

## **Report on the English birthrate : Pt. I. England, north of the Humber.**

### **Contributors**

Elderton, Ethel Mary.  
London School of Hygiene and Tropical Medicine

### **Publication/Creation**

London : Dulau, 1914.

### **Persistent URL**

<https://wellcomecollection.org/works/qbm6vhgh>

### **Provider**

London School of Hygiene and Tropical Medicine

### **License and attribution**

This material has been provided by This material has been provided by London School of Hygiene & Tropical Medicine Library & Archives Service. The original may be consulted at London School of Hygiene & Tropical Medicine Library & Archives Service. where the originals may be consulted. Conditions of use: it is possible this item is protected by copyright and/or related rights. You are free to use this item in any way that is permitted by the copyright and related rights legislation that applies to your use. For other uses you need to obtain permission from the rights-holder(s).



Wellcome Collection  
183 Euston Road  
London NW1 2BE UK  
T +44 (0)20 7611 8722  
E [library@wellcomecollection.org](mailto:library@wellcomecollection.org)  
<https://wellcomecollection.org>





LIBRARY

Author : ELDERTON (E.M.)

Title : Report on the English birth-rate. Part I

Acc. No.	Class Mark	Date	Volume
62251	<i>folio</i> D. A. EI.42	1914	



2804271969



*Date due stamped below.*

**Recallable after ONE WEEK  
if required by others.**

**LIBRARY**

*oc 16799720*

*Inte Gibray Coa  
due 1st August 1998*





Digitized by the Internet Archive  
in 2014

<https://archive.org/details/b21351533>









14  
H

# REPORT ON THE ENGLISH BIRTHRATE

## PART I. ENGLAND, NORTH OF THE HUMBER

BY  
ETHEL M. ELDERTON,  
GALTON FELLOW, UNIVERSITY OF LONDON

MEDICAL RESEARCH  
COMMITTEE  
LIBRARY  
9148.

95

LONDON:  
PUBLISHED BY DULAU AND CO. LIMITED, 37, SOHO SQUARE, W.  
1914

62251

THIS memoir was in type before the outbreak of war, and the grave question arose as to whether its publication at the present time was justifiable. The nation, some will feel, has enough immediate trouble to deal with. It appeared to me, however, that just in such a time of stress men's minds are likely to be turned from the pursuit of pleasure and thus be more in the mood to consider what tends to our efficiency as a nation. Whether victory or defeat lies before us, the war will make the topic here discussed even more urgent than before. It is the great national problem of our future, and therefore I have determined not to postpone publication. This *Report* may have fewer readers than in a time of peace, but it will find those readers more prepared to weigh justly national needs against personal indulgence.

KARL PEARSON.

GALTON LABORATORY,  
August 20, 1914.

ERRATA

Plate VII. *For* North Bierly *read* North Bierley.  
,, Warfedale ,, Wharfedale.

## CONTENTS

	PAGE
PREFATORY NOTE . . . . .	vii
I. INTRODUCTORY . . . . .	1
II. ON THE CONDITION OF ENGLAND IN 1851 AND IN 1901 . . . . .	11
III. ON THE CHANGES IN THE BIRTHRATE IN THE COUNTIES . . . . .	16
IV. CONSIDERATION OF THE INDIVIDUAL COUNTIES . . . . .	20
A. THE COUNTY OF LANCASHIRE	
I. THE COUNTY AS A WHOLE . . . . .	20
II. THE INDIVIDUAL REGISTRATION DISTRICTS . . . . .	28
B. THE COUNTY OF CHESHIRE	
I. THE COUNTY AS A WHOLE . . . . .	70
II. THE INDIVIDUAL REGISTRATION DISTRICTS . . . . .	74
C. YORKSHIRE, WEST RIDING	
I. THE RIDING AS A WHOLE . . . . .	88
II. THE INDIVIDUAL REGISTRATION DISTRICTS . . . . .	95
D. YORKSHIRE, EAST RIDING	
I. THE RIDING AS A WHOLE . . . . .	126
II. THE INDIVIDUAL REGISTRATION DISTRICTS . . . . .	130
E. YORKSHIRE, NORTH RIDING	
I. THE RIDING AS A WHOLE . . . . .	143
II. THE INDIVIDUAL REGISTRATION DISTRICTS . . . . .	147
F. AND G. THE COUNTIES OF CUMBERLAND AND WESTMORLAND	
I. THE COUNTIES AS WHOLES . . . . .	159, 160
II. THE INDIVIDUAL REGISTRATION DISTRICTS . . . . .	163, 170
H. THE COUNTY OF DURHAM	
I. THE COUNTY AS A WHOLE . . . . .	173
II. THE INDIVIDUAL REGISTRATION DISTRICTS . . . . .	177
I. THE COUNTY OF NORTHUMBERLAND	
I. THE COUNTY AS A WHOLE . . . . .	190
II. THE INDIVIDUAL REGISTRATION DISTRICTS . . . . .	194
V. THE FALL IN THE BIRTHRATE AND INDUSTRIAL CONDITIONS	
A. THE COUNTIES AS WHOLES . . . . .	205
B. THE INDIVIDUAL REGISTRATION DISTRICTS . . . . .	208
VI. THE FALL IN THE BIRTHRATE AND SOCIAL CONDITIONS . . . . .	216
VII. SUMMARY OF CONCLUSIONS AS TO THE FALL IN THE BIRTHRATE IN THE NORTH OF ENGLAND . . . . .	232
APPENDIX I. ON THE WAGES OF THE CHIEF INDUSTRIES IN THE NORTH OF ENGLAND	239
APPENDIX II. NOTE ON CERTAIN MEDICINES SOLD AS REMEDIES FOR "FEMALE IRREGULARITIES" . . . . .	246

## LIST OF DIAGRAMS AND PLATES

	<i>Frontispiece</i> <i>Facing page</i>
DIAGRAM I. Map of the Registration Districts North of the Humber . . . . .	12
DIAGRAM II. Chart of Marriages and Births and Dividends in Sheffield . . . . .	28
PLATE I. Lancashire Ulverston, Blackburn, Fylde, Lancaster, and Haslingden.	37
PLATE II. Lancashire ( <i>continued</i> ) Burnley, Bury, Ormskirk, Chorley, Clitheroe, and Oldham.	47
PLATE III. Lancashire ( <i>continued</i> ) Barton-upon-Irwell, Garstang, Ashton-under-Lyne, Rochdale, Bolton, and Lunesdale.	55
PLATE IV. Lancashire ( <i>continued</i> ) Barrow-in-Furness, Preston, Wigan, Salford, Chorlton, and Leigh.	63
PLATE V. Lancashire ( <i>concluded</i> ) Warrington, Prescott, West Derby with Toxteth Park, Manchester with Prestwich, and Liverpool.	63
PLATE V. Cheshire Altrincham, Macclesfield, and Stockport.	80
PLATE VI. Cheshire ( <i>concluded</i> ) Birkenhead, Congleton, Northwich, Runcorn, Nantwich, Wirral, and Chester.	95
PLATE VII. Yorkshire, West Riding Sedbergh with Settle, Halifax, Bradford with North Bierley, Skipton with Wharfedale, and Todmorden.	100
PLATE VIII. Yorkshire, West Riding ( <i>continued</i> ) Dewsbury, Keighley, Huddersfield, Hunslet with Holbeck and Bramley, and Wortley.	110
PLATE IX. Yorkshire, West Riding ( <i>continued</i> ) Wakefield, Saddleworth, Ripon, Leeds, Ecclesall-Bierlow, Rotherham, Knaresborough with Great Ouseburn and Wetherby.	118
PLATE X. Yorkshire, West Riding ( <i>concluded</i> ) Tadcaster with Selby, Sheffield, Pateley Bridge, Barnsley, Doncaster, Pontefract, Goole with Thorne, and Hemsworth.	130
PLATE XI. Yorkshire, East Riding Bridlington with Driffield, Patrington with Skirlaugh, Sculcoates, York, Beverley, Hull, and Pocklington with Howden.	147
PLATE XII. Yorkshire, North Riding Guisborough, Whitby, Northallerton with Thirsk, Malton, and Scarborough.	153
PLATE XIII. Yorkshire, North Riding ( <i>concluded</i> ) Stokesley, Reeth with Richmond, Middlesbrough, Helmsley with Pickering and Easingwold, Aysgarth with Leyburn and Bedale.	153
PLATE XIII. Westmorland Kendal, East and West Wards.	163
PLATE XIV. Cumberland Bootle, Whitehaven, Carlisle, Cockermouth, Penrith, and Wigton.	177
PLATE XV. Durham Darlington, Stockton with Hartlepool, Durham, Lanchester, Teesdale with Weardale, and Auckland.	185
PLATE XVI. Durham ( <i>concluded</i> ) Gateshead, South Shields, Easington with Houghton-le-Spring and Chester-le-Street, and Sunderland.	185
PLATE XVI. Northumberland Morpeth, Alnwick with Berwick, etc., Alston with Brampton and Haltwhistle, etc.	194
PLATE XVII. Northumberland ( <i>concluded</i> ) Castle Ward with Hexham, Newcastle, and Tynemouth.	194
PLATE XVII. The Counties as Wholes Lancashire, Cheshire, Yorkshire West Riding, and Yorkshire East Riding.	206
PLATE XVIII. The Counties as Wholes ( <i>continued</i> ) Yorkshire North Riding, Westmorland, Cumberland, Durham and Northumberland.	19
PLATE XVII <i>bis</i> and PLATE XVIII <i>bis</i> . The Counties as Wholes ( <i>concluded</i> ) In these two plates the several counties dealt with in Plates XVII and XVIII are brought down to the census of 1911.	

## PREFATORY NOTE

THE numerical work on this paper was completed in the year 1911 and most of the diagrams had been exhibited at a Laboratory Soirée in the previous year. The work was thus undertaken long before it was possible to make use of the census data for 1911. Owing to the fact that the birthrate has been based on the number of married women of 15 to 55 years in the registration districts we were obliged to have the necessary data for the age distribution of married women in 1901 extracted specially for us in 1910\*. In order to bring our material up to the census of 1911 we should have had to seek aid again for extracting like material from the original census sheets, and although the courtesy of the Registrar-General might, when these sheets were available, have been repeated, we have not the funds requisite for paying for the extractions.

We trust that when the work on the other districts of England and Wales is completed that we shall be able to deal with the 1911 census material for those districts. But we would remind the reader that when this is achieved, we shall again be very close to the census of 1921, and he may have then to grumble at the non-inclusion of still later material. Those who appreciate the fact that the Registrar-General's ten-yearly Report for 1901-1911 is not yet out, will understand that any report like the present cannot possibly be up-to-date in its statistics. Reduction of such extensive data—whether in a small laboratory like ours, or in a great government office—takes years to complete even after the statistics have been published. We have found it possible, however, to give duplicates of the plates of the birthrates in counties brought up to 1911: see p. 19. Plates XVII *bis*-XVIII *bis* show that our calculations of the birthrates by extrapolation from 1901 to 1906 have given a fair appreciation of the decline in the birthrate, but that *on the whole the decline has been more rapid since 1901 than in the preceding decade*. All the conclusions therefore reached in this paper on the basis of the declining birthrate from 1876 to 1906 are emphasised and intensified, not weakened by what has happened since.

