58** 842	**0·8** 486	**3·9** 2082	Mb 24% Mpf 0 Db 76% Dpf 1 (0·6)

TABLE VIII.—LANCASHIRE DISTRICTS GROUPED IN CLASSES.

Where two sets of figures are given, the larger figures are estimated for 10 years. The smaller figures are the actual figures for years on record. The rates are based on the estimated figures.

Number of Districts, with mean Acreage	Population		Persons Employed		Ten Years—1900–1909					Remarks
	Per census 1901 and rate per acre	Increase for 10 years 1901-1911 per cent	As Midwives in 1909 per 10,000 population	As Medical Men in 1905 per 10,000 population	Births Registered and rate per 1000 population	Puerperal Fever Cases. [Fatal ( )] per 1000 births	Erysipelas and rate per 1000 population	Diphtheria and rate per 1000 population	Scarlet Fever and rate per 1000 population	
30 Urban Residential *Acreage* 70715	**2·6** 176213	**21·8** 38488	**3·** 66	**9·** 175	**24·4** 46070 45495	**2·19** 101 (51) 98 (49)	**0·5** 1038 1004	**1·0** 1924 1778	**3·9** 7320 7132	
13 Rural *Acreage* 616286	**0·3** 158777	**8·6** 13751	**4·9** 80	**3·3** 55	**25·1** 40900 39984	**1·98** 86 (53)	**0·46** 756	**0·9** 1486	**3·7** 6073	
24 Urban Mining *Acreage* 70994	**4·3** 293208	**12·3** 36189	**5·3** 173	**3·7** 114	**27·6** 86235	**4·56** 394 (154)	**1·0** 3130	**1·5** 4872	**5·5** 17405	
5 Rural Mining *Acreage* 90279	**0·6** 90279	**13·** 6536	**4·** 21	**2·** 12	**27·4** 14198	**3·02** 43 (34)	**1·0** 561	**1·6** 874	**4·2** 2193	
38 Urban Manufacturing *Acreage* 29196	**22·0** 647603	**7·8** 50794	**3·6** 255	**4·5** 307	**24·8** 164185	**3·2** 530 (257)	**0·7** 4786	**0·8** 5773	**4·5** 30227	
21 Urban Mixed *Acreage* 94085	**3·1** 282526	**14·** 39667	**4·** 126	**5·3** 160	**27·3** 79960 78922	**2·4** 200 (106) 193 (101)	**0·7** 2045	**1·3** 3999	**4·9** 14512	

TABLE VIII.—LANCASHIRE DISTRICTS GROUPED IN CLASSES—*continued.*

Where two sets of figures are given, the larger figures are estimated for 10 years. The smaller figures are the actual figures for years on record. The rates are based on the estimated figures.

Number of Districts, with mean Acreage	Population		Persons Employed		Ten Years—1900–1909					Remarks
	Per census 1901 and rate per acre	Increase for 10 years 1901-1911	As Midwives in 1909 per 10,000 population	As Medical Men in 1905 per 10,000 population	Births Registered and rate per 1000 population	Puerperal Fever Cases. [Fatal ( )] per 1000 births	Erysipelas and rate per 1000 population	Diphtheria and rate per 1000 population	Scarlet Fever and rate per 1000 population	
9 Manufacturing County Boroughs *Acreage* 61670	**14·** 907680	**6·9** 63253	**3·9** 379	**5·0** 470	**27·2** 251937	**3·5** 882	**0·68** 6359	**0·8** 7723	**4·8** 44949	
2 Residential County Boroughs *Acreage* 7728	**12·** 95431	**15·2** 14595	**4·** 46	**11·** 119	**20·5** 20372	**2·3** 47	**0·4** 461	**0·9** 987	**4·1** 4149	
2 Mixed Cities *Acreage* 39210	**42·** 1630199	**8·1** 132055	**3·2** 572	**6·** 1073	**30·4** 506662	**3·09** 1569	**0·8** 14859	**1·1** 19334	**4·6** 76856	Includes Salford and Bootle
2 Mining Boroughs *Acreage* 11168	**15·** 166838	**11·3** 18899	**5·8** 107	**3·7** 66	**33·5** 57574	**3·27** 189	**0·9** 1634	**1·1** 1916	**5·6** 9643	

TABLE IX.—FACTORY DISTRICTS IN LANCASHIRE.

	Name of District ..	(A) MANCHESTER		(B) OLDHAM (Lancashire portion)		(C) ROCHDALE		(D) BOLTON		(E) STOCKPORT (Lancashire portion)	
Population, 1901 ..		1116026		327307		338103		598081		9392	
Intercensal Increase ..		129613		26879		11933		49381		1848	
Mean population, 1900-09		1148429		334026		341086		610426		9854	
1900-1909	Births	339692	29·5	87252	26·1	77188	22·6	183444	30·0	1560	15·8
	Puerperal Fever	1160	3·4	321	3·6	350	4·5	621	3·4	5	3·2
	Erysipelas ..	6935	0·6	2015	0·6	2408	0·7	5055	0·82	101	1·2
	Diphtheria ..	13576	1·0	2743	0·8	3048	0·8	6927	1·1	111	1·1
	Scarlet Fever ..	51443	4·4	16106	4·8	11919	3·4	33227	5·4	512	5·1
1905	Medical Men ..	629	5·3	67	2·0	130	3·7	236	3·8	8	7·0
1909	Midwives ..	336	3·0	65	1·5	154	4·4	316	4·9	3	2·8
Persons Employed in	Factories (1907)	219338	18·3	121184	33·5	79382	22·9	95058	15·1	The rate of persons employed represents the percentage of general population	
	Cotton Cloth Factories ..	see Rochdale and Bolton	—	included in Factories	—	78547 with Bolton	8·07	78547 with Rochdale	8·07		
	Mines (1909) ..	16417	1·3	3389	0·9	2740	0·78	59316	9·4		
	Total Rate ..		19·5		34·4		32·38		32·57		
Accidents Estimated	Factories (including C.C.F.) ..	3960	11·6	1456	16·6	1335	17·2	1749	9·5	The accident rate equals the rate per 100 births	
	Mining	2413	7·1	498	5·7	378	4·8	8714	47·0		
	Sundry ..	407	1·2	—	—	—	—	—	—		
	Total ..	6780	19·9	1954	22·3	1713	22·0	10463	57·0		
Estimated Birth Ratio ..	Doctors		1		2		1		1		
	Midwives		2		3		3		2		

(A) Includes the Manchester, Salford, Chorlton, Prestwich, Barton-upon-Irwell, and Warrington Unions.
(B) Includes part of the Ashton-under-Lyne and the Oldham Union.
(C) Includes the Bury, Rochdale, and Haslingden Unions (except the Borough of Accrington.)
(D) Includes the Bolton, Chorley, Leigh, and Wigan Unions.

TABLE IX.—FACTORY DISTRICTS IN LANCASHIRE—*continued.*

	Name of District ..	(F) LIVERPOOL (Lancashire Portion)		(G) BLACKBURN		(H) PRESTON (Lancashire Portion)		(I) MANCHESTER Cotton Cloth Factories	(J) BLACKBURN Cotton Cloth Factories
	Population, 1901 ..	1075561		481323	Administration Areas	432500		See Rochdale and Bolton Districts	See Blackburn District
	Intercensal Increase ..	91360		40328		38839			
	Mean Population, 1900-09	1098401		491405		442210			
1900–1909	Births	351447	31·9	123155	25·06	114831	25·9		
	Puerperal Fever	895	2·5	414	3·3	272	2·3		
	Erysipelas ..	12501	1·13	3840	0·7	2622	0·5		
	Diphtheria ..	13836	1·2	4990	1·01	7056	1·5		
	Scarlet Fever ..	55560	5·03	25275	5·1	15549	3·5		
1905	Medical Men ..	729	6·5	230	4·6	85	1·8		
1909	Midwives ..	547	4·7	152	2·9	65	1·4		
Persons Employed in	Factories (1907)	114418 (Whole Distr.)	7·6	49431	9·6	97365 (Whole Distr.)	18·2	The rates of persons employed represent the percentage of general population. For Factories the rate is based on the figures for the whole districts for the year 1907. For Mines the rate is based on the figures for Lancashire portion only, and for the year 1909.	
	Cotton Cloth Factories ..	Included with Factories	—	130220	25·3	Included with Factories	—		
	Mines (1909) ..	11793 Lancashire portion	1·0	7849	1·5	237 Flagstone mines in Lancs. portion	0·2		
	Total Rate ..		8·6		36·4		18·4		
Accidents Estimated	Factory (including C.C.F:) ..	2445 (Whole Distr.)	5·4	1904 (Whole Distr.)	15·4	1647 (Whole Distr.)	8·3	The accident rate represents the rate per 100 births. The Factory accident rate is based on the births in the whole factory district, Those in Mines and Sundry on the births in Lancashire portion only for the period 1900–1909.	
	Mining	1733 Lancs. portion	4·9	1153 Lancs. portion	9·3	15 Lancs. portion	0·13		
	Sundry ..	1097 Lancs. portion	3·1	—	—	—	—		
	Total ..	4275	13·4	3057	24·7	1662	8·4		
	Estimated Birth Ratio ..	Doctors	1		4		3		
		Midwives	4		5		2		

(F) Includes the West Derby, Toxteth Park Township, Liverpool Parish, Prescot, and Ormskirk Unions.
(G) Includes the Blackburn, Burnley, and Lancashire portion of Clitheroe Union and the Borough of Accrington.
(H) Includes the Preston, Fylde, Garstang, Lancaster, Lunesdale, Ulverston, and Barrow-in-Furness Unions.
(I) Includes all the C.C.F. in the Rochdale and Bolton districts. (J) Includes all the C.C.F. in the Blackburn district.

TABLE X.—SHOWING FREQUENCY DISTRIBUTION OF DIPHTHERIA AND SCARLET FEVER IN 174 BRITISH DISTRICTS.

	DIPHTHERIA							SCARLET FEVER							
	Midvalue of class intervals	Total Number of districts	Agricultural districts	Residential districts	Mixed districts	Manufacturing districts	Mining districts		Midvalue of class intervals	Total Number of districts	Agricultural districts	Residential districts	Mixed districts	Manufacturing districts	Mining districts
Mean Rates	1·31	—	1·17	1·01	1·26	0·92	1·63	Mean Rates	4·35	—	3·1	3·4	4·54	4·55	5·4
Class intervals equals rate per 1,000 persons living	0·25	23	0	7	4	9	3	Class intervals equals rate per 1,000 persons living	0·5	1	—	1	—	—	—
	0·75	59	5	15	11	24	5		1·5	5	—	4	1	—	—
	1·25	48	5	8	15	12	8		2·5	22	7	9	3	2	1
	1·75	23	1	3	7	4	7		3·5	49	3	14	11	17	4
	2·25	11	1	3	2	2	3		4·5	47	2	7	13	18	7
	2·75	5	—	1	3	—	1		5·5	28	—	2	11	8	7
	3·25	2	—	1	—	—	1		6·5	13	—	1	—	3	9
	3·75	2	—	—	—	—	2		7·5	6	—	—	2	3	1
	4·25	0	—	—	—	—	0		8·5	2	—	—	—	—	2
	5·0	1	—	—	—	—	1		9·5	1	—	—	1	—	—
No. of districts	—	174	12	38	42	51	31	No. of districts	—	174	12	38	42	51	31

TABLE XI.—SHOWING FREQUENCY DISTRIBUTION OF PUERPERAL FEVER, ETC. IN 174 BRITISH DISTRICTS.

	PUERPERAL FEVER							ERYSIPELAS							
	Midvalue of class intervals	Total Number of districts	Agricultural districts	Residential districts	Mixed districts	Manufacturing districts	Mining districts		Midvalue of class intervals	Total Number of districts	Agricultural districts	Residential districts	Mixed districts	Manufacturing districts	Mining districts
No. of districts	—	174	12	38	41	51	31	No. of districts	—	174	12	38	42	51	31
Class intervals equals rate per 1000 registered births	0·5	16	2	10	3	1	—	Class intervals equals rate per 1000 persons living	0·1	8	—	4	2	1	—
	1·5	43	6	12	15	6	4		0·3	26	6	8	1	2	2
	2·5	49	3	11	13	16	6		0·5	39	3	13	13	16	2
	3·5	26	1	4	6	9	6		0·7	32	1	9	8	11	4
	4·5	20	—	—	1	10	9		0·9	26	1	2	9	7	8
	5·5	10	—	—	2	5	3		1·1	20	1	2	5	7	5
	6·5	4	—	—	1	2	1		1·3	5	—	—	2	2	1
	7·5	1	—	—	—	1	—		1·5	5	—	—	1	2	—
	8·5	3	—	1	1	1	—		1·7	7	—	—	—	1	5
	9·5	—	—	—	—	—	—		1·9	3	—	—	1	2	1
	10·5	—	—	—	—	—	—		2·1	3	—	—	—	—	1
	11·5	1	—	—	—	—	1		2·5	—	—	—	—	—	1
	15·5	1	—	—	—	—	1		3·5	—	—	—	—	—	1
Mean Rates	2·77	—	1·75	1·93	2·5	3·5	4·2	Mean Rates	0·78	—	0·55	0·59	0·89	0·93	1·3

TABLE XII.—SHOWING FREQUENCY DISTRIBUTION OF MEDICAL MEN AND MIDWIVES, IN 174 BRITISH DISTRICTS.

	MEDICAL MEN						MIDWIVES						
	Midvalue of class intervals	Total Number of districts	Residential districts	Mixed districts	Manufacturing districts	Mining districts		Midvalue of class intervals	Total Number of districts	Residential districts	Mixed districts	Manufacturing districts	Mining districts
No. of districts	—	141	32	36	46	27	No. of districts	—	141	32	36	46	27
Medical Men—Class intervals equals rate per 10,000 persons living	2	28	16	5	9	11	Midwives—Class intervals equals rate per 10,000 persons living	2	42	12	13	16	1
	4	40	21	12	21	6		4	53	14	10	21	8
	6	35	5	9	13	10		6	25	3	9	5	8
	8	12	2	6	1	—		8	13	1	3	2	7
	10	5	1	1	—	—		10	5	2	—	1	2
	12	10	1	3	1	—		12	3	—	1	1	1
	14	4	—	—	—	—		14	—	—	—	—	—
	16 and over	7	—	—	1	—		over 15	—	—	—	—	—
Mean Rates	6·09	—	10·2	5·74	4·7	3·14	Mean Rates	7·4	—	3·94	4·4	6·0	6·28

The distribution of Medical Men or Midwives in Agricultural distribution is not reliable, since many of either class resident in Urban districts practise in neighbouring Agricultural districts.

TABLE XIII.—STATISTICS OF FACTORIES AND MINES, ETC., WITH ACCIDENT RATES.

Factory Districts defined Dec. 31st, 1908, with estimated population for 1907, with Factory and Works' Accident Rate per 1000 population employed	Persons Employed in Factories (a) Textile (b) Non-textile (c) Percentage of total population in (a) and (b)		Percentage of Males to total employed in (a) Textile (b) Non-textile			Percentage of Females to total employed in (a) Textile (b) Non-textile			Persons Employed in (a) Coal Mines (b) Metallic Mines (c) Quarries Estimated (1909) with percentage of total population in (a), (b) and (c)		Accidents (a) Factory and Workshop (1907) (b) Mining, etc. Estimated (1909) with rate per 1000 general population	
		Ratio	Adults	Young	Children	Adults	Young	Children		Ratio		Ratio
Bristol* *Pop.* 1342124 **22·9**	(a) 11847 (b) 107286 (c) **8·8**	**10·** **90·**	**34·** **60·**	**8·** **13·**	**0·4**	**44.** **19·**	**11·** **9·**	**0·3**	(a) 14908 (b) 408 (c) 2533	**1·3**	(a) 2733 ('09) (b) 2387	**2·03** **1·7**
Manchester C.C.F. See Lancashire Factory Districts	(a) 78547 (c) **8·07**		**20·6**	**4·8**	**1·1**	**54·8**	**16·2**	**2·4**	(a) 62056	**6·5**	(a) 3084 (b) 9092	**0·3** **0·9**
Blackburn C.C.F. See Lancashire Factory Districts	(a) 130220 (c) **25·7**		**32·1**	**7·6**	**1·9**	**44·3**	**11·5**	**2·3**	(a) 7849	**1·5**	(a) 1904 (b) 1153	**3·8** **2·3**
London, N.† *Pop.* 2089543 **12·2**	(a) 1115 (b) 174835 (c) **8·4**	**0·6** **99·4**	**24·7** **55·7**	**10·4** **8·7**	**·006**	**42·5** **26·1**	**21·3** **9·3**	**·003**	(c) 284		(a) 2160 (b) 16	**1·03**
London, S.‡ *Pop.* 3406785 **22·**	(a) 361 (b) 158837 (c) **4·6**	**0·2** **98·8**	**52·6** **63·6**	**6·09** **7·8**	**0·5** **0·7**	**29·9** **22·2**	**10·8** **6·2**	**·08**	(b) 194 (c) 756	**0·02**	(a) 3497 (b) 55	**1·02** **0·1**
London, W.§ *Pop.* 1935634 **18·4**	(a) 1362 (b) 98274 (c) **5·1**	**1·3** **98·7**	**41·2** **70·9**	**6·8** **9·6**	**·02**	**37·1** **14·4**	**14·7** **5·1**	**·009**	(b) 3 (c) 452	**0·02**	(a) 1819 (b) 25	**0·9** **0·01**
London, E.** *Pop.* 2084031 **31·**	(a) 3074 (b) 126567 (c) **6·2**	**2·3** **97·7**	**23·9** **63·**	**7·9** **8·9**	**·006**	**53·3** **19·9**	**14·8** **8·1**		(c) 401	**0·01**	(a) 4026 (b) 22	**1·9** **0·01**

LONDON	(a) 5912	1·0	29·8	8·2	·03	46·1	15·7				(a) 11502	1·2
Pop. 9515993	(b) 558513	99·0	62·3	8·6	·009	21·5	7·4	·005	(b) 3		(b) 105	0·01
20·	(c) 5·9								(c) 1853	·01		
KENT												
Pop. 985979	(b) 60905	100·	78·7	8·8	0·05	10·3	2·0	·001	(a) 320		(a) 2288	2·3
37·5	(c) 6·1								(b) 11	0·2	(b) 145	0·14
									(c) 1707			
NORTHAMPTON ††	(a) 197	0·3	10·1	6·08		56·3	27·4		(a) 150		(a) 686	1·5
Pop. 451704	(b) 61951	99·7	58·8	11·8	·009	19·3	9·8	·02	(b) 45	0·7	(b) 210	0·46
11·3	(c) 13·7								(c) 3254			
SOUTHAMPTON ‡‡	(a) 1054	2·4	40·9	8·2	0·8	38·8	10·8	0·5			(a) 1430	1·2
Pop. 1146890	(b) 43095	97·6	75·4	9·5	0·2	11·6	3·3	·006	(b) 546	0·13	(b) 95	0·08
32·4	(c) 3·8								(c) 1037			
SWANSEA §§	(a) 1163	2·6	5·4	7·2	0·2	30·5	8·	0·2			(a) 3172	
Pop.	(b) 43155	97·4	79·5	11·1	·004	5·8	3·4					
71·5 (approx.)												

* Includes Gloucestershire, North Wiltshire, and Somersetshire.

† Part of London: City of London and Metropolitan Boroughs of Hampstead, St. Pancreas, Islington, Stoke Newington, Shoreditch, Finsbury, and Holborn. North Middlesex: Hendon, Barnett, and Willesden Unions, and Middlesex portion of Edmonton Union.

‡ London South of Thames, Surrey and Sussex.

§ West London: The Metropolitan Boroughs of Hammersmith, Fulham, Chelsea, Kensington, Paddington, St. Marylebone and Westminster. West Middlesex: The Staines, Uxbridge, and Brentford Unions, and Middlesex portion of Kingston Union.

** East London: Metropolitan Boroughs of Hackney, Bethnal Green, Stepney, Poplar, and Woolwich (North of Thames), Essex, except the Colchester, Tendring, Lexden-and-Winstree, Halstead, Sudbury, and Risbridge Unions.

†† Northamptonshire, Huntingdonshire, and Bedfordshire.

‡‡ South Wiltshire, south of the northern boundary of the Warminster and Amesbury Unions, Dorsetshire and Hampshire.

§§ Part of Glamorganshire, Carmarthen, Pembroke, and Cardigan.

TABLE XIII.—STATISTICS OF FACTORY AND WORKS ACCIDENT RATES—*continued.*

Factory Districts defined Dec. 31st, 1908, with estimated population for 1909, with Factory and Works Accident Rate per 1000 population employed	Persons Employed in Factories (a) Textile (b) Non-textile (c) Percentage of total population in (a) and (b)		Ratio	Percentage of Males to total employed in (a) Textile (b) Non-textile			Percentage of Females to total employed in (a) Textile (b) Non-textile			Persons Employed in (a) Coal Mines (b) Metallic Mines (c) Quarries Estimated (1909) with percentage of total population in (a), (b) and (c)	Ratio	Accidents (a) Factory and Workshop (1907) (b) Mining, etc. Estimated (1909) with rate per 1000 general population	Ratio
				Adults	Young	Children	Adults	Young	Children				
Cardiff *	(a)	92	0·2	53·	4·0		22·	21·				(a) 2837	
Pop. 1165434	(b)	45148	99·8	81·	9·5	·01	5·6	3·5	·002				
62·7	(c)	**3·9**											
Worcester †	(a)	7961	28·	38·5	7·2	1·0	40·2	12·	1·0	(a) 2657		(a) 498	1·2
Pop. 403337	(b)	20423	72·	63·4	9·3		19·8	7·5		(b) 66	0·83	(b) 38	0·9
17·5	(c)	**7·**								(c) 658			
Wolverhampton ‡	(a)	493	0·6	45·4	6·5		35·9	12·		(a) 3473		(a) 3088	4·4
Pop. 694987	(b)	83794	99·4	71·2	13·1	·001	11·1	4·4	·005	(b) 307	2·1	(b) 612	2·5
36·3	(c)	**12·**								(c) 1440		Shropshire only	
										Shropshire only			
										(a) 54561			
										(b) 208	7·	(b) 8158	11·2
										(c) 2207		Staffordshire only	
										Staffordshire only			
Nottingham §	(a)	17196	24·	39·3	5·9		38·8	15·8	·02	(a) 37851		(a) 1140	3·6
Pop. 316367	(b)	54639	76·	49·3	10·3	·01	28·1	12·1	·02	(b) 373	12·3	(b) 5632	17·8
15·8	(c)	**22·**								(c) 786			
Derby **	(a)	18525	27·7	34·3	9·2	·02	33·3	22·8	·3	(a) 56222		(a) 2747	5·1
Pop. 530015	(b)	48122	72·3	76·5	10·3	·03	7·8	5·1	·006	(b) 505	11·2	(b) 8515	16·
41·2	(c)	**12·5**								(c) 3842			
Lincoln ††	(a)	138	0·4	20·	10·		60·	10·				(a) 1297	
Pop. 531723	(b)	31754	99·6	81·	16·8	·01	5·8	2·					
40·6	(c)	**6·**											

NEWCASTLE §§ *Pop.* 1604695 **62·**	(a) 1715 (b) 125953 (c) **7·**	**1·4** **98·6**	**12·1** **80·0**	**1·6** **12·0**	**·0009**	**69·** **6·**	**16·9** **2·0**	**·002**	(a) 53934 (b) 265 (c) 1485 Northumberland only	**15·5**	(a) 7916 (b) 8029 Northumberland only	**4·9** **22·0** North-thmbrl'd only
MANCHESTER See Lancashire Factory Districts **32·1**	(a) 38352 (b) 180986 (a) **3·2** (b) **15·1** (c) **18 3**	**18·0** **82·**	**19·** **62·5**	**4·8** **9·7**	**0·2** **·01**	**53·1** **19·4**	**22·4** **8·1**	**0·3** **·001**	See Lancashire Factory Districts		(a) 7048	
OLDHAM See Lancashire Factory Districts **33·6**	(a) 80043 (b) 41141 (a) **22·1** (b) **11·4** (c) **33·5**	**66·** **34·**	**34·4** **75·2**	**10·1** **10·1**	**1·6** **0·4**	**39·4** **10·3**	**12·8** **3·4**	**1·5** **0·3**	See Lancashire Factory Districts		(a) 4074	
ROCHDALE See Lancashire Factory Districts **28·4**	(a) 43505 (b) 35877 (a) **12·3** (b) **10·3** (c) **22 9**	**54·8** **45·2**	**35·1** **72·7**	**10·4** **11·4**	**2·2** **0·6**	**38·7** **11·1**	**11·4** **3·6**	**2·03** **0·4**	See Lancashire Factory Districts		(a) 2260	
BOLTON See Lancashire Factory Districts **30·9**	(a) 48496 (b) 46562 (a) **7·7** (b) **7·4** (c) **15·1**	**51·** **49·**	**27·7** **72·3**	**12·7** **13·2**	**2·03** **·6**	**37·5** **9·8**	**18·7** **4·6**	**1·1** **·08**	See Lancashire Factory Districts		(a) 2941	
STOCKPORT See Lancashire Factory Districts **24·4**	(a) 52428 (b) 64444 (a) **8·4** (b) **10·4** (c) **18·8**	**44·8** **55·2**	**26·6** **68·1**	**7·3** **10·**	**1·3** **0·3**	**49·1** **15·1**	**13·6** **6·1**	**1·9** **0·3**	See Lancashire Factory Districts		(a) 2854	

* Part of Glamorganshire: The Cardiff, Pontypridd, Bridgend and Cowbridge Unions, and the Glamorganshire portion of the Merthyr Tydvil Union, Brecon, Monmouth, and Radnor.

† Worcestershire, except the Stourbridge, Dudley, West Bromwich, King's Norton, and Solihull Unions, and Herefordshire.

‡ The Wolverhampton, Dudley, Stourbridge, and Seisdon Unions, and the Staffordshire portion of the Shifnal Union, also Shropshire.

§ Nottinghamshire. ** Derbyshire. †† Lincolnshire.

§§ Certain parts of North Durham: South Shields, Sunderland, Gateshead, Houghton-le-Spring, Chester-le-Street, Lanchester, Durham, Easington, and Weardale Unions, and the civil parishes of Whitworth, Merrington Lane, and Low Spennymoor, also Northumberland and Borough of Berwick.

TABLE XIII.—STATISTICS OF FACTORY AND WORKS ACCIDENT RATES—*continued.*

Factory Districts defined Dec. 31st, 1908, with estimated population for 1909, with Factory and Works' Accident Rate per 1000 population employed	Persons Employed in Factories (a) Textile (b) Non-textile (c) Percentage of total population in (a) and (b)		Percentage of Males to total employed in (a) Textile (b) Non-textile			Percentage of Females to total employed in (a) Textile (b) Non-textile			Persons Employed in (a) Coal Mines (b) Metallic Mines (c) Quarries Estimated (1909) with percentage of total population in (a), (b) and (c)		Accidents (a) Factory and Workshop (1907) (b) Mining, etc. Estimated (1909) with rate per 1000 general population	
		Ratio	Adults	Young	Children	Adults	Young	Children		Ratio		Ratio
LIVERPOOL See Lancashire Factory Districts **59·2**	(a) 1835 **0·1** (b) 112583 **7·4** (c) **7·6**	**1·6** **98·4**	**23·1** **66 6**	**6·2** **10·3**	**0·3**	**56·9** **16·1**	**13·6** **6·8**		See Lancashire Factory Districts		(a) 6780	
BLACKBURN See Lancashire Factory Districts **6·6**	(a) 12493 **2·4** (b) 36938 **7·2** (c) **9·6**	**25·3** **74·7**	**40 5** **77·7**	**7·3** **10 7**	**1·9** **0·9**	**40·2** **80·1**	**8·4** **2·9**	**·3** **·1**	See Lancashire Factory Districts		(a) 824	
PRESTON See Lancashire Factory Districts **28·**	(a) 41033 **7·7** (b) 56332 **10·5** (c) **18·2**	**42·1** **57 9**	**25·7** **78·8**	**7·9** **10·5**	**1·5** **0·16**	**46·4** **6·8**	**16·** **5 5**	**0·9** **·02**	(a) 9997 (b) 5488 (c) 940 Cumberland only (a) 9 (b) 210 (c) 208 Westmorland only	**6·1** Cumberland only **0·67** Westmorland only	(a) 2731 (b) 1889 (b) 26	**3·5** **7·** Cumberland only **0·4** Westmorland only
GLASGOW * *Pop.* 2055295 **34·3**	(a) 39583 (b) 288057 (c) **15·9**	**12·** **88·**	**17·8** **73·7**	**3·4** **8·9**	**·09**	**57.** **13·**	**21·6** **5·1**				(a) 11240	
KILMARNOCK † *Pop.* 424974 **22·5**	(a) 12469 (b) 22078 (c) **8·0**	**36·** **64·**	**25·8** **74·9**	**6·7** **12·6**	**·06** **·04**	**48·1** **8·3**	**1·9** **3·9**	**·03** **·001**			(a) 762	

EDINBURGH ‡	(a)	14461	20·4	25·	6·		27·	12·				(a) 1083	
Pop. 732726	(b)	56172	79·6	62·	9·		21·	8·					
15·3	(c)	9 5											
DUNDEE §	(a)	63624	59·	23·	6·	·3	57·	13·	·3			(a) 1328	
Pop. 637060	(b)	43135	41·	67·	10·		17·	6·	·001				
12·4	(c)	16·6											
ABERDEEN **	(a)	4841	14·3	18·	8·		48·	26·				(a) 550	
Pop. 410996	(b)	24849	85·7	64·	10·	·03	19·	6·					
18 5	(c)	7·1											
INVERNESS ††	(a)	593	11·	41·	8·		28·	12·				(a) 72	
Pop. 338493	(b)	4743	89·	81·	8·		6·	1·3					
13·4	(c)	1·5											
ENGLAND AND	(a)	875960	23·6	30·	8·	1·5	44·	14·				(a) 101513	
WALES	(b)	2824392	76·4	67·	10·	·07	16·	6·5				(1909)	
Pop. 34656298	(c)	10·6											
SCOTLAND	(a)	135571	23·6	23·	5·	·15	55·	16·				(a) 14151	
Pop. 4644508	(b)	439034	76·4	70·7	9·	·01	14·	6·				(1909)	
	(c)	12·3											
UNITED KINGDOM	(a)	1087223		28·	7·	1·3	45·	14·	1·6			(a) 123146	
Pop. 43713487	(b)	3401551		67·	9·	0·05	16·	6·					
	(c)	10·2											

* Includes Lanark, Renfrew, Argyle, Dumbarton, and Stirling.

† Ayr, Dumfries, Kirkcudbright, Wigton, and Bute.

‡ Edinburgh, Linlithgow, Haddington, Peebles, Selkirk, Roxburgh, and Berwick except the Borough of Berwick.

§ Perth, Forfar, Fife, Kinross, and Clackmannan.

** Aberdeen, Kincardine, and Banff.

†† Inverness, Elgin, Nairn, Ross and Cromarty, Sutherland, Caithness, Orkney and Shetland.

TABLE XIV.—REGISTRATION DISTRICTS OF ENGLAND AND WALES.

County Numbers	Registration Divisions and Counties	To 1000 Births: Puerperal Fever Rate in Administrative Counties	To 1000 Births: Puerperal Septic Diseases and Diseases and Accidents of Pregnancy and Childbirth: Ten Years 1900 to 1909	To 1000 Births: Puerperal Septic Diseases and Diseases and Accidents of Pregnancy and Childbirth: 1909	Estimated Percentage of Population employed in Factories and Mines	Persons Employed in Mines and Quarries (c) coal (m) metallurgical (q) quarries		
	ENGLAND AND WALES	—	4·22	3·70				
	I.—London							
1	London	1·04	3·11	3·10	5·91			
	II.—South Eastern							
2	Surrey	—	3·31	2·91	5·7	m 50	q 452	
3	Kent	1·7	3·40	2·48	6·3	c 320	m 11	q 1707
4	Sussex	—	3·79	3·66	5·7	m 144	q 304	
5	Hampshire	—	3·31	3·64	3·93	q 186		
6	Berkshire	2·6	4·12	2·88	5·12	q 170		
	III.—South Midland							
7	Middlesex		3·11	2·56	—	q 62		
8	Hertfordshire	—	3·58	2·63	—	q 254		
9	Buckinghamshire ..	—	3·39	3·34	5·12	q 99		
10	Oxfordshire	—	3·67	4·22	5.12	m 3	q 121	
11	Northamptonshire ..	—	3·62	2·64	14·4	c 150	m 38	q 2686
12	Huntingdonshire ..	—	2·56	1·84	14.4	q 246		
13	Bedfordshire	1·5	3·37	3·87	14.4	m 7	q 322	
14	Cambridgeshire ..	—	3·67	2·25				
	IV.—Eastern							
15	Essex	1·8	3·18	2·34	6·2	q 401		
16	Suffolk	—	3·75	2·08				
17	Norfolk	—	3·78	3·13				
	V.—South Western							
18	Wiltshire	1·8	4·52	3·13	7·0	m 579	q 92	
19	Dorsetshire	—	3·79	3·16	3·93	m 257	q 805	
20	Devonshire	—	4·34	3·27				
21	Cornwall	—	4·62	4·68				
22	Somersetshire	—	3·90	4·15	10·1	c 6415	m 106	q 1349
	VI.—West Midland							
23	Gloucestershire ..	2·04	4·03	4·46	10·1	c 8493	m 91	q 1138
24	Herefordshire	—	4·36	2·08	7·8	q 92		
25	Shropshire	2·0	3·53	4·50	14·1	c 3473	m 307	q 1440
26	Staffordshire	—	4·35	3·40	19·0	c 54561	m 208	q 2207
27	Worcestershire ..	—	3·99	3·29	7·8	c 2657	m 66	q 566
28	Warwickshire	—	3·98	3·03				
	VII.—North Midland							
29	Leicestershire	—	3·66	3·87				
30	Rutlandshire	—	3·54	2·18				
31	Lincolnshire	—	4·15	2·97				
32	Nottinghamshire ..	2·0	4·44	4·62	34·3	c 37851	m 373	q 786
33	Derbyshire	2·6	4·54	4·07	23·7	c 56222	m 505	q 3842
	VIII.—North Western							
34	Cheshire	—	4·95	3·73	—	c 1154	m 126	q 548
35	Lancashire	—	4·99	4·30	—	c 102665	m 2197	q 4666
	IX.—Yorkshire							
36	West Riding	—	4·97	4·64				
37	East Riding (with York)	—	4·28	3·50				
38	North Riding	—	4·17	3·53				
	X.—Northern							
39	Durham	—	4·59	3·49				
40	Northumberland ..	—	4·24	4·06	22·5	c 53934	m 265	q 1485
41	Cumberland	—	5·49	4·04	34·3	c 9997	m 5488	q 940
42	Westmorland	—	5·13	3·17	28·6	c 9	m 210	q 208
	XI.—Welsh							
43	Monmouthshire ..	—	5·62	4·06				
44	Glamorganshire ..	—	5·89	5·21				
45	Carmarthenshire ..	—	5·94	5·71				
46	Pembrokeshire ..	—	6·13	2·44				
47	Cardiganshire	—	6·53	5·01				
48	Brecknockshire ..	—	6·98	5·67				
49	Radnorshire	—	4·33	7·39				
50	Montgomeryshire ..	—	6·02	4·42				
51	Flintshire	—	5·78	4·93				
52	Denbighshire	—	6·95	8·25				
53	Merionethshire ..	—	6·50	6·35				
54	Carnarvonshire ..	—	5·45	6·84				
55	Anglesey	—	4·38	2·42				

This table is intended to give the reader a knowledge of the Registration Districts of England and Wales; and to enable him to compare the relationship between the percentage of the population engaged in Factories and Mines with the incidence of puerperal septic diseases in some of the counties. N.B.—The puerperal fever rate refers to Administrative Counties, whereas the other statistics refer to Registration Counties.

PART III.

ANALYSIS OF STATISTICS AND DEDUCTIONS.

BEFORE proceeding further it should be clearly understood that we take certain things for granted, viz., that puerperal fever notifications are notoriously unreliable, and that human nature is much the same in Lancashire as elsewhere in England. Nevertheless we are encouraged to persevere in the endeavour to throw light on our subject by means of statistics, by the following words from Sir Ronald Ross's book, "Prevention of Malaria": "As a matter of fact, all epidemiology, concerned as it is with the variation of disease from time to time, or from place to place, MUST be considered mathematically, however many variables are implicated, if it is to be considered scientifically at all."

When a general practitioner talks of puerperal fever, he generally has in his mind the terrifying septicæmic variety. This opinion is shared by the M.O.H. Shropshire (Report, 1909), who writes :—

In my last year's report I said :—There is reason to believe that *many cases of puerperal infection still remain unnotified principally because the name "puerperal fever" is associated in the minds of a considerable proportion of the medical profession with the graver forms of infection only.*

The foregoing is a charitable construction of the reasons for the laxity of the medical profession in the notification of puerperal sepsis. He continues :—

The Local Government Board state that they have no power to define the term. To act as a guide and as a working definition, the North-Western Branch of the Society of Medical Officers of Health, with the help of Sir Wm. Japp Sinclair, drew up the following :—

"For the purpose of the Notification Acts, 1889 and 1899, the term 'puerperal fever' shall include all cases in which, within seven days after the birth of the child, alive or still-born, the

mother shall have a rise of temperature exceeding 100·4° F., with quick pulse, maintained for a period exceeding twenty-four hours, without obvious cause other than the puerperal state.

"It shall also include all cases in which, within seven days after the birth of a child, there has been the occurrence of rigor (with attendant illness) without any obvious cause other than the puerperal state."

This definition has been forwarded to all the medical officers of health in the county, and except on one or two minor points, there is almost unanimity. There is reason to believe that notifications of puerperal fever are becoming more complete from year to year.

If the infection remains localized in the pelvis, there is not the same cause for anxiety, as the condition usually undergoes resolution. It is safe, therefore, to assume that most of the cases notified are of the severe type. Notification involves the intervention of the sanitary authorities, and such intervention is apt to be misconstrued by the patient, her friends, and the general public. The public are not yet sufficiently educated to understand why they ought to intervene, and there is a natural shrinking on the part of the doctor from the visit of the sanitary inspector. On the other hand, most of us medical practitioners, knowing full well that we may ourselves have been the cause of the attack, do not wish to incur the risk of our responsibility being matter for discussion and possible misconstruction. This natural reluctance is intensified when the notification passes into the hands of a M.O.H. who is also in general practice, for however honest and conscientious the M.O.H. may be, one has no desire that he should be one's judge, knowing, as he does, the fact only, apart from the circumstances of the case. On the other hand, the probability is that if a case of puerperal fever occurs in the practice of a midwife, it will be notified, since no blame can be attached to the person making the notification; hence the proportion of cases reported, for which midwives are held responsible, is larger than it should otherwise be. This somewhat uncharitable suggestion is borne out by the following quotations.

Dr. Sergeant (M.O.H. for Lancashire County) writes:—

Four of the deaths which were registered as due to puerperal fever had not been notified as such (1909 Report).

The M.O.H. Nottinghamshire (Report 1909) writes :—

The unwillingness of some members of the medical profession to notify cases of puerperal fever constitutes one of the greatest hindrances which the Local Supervising Authorities have to overcome in carrying out the Midwives Act, in supervising the practice of midwives, and in endeavouring to diminish the wholly unnecessary and avoidable mortality from puerperal fever. (The author can hardly agree that the unwillingness to notify extends to midwives' cases).

Dr. G. E. Taylor, M.O.H Berkshire (1909), writes :—

Puerperal Fever.—Cases notified 11. In the course of most years several women are certified as having died from puerperal fever, although no "notification" of the disease has been received. In three consecutive years the necessary correction amounted respectively to 14, 42, and 28 per cent of the notifications actually received."

The M.O.H. Gloucestershire (Report 1909) writes :—

Puerperal Fever.—The record low number of notifications received during 1909 would appear to show a gratifying reduction in this source of danger to mothers, but unfortunately this satisfactory conclusion is contradicted by the number of deaths attributed to it—the maximum of 12, the highest in any year since 1896: the same number of deaths occurred in 1899 and 1901. Six deaths are recorded in four districts in which no cases were notified, and two deaths in another district where only one case was notified. No explanation of this inconsistency or observation on the increased fatality appears in the Reports, except a passing note on the high mortality in the Cirencester Rural District, and an observation by Dr. Bond, that the mortality in the South-West Gloucestershire Combined District is slightly above the average. He adds, it is to be hoped that a diminution in the mortality from this cause will be brought about by the operation of the Midwives Act, 1902, which is every year becoming more appreciable in raising the standard of efficiency and in eliminating the class to whose ignorant manipulations the attacks of this disease were so largely due.

Of the nine cases notified, two occurred in the practice of certified midwives.

Dr. Bond's opinion reflecting upon midwives is somewhat discounted when one reads the closing sentence of the report.

Many medical officers of health, e.g., London, Manchester, Lancashire, etc., endeavour to keep a record of cases of

puerperal fever attended by medical practitioners alone, and those in which he is assisted by a nurse. In cases where both are present the practitioner should be held responsible, because under such circumstances the nurse rarely makes a vaginal examination, and moreover she is less likely to carry infection, being less exposed to septic contamination than the doctor, who in the course of his practice is likely to be dressing septic wounds.

Moreover, it is only fair to remember that a nurse may be contaminated by a doctor's case and subsequently infect a patient under her own care, for which she would naturally be held responsible, although in strict justice the responsibility should be borne by the doctor.

One may therefore assume that all the cases of puerperal fever recorded as having occurred in the practice of medical practitioners are really cases for which they must be held solely responsible, for it is scarcely credible that a practitioner would accept such a responsibility if it were undeserved, whereas midwives are probably credited with a *larger proportion* than they deserve, since all their cases are probably reported, while those occurring in cases where a medical practitioner is involved may or may not be reported.

We are now in a position to answer some questions in the light of our statistics.

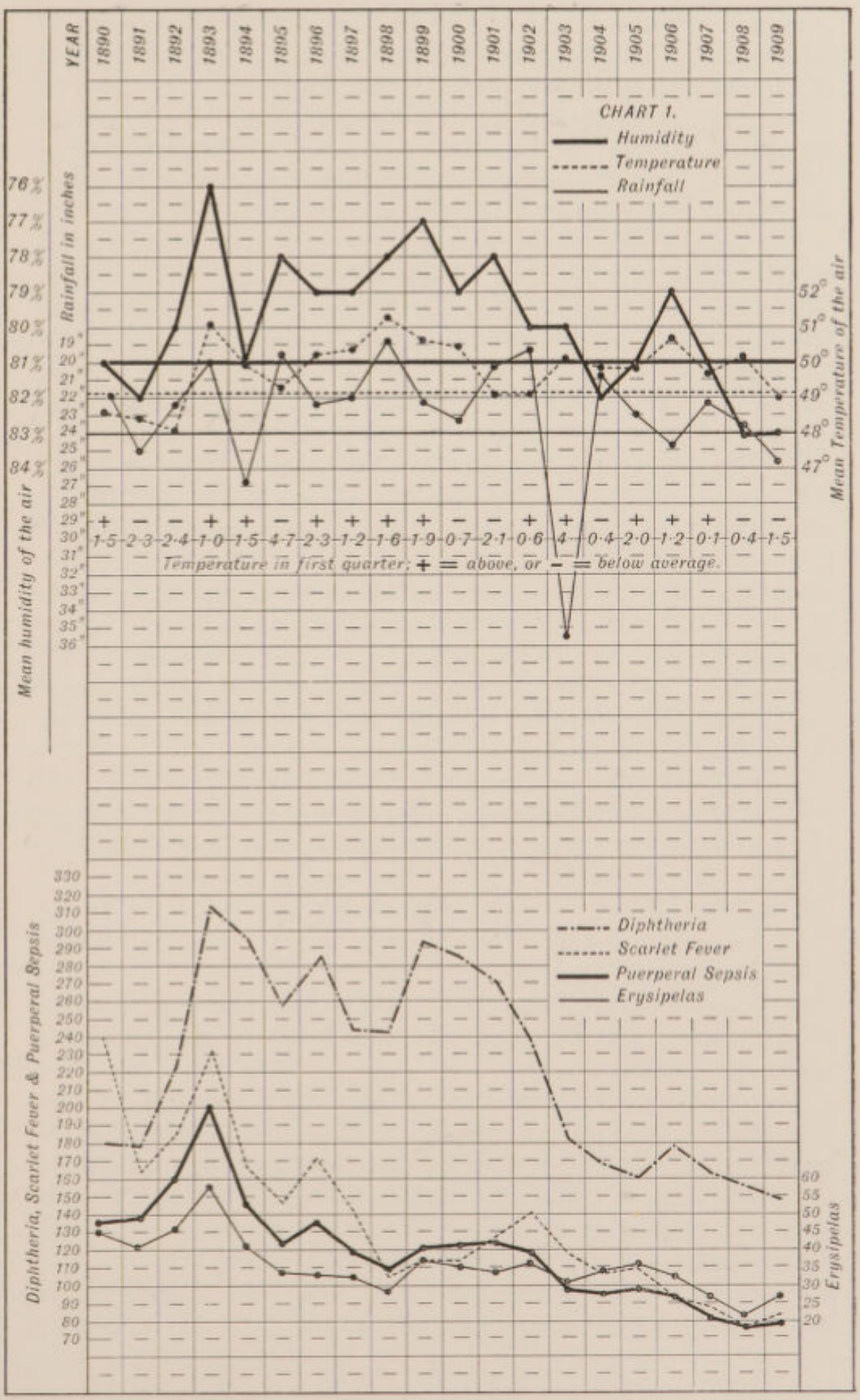
QUESTION 1. — *Do atmospheric conditions influence puerperal sepsis?*

Chart I. is arranged to show graphically in the upper portion the atmospheric conditions for twenty years (1890–1909) in relation to the incidence of puerperal sepsis, diphtheria, erysipelas, and scarlet fever, as exhibited in the lower portion, during the same period.

The dark line (in the upper half) represents the mean humidity of the air (saturation 100); the dotted line the mean temperature; the thin line the rainfall in inches. The horizontal lines show the respective means for fifty years, while the lower chart represents the incidence of the various zymotic diseases mentioned.

Observe that the humidity and rainfall curves are inverted in order (1) to obviate the different curves overlapping and

CHART I.—SHOWING THE RELATION BETWEEN ATMOSPHERIC CONDITIONS AND THE ZYMOTIC DISEASES FOR 20 YEARS.



causing confusion, (2) to show the general resemblance between them when arranged in this way. A high degree of humidity generally means increased rainfall. In order to compare the incidence of various infectious diseases and puerperal conditions in relation to the atmospheric conditions, I have arranged the infectious curves to have about the same range in height as the atmospheric curves.