If it be said that this *Report* ought to have been issued when the diagrams were completed in 1911, and that much of its value has been lost in the interval, the reply is two-fold. It was thought that our *Report* would be much strengthened by a series of local inquiries turning not on numerical data but rather on the opinions as to the fall in the birthrate in different districts held by those who were in close touch with local conditions, and whose judgments were based on considerable medical, economic or charitable experience. We do not give the names of our informants, but in each case they have been selected for their knowledge and suitability, and extracts from their opinions are published and the general drift of them analysed in the second section of this paper. This material has taken four or five years to collect.

But even when the material had been collected and reduced, a very serious question arose, which is, we fear, occasionally overlooked by those friends of the

\* We have to thank the Registrar-General very heartily for permission to have the requisite data copied from the census sheets.

Galton Laboratory who purchase and read our publications. When, they ask, is this or that piece of work, cited, perhaps, in public lectures, going to be published? They do not realise that all our publications are costly, and that the expenses of printing and engraving have largely increased during the past decade. They do not know that for the last few years the Galton Laboratory's funds have proved quite inadequate for its work, and that our publication fund is now almost entirely replenished by the sale of publications. In other words to publish a long memoir like the present one we must first have earned enough money by the sale of its predecessors to pay for its issue! That is a very serious handicap, and will possibly be sufficient apology for the lateness of appearance of a memoir finished some years ago.

No inquiry into the fall in the birthrate would be really complete without a very full discussion of the question of the deliberate limitation of the family. The chief object of our inquiry among residents in the North was to discover where and to what extent in their opinion prevention of conception is practised. One of the most striking facts that emerged from a study of the birth curves was that the years 1875-7 very approximately marked the division between the periods of stability and of decline in the birthrate. It is noteworthy that this epoch almost exactly fits the active propagandism for the limitation of families initiated by Mrs Anne Besant and Mr Charles Bradlaugh which culminated in 1877 in the failure of the prosecution to convict them for publishing *The Fruits of Philosophy*. It would be absurd to suppose that either this teaching or the failure of the prosecution was the ultimate or sole source of the immense and rapid decline in our national birthrate. But the admission of legality in the publication and in the propagandism which then resulted gave a simply overwhelming force to a movement, which appealed largely to the needs of the better artisan and middle classes. The collapse of the trade boom of the early seventies was met, not by a reduction in the standard of living, but by a reduction in the number of those among whom the earnings were to be spent. The increasing restrictions on child labour, resulting from factory and education acts, demonstrated only too effectively to the thinking part of the community that the child had little economic value, and its production was left in increasing proportions to those who were not averse to charity or to the State taking charge of their progeny.

In connection with the subject of prevention of conception it was difficult to decide how much of the information received from our correspondents should be published in this memoir. But the Director of the Laboratory felt that in a *Report* of this kind a good deal of plain speaking was necessary, if conviction as to the present state of affairs was to be brought home to those who have ultimate charge of our national welfare. The very wording of the communications made to him by responsible men in many districts brings out only too clearly the present condition of family life. No deep impression would be formed if the mere statement: "Limitation of the family is practised in this district" had been printed. He has therefore himself selected such evidence as it seemed desirable to print with regard to this matter, and he is responsible for the accounts given of local practices.

E. M. E.

## *Report on the English Birthrate.*

### PART I. ENGLAND, NORTH OF THE HUMBER.

#### I. INTRODUCTORY.

##### A. *Material used.*

The fall in the birthrate has received much attention of late years. The fact of the fall is not disputed but differences of opinion exist as to the importance of the fall and as to the circumstances which have caused it.

The fall is considered by some as a natural outcome of increased prosperity; they assert that animals, when richly fed, breed less freely and conclude that the same applies to man; the fall in the birthrate they find due to an improved environment and recognise a natural process, not an artificial one.

Others regard the falling of the birthrate as due mainly to the deliberate limitation of the family, but regard this limitation as a mark of civilization and as an advantage to the race; where there are fewer to provide for, there the few will have better opportunities; when the family is small, the children have greater advantages and a better chance of success in life.

Others, and, probably, the greater number, regard the fall in the birthrate as a serious menace to our national efficiency. They point out that this fall has not been uniform in different physical and mental classes of the community; that a low birthrate in itself may not be a serious matter but that a differential birthrate, if it favours the less fit, may be a very dangerous social factor.

The birthrate is generally based on the number of births per 1000 of the population and there is a tendency to account for the fall in the birthrate by insisting on a diminishing marriage rate and on a later age of all marriages.

The first aim of the present paper will be to show in graphical form how great the fall in the birthrate has been and to correct as far as possible for differences due to changes in the marriage rate and in the age distribution of married women.

Secondly we shall try to discover in what types of district the fall is most marked.

Thirdly we shall inquire whether there are any facts which indicate whether the fall is due to a natural decrease in fertility owing to an increase in prosperity, or whether it is due to deliberate limitation of the family.

Fourthly, if we must conclude that the fall in the birthrate is due to deliberate limitation of the family, we shall try to discover whether there are any social or economic changes which have caused or increased that limitation.

Fifthly we shall discuss whether the fall occurs uniformly in all sections of the community or whether it belongs especially to any classes differentiated in physique and mentality.



To eliminate the effect of changes in the marriage rate we have calculated the birthrate throughout on the number of married women of 15 to 55 years, and have dealt with the years from 1851 to 1906. Owing to the manner in which the ages of married women were tabulated in the earlier census returns we have been obliged to take the reproductive years as between 15 and 55, although we should have preferred to have taken 50 as the upper limit\*. In a few cases the birthrate has also been calculated on the married women of 15 to 35 for comparative purposes, and the birthrate for the years 1861, 1871 and 1901 based on the number of married women of 15 to 45 is also given in connection with the *potential birthrate* to which reference will be made later.

The number of married women is of course only obtainable for each census year and we have assumed that the increase or decrease in the number has been regular between the census years. The objections to this assumption are obvious, especially in districts of rapid growth as in mining and engineering districts. In the early seventies there was a boom in mining and engineering and many young men flocked into the districts developing these occupations, but the boom was practically over before 1881 and probably some emigration took place, and by making the increase uniform between the census years 1871 and 1881 we have almost certainly underestimated the population and so overestimated the birthrate for certain years. The number of legitimate births only has been used in our investigations. We have worked throughout on registration districts as the number of married women is only given for registration areas in the 1851, 1861, 1871, 1881 and 1891 census reports.

In the 1851 census the ages of the married women are not given but all are included of the "age of 20 years and upwards"; to obtain the number of married women in 1851 we calculated on the basis of the 1861 census the number of married women between 15 and 20 and over 55 and added them in the first case and subtracted them in the second case from the total given in the 1851 census.

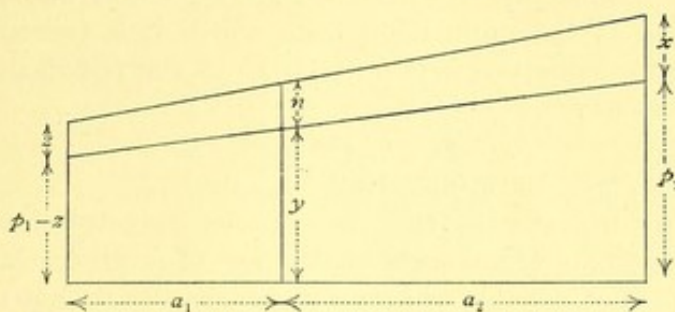
When we reached the year 1901 another difficulty presented itself as the number of married women is not given for each registration district; the Registrar-General kindly allowed us to have the number of married women for the registration districts extracted from the original sheets, and we are indebted to Mr Martin of the General Register Office for carrying out this work.

Changes in the registration districts presented some difficulty, especially when occurring nearly mid-way between two census years, as the population and number of married women can only be obtained for the census years. The same method of dealing with these changes was employed throughout except in one or two cases which will be referred to when they occur.

The method actually adopted was as follows: Let  $p_1$  = population in the first census,  $p_2$  in the second census. Let  $n$  = number of inhabitants removed in the intercensal year  $a_1$ , i.e. if the year of the first census be  $A_1$ , let the year of

\* There are quite a sensible number of births to wives between 45 and 50 and some births to wives over 50 years. But the age groups running in ten year periods 35-45 and 45-55 in the 1881 and 1891 censuses precluded any other division than the one we have taken.

removal be  $A_1 + a_1$ , and let  $A_2 = A_1 + 10 = A_1 + a_1 + a_2$  be the year of the second census. Let  $p_1 - z$  be the population which would have become  $p_2$  at the second census, and let  $p_2 + x$  be the population at the second census that  $p_1$  would have become. Let  $y$  be the population representing  $p_2$  at the intercensal year  $a_1$ , when the registration district was altered. Then assuming uniform change of rates, and taking the horizontal coordinate to represent years, and the vertical coordinate to represent population, we have the diagram :



Hence by similar figures :

$$\frac{p_1 - z - y}{a_1} = \frac{y - p_2}{a_2} \dots\dots\dots(i),$$

$$\frac{z}{p_1 - z} = \frac{n}{y} = \frac{x}{p_2} \dots\dots\dots(ii).$$

The first equation gives us  $y$  and the second  $n$ . But the Registrar-General does not give us  $n$ , but only states  $z$  the population of the transferred district at the *previous* census. Hence (i) would give  $y$  the reduced population at the transfer and (ii)  $n$  the actual number transferred. We suppose throughout the transfer made at the previous census. Hence if  $b_x$  be the number of births in the year  $A_1 + x$  in the district from which a population (size  $z$  in  $A_1$ ) was taken in the year  $A_1 + a_1$  and  $m_x$  the number of married women, 15-55, in the year  $A_1 + x$ , the reduced births are  $b_x (p_1 - z)/p_1$  till  $A_1 + a_1$  and then  $b_x$ , and the married women are :

$$m_x = m_1 (p_1 - z)/p_1 + (m_2 - m_1 (p_1 - z)/p_1) x/(a_1 + a_2),$$

$$= m_1 \frac{(p_1 - z)}{p_1} \left(1 - \frac{x}{10}\right) + m_2 \frac{x}{10},$$

giving the birthrate until  $A_1 + a_1$ ,

$$= 100 b_x \left(1 - \frac{z}{p_1}\right) / \left(m_1 \left(1 - \frac{z}{p_1}\right) \left(1 - \frac{x}{10}\right) + m_2 \frac{x}{10}\right) \dots\dots\dots(iii),$$

and after  $A_1 + a_1$ ,

$$= 100 b_x / \left(m_1 \left(1 - \frac{z}{p_1}\right) \left(1 - \frac{x}{10}\right) + m_2 \frac{x}{10}\right) \dots\dots\dots(iv).$$

If  $p_1', m_1', m_2', b_x'$  be the like quantities to  $p_1, m_1, m_2, b_x$  in the district to which  $z$  is transferred the birthrate until  $A_1 + a_1$  is

$$= 100 b_x' \left(1 + \frac{z}{p_1'}\right) / \left(m_1' \left(1 + \frac{z}{p_1'}\right) \left(1 - \frac{x}{10}\right) + m_2' \frac{x}{10}\right) \dots\dots\dots (v),$$

and after  $A_1 + a_1$  is

$$= 100 b_x' / \left(m_1' \left(1 + \frac{z}{p_1'}\right) \left(1 - \frac{x}{10}\right) + m_2' \frac{x}{10}\right) \dots\dots\dots (vi).$$

Clearly in (iii) we assume that the transferred population would have the same proportion of births as the population from which it is taken, while in (v) we assume that it has the same proportion of births as the population to which it is added, i.e. we must have

$$b_x \cdot z / p_1 = b_x' \cdot z p_1',$$

or

$$100 b_x / p_1 = 100 b_x' / p_1', \text{ nearly.}$$

That is the crude birthrates in the two districts must be nearly the same. This is probably approximate enough in the case of small transfers, but even in larger transfers it is not possible to better it, because we do not usually know the births in the transferred population.