Dr. Galabin has suggested that the incidence of puerperal sepsis and erysipelas is in inverse proportion to the rainfall. This view of the effect of rainfall from month to month, or for seasons, is confirmed by a graphic chart published by Dr. Anderson, M.O.H. for Rochdale, in his 1909 report, where high rainfall curves generally precede low zymotic death curves.

Most Lancashire practitioners will agree that in rainy seasons infectious diseases are at a minimum. Therefore Dr. Galabin's view is confirmed to a certain extent; but no close relationship can be traced between infectious curves and rainfall curves if the annual curves are compared. The atmospheric curve which certainly appears to resemble the infectious curves closely in some respects, is the humidity curve. In the year 1893 a minimum humidity curve is represented by a maximum death-rate curve for every infectious disease.

The year 1893 was exceptional in many ways.

1. The mean temperature of the air was above the average of fifty years for every quarter of the year: March quarter + 1°; June quarter + 4°; September quarter + 1·5°; December quarter + 0·3°. (In 1868, first quarter + 1·5; second quarter + 2·8; third quarter + 3·5; fourth quarter + 0·8).

2. The humidity was the lowest for fifty years, i.e., 76 per cent. (In 1899, 77 per cent; 1901, 78 per cent; 1906, 79 per cent).

The atmospheric conditions of 1868 may account for the fact that in the ten years 1861–70 the annual mortality of infants under one year was 162 to 1,000 births (the highest for sixty years). The next highest infant mortality rate (159 per 1,000) on record is for the ten years 1891–1900 which includes the year 1893. In 1868 wheat was 63s. 9d. per quarter, the highest price for fifty years (1860–1909) except 1867, when it was 64s. 5d.

Similar curves are to be observed in 1899 and 1906, and these coincide with the curves representing the death-rate from diphtheria. The effect of the upward swing in the humidity curve in 1895 upon the zymotic curves, may have been counteracted (1) by the very cold spring of that year, when the country was in the grip of intense frost from the New Year until March, and also (2) by the diminished rainfall. The increased height of the zymotic curve for 1896, including puerperal sepsis, may have been influenced by the warm spring of that year. The general contour of the humidity and of diphtheria is markedly similar throughout the twenty years. It would seem, therefore, that warm, dry air favours the growth of infective organisms, including those responsible for puerperal sepsis, but any effect that a prolonged condition of such an atmosphere might exercise is counteracted by the changeability of the climate over the British Isles.

It is gratifying to note a general gradually diminishing height in the curves representing deaths from various infectious diseases from 1903 onwards, notwithstanding a corresponding upward and downward curve in both humidity and infectious curves from 1898 to 1903.

One may conclude, therefore, that atmospheric conditions influence the incidence of puerperal sepsis only in so far as they affect zymotic diseases in general, and the curves in Chart I. tend to show the most resemblance between the humidity curve and the zymotic curves.

QUESTION 2.—*Does the proportion of persons per acre influence the incidence of puerperal sepsis?*

It does apparently, for one finds that in industrial areas where the population is dense, the puerperal rate is high. Too much stress should not be laid on this point, for if the district is compact (e.g., Prescot) the proportion per acre is high, whereas in straggling districts (e.g., Heywood) the proportion is low. Dr. Morgan, of Cardiff, has drawn attention to this coincidence, which is proved to be nothing more by an examination of the Lancashire grouped districts; e.g., we find the puerperal rate in mixed cities to be 3·09 per 1000 births where the population equals 42 persons per acre, while in mining rural districts the puerperal rate is 3·02 where each person occupies on an average 1·7 acres, and so on.

The figures given under population confirm well-known facts, e.g., the increase of population in manufacturing centres, and the stagnation or decrease in rural districts. The intercensal increase is greatest in residential districts generally. Bispham with Norbreck has an intercensal increase of 127 per cent. The causes of this exodus to the sea and fresh air need not detain us.

Another interesting feature new to me in reference to the birth-rate in certain districts emerges in the calculations, viz., the high birth-rate in mining districts.

The highest birth-rate is found in mining boroughs, presumably because miners, being well paid, are able to keep their wives at home, and thereby increase their chances of bearing children.

The low birth-rate in residential districts is notorious, and need not be enlarged upon.

QUESTION 3.—*Does erysipelas affect the incidence of puerperal infection?*

This is a crucial question, and must be dealt with at some length. The following is an extract of a review of Dr. Lea's book, from the *British Medical Journal* of April 8th, 1911: "'The streptococcus of erysipelas and the organisms frequently found associated with scarlet fever and diphtheria are identical with those present in puerperal infection.' The next paragraph begins: 'The streptococcus pyogenes manifests extraordinary variations in virulence. Thus it frequently exists in the genital tract as a saprophyte, whilst in other instances the introduction of even a small number of streptococci to a wound is followed by severe infection.' We believe that Dr. Lea is in harmony with nearly if not all bacteriologists in making these statements of fact. Nevertheless we think it certain that in the future they will be shown to require modification. The bacteriologist may fail to distinguish between (1) the erysipelas coccus of Fehleisen, (2) a streptococcus that produces spreading suppuration of the cellular tissues, and (3) a hæmolytic streptococcus that kills the patient too quickly for suppuration to take place. But the human body knows the difference, and Fehleisen showed that his erysipelas coccus bred true: it produced cutaneous erysipelas and nothing else."

Dr. Lea writes further in the book above referred to : " It has been shown that there is a remarkably close correspondence between the incidence of cases of puerperal fever and those of erysipelas." My statistics tend to confirm this statement.

Wherever one finds a large percentage of erysipelas, there also is found a large percentage of puerperal cases reported. Frequency distribution curves of various districts contrasted, and rate curves for different districts, show this clearly. The curves, however, do not exactly coincide in the rise and fall (*Chart II*), although the general resemblance is very close. There is no such general resemblance between any other two curves. Notice that all the curves reach their maximum height in mining districts, and are lowest in purely rural districts. The same relationship is shown by *Charts III, IV, V*. *Chart VI* shows frequency polygons for the four allied infectious diseases in 174 districts in the British Isles. Here again, the contours of the puerperal and erysipelas curves closely resemble one another, but it will be noticed there are many districts where there is a larger percentage of puerperal fever than erysipelas, which tends to show there must be another factor causing puerperal fever besides erysipelas, because one may safely assume that every case of erysipelas is notified ; therefore, if erysipelas alone were responsible for puerperal fever, it would follow that in districts where there was a small percentage of erysipelas there would be a small percentage of puerperal fever. We must look elsewhere, therefore, for the cause of at least 5 per cent of the cases of puerperal fever reported.

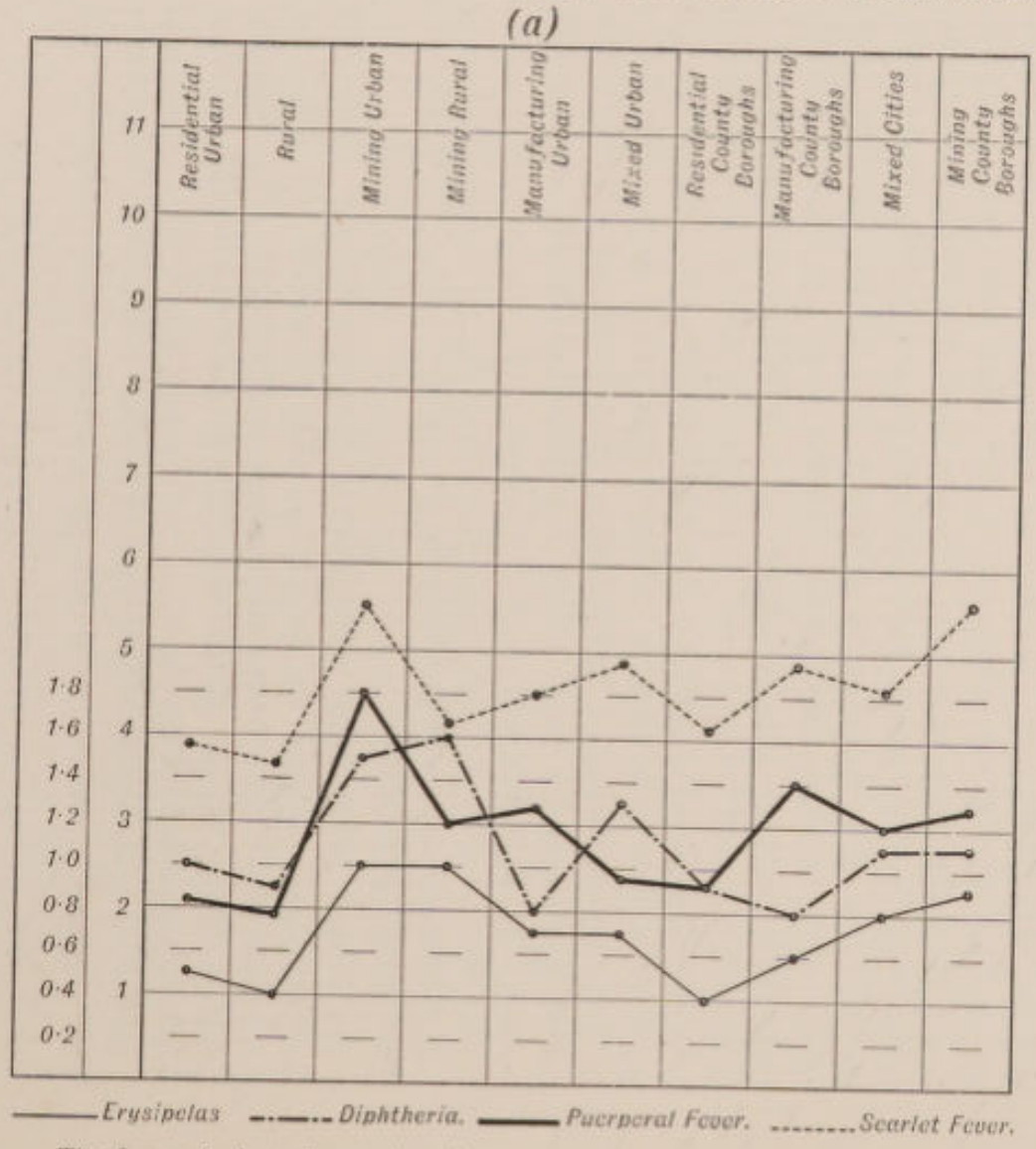
The answer to the question at the head of this section must therefore be Yes. *How* it affects puerperal sepsis will appear hereafter.

QUESTION 4.—*Does diphtheria affect the incidence of puerperal infection?*

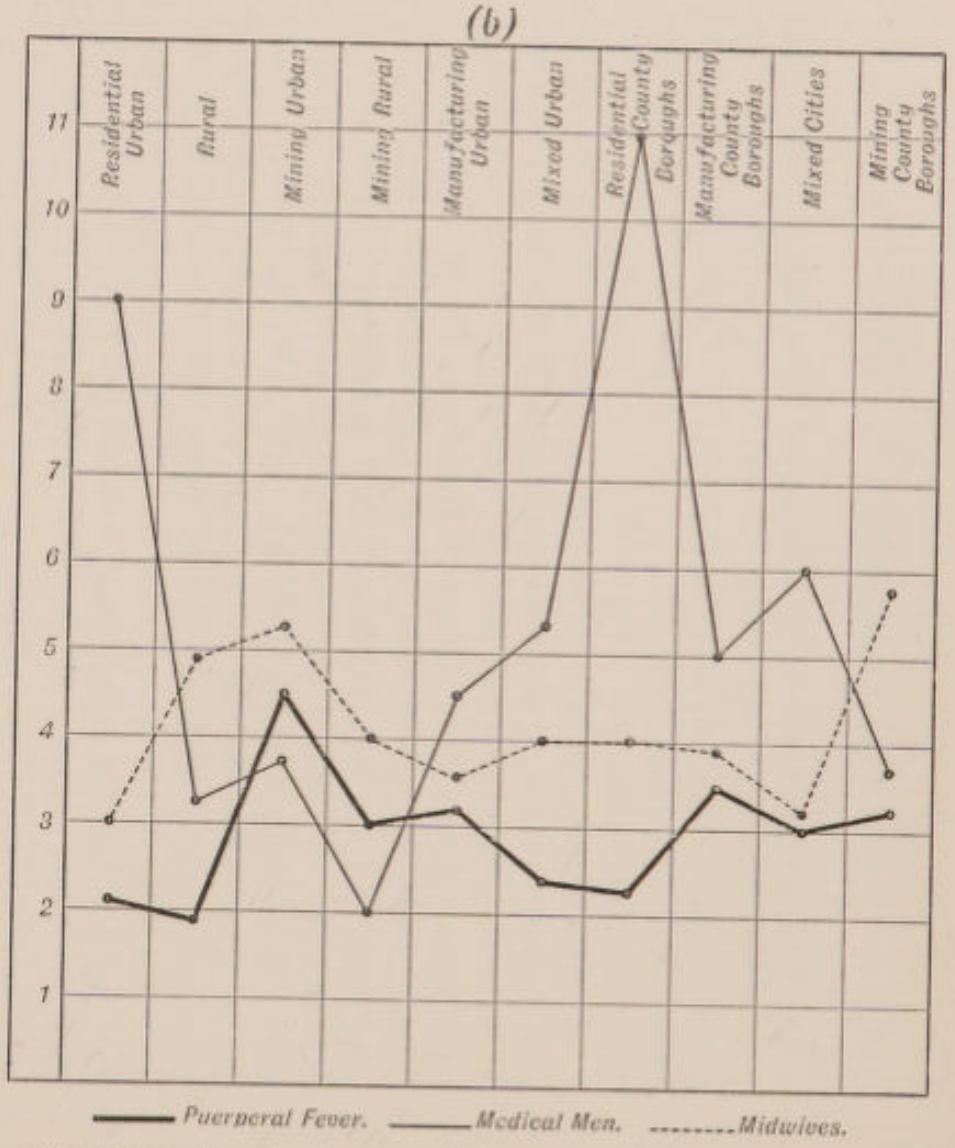
" It has long been recognized that puerperal infection is peculiarly liable to occur in the practice of medical practitioners who are attending erysipelas, diphtheria, scarlet fever, and other infectious diseases" (Dr. Lea's " Puerperal Infection ").

Chart II, a, shows that the diphtheria curves cut across the puerperal curve in a zigzag manner, and certainly the

CHART II.—PUERPERAL FEVER RATE FOR SELECTED DISTRICTS CONTRASTED (*a*) WITH OTHER INFECTIOUS DISEASES, AND (*b*) WITH MEDICAL PRACTITIONERS OR MIDWIVES IN ATTENDANCE.



The figures in first column show the rate per 1000 population for erysipelas and scarlet fever; the second column per 1000 births for puerperal fever and per 1000 population for scarlet fever.

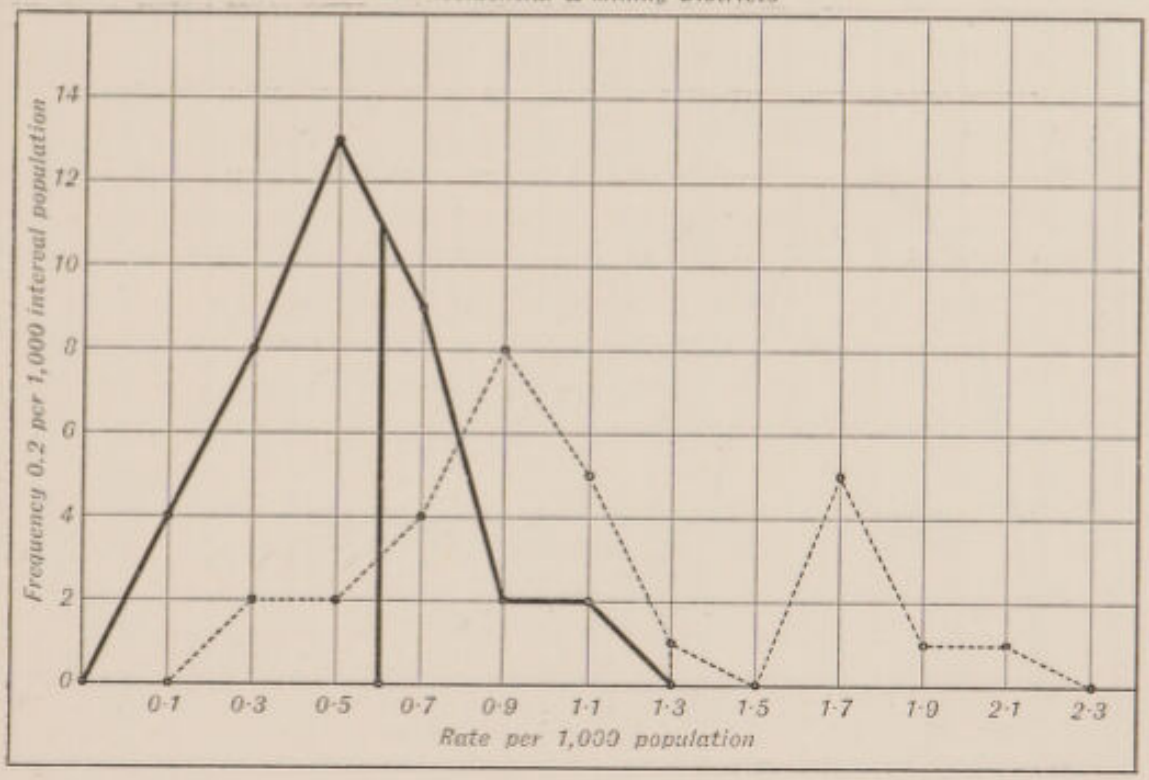


The figures show rate of puerperal fever to 1000 births and rate per 10,000 population of medical men and midwives.

CHART III.—Frequency Distribution of Erysipelas Contrasted.

(a)

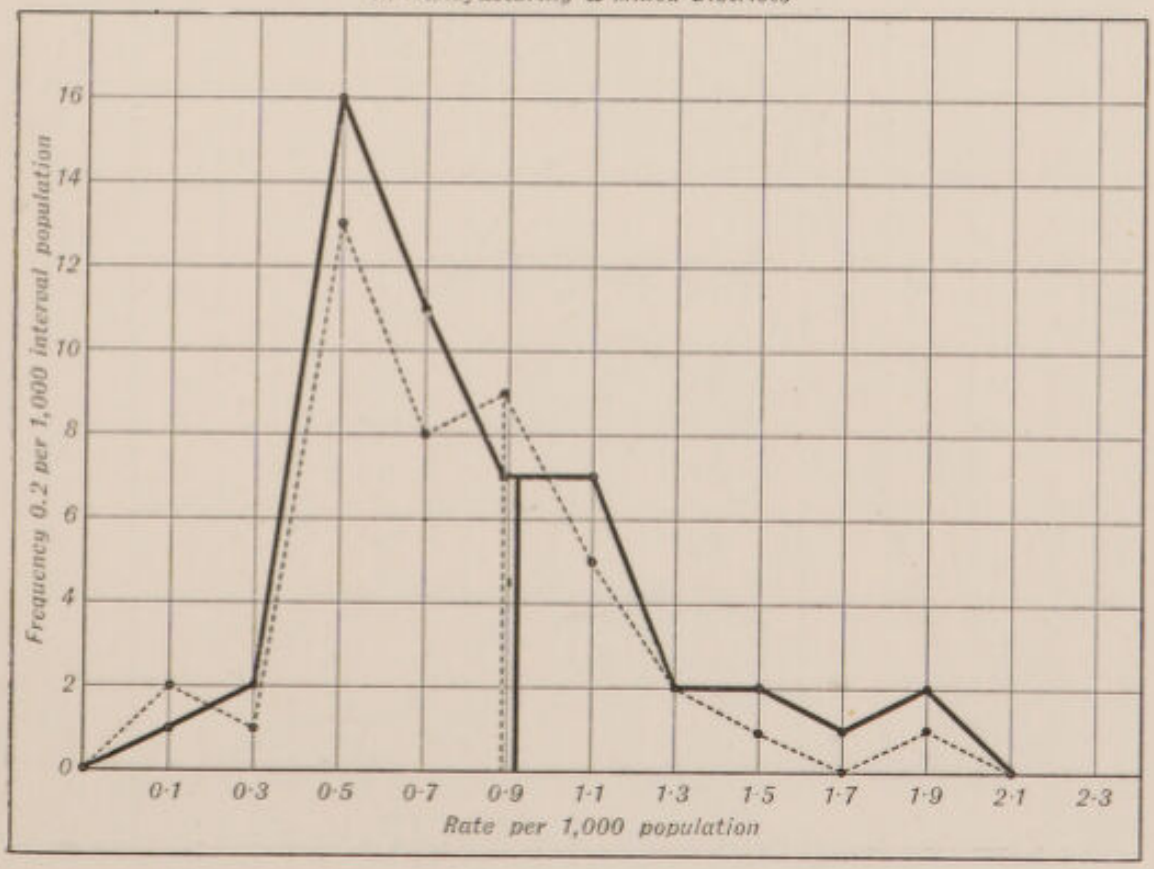
In Residential & Mining Districts



——— Residential. - - - - - - - - Mining.

(b)

In Manufacturing & Mixed Districts



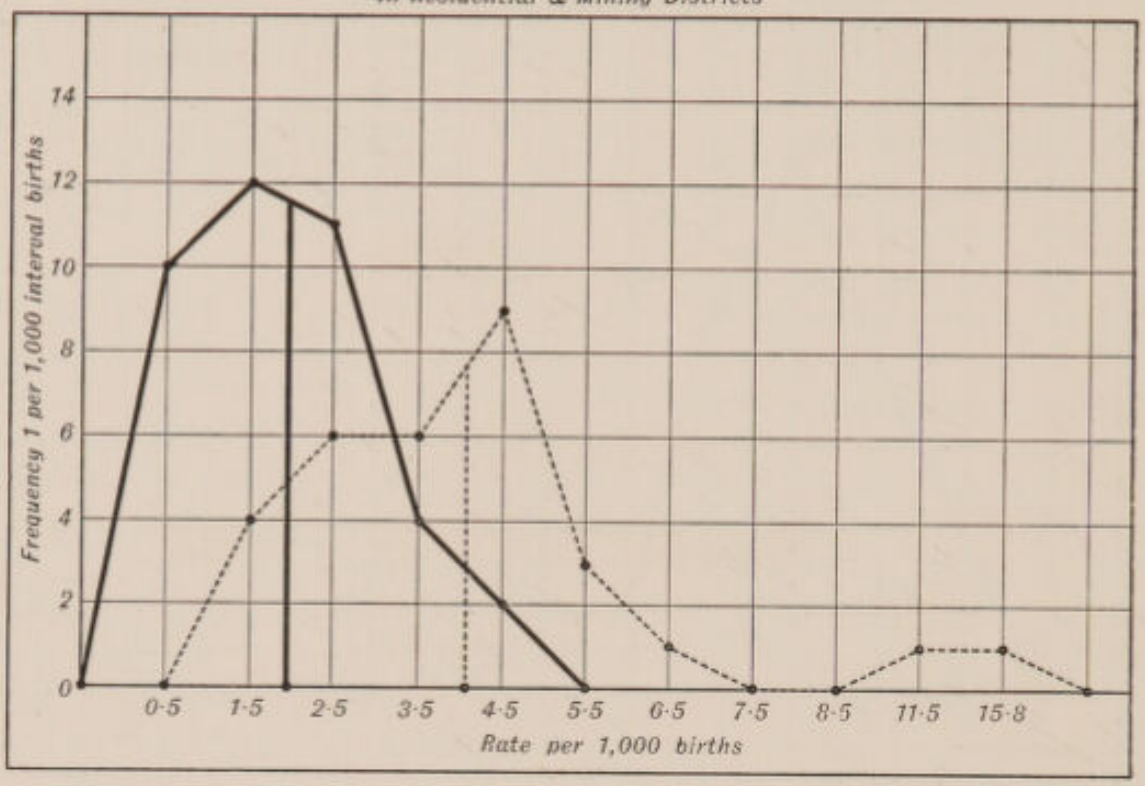
——— Manufacturing. - - - - - - - - Mixed

Vertical lines = mean rate.