*Illustration.* In 1895 Bradford lost to Halifax a population which was 2777 in 1891. Find the birthrates in 1893 and 1897 for Bradford and Halifax. Here for Bradford:

$$p_1 = 339,104, \quad m_1 = 52,292, \quad m_2 = 57,348, \quad b_2 = 9071, \quad b_6 = 8010, \quad z = 2777.$$

Substituting in (iii) with  $x = 2$ , and in (iv) with  $x = 6$  we have: Birthrate in 1893 = 17.0, and in 1897 = 15.4. Again for Halifax:

$$p_1' = 185,282, \quad m_1' = 27,763, \quad m_2' = 30,897, \quad b_2' = 4508, \quad b_6' = 4339, \quad z = 2777.$$

Substituting in (v) with  $x = 2$ , and in (vi) with  $x = 6$  we have: Birthrate in 1893 = 16.0, and in 1897 = 14.6.

With the exception of one or two districts the changes in registration areas do not give great trouble, as the populations transferred are usually very small as compared with the total populations dealt with. Changes in the boundaries of the registration districts are not given or referred to when the population transferred is not sufficient to affect the birthrate. Some registration districts of small population have been combined and changes in the boundaries of districts are not referred to when included in combined districts. The birth curve was worked out separately for each district and only those were combined in which the curves, social conditions and occupations were similar. When a district had on an average less than 500 births per year we combined it when possible with an adjacent district provided that district was a similar one; such combinations occur almost exclusively in agricultural districts.

It is generally assumed that marriage is now contracted at a later age and that some of the fall in the birthrate may be attributed to the later age of marriage. In order to test this point we have calculated the average age of married women between 15 and 55 years for the counties at each census year from 1861, and further we have calculated the *potential birthrate* for each registration district for the census years.

TABLE I. *Average Age of Married Women of 15-55 years.*

	1861	1871	1881*	1891*	1901
Cheshire .. .. .	36.0	36.0	36.2	36.3	36.3
Lancashire .. .. .	35.3	35.4	35.5	35.9	35.9
Yorkshire, West Riding ..	35.5	35.5	35.8	36.0	36.0
"    East .. .. .	36.0	35.9	35.7	36.1	36.0
"    North .. .. .	36.7	36.4	35.8	36.2	36.4
Durham .. .. .	34.8	34.6	35.0	35.2	35.2
Northumberland .. .. .	35.8	35.5	35.7	35.7	35.5
Cumberland .. .. .	36.5	36.4	35.9	36.4	36.8
Westmorland .. .. .	37.0	36.6	36.9	37.3	37.8

\* Different age grouping.

In 1861, 1871 and 1901 we have used five year groups but in 1881 and 1891 the ages after 25 are grouped in ten years, i.e. 25-35, 35-45, 45-55; it is difficult to understand why this difference in grouping occurs; we can only accept it and note the fact.

It will be clear from the table above that there has been comparatively little change in the age distribution of married women in the counties north of the Humber; the average age of married women between 15 and 55 has risen slightly since 1861 in Cheshire, Lancashire, the West Riding of Yorkshire, Durham, Cumberland and Westmorland, but the change is very slight; it is more marked in some registration districts as we shall see when we consider the registration districts separately; such a slight change will have but little effect on the birthrate. In the East Riding of Yorkshire the average age of married women is unchanged; in the North Riding and in Northumberland the average age of married women has slightly fallen†; wives between 15 and 55 were younger in 1901 than they were in 1861.

The potential birthrate shows the difference that the age distribution may be expected to make in the birthrate, and we shall see that we cannot account for the fall in the birthrate by insisting on the greater age of married women.

The method used for calculating the potential birthrate was that described by Professor Tait in *Fecundity, Fertility and Sterility* by Matthews Duncan, Part VI, p. 215 *et seq.*, and may be briefly reproduced as follows. Professor Tait states that "By *fecundity* at a given age, we mean the probability that during the lapse of one year of married life, at that age, pregnancy, producing a viable child, will ensue." Now if  $f_t$  represent the fecundity at age  $t$  then Professor Tait points out from tables of Dr Duncan for wives in Edinburgh and Glasgow that we can express the value of  $f_t$  by a number proportional to  $50 - t$ . Thus  $f_t = k(50 - t)$  where  $k$  is a number whose value can be easily found. According to Duncan's table  $k$  is  $\frac{3}{2}$  and we find that for 100 married women aged 15-19 inclusive the probable number of births is  $\frac{3}{2}(50 - 17.5) = 48.75$ ; for 100 married women of 20-24 inclusive the probable number is 41.25; for 100 married women of 25-34

† Probably due to the development of iron and mining in what were formerly almost purely agricultural districts.

inclusive, 30; for 100 married women of 35-44 inclusive the probable number of births is 15; for 100 married women of 45-50 inclusive it is 3.75; after 50 for all women according to Tait it is zero. The actual number of wives for these different age groups must be multiplied by 48.75, 41.25, 30, 15 and 3.75 respectively; by adding and dividing by the number of wives of 15-55 we get the potential birth-rate per 100 married women of 15-55.

We must point out that the average fecundity of married women aged 15-20 may or may not be measured accurately by 48.75 births per 100 married women, but the approximation will be quite sufficient to indicate whether changes in the age distribution of married women are or are not largely responsible for a decreased birth-rate. We have seen that the age distributions only differ slightly in the counties; we shall see that the variations are more marked in the registration districts and the potential birth-rate gives in perhaps the clearest form the rough loss or gain in births due to a change in the ages of the married women.

It must be noticed that Professor Tait's formula allows for no fecundity for wives over 50 and there is very little doubt that it underestimates the potential birth-rate of the working classes. In fact, as we shall see, the potential birth-rate during the first 25 years of the period we are considering is generally lower than the actual birth-rate. Originally we found the potential birth-rate on wives of 15-45 and these figures are given for the three years 1861, 1871 and 1901 for each registration district, but we felt that for comparative purposes it was more satisfactory to try and deal throughout with wives of 15-55. But the wives of 45-50 are not given separately in any census till 1901, and we have therefore had to divide the wives 45-55 in the proportion of wives 45-50 and 50-55 in the census of 1901. We shall discuss the *difference* in the potential birth-rates between census years; but if we had a quite accurate measure of the potential birth-rate we cannot believe that it would materially alter the differences found.

We must now describe the methods employed in our attempt to discover in what types of district the fall in the birth-rate is most marked. These methods include an analysis of the occupations of males and of the industrial employment of females, but we must say at once that it is impossible to give any really adequate treatment of this part of our problem from the data available in the census.

The chief difficulty throughout has been the fact that the number of married women can only be obtained for *registration districts* for the census years from 1851 to 1891 inclusive, and consequently we have been obliged to work entirely with registration districts. As will be seen, these districts are very far from homogeneous; agricultural, mining, manufacturing, and residential elements may be found in the same district, and for the purpose of ascertaining in what type of district the fall is heaviest it would be advisable, if it were possible, to work with far smaller and more homogeneous divisions.

It may be suggested that this difficulty could have been overcome by basing the birth-rate on the population, but it will be obvious that we should then have been obliged to correct for the marriage rate and age distribution of married women, and this on our present data is impossible.

The question of how far the employment of married women and a large factory population are associated with a fall in the birthrate is an interesting one, but the difficulties in the way of an adequate discussion are very great. Occupational statistics, except in the 1871 census, are not given for registration districts, but in the 1901 census this information is given for county and municipal boroughs and for the larger urban districts for males and females over 10 years, but as all rural districts and all urban districts of less than 5000 inhabitants are omitted it must be remembered that in all tables giving occupational statistics the results are based in most cases on a *portion* only of the population in each registration district. In the great industrial centres the part of the district omitted is small and the occupational statistics are of value, but in one or two cases a further difficulty has arisen. The cities of Liverpool, Manchester and Sheffield and the county borough of Hull include in each case the larger part of two registration districts, and as the occupational statistics and certain statistics of social condition are given for the city or for the borough these statistics do not necessarily apply to the registration districts; this difficulty is discussed more fully in the general description of each registration district. The occupational statistics are of value if the following facts are borne in mind; first that they must be considered in conjunction with the percentage of the district included in the table, and this is the most important fact to remember; secondly that the percentages given are the proportion of males or females over 10 years of age to the whole living population of males or females over 10 years of age, and thirdly that the figures are given for 1901. These last two facts are not repeated in the discussion of each district; wherever actual percentages of males or females occupied are given they are taken from the 1901 census.

In the table of occupations for 1901 (for example, Tables VII and VIII) under the heading of "Totals" a row of figures is given showing the occupations for the sum of those sections of the registration districts which are available. These may be compared with the figures for the whole county\* taken from the summary of the Registrar-General for the aggregate of urban and rural districts (Table 35, *Census*, 1901) which are given in the first row; the figures in the rows entitled "County" and "Totals" are important as showing what differences would have been likely to arise in the figures for the individual registration districts had we been able to include the rural and smaller urban districts.

The rural registration districts are extremely difficult to deal with; no statistics were published by the Registrar-General in 1901 which are of the slightest assistance in ascertaining whether the district is agricultural or residential; the percentage of tenements of less than five rooms is small whichever type of district we are considering; the percentage of domestic servants and the percentage of men actually engaged in agriculture would be a good test, but these facts are not given for rural districts except in the aggregate. We have been generally able to ascertain whether such districts are essentially farming or essentially

\* The "county" here means the administrative county which differs slightly from the registration county.

residential, but when a residential element is present it is extremely difficult, in fact impossible, to decide how great that element is, and the treatment of rural districts remains at present quite inadequate. We hope that in tables of occupations published in the future occupational statistics will be given for all districts irrespective of whether they are called rural or not. Figures of occupations are given for the aggregate of all rural districts of the county (see last row of Table VII, for example), and this is certainly a great assistance in enabling us to discover for a whole county whether the rural districts as a whole are engaged in agriculture, or whether mining, etc. is of more importance; we can also find the number of women employed as domestic servants, etc. in the rural districts, and this will help us to decide how far rural districts in a county are residential districts, but all this will be of very little assistance in dealing with each registration district separately.

We may find out, for example, that the rural districts in Durham are almost entirely mining districts, or that in Northumberland and the West Riding of Yorkshire the rural population is engaged in about equal numbers in agriculture and mining, but this knowledge will not help us when we come to the registration districts. The result of this difficulty is that the correlations between occupational statistics and the regression coefficients which mark the fall in the birthrate and between the employment of the mother and the fall in the birthrate are not wholly satisfactory. The data do not always adequately represent local economic features, and further, individual districts, as we shall see, may have customary social conditions which still continue to override economic factors.

In the occupational tables for women, domestic servants, charwomen and women engaged in laundries have been classed together (Group IV in the Registrar-General's summary), but where the term "domestic servant" is used in the description of each county borough or urban district it refers to the first of those categories only. The proportion per cent. of domestic servants to the total number of separate occupiers or families is given by the Registrar-General for the larger urban districts in the 1901 census and is a useful index of the social condition and prosperity of any particular district.

We now come to the third and fourth points to be discussed, namely whether the fall is due to a natural decrease in fertility or to deliberate limitation of the family; what part changing social and economic conditions play in the fall and how far the fall in the birthrate is a differential fall.

We have tried to deal with these points in two ways, first by attempting to measure the social condition in each registration district and then associating it with the fall in the birthrate, and secondly by obtaining information from residents in the districts. It is difficult to express sufficient gratitude to our friends in the north; many have made special inquiries from those likely to have the required information, special statistics have been given to us and some correspondents have written at great length. The questions asked concerned the following topics:

- (1) The nature of the social and economic conditions prevailing in the district.

(2) The nature of the chief industries and occupations and the changes that have taken place in those industries during the last fifty years.

(3) The extent of propagandism by advertisement or otherwise for the limitation of the family, and the time when such propagandism was started. We asked also whether deliberate limitation has been in the opinion of our correspondents a factor in the reduction of the birthrate, and whether the fall has occurred equally in all classes.

It is obvious that no direct facts or statistics can be available for answering the third question as to the influence of deliberate limitation of the family, and it must be emphasized that the statements made by our correspondents are in most cases only opinions and they themselves have insisted on that fact. But they have given views directing attention to lines of thought and inquiry which can be pursued further, and the accumulated mass of opinions which through the kindness and interest of our correspondents we have been able to collect may help to drive home the seriousness of the problem of the falling birthrate and the necessity for its discussion from all points of view\*.

Some attempt has been made to measure the social conditions of each registration district in 1901 by calculating

(1) the percentage of tenements of less than five rooms in which there are more than two people per room.

(2) the percentage of one and two-roomed tenements.

(3) the percentage of tenements of less than five rooms.

(4) the number of paupers in the workhouse per thousand of the population.

(5) the number of families or separate occupiers per house.

(6) the number of persons per acre.

(7) the percentage of general labourers from the 1871 census.

The percentage in (1) is the measure of overcrowding adopted by the Registrar-General; (3) is useful as throwing light on the question of how far a district is a working class district. With regard to (4) it must be remembered that the percentage of paupers in the workhouse varies in different districts at different times of the year and the estimate obtained from the census report is only a rough estimate of pauperism in a district. In considering the number of persons per acre in its relationship to social state it should be noted that few inhabitants to an acre may be due to various causes; the registration district may be largely agricultural or largely residential or it may be inhabited almost entirely by miners with large tracts of unoccupied land surrounding the mines, and the small number

\* We have quoted the opinions of our correspondents whenever we have received them, not always verbatim, but we have given the substance where possible except in the following particular:

Our correspondents were not aware that we were calculating the birthrate on the number of married women of 15 to 55 but naturally assumed that we were calculating it, as is usually done, on the population, and in discussing the cause of a falling birthrate they have referred to disproportion in the sexes and to a large proportion of men and women over or below the reproductive ages; these are matters of weight if we were dealing with the birthrate based on the population but are irrelevant under the circumstances, and they have been omitted from the discussion.



of people per acre may not mean greater prosperity or a better social condition ; the numbers are given but they seem to us to be worth very little as a measure of social conditions except in districts where there is practically no agricultural area to be considered as in Lancashire, and we have not referred to them in the discussion of each registration district. The percentage of general labourers of 20 years and over, obtained from the 1871 census, is given in these tables as it is given for the whole registration district in that year, but it is not to be compared with the occupational statistics of 1901. The first three facts which we are using as a measure of social conditions are given for all urban and rural districts and these districts have had to be combined to give the information for registration districts ; the other four sets of statistics are given for registration districts.

#### B. *Measurement of the Fall in the Birthrate.*

We have measured the fall or rise in the birthrate by the slope of the straight line of best fit to the birthrates plotted to time. After some consideration we decided to divide the period under discussion into two parts, from 1851 to 1875 inclusive and from 1876 to 1906 inclusive, and to calculate the "regression coefficient" for each series of years. The fall in the birthrate has started at somewhat different dates as will be seen from an examination of the curves for each registration district, but the curves for the counties show that as a rule this fall began about the middle of the seventies. There is no doubt that to a certain extent the fall was a natural one, a return to normal conditions after the extraordinarily high birthrate in the early seventies, but when a normal condition had been reached the fall continued. When we consider the various registration districts we shall find that the fall in the birthrate varies considerably, but in the counties, which are of course far more heterogeneous in character than even the registration districts, this variability is not so great. In every county there has been a well-marked fall since 1876, greatest in Westmorland, least in Durham. In every county except one there was a rise in the birthrate between the years 1851 and 1875, but in most cases the rise is insignificant and we may consider that the birthrate was on the whole steady except in Northumberland and Durham where the rise from 1851 to 1875 was nearly as marked as the fall from 1876 onwards in those same counties.

The figure we have used to measure this fall is the *regression coefficient*\*, or the slope of the best fitting straight line to the series of birthrates plotted to the years. From 1876 to 1906 inclusive is a period of 31 years and the regression coefficient measures the average annual fall or rise in the birthrate in this period ; when the birthrate has fallen the coefficient is negative ; when it has risen the coefficient is positive ; for example, if the regression coefficient be  $-.2$  this means that the average loss of births per year is  $.2$  over the period considered, or put in another way, in ten years the loss of births is 2 and in the 31 years we are

\* This technical term is used here for a coefficient found in the same manner as a regression coefficient ; namely as the slope of the best fitting straight line to a series of points, here of course assumed to be equally weighted.

considering the average loss over the whole period would be 6·2 births. The birthrate averaged from 20 to 26 births per 100 married women in the 25 years from 1851 to 1875 in the nine counties\* north of the Humber and it will be obvious that a regression coefficient of  $-.2$  which means a loss of 6·2 births during 31 years is a serious reduction on an average birthrate of 20 to 26 births.

Except in a few rural districts the birthrates are based on over 1000 births and over 5000 married women, and the numbers are frequently double and treble these amounts, so that the probable errors of individual rates will be slight; the deviations will be no doubt exaggerated owing to the impossibility of obtaining accurately the number of married women in the intercensus years.

For a measure of the relative reliability of the slope of the regression line we have used  $\cdot67449$  times the square root mean square residual divided by  $\sigma_x/\sqrt{n}$  where  $n$  is the number of years, and  $\sigma_x$  is the standard deviation in years, each year being given equal weight. This is, of course, not absolutely correct, but it is approximately correct, and quite sufficient as a test of relative reliability. The main factors making for irregularity are the scattering tendency of various local and annual economic variations and the range of years over which the best fitting line is determined. These are properly measured by the factors square root mean square residual and by  $1/\sqrt{n}$ .

## II. ON THE CONDITION OF ENGLAND IN 1851 AND IN 1901.

The district north of the Humber with which we are dealing is now and was in 1851 the centre of the cotton and woollen trades, which are chiefly associated with Lancashire and Yorkshire respectively. It is also a centre for coal mining and iron works and both developed greatly during the third quarter of the nineteenth century. In 1851 machinery had supplanted hand-work in all branches of the spinning industry and for the most part in weaving, but hand-weaving was still carried on to a certain extent, and in wool-combing and framework-knitting the uniform application of steam seems to have been still further delayed; in the silk trade hand looms are still largely used. From 1851 onwards the increase in the consumption of iron was most marked and is to be attributed to the increasing use of machinery in agriculture, to the substitution of iron ship-building for wooden ship-building and to the rapid growth of railways. We are not concerned in this paper with slight variations in the birthrate following seasons of depression; the commercial crisis of 1857, which affected our iron and textile industries, and the civil war in America from 1861 to 1865 caused a depression in the north, the result of which can be traced in the birthrate especially in Lancashire and Yorkshire and is well marked in some registration districts, but this is aside from the main point we are considering; we must, however, again refer to the extraordinary boom in the coal and iron trade in the early seventies. It is clear from the descriptions sent to us by our correspondents that from about 1871 to 1876 was a period of the greatest prosperity

\* We regard the three Ridings of Yorkshire as three separate counties throughout.

in the north; all districts seem to have shared in it, but in iron and mining centres the conditions were unique\*; wages increased to an extraordinary amount and as much as £1 a day is reported as being earned by miners. There was a rush of the young and strong to these districts during the early years of the seventies, but by 1876 the boom was over, work became less, and it seems likely that an exodus occurred. There is little doubt that by making the number of married women increase evenly between the census years we have underestimated the number of married women in the middle of the seventies in these iron and mining districts and overestimated the birthrate. The most extraordinary rise of all is to be found in the North Riding of Yorkshire where Middlesbrough suddenly sprang up, and in that Riding we find the number of births increasing from 8663 in 1875 to 11,755 in 1876. An indication of the rush of "foreigners" to this district can be obtained from the census report of 1881; in Middlesbrough at that date we find that only 54.9 per cent. of the population were Yorkshire born. By the kindness of the Medical Officer of Health for Sheffield we are able to reproduce the accompanying diagram showing the per cent. of dividends paid by several leading firms in heavy Sheffield trades from 1870. This diagram clearly indicates the prosperity in those trades in the early part of the seventies; the trade boom seems to have reached its highest point in 1873 and certainly by 1877 had fallen below the average for the last 38 years. The Medical Officer of Health for Sheffield also kindly plotted the marriage rate (previous to 1888 for the registration districts of Sheffield and Ecclesall-Bierlow), and it is noticeable that it follows closely the dividends paid †.

A brief reference must be made to the condition of factory employees in 1851 at the beginning of the period we are considering and their condition in 1906 at the close of the period. Board of Trade reports dealing with the earnings and hours of labour in the textile trades and in the metal, engineering and ship building trades in 1906 were issued in 1909 and 1911 respectively; a summary of their contents is given in an Appendix and we shall refer to the general conclusions later.

In 1851 the earlier series of the factory acts had been passed and the acts of 1844, 1847 and 1850 fixed the hours of labour etc. in textile factories. The 1844 Act reduced the hours of work for children between eight and thirteen to six and a half a day, either in the morning or afternoon, no child being allowed to work in both on the same day, except on alternate days, and then only for ten hours. Young persons (aged 13 to 18) and women were not to work more

\* In mining districts the boom seems to have come rather earlier than in those with iron works.

† We have also put on the diagram the birthrate based on the number of married women of 15-55, for the Sheffield registration district. In this Report we have kept Sheffield and Ecclesall-Bierlow separate, but it would have been better to have combined them for plotting this rate. The curves for the two districts are similar in their variations but the fall in Ecclesall is greater than in the Sheffield registration district. It must be noticed that though the birthrate rose after the period of prosperity in the seventies, the prosperity of 1898 to 1900 and that of 1905 to 1908 did not sensibly affect the birthrate. The difference between the reaction of the birthrate to prosperity at the two periods appears to us evidence of the present artificial character of the birthrate.

DIAGRAM II. Elderton on the English Birthrate. Part I.