CHART IV.—FREQUENCY DISTRIBUTION OF PUERPERAL FEVER CONTRASTED

(a)

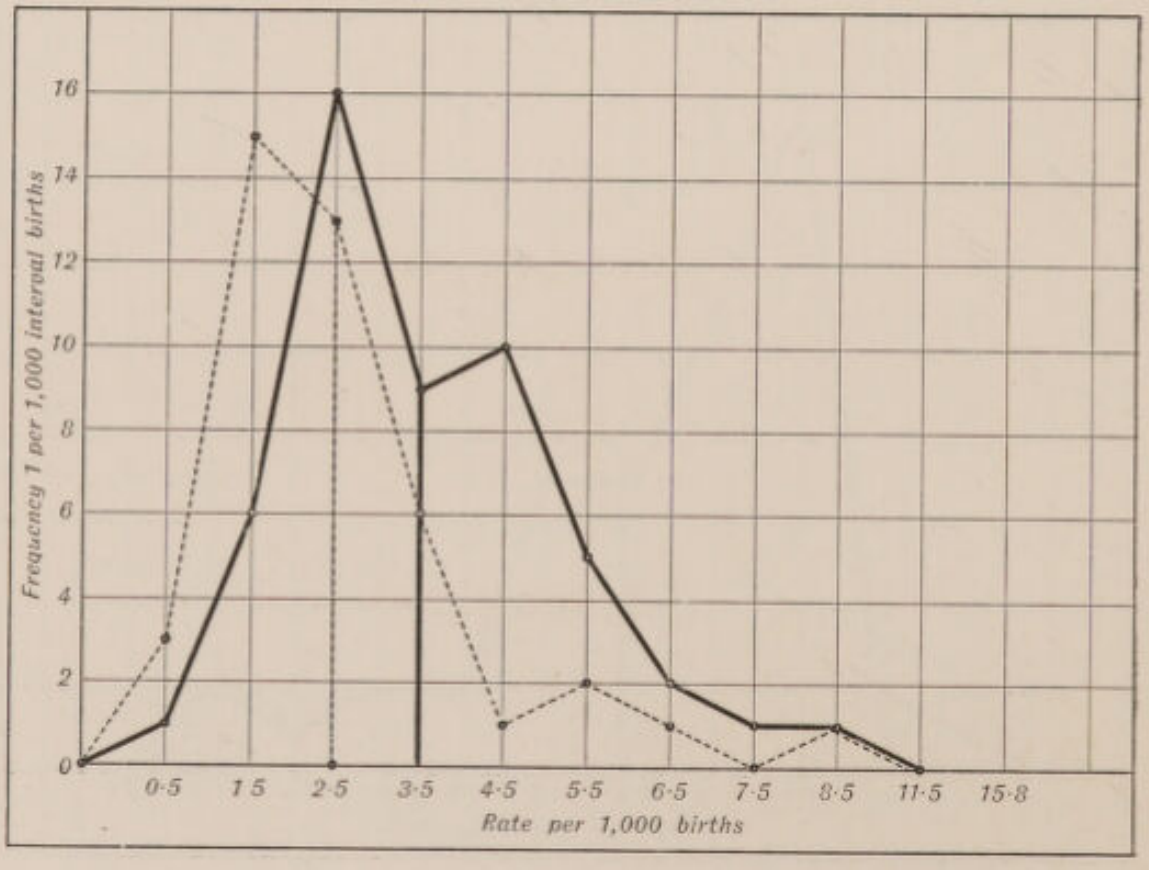
In Residential & Mining Districts



——— Residential. - - - - - - - - Mining.

(b)

In Manufacturing & Mixed Districts



——— Manufacturing. - - - - - - - - Mixed.

Vertical lines = mean rate.

CHART V.—HISTOGRAM SHOWING THE DISTRIBUTION OF INFECTIOUS DISEASES, MEDICAL MEN, AND MIDWIVES IN SELECTED DISTRICTS (diseases grouped).

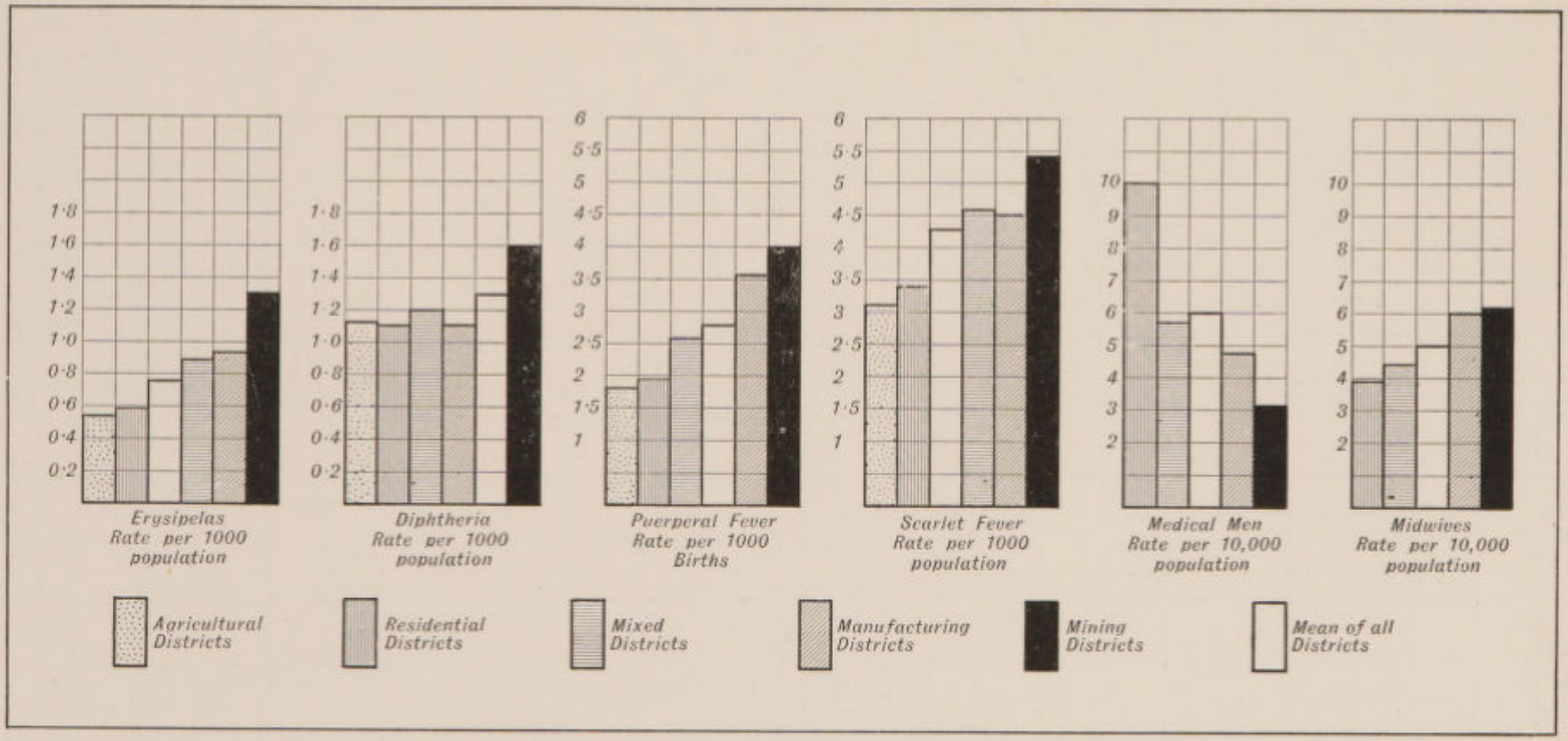
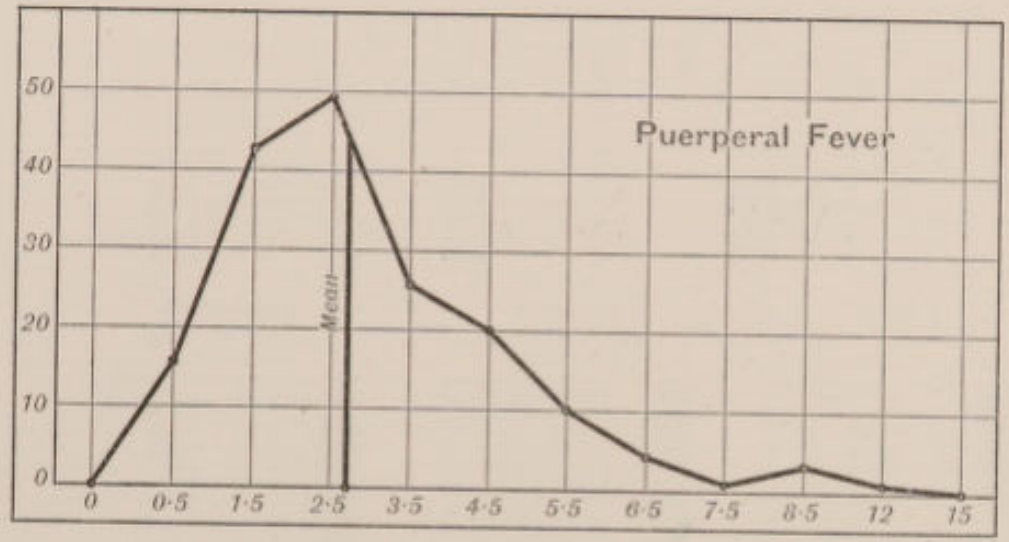
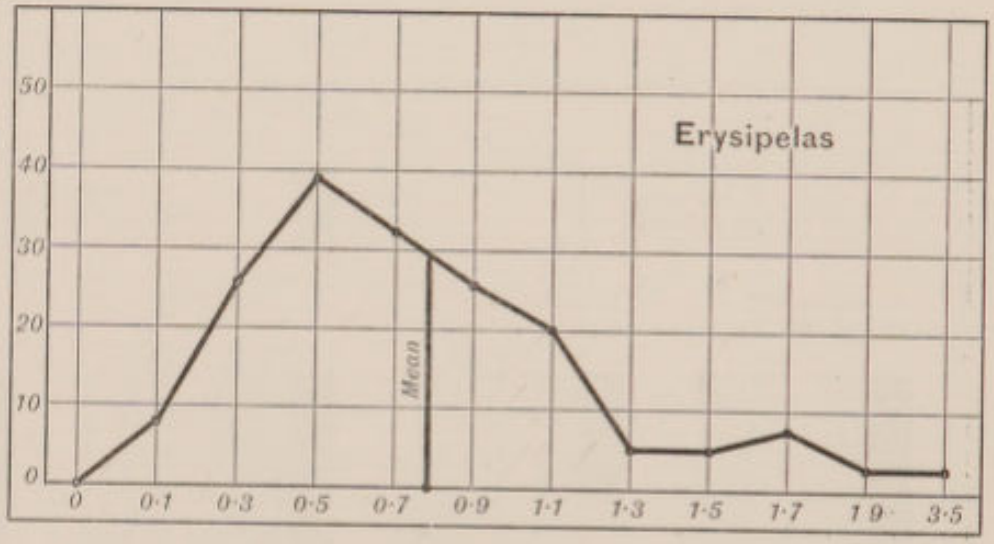
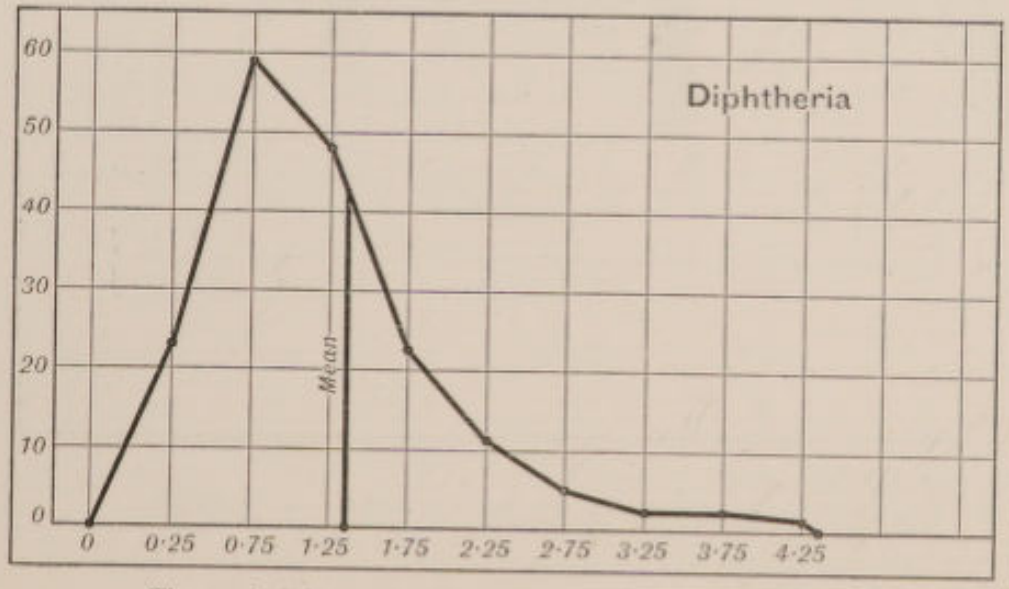
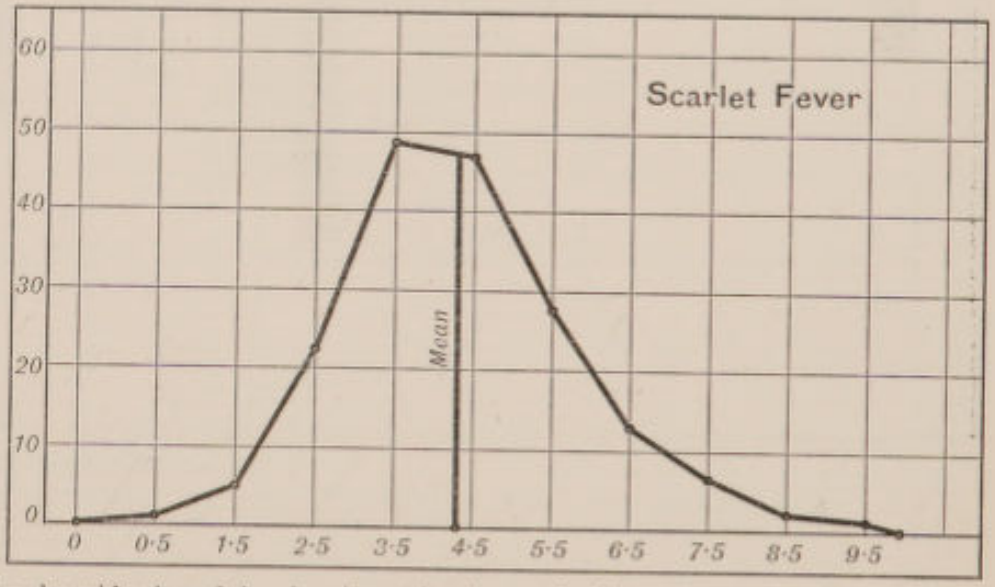


CHART VI.—FREQUENCY DISTRIBUTION OF INFECTIOUS DISEASES IN 174 BRITISH DISTRICTS.









The vertical figures represent the number of districts: the horizontal figures the mid-value of the class intervals: the vertical lines the mean rate.

relative height of the curve in residential urban and manufacturing urban districts suggests that a different relationship exists between diphtheria and puerperal fever than that between erysipelas and puerperal fever; that is to say, residential districts are more liable to diphtheria, while they are almost exempt from puerperal fever. Mining districts again top the list, and manufacturing districts, much to my surprise, are at the bottom, while in these latter districts puerperal infection is in the ascendant;* therefore one may assert, that although diphtheria may attack a woman during the puerperium, there seems no close affinity between the incidence of the two diseases.

QUESTION 5.—*What about scarlet fever?*

There certainly appears to be a closer statistical agreement between scarlet fever and puerperal infection than between diphtheria and puerperal fever. *Chart II, a*, shows how the curves from the two diseases coincide in their rise and fall until they reach the mixed urban column, where they diverge, the scarlet fever curve moving upwards, the puerperal downwards. The quotation under Question 4 is comprehensive yet vague: comprehensive, inasmuch as it includes "and other infectious diseases" as a probable cause of puerperal infection; and vague, in that it embraces medical practitioners attending any of those infectious diseases, a qualification which would, in my opinion, at any given time include 95 per cent of all general practitioners, for most of us throughout the year are attending one or other of those diseases; therefore, if at any time a case of puerperal fever occurred in one's practice, the chances are ten to one we should be found to be attending a case of infectious disease. If there was truth in this statement, one would expect puerperal fever to be more prevalent than it is. Presumably, a woman attacked by scarlet fever during the puerperium would develop the usual symptoms of the disease, e.g., the characteristic rash, etc., which could not escape recognition, nor can I imagine anyone failing to

* It must be remembered mining districts contain a larger proportion of children than other districts, while in residential districts children are few, which gives the larger figures in the latter districts still more significance, since 90 per cent of cases of diphtheria occur in children.

notify such a case. If such cases existed they would be more generally known and better understood, and should be described as scarlet fever contracted during the puerperium, rather than puerperal fever *per se*.

Again, it will be observed that scarlet fever is endemic in almost every district, and the rate is more nearly constant than any of the other diseases. A perusal of the tables shows that it assumes an epidemic form at least once, sometimes twice, in a period of ten years. After an epidemic the disease remains quiescent, the community having acquired an immunity, until a new race of children arises, when it again becomes active.

So far we have been unable to show a constant relationship between any of the factors considered hitherto and the puerperal fever rate in every district, and the question arises—

QUESTION 6.—*What is the determining factor in the etiology of puerperal sepsis?*

Why should the rate be higher in certain districts? Is it suggested that the medical practitioners in residential towns and mixed counties are more competent, or more particular in their search after sepsis, than their brethren who practise in mining towns or manufacturing counties? Before proceeding further, let us quote again from Dr. Lea's book:—

"If general infection ensues, usually one organism only invades the blood-stream, and this is almost always the streptococcus."

I am convinced every word here quoted rings true, and would suggest that the streptococcus is the organism generally responsible for cases of puerperal fever, even where the infection is local as distinguished from general.

General infection is the catastrophe we all deplore, and it is this form which causes the general practitioner mental uneasiness. He wonders whether he has been an "involuntary contributor" in the causation. I am convinced he has been, and will continue to be, an involuntary contributor towards the graver forms of puerperal fever, unless the source of infection is rooted out, as I hope to prove may be done. *Puerperal fever is a wound infection. The source of a wound infection may be found in another wound.*

In puerperal fever we have a wound infection. In normal cases the placental site is liable to infection, and in abnormal cases there may be wounds in any part of the utero-vaginal tract from the use of instruments, or caused by manual manipulations. Nor are normal labours exempt from wounds. If strict asepsis were possible, puerperal fever would soon cease to trouble us. The statistics of maternity hospitals published in Dr. Lea's book prove this, and render it unnecessary for me to do more than state the fact that in maternity hospitals the mortality from puerperal infection is uniformly below 1 per cent, a fact which ought to dispel the idea of auto-infection in puerperal fever.

Dr. Lea admits auto-infection is rare. I have repeatedly attended confinement cases where the mother had gonorrhœa, and have been surprised to find the temperature remain normal throughout the puerperium; but curiously enough, those mothers might in a month or two develop some form of pelvic inflammation. Therefore there is much to be said for the view that even in gonorrhœal cases the subsequent infection, if it becomes general, is a mixed infection.

The word auto-infection acts as a soothing unction to one's soul, but in the interests of truth one should eschew its use, because it has a soporific influence calculated to prevent the search after the real cause of infection, a search imperatively called for if one would avoid the infliction of untold misery. "Staphylococci rarely cause puerperal fever." A good thing too, for staphylococci abound in boils, acne, etc., and those disagreeable skin diseases are common to all, including patient, midwife, and doctor. Auto-infection, strictly so-called, is due to poisoning of the patient by her own secretions, e.g., the lochia. I know too little of this form to dwell on the possibility of its occurrence, but auto-infection may take another form.

A case of auto-infection came under our personal observation some time ago. Strict precautions were taken to prevent contamination through hands, forceps, etc., but nevertheless symptoms of septicæmia appeared on the third day, and continued until curettage was performed on the sixth day. Although quite sure of our own innocence, it was a considerable relief to find that the patient had been treating herself for a purulent discharge from the middle

ear. The method of infection was then clear, for while the head was being guided over the perineum, the patient, not being deeply anæsthetized, grasped my hand and had to be restrained, and thus infected herself through me.

Another instance of auto-infection which puzzled me for nearly a year, exemplifies what I believe to be the most common cause of puerperal infection, viz., suppurating wounds. The patient was the wife of a labourer. She gave birth to an acephalous child at full term after prolonged manipulation, and subsequently developed pelvic cellulitis. The cause was undiscovered until after twelve months, when the husband sought treatment for a large ulcer of the leg which had troubled him for years, and which arose from a wound of the shin.

In the light of such experiences, consider this last quotation from Dr. Lea's book: "Streptococci vary in virulence . . . but the most virulent organisms are those *which have recently passed through the human body*; *thus streptococci from an infected wound* or from a case of septicæmia are highly dangerous, and even a small number of these may produce the most severe types of infection."

In short, this book is an attempt to convince all whom it may concern *that suppurating wounds are the most common source of puerperal fever*. Such wounds are the breeding grounds for streptococci, and the streptococci are conveyed to puerperal women by those most liable to contamination; and who are more liable than medical practitioners, who must in their daily work dress septic wounds, and may unconsciously be the innocent cause of puerperal infection?

Now for the evidence in support of this conviction. In what districts does one expect to find the largest proportion of wounds? In districts with the largest proportion of accidents. Where do we look for most accidents? In industrial districts, of course. Before I began the investigation into the causes of puerperal infection, I was satisfied in my own mind that most people would agree that the following districts are arranged in the order of their liability to accidents: (1) Mining; (2) Manufacturing; (3) Mixed; (4) Residential. Assuming such to be the case, one would expect they could be arranged in the same order in their relationship to the proportion of wounds. If our theory is correct, it must follow that the same test applied to

puerperal fever gives the same result, and such has proved to be the case (see *Chart II, a*).

Baffled in the attempt to procure figures for Lancashire showing the number of accidents in each sanitary area, I consulted "Worrall's Directory" for a list of factories in each district, convinced, as I am, that the number of factories is an index of the number of accidents, and therefore of puerperal fever. Such is proved to be the case, for wherever there are no factories, puerperal fever is absent, or practically so.

If the same method be applied to English counties, or Scotch burghs, the same result is obtained. Factories vary in size, some giving employment to hundreds of workpeople, while others only find employment for a few. We must therefore fall back upon the number of persons employed in factories for reliable data.

We had not proceeded far in our calculations before it became apparent that the figures for factories alone did not explain the incidence of puerperal infection in every district, and then we discovered that we had neglected accidents in mines. Even then our results did not satisfy, until the figures obtained from the calculations for accidents in docks and quays emerged to put the matter beyond doubt. Let us review each group of statistics in detail.