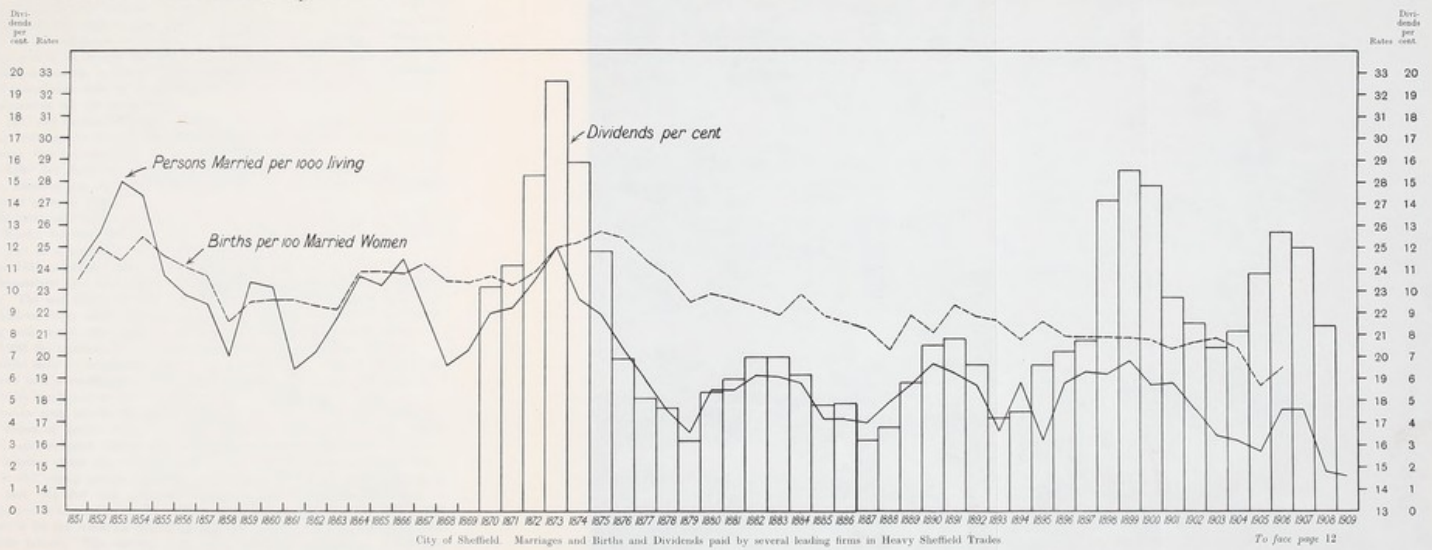
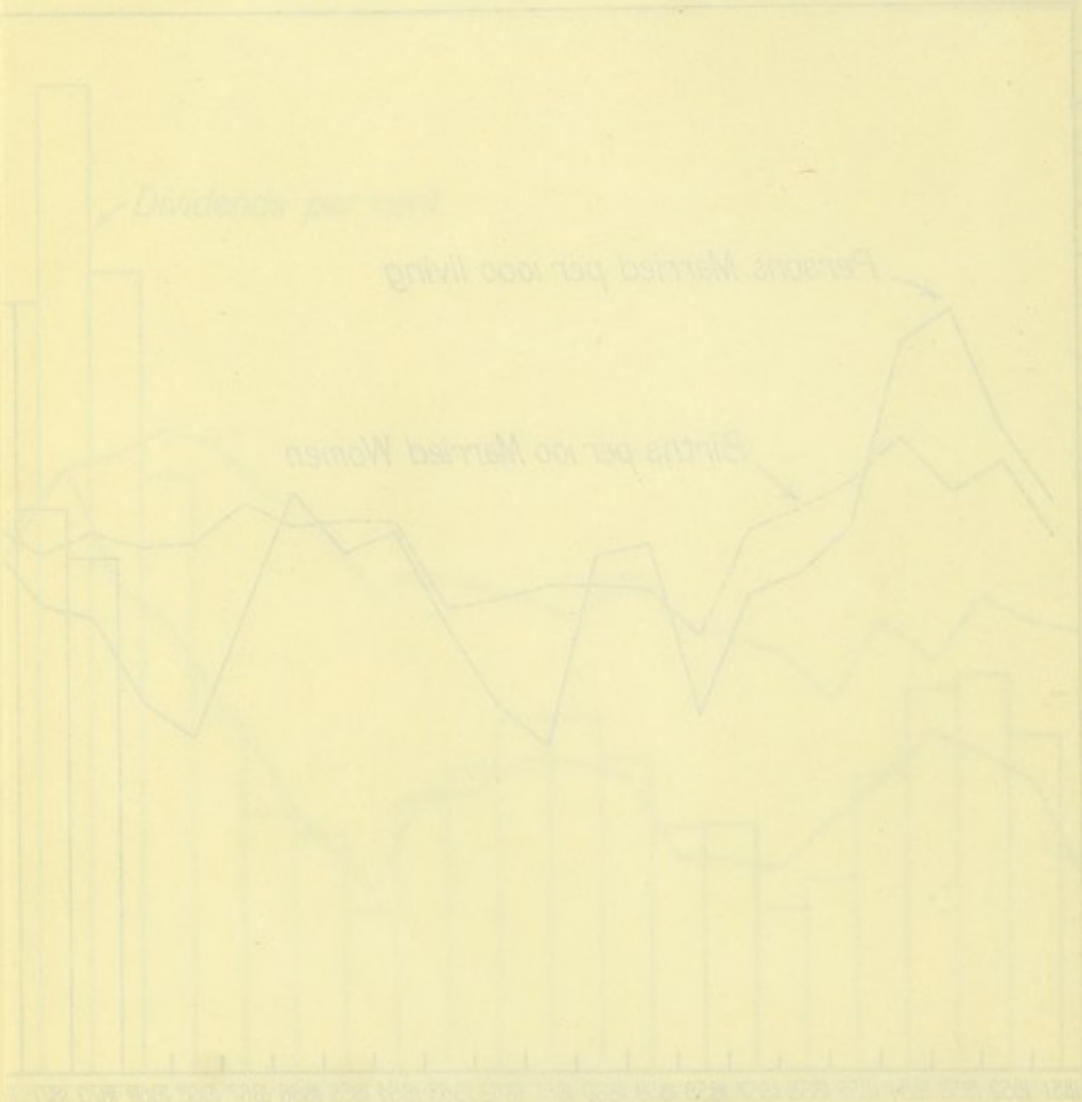


Chart II. Relation to the British Market. Part I.



1870 10  
 1871 11  
 1872 12  
 1873 13  
 1874 14  
 1875 15  
 1876 16  
 1877 17  
 1878 18  
 1879 19  
 1880 20  
 1881 21  
 1882 22  
 1883 23  
 1884 24  
 1885 25  
 1886 26  
 1887 27  
 1888 28  
 1889 29  
 1890 30  
 1891 31  
 1892 32  
 1893 33  
 1894 34  
 1895 35  
 1896 36  
 1897 37  
 1898 38  
 1899 39  
 1900 40  
 1901 41  
 1902 42  
 1903 43  
 1904 44  
 1905 45  
 1906 46  
 1907 47  
 1908 48  
 1909 49  
 1910 50

than twelve hours for the first five days of the week (with one and a half hours out for meals) and nine on Saturday, and these hours were to be reckoned consecutively from the period of commencement. Certificates of age were to be granted only by surgeons appointed for the purpose, and accidents were to be reported to the surgeons who were to report to the inspector. Dangerous machinery was to be fenced and the factory to be thoroughly washed with lime every fourteen months or painted with oil once every seven years. Certificates of school attendance were to be obtained in the case of children, the employer being responsible for the school fees.

The 1847 Act limited the hours of labour for protected persons to 63 per week from July 1847 and to 58 per week from May 1st, 1848, which with the stoppage on Saturday was the equivalent of ten hours work per day.

The 1850 Act fixed the hours of work from 6 a.m. to 6 p.m. or from 7 a.m. to 7 p.m., allowing one and a half hours for meals and enacting that on Saturdays work should cease at 2 p.m.

These three acts define the position of the worker in textile factories in 1851. A Print Works Act had also been passed before 1851 extending the principle of the 1844 Act in a modified form to Print Works.

From 1851 onwards a series of factory acts and education acts were passed; factory legislation was extended to all factories and workshops and to workers in mines. The first Mines Act had been passed in 1842 excluding all women and young children from work underground in coal mines, but further regulations regarding coal mines were passed and legislation finally included all mines.

By 1906 the position of the factory worker was regulated as follows:

No child may be employed under 11 years; from 11 to 14, on proof of age being given and a certificate of the child's physical fitness for employment, a child may be employed on the "half-time" or "alternate day" system.

A woman may not be knowingly employed for four weeks after childbirth.

The hours of labour vary; in textile factories with which we are largely concerned, and in print works, and bleaching and dyeing works the maximum number of hours which may be legally worked in a week, exclusive of meal times, by women and young persons under 18 years of age is 55 on any manufacturing process, and  $55\frac{1}{2}$  for any purpose whatever. For operatives employed in workshops and non-textile factories the maximum number of hours which may be worked is 60 per week for protected persons. There were no restrictions on male adult labour. The factory acts have regulated sanitation, ventilation and overcrowding. The chief changes between 1851 and 1906 in the regulations affecting factories are the improvements in sanitation, etc. and the stricter regulation of the work of children between 11 and 14, i.e. of half-timers. The proportion of half-timers employed in 1905 as given in the Board of Trade Report on Textile Trades forms a striking contrast to the number employed in 1885. In 1885 91,651 half-timers were employed, in 1904 only 31,744 were employed; the percentage of half-timers to the total number of employees in textile factories in 1885 was 8.9, in 1904 it was 2.5.

The Board of Trade Reports also show an increase in wage\* between the years 1886 and 1906 of 20 per cent. for men and 22 per cent. for women in the textile industries†. “Having regard, however, to the character of the years 1886 and 1906 and the years immediately preceding and following them, . . . it would probably more nearly represent the facts to say that the average advance during the last 20 years had been about 16 per cent. for men and 18 per cent. for women.”

In 1886 the state of employment in the textile industries, in common with most industries at that date, was one of depression, more especially in cotton and jute industries, while 1906 was a year of comparatively good employment‡.

In the metal, engineering and ship building trades the percentage increase in wage for five trades (pig iron, tinplate, engineering and boiler making, ship and boat building and repairing and railway carriage and wagon building) has been 25·7; but again it must be remembered that the comparison is between a year of depression and one of prosperity.

There is no doubt that wages on the whole during the last 20 years have increased, that there has been a great improvement in the conditions under which factory hands work and that the number of “half-timers” employed has decreased largely in the textile trades.

The three classes of industries with which we are chiefly concerned are the textile industries, the metal, engineering and ship building trades, and mining. Agriculture is an important industry in some districts but the number of men employed is a very small one relatively to the total number employed industrially.

The first and most important of the textile industries is cotton; 83 per cent. of the cotton operatives work in Lancashire, and the average weekly wages of operatives working full time is 29s. 6d. for males and 18s. 6d. for females.

Women are very largely employed, and when doing the same work as men earn the same wage, but, except in weaving in which both men and women are employed, generally speaking women do different and less highly paid work than men. In the weaving on an average the women have charge of the smaller looms and consequently their average wage works out lower than the men's. Married women are largely employed, but in some districts not extensively after the birth of the first child; in all districts it seems to be customary for those who have been working in the factory to continue to do so until the birth of the first child. Of the total number of hands employed, 62 per cent. were women.

The woollen and worsted industry is the second in importance; 72 per cent.

\* I.e. average earnings for full time.

† Including cotton, woollen and worsted, linen, jute and silk.

‡ In a consideration of the real value of wages the question of prices must arise. In the evidence given before the Royal Commission on the Civil Service Mr G. Stapylton Barnes, C.B., gives information on this subject. Dealing with wholesale prices in the United Kingdom he shows that from 1873 till the quinquennial period 1893-1897 the price of food, tobacco, and drink fell; in the quinquennial period 1903-1907 there was a slight rise, and between 1908 and 1912 the rise was well marked. Rents in London and 20 large provincial towns rose between 1880 and 1900, but there seems no reason to suppose that between 1886 and 1906 there was any great increase in the total cost of living.

of the operatives employed in this industry worked in the West Riding of Yorkshire. The average weekly wage in Yorkshire for men was 27*s.* 3*d.* and for women it was 13*s.* 10*d.* As a rule the women are employed in less skilled and less highly paid work, and when men and women do the same work, as in weaving in Huddersfield, the men are paid at slightly higher rates. Of all the employees 58 per cent. were women. Married women are employed, but from an examination of the percentages in the census report and of the tables we shall give later, it can be seen that the total number of married women employed in woollen towns is not as great as the number employed in cotton towns, the reason being that Yorkshire towns are not so exclusively textile districts as Lancashire towns.

The silk industry is carried on almost entirely by women, only 29 per cent. of all the operatives being men. In Cheshire\* the average weekly wage was 24*s.* 5*d.* for men and 11*s.* for women, while in Lancashire and Yorkshire it was 27*s.* 2*d.* for men and 12*s.* 9*d.* for women. Married women are employed.

The fustian and cord cutting industry is carried on in certain districts in Cheshire, Lancashire and the West Riding of Yorkshire. Women are chiefly employed, only 31 per cent. of the operatives being males; the employment is very irregular and earnings are low; men working full time averaged 24*s.* 1*d.* a week and women averaged 10*s.* 10*d.*

In those metal, engineering and ship building industries with which we are concerned, wages are higher than in the textile trades; practically no women nor "half-timers" are employed. The highest average weekly wage † (39*s.* 1*d.*) was earned in iron and steel manufacture; the average wage in ship and boat building was 35*s.* 11*d.*, in pig iron manufacture was 34*s.* 4*d.*, in engineering and boiler making was 32*s.* 5*d.*, in light iron castings, etc. was 31*s.* 4*d.*, and in railway carriage and wagon building was 30*s.* 9*d.* Generally speaking the work in these trades is carried out by "groups" of work-people, a few of whom have much responsibility and receive a high wage while the subordinates receive lower pay. Foremen and subordinates are usually paid time wages while the head man of the group and frequently his chief assistant are paid piece wages or in some cases time wages with a bonus on the output. There are practically no half-timers and very few women are employed.

No report has yet been issued on the mining industry, so no summary is possible and only general impressions can be given which have been obtained from our correspondents.

On the Durham and Northumberland coalfields wages seem to be high, in Easington they averaged 6*s.* 2*d.* a day, but miners do not seem to work more than five days a week and often only four; the miner frequently receives a free house, rates and coal; practically no married women are employed. A man of 20 years is generally earning full wages.

We shall next examine the conditions in each registration district and attempt to discover whether the fall in the birthrate is associated with any definite social conditions or occupational statistics. We have already explained

\* Congleton, Leek and Macclesfield.

† Working full time.



the difficulties arising when we deal with occupational statistics, namely, the absence of complete data for each registration district, but though we have not worked out a complete series of correlations there are some points which will appear on an examination of the available data for each county.

The same method has been adopted throughout. First a short general introduction to the county is given, stating the chief occupations and the percentage of males over ten years engaged in each occupation. Significant changes in the boundaries of registration districts and the percentages of the population in each registration district which are omitted from the tables of occupations are then given, followed by a few general remarks. The occupational statistics for men and women and a table of social conditions for each registration district are then given. This is followed by a description of each registration district; information being given in a table in the following form:

TABLE II.

	1851	1861	1871	1881	1891	1901
No. of married women, 15-55 .. .. .						
No. of births .. .. .						
No. of births per 100 married women (15-55)						
Potential birthrate (Tait's) (15-55) .. .. .						

Regression coefficient (1876-1906), ; (1851-1875),  
 Percentage of district included in tables of occupations,  
 Changes in boundaries of registration district,

The most important datum in the above table is the regression coefficient which measures the fall or rise in the birthrate.

Then follows a brief description of each district, and when we have been able to obtain any correspondents in a district we quote their views. We are quite aware that these descriptions are occasionally inadequate; where it has been impossible to obtain help from residents in the neighbourhood, we can give no more than percentages of certain housing and occupational conditions from the census of 1901, when these indeed are available. When actual percentages of men and women employed are given, they were taken from the census, but all other matter in this description of the districts is from our correspondents' letters.

### III. ON THE CHANGES IN THE BIRTHRATE IN THE COUNTIES.

Before turning to the description of the various counties and registration districts we will give for the counties as wholes the regression coefficients and the potential birthrates in order to show as clearly as possible the significance of these constants, and to emphasize one or two points in connection with them. First we must note that the regression coefficient gives the loss or gain in births per year, but in the potential birthrate, if we compare two years, we have, not the change

per year in the number of births, but the change per ten years, and in comparison we must divide the difference in the potential birthrate between any two census years by 10 before comparing it with the regression coefficient. It must also be remembered that a negative regression coefficient means a *fall* in the birthrate, and finally that for calculating the regression coefficients we have divided the material at an epoch between two census years, and that consequently throughout, when we are comparing the actual fall or rise in the birthrate as measured by the regression coefficient with differences in the potential birthrate, the periods for which comparisons are made are never absolutely identical.

In the first column of Table III we have regression coefficients measuring the change in the number of births per year, between the years 1851 and 1875 inclusive. We see that, except in the West Riding of Yorkshire, the birthrate rose between those years; this rise is hardly worth consideration except in Cumberland, Durham and Northumberland, but in those counties during the 25 years from 1851 to 1875 there was an increase of 2.0, 3.9 and 3.8 births

TABLE III.

	Regression coefficients		Potential birthrate, women (15—55)*				
	1851—1875	1876—1906	1861	1871	1881	1891	1901
Cheshire .. .. .	+ .049 ± .009	- .215 ± .005	20.7	20.6	20.5	20.3	20.2
Lancashire .. .. .	+ .019 ± .012	- .239 ± .005	21.6	21.4	21.4	20.8	20.6
Yorkshire, West Riding	- .012 ± .011	- .241 ± .008	21.2	21.3	21.0	20.7	20.5
"    East    "	+ .051 ± .007	- .187 ± .005	20.7	20.7	21.2	20.6	20.6
"    North   "	+ .030 ± .007	- .271 ± .017	19.6	20.0	21.0	20.4	20.1
Durham .. .. .	+ .155 ± .023	- .166 ± .011	22.2	22.6	22.1	21.9	21.6
Northumberland .. .. .	+ .151 ± .012	- .180 ± .010	20.9	21.2	21.1	21.1	21.3
Cumberland .. .. .	+ .082 ± .011	- .243 ± .006	19.9	20.0	20.8	20.1	19.5
Westmorland .. .. .	+ .032 ± .016	- .309 ± .009	19.1	19.7	19.4	18.9	18.2

\* Except for 1881 and 1891 the number of wives of 45-50 is given for the whole counties.

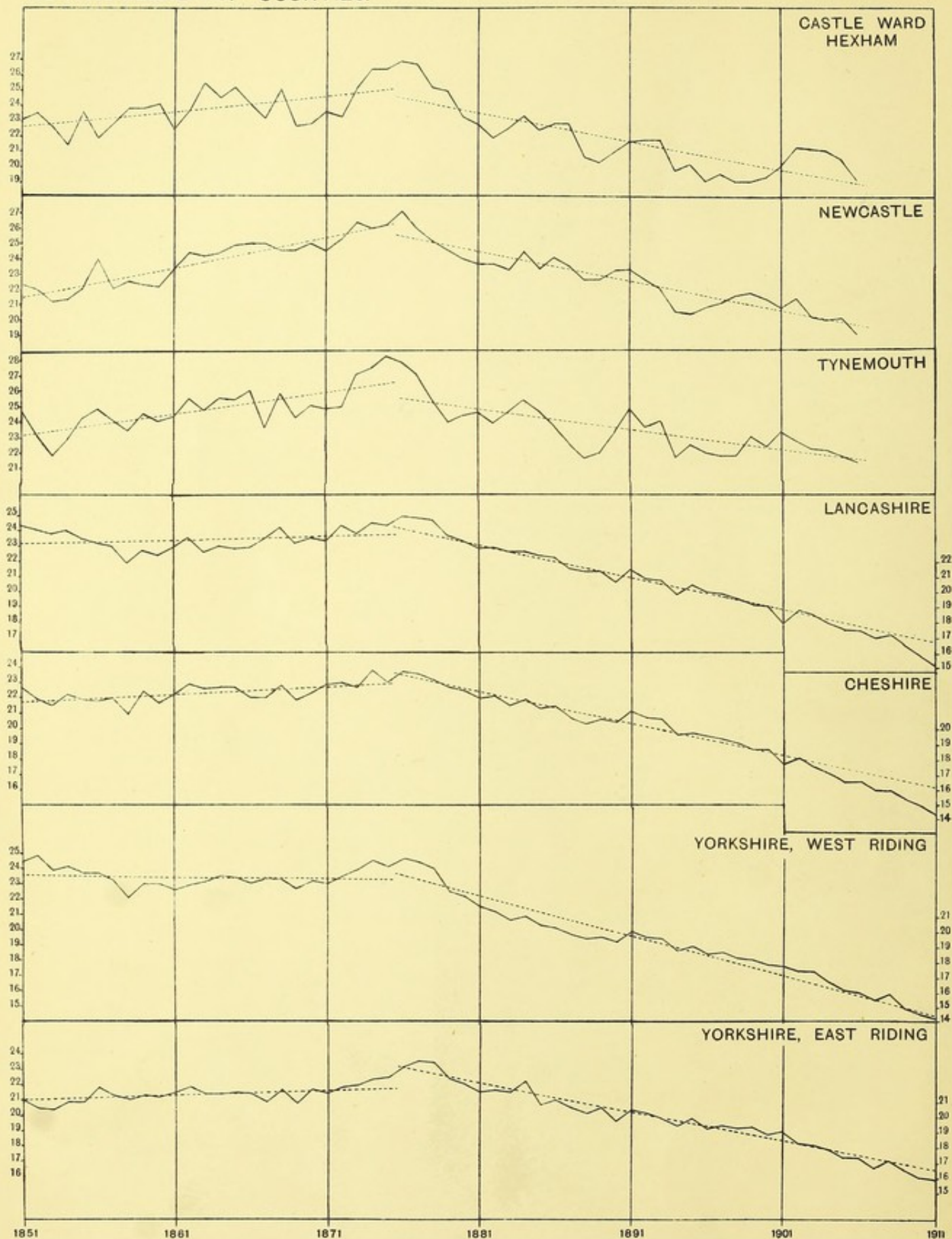
respectively. How can we account for this decided rise in the birthrate in these counties? Durham and Northumberland are mining counties, chiefly for coal, and Cumberland is also a mining county, but largely for ironstone, and these 25 years were a period of prosperity culminating in the trade boom of the seventies. We assume that the high birthrate is due to this great trade boom and the resulting prosperity. On the other hand it is asserted that great prosperity physiologically connotes a lower birthrate and it seems a little difficult to reconcile the two statements. Prosperity seems to be accompanied by a high marriage rate and by a younger age of marriage. Now the first of these factors we can discard, we have already allowed for it; but if the rising birthrate be due to a younger age of marriage this would be shown by a rising potential birthrate. At this point we feel the need of a five yearly census even more than we do generally and also the want of the age distribution of married women in 1851. We desire to know whether the change in the potential birthrate is sufficient to account