Lancashire Urban Districts.—Almost every district classed as mining shows a high puerperal rate. Blackrod has the blackest record of any district (15·8), Ashton-in-Makerfield 5·1, West Houghton 11·8. There are exceptions, but they prove the rule: Haydock (1·1), Chorley (1·7). Midwives conduct a large proportion of confinements in mining districts, and are therefore associated with large and small puerperal rates.

In *residential districts* the puerperal rate is invariably low, many districts having a clean record for ten years, e.g., Allerton, Bispham with Norbreck, Childwall. A high rate is exceptional in those districts, except Croston (8·5). Croston is not strictly residential, and, moreover, it is a small district of 2102 inhabitants. Many small districts show a high puerperal rate which is more apparent than real, owing to the fact that a few cases raise the rate disproportionately. It is difficult to decide into which class certain districts should be placed, e.g., Norden, and Swinton

and Pendlebury. Norden is near Rochdale borough, partly rural and partly urban, and is served by Rochdale medical practitioners, although presumably most of the midwifery will be in the hands of midwives. It is classed as mixed. Swinton and Pendlebury is in the midst of a mining district, although many Manchester business men reside in the district; hence it is classed as "mixed." A mixed district, therefore, occupies a middle position, neither purely manufacturing nor purely mining, and that the classification is justified is proved by the mean puerperal rate obtained when such districts are grouped, for the rate occupies a middle position, being lower than either manufacturing or mining, but higher than residential or rural.

Again, *manufacturing districts* generally show a high puerperal rate, as one would naturally expect, since the accident rate is high, although not so high as in mining districts.

In agricultural or rural districts the puerperal rate is comparatively low, although in rural mining districts the rate tends to rise. The number of such districts is so small, however, that it would be unsafe to dogmatize upon them.

Lancashire County Boroughs.—These follow the same rule: residential, low rate; mining, high rate; mixed, intermediate rate. Liverpool and Bootle (2·0) are lower than Manchester and Salford (3·4), and curiously enough there are more midwives in Liverpool and Bootle than in Manchester and Salford, but it is only fair to add that the accident rate is higher in Manchester and Salford. Southport has the lowest rate (1·9).

Grouped Lancashire Districts. — This method of classification furnishes the most convincing proof that the incidence of puerperal infection depends on the nature of the district, for the rate increases almost geometrically from agricultural upwards to mining districts, and this is the only infectious disease where the rise is constant and invariable. I am convinced that the same conditions can be demonstrated in other counties. A glance at the 1910 report of the M.O.H. for Derbyshire shows that in the mining districts of that county the puerperal rate is high compared with the other districts. I would earnestly suggest that medical men should investigate this problem in their respective counties, being familiar, as they ought to

be, with the various districts, and thereby able to classify them on the lines followed in this book.

Lancashire Factory Districts. — To estimate even approximately the number of accidents in each factory district is a difficult task, particularly in the Manchester and Liverpool districts, where it was found necessary to estimate the number of "sundry" accidents, under which head are accidents occurring at docks, wharves, and quays. Nevertheless, the result indicates the same correlation between accidents and puerperal sepsis as the results obtained by other calculations, and the correlation between puerperal sepsis and erysipelas is not so close; but inasmuch as a factory district includes variously classed districts, the puerperal rate is more uniform, except in districts largely mining, where the figures are disturbed by the large number of mining accidents (see Tables).

English Boroughs.—The mean puerperal rate in eight seaports is remarkably low (1·5), lower even than that of the five residential districts (2·6). Factories are few in seaports, goods being merely handled in transit in docks and on quays, where the accident rate is low (7 per cent).

English Counties.—The results here are unreliable, no matter how the figures are treated; nevertheless they are included to show how involved the calculations become in the attempt to evolve order out of chaos. Suppose we wish to estimate the accidents for Berkshire. Berkshire forms part of the West London factory district, which also includes five other counties (see Appendix). Therefore it is necessary to estimate the number of accidents in the whole district, and afterwards calculate Berkshire's proportion on the assumption that the rate for Berkshire will be the same as the rate for the whole district, an assumption scarcely warrantable. When a factory district is coterminous with a county, the problem would seem to be simplified, but it is not so. The Derbyshire factory district is coterminous with the registration county, while the figures of puerperal sepsis etc., is based on the statistics of the administrative county, and so on.

Scotch Burghs.—Here again we find that where factories abound puerperal sepsis also abounds. Glasgow (4·0), Falkirk (5·2), and Motherwell (4·5), contrast strangely with Edinburgh (1·8).

Our final set of figures includes the latest procurable for ten years of deaths from puerperal septic diseases, and diseases and accidents of pregnancy and childbirth, in England and Wales. A Committee appointed to consider the working of the Midwives Act, 1902, commenting on a similar set of figures for the ten years 1897–1906, says: "No complete explanation is at present practicable of the differences, for instance, between London and Cumberland, or between Essex and Wales. The figures for the West Riding and Lancashire do not appear to favour the idea that in all towns prompt and efficient midwifery is more readily available than in chiefly rural counties." "The figures set out above need to be supplemented by further figures (e.g., those of notifications of puerperal fever, of the number of still-births notified by midwives in each county), and by investigation of administration in the chief counties, before inferences can be drawn. Such an investigation would be appropriate to be undertaken by the medical staff of the Local Government Board."

My investigations were not inspired by the above quotation, but they furnish a complete answer, and suggest that "prompt and efficient midwifery" "have nothing to do with the case."

Every county in the list where the rate is high is either a manufacturing or mining county. If they are neither manufacturing nor mining they are small counties (e.g., Westmoreland), in which a small number of puerperal fatalities give a disproportionately high rate, the number of births being small. Again, the inclusion of deaths from diseases and accidents of pregnancy and child-bearing obscures the results of puerperal sepsis, although the figures of puerperal fever alone, and those for fever and accidents combined, are apparently governed by the same conditions, i.e., the figures are high in manufacturing counties and low in agricultural or residential counties.

The Welsh counties, with two exceptions, show a high rate, and, curiously enough, those two counties, Anglesey and Pembrokeshire, both show a small percentage of persons employed in mines. The rate for Radnorshire is high, but being a small county the high rate is more apparent than real.

When the county rate from septic diseases is high, if the

county is neither a mining nor a manufacturing one, the high rate is, in my opinion, accounted for by the high death-rate from the diseases and accidents of pregnancy and child-bearing; this, I believe, may be due to a lack of "prompt and efficient midwifery," and the responsibility for this high rate must be borne by midwives, who, curiously enough, abound in those counties.

If my readers have studied closely the statistics, probably they have observed that in districts where one finds a high puerperal rate, one finds a large proportion of midwives. At first sight one would be inclined to exclaim, "Eureka!" that is, "I have found the explanation of the high puerperal rate." Justice to midwives demands, however, that one should dispel this erroneous conclusion. Let us read the following extracts :—

"*Puerperal Fever.*—Eleven cases were notified in the whole county, as against 9 in 1908, 11 in 1907, and 14 in 1906. Five occurred in urban districts, viz.: three in Salisbury and two in Trowbridge. Five cases occurred in the rural districts: 2 in Melksham and 1 each in Chippenham, Pewsey, Warminster, and Westbury. Of the 11 cases, 5 proved fatal, viz.: 1 at Trowbridge, 1 at Salisbury, 2 in the Melksham District, 1 in the Pewsey District, and 1 in the Westbury District.

"Of the 11 cases, 5 occurred in midwives' practice and the remaining 6 in the practices of medical men. Each case was carefully enquired into, and where a certified midwife was in attendance she was suspended from practice, in accordance with Rule 5 of the Central Midwives Board, until her clothing, bag of appliances, etc., were disinfected. Of the 6,519 births in Wiltshire in 1909, over 3,245 were attended by midwives without the aid of medical men, and over 317 by midwives with the aid of medical men. It cannot therefore be said that the proportion of puerperal fever cases in Wiltshire midwives' practice is higher than that in doctors' practice."—(Annual Report for 1909 of the Medical Officer of Health for Wiltshire).

"*Puerperal Fever.*—Three notifications of puerperal fever were received, two cases proving fatal. The patients were attended in their confinements by medical practitioners. The Midwives Act, 1902, will attain its full powers in April of the current year, and steps are being taken to appoint an inspector of midwives, preferably a lady.

"The clothing of nurses and midwives who have been in attendance on patients suffering from puerperal fever is disinfected,

and such attendants are warned against undertaking similar work for so long a period as seems to be necessary."—(Annual Report for 1909 of the Medical Officer of Health for Hastings).

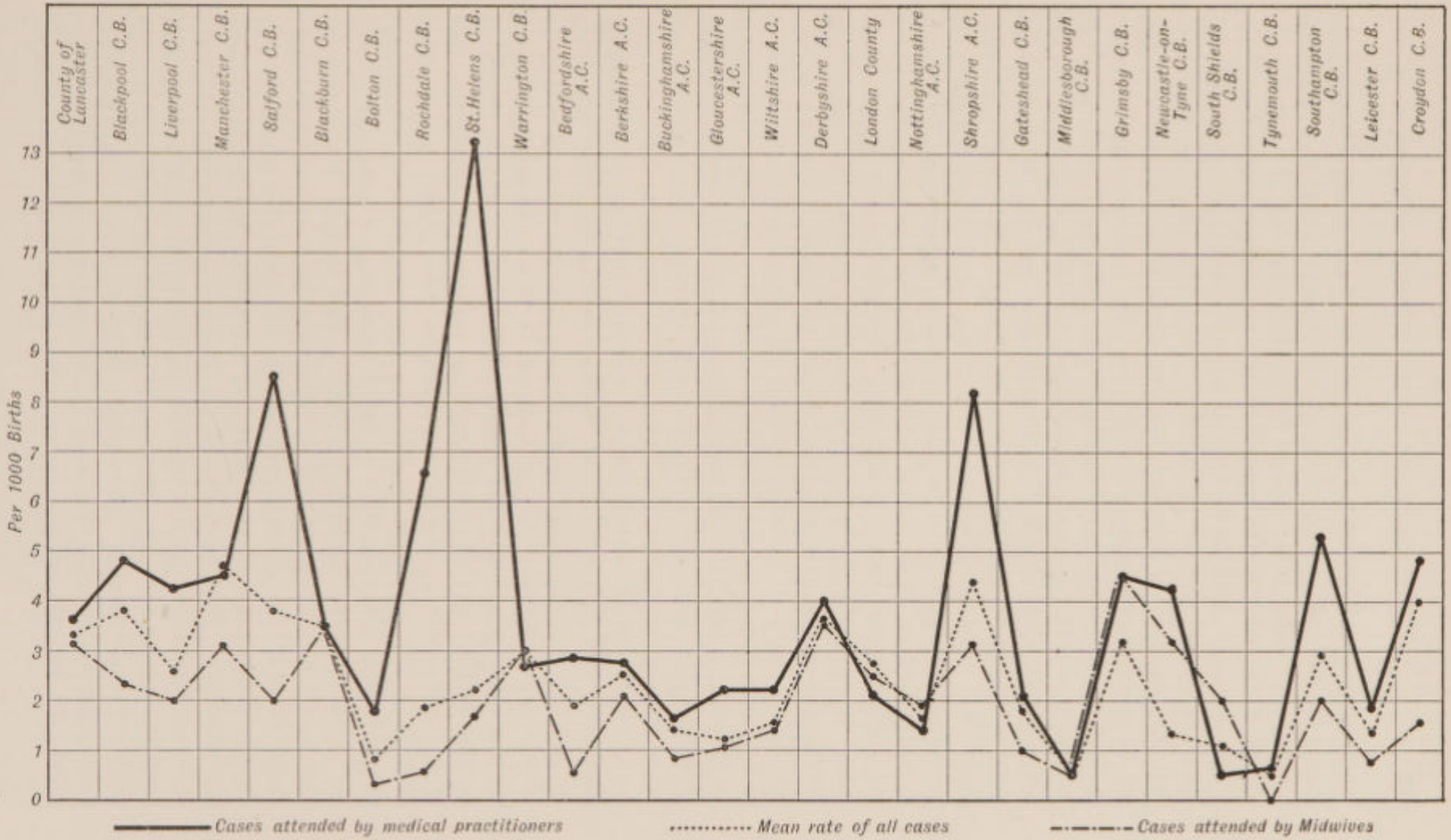
Again, that midwives cannot be held especially responsible for puerperal infection may be more effectively seen from a study of *Chart VII*, where it is shown that by calculating the number of confinements attended by midwives alone, where figures are available, the puerperal rate for midwives is *invariably lower* than the puerperal rate for medical practitioners. Salford, St. Helens, and Shropshire are the most glaring instances. In St. Helens the doctors' rate is 13·2, while the midwives' rate is only 1·7. The figures are for 1909.

Again, in Scotland, midwives are practically non-existent, and still the puerperal rate is as high in Glasgow, etc., as in English boroughs swarming with midwives. Midwives are, however, responsible, in our opinion, for the high rate from puerperal accidents, and this explains the high rate in agricultural counties and rural districts due to accidents of pregnancy and child-bearing. It is only reasonable to suppose that in sparsely-populated districts served by midwives, the lack of prompt and skilled assistance is bound to increase the risks of death from prolonged labour.

On the other hand, in populous districts where skilled medical attendance is at hand, most midwives do not hesitate to send for help, and if puerperal sepsis supervenes in such cases, it is only fair that the medical practitioner should be held equally responsible with the midwife. In mining districts of Lancashire, most of the midwifery is done by midwives (St. Helens, 95 per cent). In those districts also the puerperal rate is high, but as has been shown for example in St. Helens, the midwives' rate is low compared with the doctors' rate. This leads us to suggest an explanation of the fact that accidents, erysipelas, puerperal fever, and midwives are all represented by a high rate in mining districts.

The question arises, therefore, Is the high puerperal rate due to midwives or accidents? I am not convinced that erysipelas causes puerperal fever directly. I am confident that if reliable data were available, it could be proved by statistics that accidents, erysipelas, and puerperal sepsis are closely correlated.

CHART VII.—PUERPERAL FEVER NOTIFICATIONS. CASES ATTENDED BY MEDICAL PRACTITIONERS AND MIDWIVES COMPARED.



It will be admitted by everyone that erysipelas frequently complicates wounds. It is, indeed, doubtful whether erysipelas does ever occur independently of a wound. It is difficult to decide whether the streptococcus found in suppurating wounds becomes transformed into the streptococcus of erysipelas, or whether the streptococcus of erysipelas becomes grafted upon and superadded to the streptococcus of suppuration. In any case it seems reasonable to argue that suppurating wounds furnish a favourable medium for the growth of Fehleisen's coccus, and therefore that both the streptococci and the coccus of erysipelas find suitable conditions favourable to growth in manufacturing and mining districts. It frequently happens that if erysipelas supervenes in an ordinary suppurating wound, the discharges cease. It would seem as if the streptococci of suppuration were destroyed by the invasion of newcomers, or that they had acquired new powers under the influence of their conquerors, and become like unto them, in their clinical manifestations at all events. When the erysipelas undergoes resolution it will frequently be found that the original suppurating wound has quite healed without having discharged pus during the attack of erysipelas.

That wounds abound in manufacturing and mining districts will not be denied. That erysipelas also abounds is proved by our figures, and our figures also prove that the puerperal fever rate is highest in those districts. Since wounds are generally the result of accidents, one is justified in concluding that both puerperal sepsis and erysipelas are closely bound up with accidents. No other hypothesis accounts for all the facts. In our experience, puerperal fever rarely assumes the clinical features of erysipelas. It may be that the coccus of erysipelas would be found in the blood of puerperal fever patients, but only microscopic examination could decide that fact; but the streptococci found in suppurating wounds are always found in the tissues of patients suffering from puerperal septicæmia. There seems, therefore, no necessity to go further afield in the search for the streptococci of puerperal fever than the suppurating wounds seen every day by most busy general practitioners in manufacturing and mining districts. Why prefer to regard erysipelas (a rare disease) as the cause of

puerperal infection, rather than suppurating wounds, which most practitioners have to treat every day?

Therefore we are forced to the conclusion that the correlated high rate of puerperal fever and erysipelas in manufacturing districts is a coincidence dependent upon the high accident rate in such districts, and where accidents are rare, both those diseases are rare or entirely absent. Our thesis, therefore, is proved, viz., **That puerperal infection is largely if not entirely due to contamination, directly by, or indirectly through, suppurating wounds, and therefore that the high puerperal rate in manufacturing and mining districts is explained by the high accident rate in those districts.**

QUESTION 7.—*Who is responsible?*

Are midwives or medical practitioners, or both, responsible for the high puerperal rate in those districts?

Both, to some extent; but the medical practitioner must, I am convinced, accept the larger share of responsibility; and necessarily so, since he is far more likely to carry infective organisms about on his hands or clothes, being exposed as he is to daily contamination from suppurating wounds or infectious diseases. Indeed, it is surprising that the puerperal rate is not higher in mining and manufacturing districts; and that it is so low compared with districts free from accidents reflects great credit on the practitioners in such districts.

Many years ago, in the correspondence columns of the *British Medical Journal*, one practitioner apparently prided himself on how little care he took in washing his hands when called upon to act as accoucheur. At that time I thought there was something to be said for his attitude, which was in reality a recoil from the other extreme of shaving the pubes and using the vaginal douche in every case. Some years of practice in a manufacturing county have changed my view. Nowadays, I never attend a confinement without recalling to mind whether during the previous twenty-four hours I have been in contact with wounds, and take precautions accordingly. Now, midwives, unless they have wounds or sores on their own bodies, are no more liable to carry contagion than any ordinary person. Unlike the doctor, their duties do not expose them to

contamination by wounds. Indeed, when I recall some of the midwives I have met, and how few precautions they take to keep even their hands clean, and when one considers the large number of cases such midwives attend in a year without mishap, notwithstanding how many hours and even days they advise expectant mothers to "have patience" until the uterus empties itself, I am amazed that there are so few cases of puerperal fever traceable to midwives.

I have already given reasons why one would expect all midwives' cases to be reported, whereas it is safe to assume that a small proportion indeed of doctors' cases are reported.

It is amusing what precautions sanitary authorities take to prevent midwives from spreading puerperal fever. I presume the assumption is that medical men should, and as a matter of fact do, take precautions against the spread of the disease, whereas midwives, being ignorant of the risk, do not. Therefore they allow the practitioner to "go in peace," while the midwife is "suspended" for ten days. If suspension is necessary, both doctor and midwife ought to be suspended. If suspension is not necessary, both ought to be allowed to continue practising, but to ensure that *both* would take every precaution to prevent the spread of the disease, either or both should be held responsible for any subsequent case of puerperal fever if negligence could be proved. It should not be possible for anyone to jeopardize the life of a fellow creature through carelessness. Society hedges itself round with safeguards to eliminate, as far as possible, dangers of this or somewhat similar nature. It is not good for any trade or profession that it should not be amenable to law or discipline.

The doctor is too often, I think, a law unto himself. It speaks volumes for his honesty and rectitude that, despite the fact that those virtues often clash with his own selfish interests, he has always willingly lent himself to the furtherance of preventive medicine, which has for its ideal the prevention of disease, an ideal which, realized, means his extinction.

The State cannot expect him to continue to sacrifice himself on this altar, and the day is not far distant when the question of a State Medical Service will become a matter of practical politics. Meantime we may do something to save the "doctor" from himself.

If severe measures were adopted, medical practitioners might be tempted to neglect notification altogether, so that, after all, the safety of parturient women depends upon the honesty of the medical profession, and being human they are afflicted with human frailties, among which one may include the instinct of self-preservation. No general practitioner can with safety dress septic wounds and thereafter attend a confinement, unless he is careful—

(1) To prevent his fingers or clothes becoming contaminated while he is dressing the wounds. To minimize the risk, dressing forceps should be used to remove the dressings, and the patient should be requested, whenever possible, to wash the wound himself.

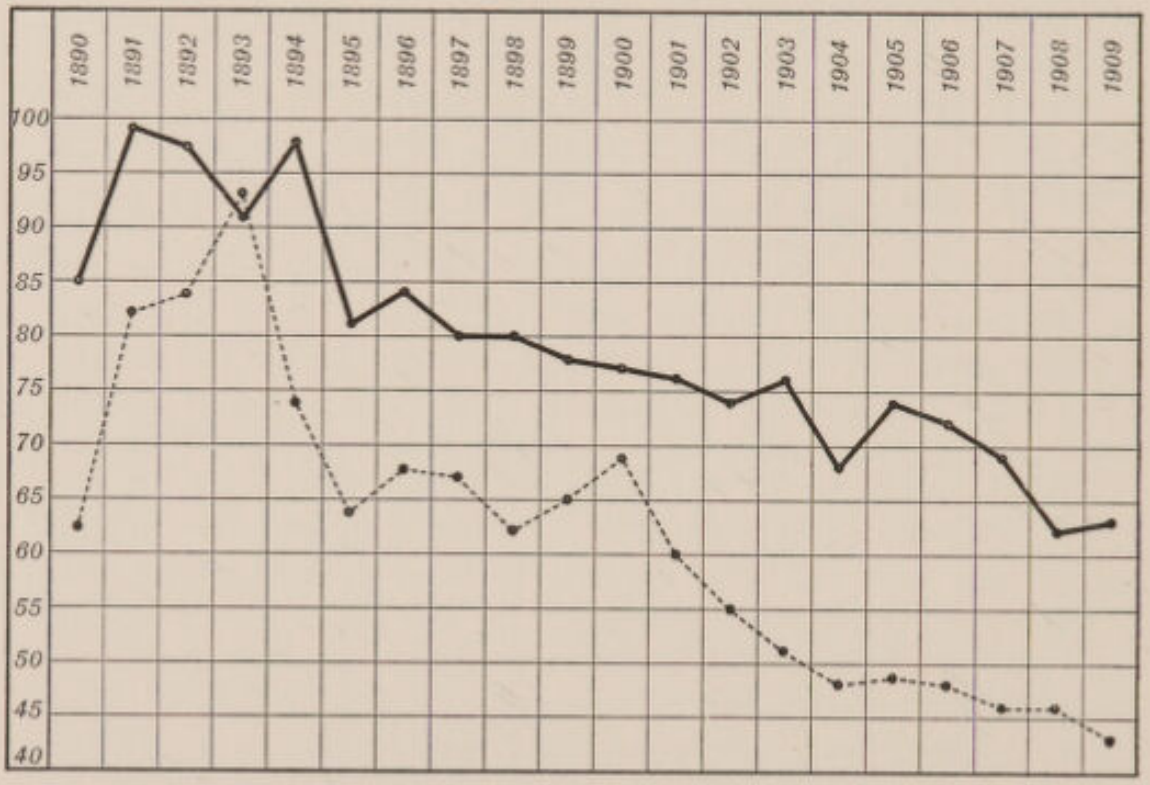
(2) To disinfect his hands as carefully as does a surgeon before doing a major operation, before he makes a vaginal examination. It is possible that midwifery practice by medical men will increase under the National Insurance Act, because, having the means to pay for medical attention, women will often prefer such attention rather than rely on a midwife because her services cost less. The time is opportune, therefore, that some attempt should be made to diminish the mortality from puerperal sepsis.

Dr. C. W. Saleeby, speaking on March 7th, 1912, at the Free Church Congress, said: "We deplore the falling birth-rate, but our first duty is to take care of those who produce the birth-rate, primarily by the provision of skilled cleanliness—that is Listerism—in their creative hour. I suggest that our national memorial to Joseph Lister, who saves more lives every year than Napoleon slew in all his wars, shall take the living form of a Listerian Order of skilled men and women appointed by the nation to save and serve its motherhood, first perhaps, in association with the 'maternity benefit' of the Insurance Act." It is a curious coincidence that this appeal should be uttered while this book is being prepared for the press. I pray it may prove a hopeful augury, and that some measure, legislative or voluntary, may be devised to realize the ideal of an aseptic parturition.

The Central Midwives Board attributes the lower death-rate from puerperal diseases in recent years to the administration of the Midwives Act. Such a claim is reasonable,

and probably could be substantiated, but it is well to remember that the death-rate from every infectious disease, including "puerperal sepsis," has decreased within recent years, and that the death-rate from "accidents of childbirth," a large proportion of which could fairly be claimed as probably due indirectly to sepsis, has not decreased in the same ratio. Therefore the total decrease may really be due to the decrease in infectious diseases in general, for

CHART VIII.—DEATH-RATE TO ONE MILLION LIVING, FROM VARIOUS ACCIDENTS OF CHILDBIRTH.



—— Deaths from abortion, miscarriage, puerperal mania, puerperal convulsions, placenta prævia and flooding.

..... Deaths from other accidents of childbirth and pregnancy—*for details see opposite page.*

which midwives can claim no credit, while the death-rate from septic puerperal diseases, for which they must share responsibility, still remains comparatively high when compared with general infectious diseases.

To make this point clear, I have added *Chart VIII*, showing the combined death-rate from abortion, miscarriage, puerperal mania, puerperal convulsions, placenta prævia, and flooding, for twenty years, and from other accidents of pregnancy and child-birth. A reference to Chart I. shows

the death-rate from diphtheria to have remained fairly constant, while that from scarlet fever, in 1909, is only one-third of what it was in 1890. Erysipelas is practically the same in 1909 as in 1898. The combined infections rate has declined almost one-half, while the rate from abortion, etc., has only declined one-quarter, and the rate from "other accidents" of childbearing one-third.

In order that the reader may appreciate the significance of the terms "puerperal sepsis," etc., we may say that the Registrar General classifies deaths caused or associated with pregnancy into three groups:—

1. Puerperal Septic Diseases, including puerperal septicæmia, puerperal septic intoxication, puerperal pyæmia, phlegmasia alba dolens, and puerperal fever not otherwise defined. (This class we call "Puerperal Sepsis.)

2. Diseases and Accidents of Pregnancy and Childbearing:

Abortion, miscarriage
Placenta prævia, flooding
Ectopic gestation
*Ruptured uterus
*Inversion of uterus
*Retroflexion of uterus
Contracted pelvis
Instrumental delivery
Adherent placenta
Calcareous placenta
Cæsarian section
Craniotomy
Mal-presentation
Hydrocephalic fœtus
Molar pregnancy
Embolism, thrombosis
Puerperal mania
Puerperal convulsions
*Vomiting
*Rupture of spleen
*Administration of chloroform

Pregnancy and childbirth, apart from the foregoing complications:—
(*a*) With secondary causes as follows:—
Diarrhœa
Anæmia
Inflammation of brain
Other diseases of nervous system
Valvular disease
Endocarditis
Dilatation of heart
Heart disease
Cerebral hæmorrhage
Apoplexy
Bronchitis, asthma
Pleurisy
Other diseases of respiratory system
Tonsillitis, quinsy
Gastric catarrh
Other diseases of stomach
Enteritis
Gastro-enteritis
Appendicitis
Obstruction
Other diseases of liver
Nephritis
Chronic Bright's disease
Other diseases of bladder
(*b*) Without stated secondary cause.

3. Other Diseases associated with, but not classed to, Pregnancy and Childbirth. (One may include in this group all the diseases to which human flesh is heir).

In Group 1 there can be no doubt but that septic infection killed the patient.

In Group 2, although septic infection would appear to have had nothing to do with the death of the patient, yet most of my medical readers will agree that only those diseases preceded by an asterisk are likely to be entirely free from the suspicion of being associated with sepsis. Abortion or mal-presentation are not likely to cause death

directly; and it is surprising to find medical men of to-day using such vague terms in death certificates. I made an attempt to divide Group 2 into diseases likely to be complicated by sepsis and those where septic infection was improbable, but found the task an impossible one.

A more scientific—not to say sensible—certification of deaths from puerperal diseases is a necessity if statistics are to be utilized in the future elucidation of those diseases. At present the Registrar General's report is of very little value in this respect.

How then can this septic rate be lowered also? If it were possible to appoint a medical officer to devote his whole time to the treatment of accidents alone, and thus remove the danger of septic contamination from every general practitioner, I am convinced the puerperal death-rate would practically disappear. At present, unfortunately, the busy practitioner is more likely to be contaminated by wounds than his fellows, and the practitioner who is busy with accidents is generally busy also with confinements; this is a natural consequence of his popularity. I have known a practitioner who, without washing his hands, contented himself with vaseline as a "disinfectant" before making a vaginal examination. His excuse was, "I don't believe in the new fashions of to-day." I am prepared to believe that, not handling many wounds, he could often take such risks and avoid puerperal sepsis, but he left in his trail many cases of complete perineal rupture unstitched, and untold suffering from lacerated cervices, and it is perhaps uncharitable to suggest that such cases of puerperal sepsis as he had in his practice passed off as "milk fever," and were not notified.

Factory surgeons might take over the treatment of accidents, and thus free the general practitioner to conduct midwifery with clean hands.

Does the loss of life from puerperal sepsis call for such extreme measures? Dr. Sergeant, M.O.H. Lancashire, writes in his 1909 report:—

"The death-rate from puerperal septicæmia, commonly known as 'puerperal fever,' corresponding to 1·43 per 1,000 of the county births, is unnecessarily high, and might be reduced to one-half by strict enforcement of antisepsis and asepsis. The

majority of the 144 puerperal fever cases with 62 deaths which were recorded during the year, may be looked on as calamitous and avoidable, and, holding this opinion, it has during the past year been my custom to report to the Midwives Act Committee the result of careful enquiries made into every case of this character occurring in the practice of the county midwives."

According to the Registrar General's report for 1909, there were 3379 deaths in England and Wales from diseases of child-birth and puerperal septic diseases, of which number 1429 were due to puerperal septic diseases. Assuming the death-rate at 25 per cent, we have 15,516 as the number of cases in which women are exposed to the risk of death or impairment of health from the natural process of child-bearing. Such figures represent untold suffering and much misery, to a large extent preventable. With a declining birth-rate such facts call for drastic measures. The State alone can take such steps as might remedy this deplorable condition of affairs. Will it respond ? Or must we be content to wait with arms folded until thousands more valuable lives are lost or wrecked, and everybody concerned learns by bitter experience the necessity of conducting every case of midwifery in fear and trembling lest he or she may be the means of converting a natural process into a harbinger of death.

In conclusion, let me say in justice to my fellow practitioners that the careless practitioner is the exception and not the rule. Were it not so, the death-roll from puerperal sepsis would be truly frightful.

He were callous indeed who, knowing the dangers of puerperal sepsis, took no precautions to guard against them, and I am hopeful that, having pointed out the danger spots, others may be interested and test the accuracy of my views. I may be over-sanguine, but I am convinced, if the views herein expressed take root, that we shall reap a rich harvest in the near future.

It is my desire that any movement towards the desired reform should arise in the ranks of the profession, and if I have succeeded in my task, I am hopeful that will be so. In any case, having done what I conceived to be my duty, the rest may safely be left in the keeping of a higher Power who, in His own time, will accomplish " that which is good."

DEDUCTIONS FROM THE LATE COAL STRIKE.

It's an ill wind that blaws naebody guid."

An unique opportunity of further testing the accuracy of our conclusions arose during the recent coal strike. During the period covered by that strike, labour in mines was at a standstill, and mining accidents could therefore be eliminated as a factor in the causation of puerperal fever in mining districts.

The strike lasted throughout the month of March, 1912. With the view to ascertain whether the strike affected the notifications of puerperal fever during the month of March, 1912, I solicited a return of puerperal fever notifications during March for the preceding ten years.

With his unvarying kindness, Dr. Sergeant gave me the desired information, and at the same time suggested that "a more reliable and consistent factor as regards occurrence of puerperal fever is, I think, the number of deaths registered as due to that disease." This suggestion I believed to be founded on fact, and with a view to prove its accuracy I carried out the necessary calculations, the result of which will be given presently. Meantime let us examine the figures for March for a period of years.

These will be best understood by a summary (see table at head of page 91). It would serve no useful purpose to give a detailed list of the districts (Lancashire) for the eleven years. Let it suffice that the districts are classed as before.

The figures there given are highly significant. Everyone will admit that the only districts likely to be affected by the coal strike are those classed as mining districts, i.e., in so far as they affect our deductions. Our whole case is based on the proved relationship between accidents and puerperal fever: the more accidents the more puerperal fever, and *vice versa*.

It follows, therefore, that if work is suspended in mining districts there will be no accidents, and therefore fewer cases of puerperal fever. Puerperal fever need not be absent altogether, since accidents are only responsible

ADMINISTRATIVE COUNTY OF LANCASTER.

CASES OF PUERPERAL FEVER NOTIFIED DURING THE MONTH OF MARCH.

	1902–1911		1912
	Total	Average	Total
Mining Districts	40	4	2
Manufacturing Districts	61	6·1	6
Mixed Districts	25	2·5	3
Residential Districts	5	0·5	2
Rural Districts	6	0·6	1
	137	13·7	14

for some cases—the larger number perhaps—but not all. The figures bear out this view.

Notice (1) that for ten years the average number of cases in March for mining districts is four, and that for 1912 it is only half that number; (2) that mining districts are the only class that show a reduction; the others are the same or show an increase, and this latter fact is convincing to me.

The effects of the strike on the puerperal rate need not necessarily coincide in point of time, for a wound received before the strike may contaminate a lying-in woman during the strike; on the other hand, the absence of wounds during a strike should favourably affect the puerperal rate for some time afterwards; and from the returns for April, 1912, this contention is actually borne out, *for the notifications in mining districts for April were received in the latter half of the month.*

The following are the figures for April, 1912:—

	Cases notified in April, 1902–1911		Cases notified in April, 1912
	Total	Average	
Mining Districts	42	4·2	3
Manufacturing Districts	44	4·4	4
Mixed Districts	21	2·1	1
Residential Districts	9	0·9	1
Rural Districts	13	1·3	3
	129	12·9	12

I do not think one can overstrain the chain of circumstantial evidence furnished by the foregoing figures in favour of our theory, for however they are manipulated they always bear out the same construction, viz., that mining districts are the only ones that show a difference in the months under consideration, and that difference in favour of our theory.

There is no need to dwell upon them. To those familiar with our theory they speak for themselves. Circumstantial evidence is admitted by some of our leading jurists to be the most reliable evidence; and since it is impossible to connect each or every accidental wound with any or every case of puerperal sepsis, we must depend on the circumstances bearing on both and build up our case. Having marshalled the facts, I leave the verdict to my readers.

Now let us test our conclusions by the suggestion of Dr. Sergeant just referred to (page 90). This suggestion is really a corollary of the proposition stated at page 57, viz., that many medical practitioners apparently think it necessary to notify only the severe forms of puerperal fever, or those which seem likely to terminate fatally. I have given reasons why one need not be surprised at their attitude.

Of course, the inference is that the occurrence of puerperal fever is concealed as long as possible, sometimes until the registration of the death of the patient, and that the probability or certainty of a fatal issue is the determining factor in the notification. This procrastination on the part of the practitioner, deplorable as it is, would become more so if the notification were likely to benefit the patient or the public. It is questionable if it does, except that it draws the attention of the public to the nature of the case, and, if a midwife is involved, her suspension diminishes the risk of the disease being carried to her other patients. Notification should not be necessary to stimulate the practitioner to increased caution, although doubtless, even were he inclined to be careless, the probability of the authorities being able to trace a later case to the former one would have a beneficial effect.

I presume a natural reluctance on our part to notify cases of puerperal fever will be admitted by most of my fellow practitioners. If only serious cases are notified, the percentage mortality is bound to be very high.

Again, one may assume the natural reluctance will not be so intense if the case to be notified cannot incriminate the person notifying; in other words, cases for which midwives are undoubtedly responsible are more likely to be notified than those where blame might fall upon the practitioner. If this assumption is justified, one would expect the percentage mortality in districts where midwives do most of the work to be lower than in districts where doctors predominate. This is borne out by the figures (see Table below), for the percentage mortality in mining urban districts is 39 per cent, whereas in residential districts it is 50 per cent.

I am inclined to believe that this difference would be more marked even than it appears to be, were it not that midwives do not realize the gravity of the symptoms until the patient is practically in a hopeless condition. If every midwife's case were seen by a doctor at once, the percentage mortality would be reduced. As it is, the mortality is higher than it ought to be, because of the midwife's ignorance or, may be, negligence. Such considerations as these complicate our figures, but their general tendency bears out our contention.

LANCASHIRE DISTRICTS.

	Rural districts	Residential districts	Mixed districts	Mining Rural	Manufacturing districts	Mining Urban	Mining Average Urban and Rural
Notifications of Puerperal fever per 1000 births	2·10	2·19	2·50	3·02	3·2	4·56	4·35
Puerperal fever death-rate per 1000 births ..	1·29	1·10	1·32	2·39	1·56	1·78	1·87
Mortality per cent	61	50	53	79	48	39	43

It will be observed that the mortality rate is highest in rural districts: mining rural 79 per cent, purely rural 61 per cent.

This high rural rate may be explained as follows: (1) Being inaccessible the patients cannot receive the same care and attention as patients in urban districts. (2) If midwives' cases, they are exposed to special risks:

(*a*) delay in obtaining assistance if the case is abnormal, (*b*) the risk of sepsis inseparable from the treatment of abnormal cases either at the hands of midwives or doctors, (*c*) the impossibility of obtaining the frequent douching, etc., necessary for proper treatment.

In all mining districts the risks of sepsis are increased whether the case is normal or abnormal, *quod demonstratum est.* Therefore the risks are likely to be increased in a corresponding ratio in rural mining districts as compared with ordinary rural districts. Now compare the mortality in residential and mining urban districts. In the former, where undoubtedly the midwifery practice is largely in the hands of doctors, the percentage mortality is 50, whereas in mining urban districts where midwives abound the rate is 39.

Again, figures prove that in manufacturing districts a larger percentage of midwifery cases are attended by midwives than in mixed districts. Still the percentage mortality is higher in mixed districts (53) than in manufacturing districts (48).

It may be asked why the mortality in mixed districts is higher than in residential districts, if our premises are correct, since the chances are that midwives predominate in the former. I would suggest the explanation that on the whole, puerperal fever is likely to be more virulent in mixed districts than in residential districts because the contamination in the latter districts is not so likely to arise from wounds due to accidents, and accidental wounds are responsible for the most virulent forms of pus, and therefore the percentage mortality is lower in residential districts.

It is certainly remarkable that the mortality should be highest in districts where the puerperal notifications-rate is low. If we exclude rural (mining and ordinary) and mixed districts where disturbing factors interfere with the figures, we have the notification and death-rate in inverse proportion to each other.

	Rural	Residential	Manufacturing	Mining Urban
Notification-rate	2·10	2·19	3·2	4·56
Mortality per cent ..	61	50	48	39

Notwithstanding the test, carried out according to Dr. Sergeant's suggestion and applied to our figures, the results remain practically unshaken, whether in considering the incidence in the various districts one relies on the puerperal notification-rate or the death-rate. If we omit rural districts we have :—

	Residential	Mixed	Manufacturing	Mining Urban
Notification-rate	2·19	2·5	3·2	4·56
Death-rate	1·10	1·32	1·56	1·78

CONCLUSIONS.

We are now in a position to review briefly the whole subject of puerperal fever in its pathological, bacteriological, statistical, and clinical aspects in the light of our statistics. We have seen that puerperal fever occurs everywhere, but that its incidence varies in selected districts. That no district is exempt is due to the fact that no district is entirely free from the bacteria responsible for its causation.

The sources of bacteria are legion, and one cannot imagine any district likely to be free from diseases due to bacteria.

Some diseases are common to all districts, but certain diseases seem to flourish better in certain districts, and our task has been to ascertain the determining factor in the causation of puerperal fever. We took it for granted (1) that 99 per cent of puerperal fever cases are due to direct infection through those conducting the labour, (2) that suppurating wounds are the likeliest source of such infection. Suppurating wounds are to be found everywhere; so are cases of puerperal fever.

Suppurating wounds due to systemic diseases are to be found everywhere, but suppurating wounds as a result of injuries must necessarily be more common in districts where injuries are an every-day occurrence than in those where they only occur at rare intervals. If it were possible to ascertain the numbers of injuries in all districts, we contend that it would be possible to show a numerical relationship between injuries and puerperal fever, i.e., the more injuries there are, the larger number of puerperal fever cases. Most injuries are caused by accidents, and it follows that in districts where accidents abound injuries also abound.

As it is impossible to obtain a record of injuries, we are compelled to rely on accidents as an index of injuries, and this, with all the data available, we have done. Injuries almost invariably produce wounds which rarely heal by first intention, and therefore produce inflammatory or suppurative conditions. Now let us examine the bacteria

found in inflammatory or suppurative conditions, with the diseases to which each variety gives rise.

A.—Cocci.

Micrococcus pyogenes tenuis.

,, *tetragenus* (suppurations in mouth, neck, and respiratory tract).

Diplococcus intracellularis meningitidis (cerebrospinal meningitis).

* *Pneumococcus* (Fränkel's) (croupous pneumonia).

Staphylococcus cereus albus.

,, ,, *flavus.*

,, *pyogenes albus.*

,, ,, ,, *epidermidis.*

,, ,, *citreus.*

,, ,, **aureus.*

The staphylococci are generally responsible for localized abscesses, pustules, carbuncles, boils, and for acute suppurative periostitis, mucous catarrh, ulcerative endocarditis, and various pyæmic conditions. They may also be present in septicæmia.

* *Streptococcus pyogenes longus* (erysipelas).

,, ,, *brevis.*

* ,, ,, **conglomeratus*

* ,, ,, ,, **angiosus* } (scarlet fever).

The streptococci are found especially in spreading inflammation, (with or without suppuration), diffuse phlegmonous or erysipelatous conditions, suppurations in serous membranes or joints; also in acute suppurative periostitis and ulcerative endocarditis, lymphangitis, and secondary abscesses in lymphatic glands; many cases of non-diphtheritic inflammation of the throat, e.g., in scarlatina; pyæmia, septicæmia, and some forms of enteritis.

B.—Bacilli.

Bacillus pyocyaneus.

,, *aerogenes encapsulatus.*

,, *lactis aerogenes.*

,, *pyogenes fœtidus* (Passet).

Pneumobacillus (Friedländer). (Found in some cases of pneumonia).

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* Those marked with an asterisk have been found in cases of puerperal fever.

* *Bacillus coli communis* is found in many inflammatory and suppurative conditions involving the alimentary tract: peritonitis, appendicitis, etc.; also in inflammations of the urinary passages: cystitis, etc. Its virulence is increased by growth in the tissues.

* *Bacillus diphtheriæ* (Klebs-Löffler's bacillus).

C.—Bacteria of Typhoid Fever, etc.

All authorities are agreed that the streptococci are found in every case of puerperal fever, the other bacteria only sometimes; and it would appear that the others may be present along with the streptococci, but never alone. One may justly infer, therefore, that the streptococci are the ringleaders, so to speak, in the attack upon the organism. Now clinical experience teaches us that a few streptococci, by gaining access to a small superficial wound of the skin, may set up a train of symptoms which varies according to circumstances: (1) They may remain localized and produce abscess; (2) They may invade the lymphatic vessels and glands; (3) They may cause a cellulitis (simple or suppurative); (4) Erysipelas—or what appears to be erysipelas—may supervene, but it would seem impossible to distinguish clinically between erysipelas and simple cellulitis except by the aid of serum therapy; (5) Lastly, and rarely, septicæmia or pyæmia may be a sequel. Bacteriological research furnishes an explanation of the above changes by demonstrating that the *Streptococci pyogenes* vary in virulence according to the cultures. If different culture media cause a variation in the virulence, one can easily understand how the virulence may be affected by the blood of different individuals or by the blood of the same individual at different times.

Now consider the various lesions found in connection with puerperal fever—Spiegelberg's classification (after Lusk).

1. *Inflammation of the genital mucous membrane.—Endocolpitis and endometritis.*

(*a*) Superficial.

(*b*) Ulcerative (diphtheritic).

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* Those marked with an asterisk have been found in cases of puerperal fever.

2. *Inflammation of the uterine parenchyma and of the subserous and pelvic cellular tissue.*

(*a*) Exudation circumscribed.

(*b*) Phlegmonous, diffused: with lymphangitis and pyæmia (lymphatic form of peritonitis).

3. *Inflammation of the peritoneum covering the uterus and its appendages. Pelvic peritonitis and diffused peritonitis.*

4. *Phlebitis uterina and para-uterina*, with formation of thrombi, embolism, and pyæmia.

5. *Pure septicæmia* (putrid absorption).

It would appear therefore that the phenomena observed in puerperal fever are similar to those indicated as familiar to myself and presumably to every general practitioner called upon to dress wounds due to accidents, if one remembers the difference as between skin and mucous membrane.

Moreover, the onset and course of the different phases in wounds of the skin can be modified by appropriate treatment, i.e., an infection may remain localized if the initial focus be incised and treated antiseptically. Of course it may be argued that the infection might have remained localized independent of treatment, but experience does not bear out such a view. Again, the risks of a mild infection becoming grave are increased a thousandfold in cases of puerperal fever, because not only have we the wound area acting as a culture medium, but also the blood clots and blood serum.

A study of the organisms found in inflammatory and suppurative conditions, and of the classifications of lesions possible in puerperal infection, shows that all the lesions may be due to one or other of those organisms, and that therefore every form of puerperal fever can be accounted for by infection by a suppurating wound, and that therefore the presence of the organisms associated with erysipelas, scarlet fever, and diphtheria in any given case of puerperal fever may be accounted for by infection through a septic wound, and need not depend on an infection by those diseases direct.

This fact may explain why those diseases have long been recognized as a probable cause of puerperal fever. Since the presence of those organisms can be explained in this way, there seems no reason to go further afield in search of them.

To admit this explanation of their presence does not exclude direct infection, although, as already pointed out, clinical experience and our statistics tend to make one sceptical of the theory that postulates the necessity of direct infection of parturient women by erysipelas, scarlet fever, and diphtheria respectively.

It is said that "erysipelas passes from patient to patient as erysipelas," and that "purulent conditions are not liable to be followed by erysipelas." That erysipelas passes from patient to patient as erysipelas may be granted, but that purulent wounds are complicated by erysipelas is a fact I can personally vouch for. As regards diphtheria I suggest that the so-called cases of diphtheria in parturient women can be explained by the presence of a false membrane due to non-diphtheritic streptococci.

I have had experience of such cases both in septic wounds of the skin and in puerperal wounds where infection by diphtheria was impossible as an explanation. No doubt scarlet fever may attack a woman during the lying-in period, just as it may attack anyone else. I have never seen such a case, and should require to be satisfied that every probable source of infection had been eliminated before admitting the accuracy of the diagnosis. On the other hand, I have heard of cases being ascribed to scarlet fever when I knew of circumstances pointing to a much likelier explanation.

Since writing the foregoing in reference to erysipelas and scarlet fever, I have had an opportunity of perusing two papers bearing on the subject. The first was read by Matthews Duncan in March, 1876, and the second by Lusk in the same year.

Duncan* contributed his article to disprove the alleged occurrence of puerperal fever and erysipelas in epidemic form. He adduced evidence to show that neither puerperal fever nor erysipelas assumed the dimensions of an epidemic during seventeen years in London. His statistics also convinced him that a rise in the puerperal death-rate was not accompanied by a rise in the death-rate from erysipelas.