for the rise in the birthrate between 1851 and 1876; but firstly we do not know the potential birthrate for 1851, and secondly we do not know what was happening between 1872 and 1876. The birthrate between these years leaps up especially in the North Riding of Yorkshire and in Durham (see Plate XVIII), and probably if we had returns for 1876 we should find that the potential birthrate was high and that the number of married women was probably much greater than we have estimated it and consequently that the birthrate was really lower. As we have said before, by making the number of married women increase uniformly between two census years we have, almost certainly, increased the apparent rise in the birthrate in the seventies. The boom in the coal mining districts seems to have come earlier than in the iron and the highest point in the potential birthrate in the coal mining districts was reached in 1871, while in the ironstone districts it was in 1881. The boom was probably over earlier in the coal mining districts and a certain exodus and rearrangement had taken place before 1881, but in the iron districts the boom possibly came later and lasted longer. The rise in the potential birthrate between 1861 and 1871 or 1881 is obviously not sufficient to account for the rise in the birthrate even if we consider that the potential birthrate is underestimated. Look at Cumberland for instance in Plate XVIII; we choose this county because there was no extraordinary rise in the birthrate about 1876 and we have no reason to suppose that the potential birthrate at that date would show any marked change from the rate in 1871 or 1881. The increase in the number of births per year is  $\cdot 082$  while the increase per year between 1861 and 1881 due to changes in the potential rate was  $\cdot 045$ , or if we consider the change during 20 years we see that the actual increase in the number of births was 1.64, while the increase in the potential birthrate was  $\cdot 9$  births. It does not seem that increased prosperity means a lesser birthrate unless of course we assume that deliberate limitation of the family had begun before 1851, that increased prosperity removed the necessity of limitation and consequently that there was a rise in the birthrate. This suggestion seems very unlikely, although it may be impossible to settle the point definitely one way or the other. In Northumberland also the rise was very steady and the gain in births was  $\cdot 151$  per year between 1851 and 1875, while the rise in the potential birthrate was only  $\cdot 03$  births per year between 1861 and 1871. An underestimate of the potential birthrate cannot account for this difference, and there would appear to be signs of greater fertility and of the birthrate actually rising with increasing prosperity. At the same time we must insist on the impossibility of pronouncing definitely; the data are inadequate before 1876 and now that limitation of the family is the rule, even if we had a census every year, it would be impossible to solve the question.

In the West Riding of Yorkshire there was a slight fall in the birthrate between 1851 and 1876, but it is really not significant; such as it is, it cannot be accounted for by changes in the age distribution of married women between 1861 and 1871; possibly it resulted from the period of depression in the woollen trade which existed for some years after 1856. In individual districts in Yorkshire and in

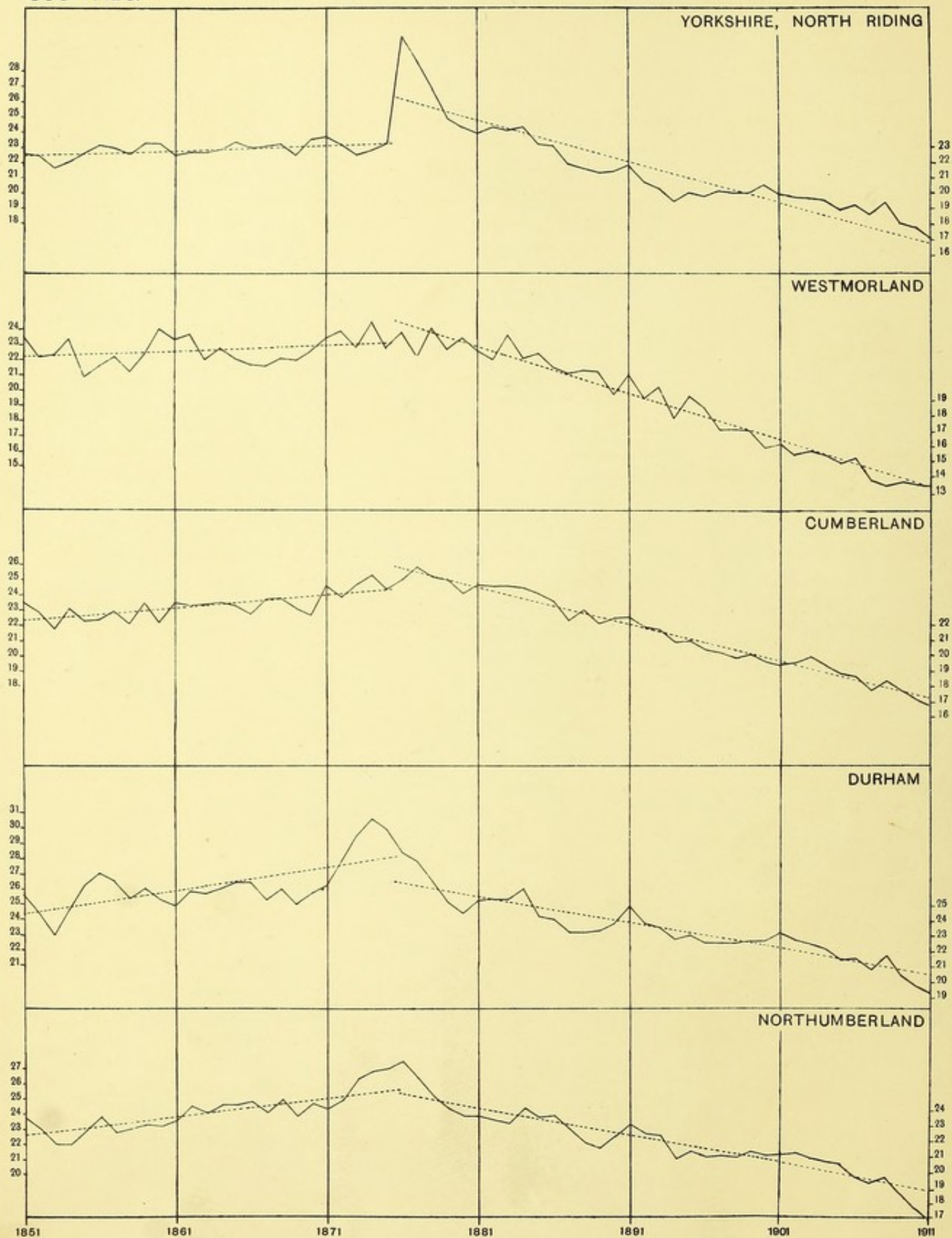


NORTHUMBERLAND. COUNTIES.





COUNTIES.



some districts in Lancashire we shall also see some signs of a fall in the birthrate even before 1876.

We have discussed this question of the potential birthrate and the rise in the actual birthrate before 1876 at some length because it constantly crops up in individual registration districts; such expressions as "the high birthrate in the seventies is due to the boom in the coal and iron trades" constantly recur in the letters from our correspondents and in the descriptions of the districts. As we have remarked it is difficult to say how far such a statement is accurate; a time of prosperity means a higher birthrate because it means a younger marriage age; it may in itself mean a higher birthrate. The birthrate is also sometimes exaggerated owing to our ignorance as to the number of married women between the census years, and all we can state with certainty is that a time of prosperity is *apparently* accompanied by a high birthrate. This statement is not repeated every time the question of the 1870 trade boom arises.

In every county the birthrate has fallen since 1876; the actual loss of births in those 31 years varies from 9.6 births in Westmorland to 5.3 births in Durham, and it will be obvious that this is out of all proportion to the fall in the potential birthrates between 1871 and 1901.

As we have already noted this memoir was finished before the publication of the census returns of 1911, but, as it is now possible to obtain the figures for the counties north of the Humber from 1901 to 1911, we decided to work out the birthrate for the eleven years from 1901 to 1911. It is not possible to bring all the registration districts up to date as the number of married women of 15-55 years is not given for registration districts in the 1911 census, but the facts for the counties will show the trend of events and whether the birthrate is continuing to fall or whether the fall is arrested. There is one slight difficulty; from 1901 till 1910 inclusive births are given for the *registration* county, but in 1911 births are given for the *administrative* county; it was necessary therefore to make the marriages increase regularly from 1901 to 1911, but to base the birthrate in 1911 on the number of married women in the administrative county.

TABLE IV. *Counties North of the Humber.*

See Plates XVII <i>bis</i> and XVIII <i>bis</i>	Loss of births per year		Difference in potential births per year	
	1876—1906	1901—1911	1871—1901	1901—1911
Westmorland	.31	.31	.05	.07
North Riding	.27	.25	.00	.05
Cumberland	.24	.30	.02	.04
West Riding	.24	.34	.03	.09
Lancashire	.24	.31	.03	.10
Cheshire	.22	.34	.01	.10
East Riding	.19	.28	.00	.09
Northumberland	.18	.37	.00	.09
Durham	.17	.35	.03	.08



We found the slope of the regression line for the 11 years from 1901 to 1911 inclusive giving the actual loss of births per year, and a comparison with the loss for the 31 years between 1876 and 1906 is interesting though far from reassuring. The figures are given in Table IV which also shows the difference in the potential birthrate between 1901 and 1911.

In Westmorland and the North Riding of Yorkshire there has been practically no change in the rate of fall in the birthrate, but in every other district the fall has been accelerated, and in the mining districts of Northumberland and Durham the rate of the fall has been doubled. In fact if the rate of decrease of the years 1901 to 1911 had extended back to 1876 the birthrate would now have been in every county except perhaps the North and East Ridings of Yorkshire half what it was 40 years ago. The reader will see from a comparison of Plates XVII *bis*—XVIII *bis* with Plates XVII—XVIII, how markedly our calculation for the years 1901–1906 has really underestimated the drop in the birthrate.

It is quite true that some of this loss is probably due to the rather older age of the married women. Between 1871 and 1901 there was very little change in the age distribution of married women and in the potential birthrate, but since 1901 there has been a decided change, and there is a difference in the potential rate of from  $\cdot 04$  to  $\cdot 10$  births per year. The fall in the birthrate has been accelerated but it is just possible that deliberate limitation of the family is not increasing at a greater rate than it was ten years ago. There has been, however, no check to its progress.

#### IV. CONSIDERATION OF THE INDIVIDUAL COUNTIES.

##### A. *The County of Lancashire.* (See Plates I—V, XVII, and XVII *bis*.)

##### I. *The County as a Whole.*

*Lancashire.* The population of Lancashire numbered 4,437,518 in 1901 and of these 4,154,571 are included in the urban districts and 232,472 in the rural districts, i.e. 5.2 per cent.

The chief industries are :

(1) The various branches of the textile industry which occupy 13.3 per cent. of the males and 17.1 per cent. of the females over 10 years of age. An examination of the tables of occupations, Tables VII and VIII, pp. 26–27, shows that the textile industry is the staple occupation for men and women in Blackburn, Haslingden, Chorley\*, Bury†, Oldham, Ashton, Rochdale, Bolton and Preston. It is also carried on in Leigh, Salford and Manchester, but not to the same extent. Ashton, Oldham, Bolton, Leigh and Manchester are largely spinning districts and the men's wages are higher in these districts, all averaging over 31s. a week for a full week's work, while the women's wages in these districts average less than in the weaving districts where the men's wages are lower but the women's higher.