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* "On the alleged occasional epidemic prevalence of puerperal pyæmia, or puerperal fever and erysipelas" (*Edinburgh Medical Journal*, March, 1876, p. 774).

At the same time he demonstrated that "the seasonal relationship is very close, but that is another matter." He concludes that "this relation establishes the probability of some alliance between those two diseases." Our results indicate what that alliance is. In the course of his enquiry he also shows that "there is an utter absence of any relation" to scarlet fever by comparing the two diseases during the scarlatina epidemics of 1869 and 1870. He adds that during that time "the combined accoucheurs of London did not increase the amount of puerperal fever among their patients by attending scarlatina and child-bed simultaneously," and that "there is no relation whatever between the varying prevalence of them," nor do they agree in the seasonal relationship. He pooh-poohs the idea of the direct infection of puerperal women by scarlet fever.

Lusk published his results* on practically the same subject in the same year. His object was to ascertain whether there was any relation between the frequency of deaths from scarlatina, diphtheria, and erysipelas, and those from metria. He was unable to show any such relationship. He also suggested that locality influenced the mortality from puerperal fever. He found that certain wards in New York City had a low death-rate, and instanced Wards 9, 11, and 15. He attributed the low rate to their all being in the same zone, but seemed at a loss to understand Nos. 9 and 11, "which are otherwise not specially favoured, both containing a large and crowded tenement-house population. It is hard to understand their relative immunity from deaths due to puerperal diseases unless upon the assumption that local causes, probably superior drainage, rendered them exceptionally free."

Unfortunately a high death-rate in Ward 17, between Wards 11 and 15, upsets his theory, and was explained by dense population. He remarked also upon the relative immunity of those in well-to-do circumstances, but his conclusions are not very convincing.

I regret I am unable to apply my test to his figures, being ignorant of the industrial conditions prevailing in the wards of New York City.

The only other organism whose presence in puerperal

* See *Trans. of the Internat. Med. Congress*, Philadelphia, 1876.

cases requires explanation is the *Bacillus coli communis*. If the reader will refer to the list of bacteria found in suppurative wounds he will find this bacillus frequents septic wounds of the alimentary tract, but I have not seen it suggested by anyone that it occurs alone without the streptococci and staphylococci.

Therefore one would not be justified in concluding that its presence in puerperal cases was the causative factor, but rather that its presence was accidental, and that it was carried along with the streptococci and flourished side by side with them. I know of at least one case of puerperal fever where the infection could be traced to a case of septic appendicitis, and doubtless in such a case the *Bacilli coli communis* would have been found in large numbers, although the puerperal attack was really due to streptococci.

I hope I have convinced the reader : (1) That the clinical features of every form of puerperal fever can be accounted for if we admit contamination by septic wounds ; (2) That all the organisms associated with puerperal fever are also present in septic wounds ; (3) That septic wounds are more frequent in districts where accidents are frequent ; (4) That the incidence of puerperal fever is highest in these districts and lowest where accidents are rare ; (5) That septic wounds are the most likely source of contamination ; (6) That medical practitioners are the most likely members of society to become contaminated by septic wounds.

If the foregoing premises be granted, we may conclude that a large percentage of puerperal fever is due to septic infection by suppurating wounds. Suppurating wounds therefore may be regarded as nature's culture media, and act as reservoirs of micrococci of every variety.

If one could prevent all accidents, and therefore all wounds due to accidents, micrococci, being deprived of nutrition, would soon cease to exist and to pollute the air we breathe, or invade our tissues through abraded surfaces.

Until the advent of such an idealistic aseptic era, micrococci will continue to menace humanity at its source through the vulnerable parturient canal of potential motherhood.

PART IV.

APPENDIX.

THE information given herein, although not essential, is nevertheless valuable to anyone who would desire to test the data upon which the tables, etc., are based. Culled as it is from many sources, it were a pity that it should be lost. The list of Lancashire Poor Law Unions will serve to elucidate the intricacies involved in the comparison of registration districts and administrative areas. Without such a list any attempt to check the figures would be in vain.

The list of practitioners in the various counties may serve some useful purpose.

FACTORY ACCIDENTS.

Reported to Certifying Surgeons and Inspectors for 10 *years* 1898-1907.

Factories and Workshops	Other Premises *	Total
279,428	21,263	300,691

ACCIDENT RATES.

All Accidents per 1000 *employed in Factories.*

	1901		1904		1901-04	
	Males	Females	Males	Females	Males	Females
Textile	11·6	4·1	11·0	3·8	11·3	3·9
Non-Textile	25·1	4·5	28·7	4·3	26·9	4·4

Rates per 10,000 *employed in Factories.*

	1901		1904		1901-04	
	Males	Females	Males	Females	Males	Females
Adults	227	38	257	34	242	36
Young persons under and over 16 years	284	58	308	61	296	59·5
Children, half-time ...	92	31	101	30	96·5	30·5

* Docks, buildings, and other premises added by the Act of 1895. Ninety-three per cent of total accidents occur in factories and workshops, seven per cent in other premises. Of factory and workshop accidents, 0·2 per cent occur in workshops.

ACCIDENTS IN MINES.*

Rates per 1000 employed, injured and disabled for more than 7 days.

	Coal Mines	Iron Mines	Other Mines†	All Mines	Quarries
1908	143	115	66	141	56
1909	151	121	69	148	58
1910	151	—	—	—	—
Mean Rate	147	118	67	144	57

* Mines worked under the Coal Mines Regulation Acts include mines where the following minerals are raised: Barium (compounds), clay and shale, other than fireclay and oil shale, coal, fireclay, igneous rocks, iron pyrites, ironstone, limestone, oil shale, sandstone (including ganister).

Mines worked under the Metalliferous Mines Regulation Act includes mines where the following minerals are raised: Barium (compounds), chalk, chert, flint, jasper, etc., clay and shale, copper ore and copper precipitate, gypsum, iron ore, lead ore, limestone, ochre, umber, etc., rock salt, sandstone, slate, tin ore (dressed), zinc ore, and other minerals.

The following minerals are raised in quarries worked under the Quarries Act: Barium (compounds), chalk, chert, flint, jasper, etc., clay coal, diatomite, fluor spar, gravel and sand, gypsum, igneous rocks, ironstone, lead, ore, limestone, mica, ochre, umber, etc., oil shales, sandstone, slate, tin ore (dressed).

† "Other mines" are those worked for metallic ores other than iron, and for minerals designated non-metallic, e.g., barytes, gypsum, limestone, sandstone, and slate. Oil shale mining in Edinburgh and Linlithgow is largely responsible for those returned as employed in "other mines." Slate mining on a large scale is confined to North Wales.

"By far the larger proportion of accidents in mines do cause wounds." Letter from H.M. Chief Inspector of Mines, October 20th, 1911.

POOR LAW UNIONS AND REGISTRATION DISTRICTS IN THE COUNTY OF LANCASTER.

Registration districts (Reg. Dist.) are generally co-extensive with the corresponding Poor Law Unions.

The Union Contents are copied from "A Dictionary of Civil Parishes, Townships, etc., in England and Wales," Knight & Co., and other sources.

The letter d denotes a resident medical practitioner, and the number is indicated by a figure prefixed to the letter. c.m. indicates a mine worked under the Coal Mines Acts. m.m. indicates a mine worked under the Metalliferous Mines Acts. m. indicates persons employed in mines (above or underground). The figures prefixed indicate the number of such mines or persons employed.

Abbreviations: R.D. = Rural District; U.D. = Urban District; C.B. = County Borough; M.B. = Municipal Borough; tnp. = township; loc. = locality; par. = parish; c.p. = civil parish.

The administrative areas given under each Union are not necessarily co-extensive therewith, but nearly so.

It has been considered advisable to incorporate all the particulars of mines, and medical practitioners necessary to supplement the particulars already given in the tables, under the Poor Law Unions. This will enable the reader to understand figures given in the tables which would otherwise be obscure.

For a complete list of Registration Districts and Sub-districts, see the Registrar General's annual reports.

Liverpool Parish Union. Reg. Dist. 453.—Liverpool.
Contents.—Liverpool C.B., which includes Liverpool par., Broadgreen 1d., and Grassendale 1d. (Liverpool C.B.).
Administrative Areas.—Bootle C.B., Liverpool C.B. (part of).

Toxteth Park Township Union. Reg. Dist. 454.—Toxteth Park.
Contents.—Liverpool C.B. and Toxteth Park tnp.
Administrative Area.—Liverpool C.B. (part of).

West Derby Union. Reg. Dist. 455.—West Derby.
Contents.—The townships of Aintree, Allerton, Childwall, Fazakerley, Garston, Great Crosby, Lunt, Netherton, Orrell and Ford, Seaforth, Sefton, Thorton, Waterloo, West Derby (rural), and the parish of Croxteth Park.
Administrative Areas.—Allerton U.D., Childwall U.D., Great Crosby U.D., Litherland U.D., Little Crosby U.D., Waterloo and Seaforth U.D., Sefton R.D.

Prescot Union. Reg. Dist. 456.—Prescot.
Contents.—St. Helens C.B. 21 c.m. 8728 m. The townships of St. Helens, Bold, Cronton, Ditton, Eccleston Hall 1 c.m. 249 m., Halewood, Huyton-with-Roby, Knowsley, Little Woolton, Much Woolton, Prescot Rainford 2 c.m. 663 m., Rainhill 8 d.,* Speke, Tarbock, Whiston, Widnes with Appleton, Windle, Farnworth 1 d.†
Administrative Areas.—St. Helens C.B., Widnes M.B., Huyton with Roby U.D., Little Woolton U.D., Much Woolton U.D., Prescot U.D., Whiston R.D.

* Included in Whiston R.D. † Included in Widnes M.B.

Ormskirk Union. Reg. Dist. 457.—Ormskirk.
Contents.—The townships of Ainsdale 3 d.,* Bickerstaffe 1 c.m., 637 m., Birkdale, Bispham, Burscough, Down Holland, Formby, Halsall, Lathom, Lydiate, Maghull 1 d.,* Melling, North Meols, Ormskirk, Scarisbrick, Simonswood, Skelmersdale 7 c.m. 1516 m., Parishes of Altcar, Aughton 1 d.,* Hesketh with Beckensall, Rufford 1 d.,* Tarleton.
Administrative Areas.—Urban Districts of Birkdale, Formby, Lathom and Burscough, Ormskirk, Skelmersdale, Southport C.B. and West Lancashire R.D.

* Included in West Lancashire R.D.

Wigan Union. Reg. Dist. 458.—Wigan.

Contents.—The townships of Abram, Ashton-in-Makerfield 16 c.m. 7166 m., Aspull 5 c.m. 1151 m., Billinge 3 c.m. 367 m., Chapel End, Billinge Higher End, Blackrod 2 c.m. 840 m., Dalton, Haigh 4 c.m. 1042 m., Hindley 1 c.m., Ince, Orrell, Parbold, 1 d.,* Pemberton, Shevington, Standish with Langtree 9 c.m. and 2098 m. at Standish, Upholland 4 c.m. 719 m., Winstanley, Worthington, Wrightington and Wigan and Wigan C.B. In or about Abram, Ince, Hindley, and Orrell 50 c.m. and 18562 m.

Administrative Areas.—Urban Districts of Abram, Ashton-in-Makerfield, Aspull, Billinge, Blackrod, Hindley, Ince-in-Makerfield, Orrell, Standish-with-Langtree, Upholland, Wigan C.B. and Wigan R.D.

* Included in Wigan R.D

Warrington Union. R.D. 459.—Warrington.

Contents.—The townships of Burton Wood, Cuerdley, Great Sankey, Haydock 6 c.m. 2344 m., Houghton, Middleton and Arbury, Latchford, Penketh 2d.,* Poulton with Fearnhead, Rixton with Glazebrook, Warrington, Winwick with Hulme, 3 d.,* Woolston with Martinscroft, and Parishes of Newton-in-Makerfield, Southworth and Croft 1 d.,* and localities of Earlstown 7 d.† 5 c.m. 2827 m., Newton-le-Willows 3 d.,† Padgate 1 d.,*

Administrative Areas.—Urban Districts of Haydock, Newton-in-Makerfield, Warrington C.B. and Warrington R.D.

* Included in Warrington R.D. † Included in Newton-in-Makerfield.

Leigh Union. R.D. 460.—Leigh.

Contents.—Townships of Astley, 3 c.m. 1553 m., Atherton 4 c.m. 2392 m., Culcheth 1 d.,* Kenyon Leigh 13 c.m. 708 m., Tyldesley 9 c.m. 2870 m., with Shakerley 2 c.m. 552 m. Parishes of Golborne 4 c.m. 939 m., Lowton. Localities: Glazebury, Bickershaw 3 c.m. 1195 m., Bedford 1 d.,† Westleigh 3138 m.

Administrative Areas.—Urban Districts of Atherton, Golborne, Leigh M.B., Tyldesley with Shakerley, and Leigh R.D.

* Included in Leigh R.D. † Included in Leigh M.B.

Bolton Union. R.D. 461.—Bolton.

Contents.—Bolton C.B. and par. Townships of Astley Bridge, Belmont, Bradshaw, Breightmet, Darcy Lever 1 c.m. 416 m., Deane 1 c.m. 53 m., Edgworth, Entwistle 3 m.m. 32 m., Farnworth, Great Lever 3 c.m. 594 m., Harwood, Heaton, Horwich, 2 c.m. 74 m., Kersley 4 c.m. 689 m., Little Hulton 3 c.m, 892 m., Little Lever 3 c.m. 465 m., Longworth, Lostock, Middle Hulton, 2 c.m. 566 m., Over Hulton 2 c.m. 167 m., Quarlton, Smithills, Tonge 1 c.m. 272 m., Turton, West Houghton 13 c.m. 4402 m. Localities: Doffcocker 1 c.m. 12 m.,* Rumworth 1 c.m. 59 m.*

Administrative Areas.—Urban Districts: Farnworth, Horwich, Kersley, Little Hulton, Little Lever, Turton, West Houghton, Bolton C.B.

* Included in Bolton C.B.

Bury Union. R.D. 462.—Bury.

Contents.—Bury C.B. and tnp., Townships of Ainsworth, Birtle-cum-Bamford, Heywood, Outwood, Radcliffe 2 c.m. 104 m., Ramsbottom, Tottington, Lower End, Unsworth, Walmersley 1 c.m. 17 m., Shuttleworth, Whitefield. Localities: Besses o' th' Barn, Edenfield 1 d.,* Heap Bridge, Holcombe 1 d.,* Woolfold, Pilkington 2 c.m. 1315 m.†

Administrative Areas.—Bury C.B., Heywood M.B., Radcliffe U.D., Ramsbottom U.D., Tottington U.D., Whitefield U.D., and Bury R.D.

* Included in Ramsbottom U.D. † Included in Radcliffe U.D.

Barton-upon-Irwell Union. R.D. 463.—Barton-upon-Irwell.

Contents.—Townships of Barton Moss, Clifton 5 c.m. 2864 m., Davyhulme, Eccles, Flixton, 2 d.,* Irlam, Stretford, Swinton, Urmston 5 d.,† Worsley 6 c.m. 2673 m. Localities: Boothstown, Cadishead 2 d., Walkden 1 c.m. 330 m.

Administrative Areas.—Urban Districts of Eccles M.B., Irlam, Stretford, Swinton and Pendlebury (part only), Urmston, Worsley, and Barton-upon-Irwell R.D.

* Included in Barton-upon-Irwell R.D. † Included in Worsley U.D.

Chorlton Union. R.D. 464.—Chorlton.

Contents.—Manchester C.B. and South Manchester tnp. Townships of Burnage, Chorlton-cum-Hardy 1 d.,* Didsbury 24 d.,* Gorton, Levenshulme, Moss-side, Withington 16* d., and locality of Crawshawbooth, 1 d.*

Administrative Areas.—Manchester C.B., Gorton U.D., and Levenshulme.

* Included in Manchester C.B.

Salford Union. R.D. 465.—Salford.

Contents.—Salford C.B., including the townships of Broughton, Pendleton 1 c.m. 746 m., and Salford, Pendlebury 3 c.m. 1989 m.

Administrative Areas.—Salford C.B. and part of Swinton and Pendlebury U.D.

Manchester Township Union. R.D. 466.—Manchester.

Contents.—Manchester C.B., including Manchester tnp.

Administrative Area.—Manchester C.B.

Prestwich Union. R.D. 467.—Prestwich.

Contents.—In Manchester C.B., North Manchester tnp., in the County of Lancaster the townships of Failsworth and Prestwich.

Administrative Areas.—Manchester C.B., Failsworth U.D., Prestwich U.D.

Ashton-under-Lyne Union. R.D. 468.—Ashton-under-Lyne.

Contents.—In the County of Chester: the townships of Dukinfield, Godley Hattersley, Hollingworth Matley, Mottram, Newton, Stalybridge, and Tintwistle. In the County of Lancaster.: the townships of Alt, Ashton-under-Lyne, Audenshaw 1 c.m. 2056 m., Bardsley

1 c.m. 266 m., Crossbank, Denton 1 c.m. 429 m., Droylsden, Hartshead, Hurst Lees, Little Moss, Mossley, Waterloo and Woodhouse, Godley c.p. and Micklehurst loc.

Administrative Areas (in Lancs.).—Urban Districts of Ashton-under-Lyne M.B., Audenshaw, Denton, Droylsden, Hurst, Lees, Mossley M.B., and Limehurst R.D.

Oldham Union. Reg. Dist. 469.—Oldham.

Contents.—Oldham C.B., including Oldham tnp. The townships of Chadderton 1 c.m. 178 m. Crompton 1 c.m. 247 m., Middleton, Royton, and the localities of Middleton Junction, Rhodes, Hollinwood 4 d.* 5 c.m. 639, Moorside 1 c.m. 3 m. Shaw 7 d†.

Administrative Areas.—Urban Districts: Oldham C.B., Chadderton, Middleton M.B., Royton, Crompton.

* Included in Oldham C.B. † Included in Crompton U.D.

Rochdale Union. Reg. Dist. 470.—Rochdale.

Contents.—Rochdale C.B., 1 c.m. 9 m., which includes Rochdale tnp. The townships of Castleton 3d.* Littleborough 4 c.m. 47 m. Milnrow 1 c.m. 250 m., Norden 3 c.m. (including 1 c.m. at Greenbooth 39 m. 1 c.m. at Rowley Moor 28 m., 1 c.m. at Wolstenholme 3 m.), Wardle 3 c.m. 46 m. Whitworth 1 c.m. 12 m. Localities: Healey 1 d.,* Small Bridge 2 d.,* Haugh Hey 1 c.m. 6 m., Shaworth 1 c.m. 16 m., Facit 1 m.m. 52 m., Calderbrook 1 c.m. 52 m.

Administrative Areas.—Urban Districts: Rochdale C.B., Littleborough, Milnrow, Norden, Wardle, Whitworth.

* Included in Rochdale C.B.

Haslingden Union. Reg. Dist. 471.—Haslingden.

Contents.—The townships of Accrington 3 c.m. 277 m., Bacup 11 c.m. 216 m. (including 7 c.m. at Bacup with 142 m. 3 c.m. at Stacksteads with 66 m. 1 c.m. at Sharneyfold with 8 m. 2 m.m. 181 m. (including 1 m.m. at Stacksteads with 164 m. and 1 m.m. at Lawhead with 17 m.), Haslingden, Rawtenstall 3 c.m. 136 m. (including 2 c.m. at Goodshaw Hill with 67 m. and 1 c.m. at Newchurch with 69 m.), 3 m.m.; 65 m. (including 1 m.m. at Horncliffe 19 m., 1 m.m. at Rawtenstall 10 m. and 1 m.m. at Newchurch 36 m.). Localities: Crawshawbooth 2 c.m. 53 m. 1 m.m. 4 m., Baxenden 1 c.m. 53 m., Helmshore, Cloughfold 1 d.,* New Church 2 d.,* Rossendale 2 d.,* Waterfoot 4 d.,* ecclesiastical parish of Grane.

Administrative Areas.—Urban Districts: Accrington M.B., Bacup M.B., Haslingden M.B., Rawtenstall M.B.

* Included in Rawtenstall M.B.

Burnley Union. Reg. Dist. 472.—Burnley.

Contents.—Burnley C.B., which includes Burnley tnp. 10 c.m. 3442 m. Townships: Altham 3 c.m. 939 m., Barley with Wheatley Booth, Barrowford, Blacko, Briercliffe, Brierfield, Brunshaw, Cliviger 3 c.m. 265 m., Colne, Dunnockshaw, Foulridge, Goldshaw, Booth, Habergham, Eaves, Hapton, Heyhouses, Higham with West Close Booth, Huncoat 1 c.m. 576 m., Ightenhill, Nelson, Northtown, Old Haund Booth, Padiham, Reed, Reedley Hallows,

Rough Lee, Simonstone, Trawden, Wheatley Carr, Worsthorne with Hurstwood. Localities: Lowerhouse, Sabden, and Towneley 1 c.m. 637 m.

Administrative Areas.—Urban Districts: Burnley C.B., Barrowford, Brierfield, Colne, Nelson M.B., Padiham, Trawden, Burnley, R.D.

Clitheroe Union. Reg. Dist. 473.—Clitheroe.

Contents.—In Lancashire. Townships: Aighton, Bailey and Chaigeley, Chatburn 1 d.,* Chipping, Clitheroe, Dowsham, Leagram, Little Bowland, Little Mitton, Mearley, Pendleton, Thornley with Wheatley, Twiston, Whalley 1 d.,* Wiswell, Worston, Grindleton civ. par.

Administrative Areas.—Clitheroe M.B. and Clitheroe R.D.

* Included in Clitheroe R.D.

Blackburn Union. Reg. Dist. 474.—Blackburn.

Contents.—Blackburn C.B., which includes Blackburn tnp. Townships: Balderstone, Billington, Church, Clayton-le-Dale, Clayton-le-Moors, Darwen 4 c.m. 232 m., Dinkley, Eccleshill, Great Harwood 1 c.m. 315 m., Livesay, Mellor, Osbaldeston, Oswaldtwistle 2 c.m. 450 m., Pleasington, Ramsgrave, Rishton 1 c.m. 425 m., 1 m.m. 7 m., Salesbury, Tockholes, Wilpshire 1 d.,* Witton, Yate and Pickups Bank 1 c.m. 35 m. Localities: Hoddlesden 1 c.m. 190 m., Langho.

Administrative Areas.—Urban Districts: Blackburn C.B., Church, Clayton-le-Moors, Darwen M.B., Great Harwood, Oswaldtwistle, Rishton, Blackburn R.D.

* Included in Blackburn R.D.

Chorley Union. Reg. Dist. 475.—Chorley.

Contents.—Townships: Adlington, Anderton, Anglezark, Bretherton, Charnock Richard, Clayton-le-Woods, Coppull 1 d. 4 c.m. 1699 m., Croston, Cuerden, Duxbury, Eccleston, Euxton, Heapey, Heath Charnock, Heskin, Hoghton, Leyland, Mawdsley, Rivington, Ulnes Walton, Welsh Whittle 2 c.m. 586 m., Wheelton 1 d.,* Whittle-le-Woods 2 d.,* Withnel. Locality: Lostock Hall 2 d.* Parishes: Brindle, and Chorley 3 c.m. 918 m. (including 2 at Chorley 696 m., 1 c.m. at Birkacre 222 m.

Administrative Areas.—Urban Districts: Adlington, Chorley M.B., Croston, Leyland, Withnell, Chorley R.D.

* Included in Chorley R.D.

Preston Union. Reg. Dist. 476.—Preston.

Contents.—Preston C.B., which includes Preston tnp. Townships: Alston 1 d.,* Barton 1 d.,† Broughton, Cuerdale, Dilworth, Dutton, Elston, Farington, Fulwood, Goosnarth, Grimsargh with Brockholes 1 d.,† Haighton, Hothersall, Howick, Hutton, Lea, Ashton, Ingol, and Cottam, Little Hoole, Longton 2 d.,† Much Hoole, Penwortham, Ribbleton, Ribchester 1 d.,† 1 m.m. 5 m., Salmesbury,

* Included in Longridge U.D. † Included in Preston R.D.

Walton-le-Dale, Whittingham 6 d.,† Wood-Plumpton, Bamber Bridge 3 d.‡

Administrative Areas.—Urban Districts: Preston C.B., Fulwood, Longridge, Walton-le-Dale, Preston R.D.

† Included in Preston R.D. ‡ Included in Walton-le.-Dale U.D.

Fylde Union. Reg. Dist. 477.—Fylde.

Contents.—Townships: Bispham with Norbreck, Blackpool, Bryning with Kellamergh, Carleton, Clifton with Salwick, Elswick, Freckleton 1 d.,* Greenhalgh with Thirleton, Hardhorn-with-Newton, Kirkham, Little Eccleston, Lytham, Marton, Medlar-with-Wesham 1 d., Newton with Scales, Poulton-in-the-Fylde, Ribby with Wray, St. Annes-on-the-Sea, Singleton, Thornton, Treales, Roseacre and Wharles, Warton, Weeton, Westby-with-Plumpton.

Administrative Areas.—Urban Districts: Bispham with Norbreck, Blackpool C.B., Fleetwood 1 m.m. 232 m., Kirkham, Lytham, Poulton-le-Fylde, St. Annes-on-the-Sea, Thornton, Fylde R.D.

* Included in Fylde R.D.

Garstang Union. Reg. Dist. 478.—Garstang.

Contents.—Townships: Barnacre with Bonds, Bilborough, Bleasdale, Cabus, Catteral, Claughton, Clevely, Forton, Garstang, Great Eccleston, Hambleton, Holleth, Kirkland, Myerscough, Nateby, Nether, Wyersdale, Out Rawcliffe, Pilling, Preseall with Hackensall, Sowerby with Inskip, Stalmin with Stanall 2 d.,* Upper Rawcliffe with Tarnicar, Winmarleigh.

Administrative Areas.—Garstang R.D., Preesall with Hackensall U.D.

* Included in Garstang R.D.

Lancaster Union. Reg. Dist. 479.—Lancaster.

Contents.—Townships: Aldcliffe, Ashton with Stodday, Bolton-le-Sands 1 d.,* Bulk, Carnforth, Cockerham, Ellel North and South, Heaton with Oxcliffe, Lancaster, Middleton, Overton, Overwyersdale, Poulton, Bare and Torrisholme, Priest Hutton, Scotforth, Silverdale, Skerton, Slyne with Hest, Thurnham, Warton with Lindith, Yealand Conyers, Yealand Redwayne. Parishes: Cockersand Abbey and Heysham.

Administrative Areas.—Urban Districts: Carnforth, Heysham, Lancaster M.B., and Morecambe M.B. Also Lancaster R.D.

* Included in Lancaster R.D.

Lunesdale Union. Reg. Dist. 480.—Lunesdale.

Contents.—Townships: Arkholme with Cawood, Borwick, Burrow with Burrow, Cautsfield, Caton, Claughton, Gressingham, Hornby with Farleton 1 d.,* Ireby, Leek, Melling with Wrayton, Nether Kellet, Overkellet, Quernmore, Roeburndale, Tunstal, Wennington 1 d.,* Wray with Bolton. Parishes: Halton, Tatham, Whittington.

Administrative Area.—Lunesdale R.D.

* Included in Lunesdale R.D.

Ulverston Union. Reg. Dist. 481.—Ulverston.

Contents.—Townships: Blawith, Cartmel 1 d.,* Fell, Claife, Coniston 1 d.,* Dalton, Dunnerdale with Seathwaite, East Broughton 1 d.,* Egton with Newland, Grange, Hawkshead 1 d.,* Kirkby Ireleth, Lower Allithwaite, Lower Holker, Lowick, Mansriggs, Osmotherly, Satterthwaite, Skelwith, Staveley, Subberthwaite, Torver, Ulverston, Upper Allithwaite, Upper Holker, Urswick, West Broughton. Parishes: Adingham (Aldingham), Angerton, Colton Pennington 1 d.,* Localities: Haverswathwaite 1 d.,* Walney 2 d.,* Askam-in-Furness 1 d.,†

Administrative Areas.—Dalton-in-Furness U.D., Grange-over-Sands U.D., Ulverston U.D., and Ulverston R.D.

* Included in Ulverstone R.D. † Included in Dalton-in-Furness U.D.

Barrow-in-Furness Parish Union. Reg. Dist. 482.—Barrow-in-Furness.

Contents.—Barrow-in-Furness C.B., which includes Barrow-in-Furness parish.

Administrative Area.—Barrow-in-Furness C.B.

Stockport Union. Reg. Dist. 443.—Stockport.

Lancashire portion includes the parish of Heaton Norris and Reddish tnp.

Administrative District.—Heaton Norris U.D.

LIST OF TOWNS WHERE MEDICAL PRACTITIONERS RESIDE.

For Lancashire see Statistics of Sanitary Areas and Poor Law Unions.

(The number resident in each is given in brackets.)

Bedfordshire. — Ampthill (4); Arlesey (5); Aspley Guise (3); Barton-le-Cley (1); Biggleswade (3); Clophill (1); Cranfield (1); Dunstable (5); Great Barford (1); Harrold (2); Kempston (1); Leighton Buzzard (10); Luton (16); Markyate (1); Potton (1); Riseley (2); Sandy (2); Sharnbrook (1); Shefford (4); Shillington (1); Toddington (2); Turvey (1); Woburn (1); Woburn Sands (2). Total for Administrative County 71. The County Borough of Bedford alone contains fifty-two, but omitted in our calculations.

Berkshire (Administrative County). — Abingdon (7); Aldermaston (1); Ascot (5); Ashhampstead (1); Aston Tirrold (1); Bagley Wood (1); Beenham (1); Binfield (2); Bracknell (2); Bradfield (1); Brightwalton (1); Broadmoor (4); Clewer (1); Cookham (3); Crowthorne (1); Donnington (1); East Ilsley (1); Faringdon (3); Frilsham (1); Halwell (1); Hungerford (3); Hurley (1); Kingston Bagpuize (1); Kintbury (1); Lambourn (4); Maidenhead (13); Midgham (1); Mortimer (1); Moulsford (1);

Newbury (14); North Stoke (1); Pangbourne (2); Reading (50); Sandhurst (2); Shrivenham (1); Sonning (1); Sparsholt (1); Stanford Dingley (1); Sulham (1); Sunningdale (2); Sunninghill (1); Sutton Courtenay (1); Swallowfield (1); Thatcham (1); Theale (1); Tilehurst (2); Twyford (2); Wallingford (7); Wantage (4); Wargrave (2); Wellington College (1); Whitchurch (2); Windsor (12); Wokingham (7); Yattenden (1); Total, 186.

Essex (*ex* West Ham), (Administrative County).—Abridge (1); Aveley C.P. (1); Barking U.D. (8); Billericay (4); Birch C.P. (1); Bocking C.P. (3); Bradfield C.P. (1); Braintoll U.D. (6); Brentwood U.D. (10); Buckhurst Hill U.D. (7); Burnham U.D. (4); Castle Hedingham C.P. (2); Chadwell Heath (3); Chelmsford Boro' (12); Chigwell C.P. (1); Chipping Ongar C.P. (4); Clacton-on-Sea U.D. (11); Coggershall Great and Little C.P. (2); Colchester Boro' (28); Dedham C.P. (1); Dovercourt C.P. (4); Dunmow Great and Little C.P. (3); Earls Colne C.P. (2); Epping U.D. (4); Felstead C.P. (2); Finchingfield C.P. (1); Fordham C.P. (2); Frinton-on-Sea U.D. (2); Grays U.D. (9); Great Baddow C.P. (1); Great Bardfield C.P. (1); Great Bentley C.P. (2); Great Chesterford C.P. (1); Great Wakering C.P. (2); Halstead U.D. (4); Haresfield C.P. (1); Harlow C.P. (4); Harwich Boro' (2); Hatfield Broadoak C.P. (1); Hempstead C.P. (1); Hornchurch C.P. (3); Horndon-on-Hill C.P. (1); Ilford U.D. (45); Ingatestone C.P. (6); Kelvedon C.P. (1); Kelvedon Common (1); Langenhoe C.P. (1); Leigh-on-Sea U.D. (4); Little Baddow C.P. (1); Little Waltham C.P. (1); Loughton U.D. (8); Maldon (5); Manningtree C.P. (3); Newport C.P. (1); North Ockenden C.P. (1); Orsett C.P. (2); Pitsea C.P. (1); Rainham C.P. (3); Rayleigh C.P. (1); Rochford C.P. (2); Romford U.D. (8); Rowhedge (1); Saffron Walden Boro' (11); St. Osyth C.P. (1); Seven Kings (see Ilford); Shoeburyness U.D. (2); Sible Hedingham C.P. (1); South Benfleet C.P. (1); South Ockenden C.P. (1); Southend Boro' (33); Southminster C.P. (1); Stanford-le-Hope C.P. (4); Stansted Montfichet C.P. (8); Steeple Bumstead C.P. (1); Stock C.P. (2); Thaxted C.P. (2); Theydon Bois C.P. (3); Thorpe-le-Soken C.P. (3); Thundersley C.P. (1); Tilbury C.P. (1); Tillingham C.P. (1); Tollesbury C.P. (1); Tolleshunt de Arcy C.P. (1); Waltham Abbey or Holy Cross U.D. (3); Walton-on-Naze U.D. (1); West Mersea C.P. (1); Withersfield C.P. (1); Wickford C.P. (1); Wigborough Great and Little C.P. (1); Witham U.D. (5); Wivenhoe U.D. (4); Woodford Bridge (6); Woodford Green (8); Wormingford C.P. (1); Writtle C.P. (2); Total, 372.

Gloucestershire (Administrative County). — Almondsbury C.P. (1); Amberley (1); Ashton-under-Hill (1); Barnwood C.P. (1); Berkeley C.P. (3); Bitton C.P. (1); Blackeney (2); Bourton-on-the-Water C.P. (2); Bream (1); Cam C.P. (1); Chalford C.P. (4); Charlton Kings U.D. (2); Cheltenham (Boro') (66); Chipping Campden C.P. (2); Chipping Sodbury C.P. (5); Churchdown C.P. (1); Cinderford (2); Cirencester U.D. and R.D. (7); Coleford U.D. (3); Compton Greenfield (1); Cromhall C.P. (1); Downend (1); Drybrook (1); Dursley C.P. (4); Fairford C.P. (2); Filton C.P.

(1); Frampton Cotterell C.P. (1); Gloucester Boro' (34); Hawkesbury Upton (2); Horfield (see Bristol); Iron Acton C.P. (1); Kemble (1); Kemerton C.P. (1); Lechlade C.P. (1); Lydbrook C.P. (2); Lydney C.P. (4); Marshfield C.P. (1); Mickleton C.P. (1); Minchinhampton C.P. (2); Mitcheldean C.P. (2); Moreton-in-Marsh C.P. (2); Nailsworth U.D. (2); Newent C.P. and R.D. (3); Newnham U.D. (1); Northleech C.P. and R.D. (1); Olveston C.P. (1); Painswick C.P. (2); Parkend (1); Ruardean C.P. (1); St. Briavels C.P. (2); Sapperton C.P. (2); Siddington C.P. (1); Staunton C.P. (1); Stonehouse C.P. (4); Stow-on-the-Wold U.D. and R.D. (2); Stroud U.D. (15); Tetbury U.D. (3); Tewkesbury Bow (5); Thornbury C.P. (4); Tuffley (1); Tutshill (1); Uley C.P. (1); Westbury-on-Severn U.D. (1); Westbury-on-Trym C.P. (3); Wick C.P. (1); Winchcombe C.P. (3); Winterbourne C.P. (2); Wotton-under-Edge C.P. (4); Total, 240.

Bristol (170); Clifton (112); not included.

Kent (Administrative County).—Adlington C.P. (1); Ash next Sandwich C.P. (2); Ashford U.D., Ashford East R.D., Ashford West R.D. (12); Aylesford C.P. (2); Barming C.P. (5); Bearstead C.P. (1); Beckenham U.D. (34); Belvedere (6); Benenden C.P. (1); Bethersden C.P. (1); Bexley U.D. (19); Bickley (5); Biddenden C.P. (1); Birchington C.P. (3); Borstal (1); Bloughton under Blean C.P. and R.D. (1); Brabourne C.P. (1); Brasted C.P. (3); Brenchley C.P. (2); Bridge C.P. (1); Broadstairs with St. Peter's U.D. (5); Bromley Boro' and R.D. (32); Charing C.P. (3); Charlton (with Kidbrooke) C.P. (9); Chartham C.P. (6); Chart Sutton C.P. (1); Chatham Boro' (13); Chilham C.P. (1); Chislehurst U.D. (7); Cliffe-at-Hoo C.P. (1); Cowden C.P. (1); Cranbrook C.P. and R.D. (3); Crayford C.P. (1); Darenth C.P. (4); Dartford U.D. and R.D. (12); Deal Boro' (6); Dover Boro' and R.D. (30); Dymchurch C.P. (2); East Malling C.P. (1); East Peckham C.P. (1); East Sutton C.P. (1); Eastray R.D. (2); Edenbridge C.P. (5); Elham C.P. and R.D. (2); Eltham C.P. (20); Erith U.D. (1); Eythorne C.P. (1); Farnborough C.P. (1); Farningham C.P. (1); Faversham Boro' and R.D. (8); Folkestone Boro' (34); Fordcombe (1); Gillingham Boro' (13); Goudhurst C.P. (5); Gravesend Boro' (21); Greenhithe (3); Green Street (1); Hadlow C.P. (2); Halling C.P. (2); Ham Street (1); Hawkhurst C.P. (4); Headcorn C.P. (2); Herne C.P. (1); Herne Bay U.D. (10); Higham C.P. (1); Hildenborough C.P. (1); Hollingbourn C.P. and R.D. (1); Hoo R.D. (2); Horsmonden C.P. (2); Hythe Boro' (6); Ightham C.P. (2); Kearsney (1); Keston C.P. (1); Kilndown (1); Langton (2); Leigh (1); Lenham C.P. (1); Littlebourne C.P. (1); Loose C.P. (1); Lydd Boro' (2); Lyminge C.P. (1); Maidstone Boro' and R.D. (24); Marden C.P. (2); Margate Boro' (26); Meopham C.P. (1); Milton Sittingbourne U.D. and R.D. (2); Minster-in-Shappey C.P. (1); Monkton C.P. (1); New Romney Boro' (3); Newington C.P. (1); Northfleet U.D. (5); Orpington C.P. (8); Paddock Wood (1); Pembury C.P. (2); Penshurst C.P. (2); Pluckley C.P. (1); Queensborough Boro' (1); Rainham C.P. (2); Ramsgate Boro' (31); Rochester Boro' (12); Rolvenden C.P. (1);

St. Margaret's-at-Cliffe C.P. (1); St. Mary Cray C.P. (3); Sandhurst C.P. (1); Sandwich Boro' (3); Sevenoaks U.D. and R.D. (11); Sheerness U.D. (7); Shepherdswell (1); Shooters Hill (6); Shoreham C.P. (2); Shorncliff (1); Shortlands U.D. (3); Sandgate (1); Sidcup (11); Sittingbourne U.D. (8); Smarden C.P. (1); Snodland C.P. (4); Southborough U.D. (6); Speldhurst C.P. (1); Staplehurst C.P. (1); Stone, Dartford C.P. (1); Stone, Tenterden C.P. (1); Strood C.P., Upper and Lower R.D. (4); Sturry C.P. (2); Sutton-at-Home C.P. (2); Sutton Vallence C.P. (3); Swanley (6); Swanscombe C.P. (1); Tenterden Boro' and R.D. (2); Teynham C.P. (1); Tunbridge U.D. (9); Tunbridge Wells Boro' and R.D. (56); Walmer U.D. (5); Wateringbury C.P. (1); Welling (1); West Malling C.P. and R.D. (4); West Wickham C.P. (1); Westerham C.P. (4); Westgate-on-Sea C.P. (3); Whitstable U.D. (5); Willesborough C.P. (1); Wingham C.P. (2); Wittersham C.P. (2); Woodchurch C.P. (2); Wrotham U.D. (1); Wye C.P. (2); Yalding C.P. (1). Total, 732. Woolwich (39), Canterbury (24), in London County, not included in Administrative County.

Nottinghamshire (*ex* Nottingham, 146), (Administrative County)—Annesley Woodhouse (1); Auston C.P. (2); Arnold U.D. (3); Beeston U.D. (4); Bingham C.P. and R.D. (2); Blidworth C.P. (1); Cailton U.D. (2), Colston Bassett C.P. (1); East Bridgford C.P. (1); East Retford Boro' and R.D. (9); Eastwood U.D. (3); Edwinstowe C.P. (1); Epperstone C.P. (1); Farnsfield C.P. (2); Gringley-on-the-Hill C.P. (1); Harthill C.P. (1); Hucknall Huthwaite U.D. (1); Hucknall Torkard U.D. (4); Keyworth C.P. (1); Kimberley C.P. (4); Kirkby-in-Ashfield U.D. (2); Lowdham C.P. (1); Mansfield Boro' (13); Mansfield Woodhouse U.D. (3); Netherfield (1); New Basford (see Nottingham); Newark Boro' and R.D. (12); North Collingham C.P. (2); Ollerton C.P. (1); Pleasley C.P. (1); Ratcliffe-on-Trent C.P. and R.D. (5); Ruddington C.P. (2); Selston C.P. (1); Skegby C.P., R.D. (2); Southwell C.P., R.D. (5); Stapleford C.P., R.D. (2); Sutton Bonnington C.P. (1); Sutton-in-Ashfield U.D. (4); Sutton-on-Trent C.P. (2); Tuxford C.P. (2); Upper Broughton C.P. (1); Walkeringham C.P. (1); Warsop U.D. (1); West Bridgford U.D. (5); Worksop U.D. (10). Total, 125. Nottingham County Borough (146) not included.

Shropshire.—Albrighton C.P. (2); Baschurch C.P. (2); Bicton Heath C.P. (2); Bishops Castle Boro' (3); Bridgnorth Boro' and R.D. (8); Broseley C.P. (4); Burlton (1); Cheswardine C.P. (1); Church Stretton U.D. (3); Claverley C.P. (1); Cleobury Mortimer C.P. and R.D. (2); Cleobury North C.P. (1); Clun (1); Clunbury (1); Craven Arms (2); Cressage C.P. (3); Dawley U.D. (3); Dorrington (1); Ellesmere U.D. (6); Haumer C.P. (1); Hanwood C.P. (1); Hodnet C.P. (1); Hopesay C.P. (1); Iron Bridge (2); Kinnerley C.P. (1); Knowbury (1); Ludlow Boro' (7); Madeley C.P. (2); Market Drayton (6); Much Wenlock Boro' (3); Munslow C.P. (3); Newport U.D. and R.D. (4); Oakengates U.D. (3); Oswestry' Boro and R.D. (9); Pontesbury and Pontesford C.P. (3); Prees C.P. (1); Ruyton Eleven Towns C.P. (1); St. Georges C.P.

(3); Shawbury C.P. (1); Shifnal R.D. (3); Shrewsbury Boro' (33); Wellington U.D. and R.D. (7); Wem R.D. (4); Whitchurch with Doddington U.D. (6); Worthen C.P. (1); Total, 155.

Wiltshire. — Amesbury R.D. (4); Avebury (1); Box (3); Bradford-on-Avon U.D. and R.D. (8); Bratton (1); Broad Chalk (1); Burbage (1); Calne Boro' (4); Castle Combe (1); Chippenham Boro' (7); Codford St. Mary (1); Corsham (3); Cricklade R.D. (1); Devizes Boro' and R.D. (9); Donhead St. Andrew (1); Downton (1); Fovant (1); Great Bedwyn (1); Great Somerford (1); Heytesbury (1); Highworth R.D. (1); Hindon (2); Holt (2); Hullavington (1); Kemble (1); Lacock (1); Ludgershall (1); Maddington (1); Malmesbury Boro' (6); Market Lavington (2); Marlborough Boro' (4); Melksham Boro' and R.D. (4); Mere R.D. (2); Pewsey R.D. (3); Purton (1); Ramsbury R.D. (2); Salisbury Boro' and R.D. (18); Sherston Magna (1); Stratton St. Margaret (1); Sutton Bangor (1); Swindon Boro' (17); Tisbury R.D. (1); Trowbridge U.D. (8); Upavon (1); Urchfont (1); Warminster U.D. and R.D. (5); Westbury U.D. and R.D. (4); Whiteparish (1); Wilton Boro' and R.D. (3); Wootton Bassett (2); Wroughton (1); Wylye (1). Total, 151.

Derbyshire.—Alfreton U.D. (9); Alvaston U.D. (with Boulton) (2); Ashbourne U.D. and R.D. (7); Ashover C.P. (1); Bakewell U.D. and R.D. (6); Baslow U.D. with Babnell (2); Beighton C.P. (2); Belper U.D. and R.D. (7); Blackwell R.D. (1); Bolsover U.D. (4); Borrowash (1); Bradwell C.P. (1); Brailsford C.P. (1); Brimington C.P. (1); Buxton U.D. (27); Calow C.P. (1); Castleton C.P. (1); Chapel-en-le-Frith R.D. (3); Chellaston C.P. (1); Chesterfield M.B. and R.D. (20); Church Gresly C.P. (1); Clay Cross U.D. (3); Clown R.D. (2); Codnor C.P. (1); Cresswell (2); Crich C.P. (2); Darleydale U.D. (2); Derby C.B. (60); Derwent C.P. (1); Draycott C.B. (1); Dronfield U.D. (3); Duffield C.P. (3); Eckington C.P. (6); Etwall C.P. (1); Eyam C.P. (1); Furness Vale (2); Glossop M.B. (8); Hadfield (6); Hasland C.P. (1); Hathersage C.P. (1); Heanor U.D. (3); Hayfield R.D. (2); Holmewood (1); Horsley Woodhouse C.P. (1); Ilkeston M.B. (11); Ironville C.P. (1); Killamarsh C.P. (1); Little Eaton C.P. (1); Long Eaton U.D. (7); Longford C.P. (1); Lullington C.P. (1); Matlock U.D. (7); Meersbrook (1); Melbourne C.P. (4); Mickleover C.P. (3); Mosborough C.P. (1); New Mills U.D. (2); New Hall C.P. (3); Norton Woodseats (5); Parwich C.P. (1); Pinxton C.P. (1); Renishaw (1); Repton R.D. (2); Ripley U.D. (5); Rowditch (2); Sandiacre C.P. (3); Shardlow R.D. (1); Shirebrook C.P. (3); South Normanton C.P. (2); Sponden C.P. (2); Staveley C.P. (4); Stonebroom (1); Sudbury R.D. (1); Swadlincote U.D. (5); Tibshelf C.P. (3); Totley C.P. (2); Whittington U.D. (3); Whitwell C.P. (1); Winster C.P. (1); Wirksworth U.D. (5); Woodville C.P. (3); Youlgreave C.P. (1). Total for Administrative County, 256; City of Derby, 60; Registration County, 316.

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