\* Chorley is included in the Preston district in the Board of Trade Report.

† Bury is included in the Rochdale district in the Board of Trade Report.

(2) Metal and engineering works occupy 11·1 per cent. of all males over 20 years, but the extent of this trade varies greatly in the different districts; the chief branch is engineering and boiler making, the centres for which are Barrow-in-Furness, Manchester, Bolton, Rochdale, Oldham, Bury and Haslingden and to a lesser extent Wigan, Preston and Lancaster. In Warrington iron and steel manufacture occupies more men than engineering, etc.

(3) The conveyance of men, goods and messages occupies 12 per cent., the chief centres being Liverpool and, to a lesser extent, Manchester.

Mining is practically of no importance in the county as a whole, but it is the staple industry in Wigan and Leigh and of a certain importance in Prescot.

The percentage of women employed in 1901 was 38·7, and of those employed 24 per cent. were married or widowed.

The proportion of tenements of less than five rooms averages 49·5 per cent. in the whole county, but there is a great range, namely from 16·7 per cent. in the registration district of Fylde to 73·3 per cent. in Oldham. In the amount of overcrowding, and number of one and two-roomed tenements, Lancashire compares favourably with most districts north of the Humber, but the number of paupers is high, due chiefly to the large number in and round Liverpool and Manchester. Changes in the boundaries of the registration districts from 1851 to 1906 are as follows:

1869. The Lunesdale registration district was formed by withdrawal from Lancaster.

1876. The Barrow-in-Furness registration district was formed from the sub-district Dalton-in-Ulverston.

1895. (a) 2194 of the population of Warrington were transferred to Runcorn.

(b) 684 of the population of Bury were transferred to Oldham.

(c) 852 of the population of Prestwich were transferred to Oldham.

(d) 3328 of the population of Ashton-under-Lyne were transferred to Prestwich.

(e) 681 of the population of Oldham were transferred to Rochdale.

(f) 2350 of the population of Rochdale were transferred to Bury.

(g) 9428 of the population of Rochdale were transferred to Haslingden.

(h) 3003 of the population of Haslingden were transferred to Bury.

(i) 4224 of the population of Saddleworth were transferred to Ashton-under-Lyne.

1904. 888 of the population of Clitheroe were transferred to Burnley.

In the table of occupations (p. 22) Lunesdale, Garstang and Clitheroe are omitted; Lunesdale is entirely an agricultural district, and statistics of occupation can only be obtained for 12 per cent. of the population of Garstang and 48·8 per cent. of Clitheroe. The occupational statistics are not satisfactory for either Chorley or Ulverston, only just over 50 per cent. of the population is included in each case. It must also be noted that occupational statistics and statistics of social conditions (except the number of paupers, families per house, people per acre and general labourers in 1871) are given for the city of Liverpool and for the

city of Manchester; the city of Liverpool includes the whole registration district of Liverpool and 86.8 per cent. of the registration district of West Derby and Toxteth Park, while the city of Manchester includes 91.1 per cent. of the registration district of Prestwich and Manchester and 70.5 per cent. of the registration district of Chorlton. It is unfortunate, especially in the case of the Liverpool registration district, that statistics are not given for the registration district itself; as Liverpool is one of the only two districts which shows no fall in the birthrate since 1875 a thorough investigation into social and occupational statistics is most necessary. Liverpool registration district probably differs widely from West Derby and Toxteth Park, in fact we know that this difference exists from the number of paupers and the number of families per house, but in occupational statistics and in housing statistics this difference does not appear. The same is true of the Manchester and Chorlton registration districts but probably not to so great an extent.

*The percentages of the population living in rural districts and in urban districts of less than 5000 inhabitants and consequently omitted from the table of occupations of men and women are given below.*

Ulverston	..	..	46.1	Rochdale	..	..	..	6.9
Blackburn	..	..	4.4	Bolton	..	..	..	0
Fylde	..	..	21.6	Lunesdale	..	..	..	all
Lancaster	..	..	22.6	Preston	..	..	..	14.9
Haslingden	..	..	0	Wigan	..	..	..	3.2
Burnley	..	..	12.3	Salford	..	..	..	0
Bury	..	..	5.6	Barrow-in-Furness	..	..	..	0
Ormskirk	..	..	24.5	Chorlton	..	..	..	0
Chorley	..	..	46.5	Leigh	..	..	..	9.8
Clitheroe	..	..	51.2	Warrington	..	..	..	10.5
Oldham	..	..	0	Prescot	..	..	..	21.3
Barton-upon-Irwell	..	..	10.8	West Derby and Toxteth Park	..	..	..	2.1
Garstang	..	..	88.0	Manchester and Prestwich	..	..	..	0
Ashton-under-Lyne	..	..	12.4	Liverpool	..	..	..	0

The fall in Lancashire shows greater variation than in any other county north of the Humber; in 11 of the districts the fall is measured by a regression coefficient of over .3 which means that in a period of 31 years the loss of births has been over 9. The greatest fall is in Ulverston where it is measured by a regression coefficient of .460, and the least fall has been in Manchester and Prestwich where the fall is measured by the regression coefficient .158, while in Liverpool there has been a slight rise.

The fall is greatest in two types of districts: the first type consists of those districts engaged in the textile industries where a large percentage of women are employed, and where bad social conditions, as measured by overcrowding and by the number of one and two-roomed tenements, do not prevail; these districts

contain essentially working class towns with a large number of tenements of less than five rooms ; such districts are Blackburn, Haslingden, Burnley and Oldham. The second type of district which shows a large fall is the residential type ; these districts have as their chief characteristics small percentages of tenements of less than five rooms and of one and two-roomed tenements, a proportion of domestic servants above the average and no or few factories of importance ; such districts are Ulverston, Fylde and Lancaster.

We do not mean to suggest that this always occurs ; local circumstances, variations in trade, etc. will affect the birthrate slightly and we shall find districts of the first type where the birthrate has not fallen so markedly. Rochdale for example would seem from the figures in the tables to be very similar in occupations and social conditions to Haslingden, but the fall has been distinctly less ; at the same time a careful comparison will show that in Rochdale the proportion of paupers is more than twice as great as in Haslingden, and the type of textile work differs (see description of the district, p. 52).

Speaking generally we shall find that where there is a large percentage of men and women employed in the textile industries the fall has been great, and where there is a small percentage of tenements of less than five rooms the fall has also been great, except when we are dealing with largely agricultural districts such as Garstang or Lunesdale.

Most of the districts show a tendency in the birthrate to rise in the middle of the seventies, but this rise is not nearly so marked as in the mining and engineering districts, while in certain cases the fall begins before 1876 ; in some of these districts, as in Blackburn and Oldham, changes in the potential birthrate are sufficient to account for this fall, but this is certainly not always the case.

Table V shows in the second column the actual loss of births between the years 1876 and 1906 inclusive, and the seventh column gives the loss which may be attributed to changes in the age distribution of the married women. It will be obvious that we cannot account for the fall in the birthrate by reference to these changes in the age distribution of the married women, though these are sensible in some districts. The fourth column gives the percentage loss of births, and it will be seen that in 14 districts the loss is over 40 per cent., in four districts it is between 30 and 40 per cent., in nine districts the loss is between 20 and 30 per cent. and in one district there has been a rise of 13 per cent. The birthrate at the beginning of the 20th century is only just over half what it was between 1851 and 1876 in 14 out of 28 districts in Lancashire.

The rural districts only form 5 per cent. of the whole population in Lancashire, and in the aggregate of the rural districts 26·0 per cent. of the males are engaged in agriculture, 9·5 per cent. of the males and 12·5 per cent. of the females are engaged in the textile industries and 7·9 per cent. of the males in mining, so that these rural districts are not entirely agricultural in character ; in the aggregate the percentage of women employed in domestic service is 12·0, which is a larger percentage than in Durham or the West Riding but a smaller percentage than in the other counties with which we are dealing.

TABLE V. *Lancashire. Birthrates.*

Registration District		Regression coefficient, 1876-1906	Actual change in no. of births in the 31 years	Mean birthrate, 1851-1875	Percentage change in no. of births	Potential birth-rate, women (15-55)		Potential change in no. of births in 30 yrs.	See page
						1871	1901		
(i)	Ulverston .. .. .	-460	-14.3	26.4	54	21.6	18.8	-2.8	28
(ii)	Blackburn .. .. .	-376	-11.7	25.3	46	21.1	20.1	-1.0	29
(iii)	Fylde .. .. .	-361	-11.2	23.2	48	19.3	20.0	+ .7	31
(iv)	Lancaster .. .. .	-356	-11.0	23.7	46	19.4	19.8	+ .4	33
(v)	Haslingden .. .. .	-355	-11.0	22.6	49	20.5	19.6	- .9	35
(vi)	Burnley .. .. .	-353	-10.9	22.6	48	21.2	20.6	- .6	37
(vii)	Bury .. .. .	-353	-10.9	22.4	49	20.8	19.5	-1.3	39
(viii)	Ormskirk .. .. .	-340	-10.5	24.6	43	20.1	19.1	-1.0	41
(ix)	Chorley .. .. .	-329	-10.2	25.0	41	19.8	19.7	- .1	42
(x)	Clitheroe .. .. .	-327	-10.1	22.7	44	19.5	18.7	- .8	44
(xi)	Oldham .. .. .	-312	-9.7	22.3	44	21.1	20.1	-1.0	45
(xii)	Barton-upon-Irwell .. .. .	-299	-9.3	22.5	41	20.9	20.2	- .7	47
(xiii)	Garstang .. .. .	-297	-9.2	24.3	38	18.5	18.5	+ .0	49
(xiv)	Ashton-under-Lyne .. .. .	-293	-9.1	21.9	42	20.5	20.1	- .4	50
(xv)	Rochdale .. .. .	-281	-8.7	21.4	41	20.9	19.7	-1.2	51
(xvi)	Bolton .. .. .	-274	-8.5	25.0	34	21.0	20.1	- .9	52
(xvii)	Lunesdale .. .. .	-263	-8.2	23.7	35	18.0	18.7	+ .7	54
(xviii)	Barrow-in-Furness .. .. .	-246	-7.6	26.4	29	21.6	21.4	- .2	55
(xix)	Preston .. .. .	-243	-7.5	24.4	31	20.6	20.0	- .6	56
(xx)	Wigan .. .. .	-219	-6.8	27.1	25	21.6	21.2	- .4	57
(xxi)	Salford .. .. .	-217	-6.7	23.2	29	22.2	21.3	- .9	58
(xxii)	Chorlton .. .. .	-215	-6.7	23.2	29	22.0	21.0	-1.0	59
(xxiii)	Leigh .. .. .	-204	-6.3	24.5	26	20.9	21.1	+ .2	61
(xxiv)	Warrington .. .. .	-193	-6.0	26.1	23	21.9	21.7	- .2	63
(xxv)	Prescot .. .. .	-188	-5.8	27.0	21	21.8	21.0	- .8	64
(xxvi)	W. Derby and Toxteth Park .. .. .	-162	-5.0	23.8	21	22.1	21.2	- .9	66
(xxvii)	Manchester and Prestwich .. .. .	-158	-4.9	22.5	22	21.8	21.3	- .5	67
(xxviii)	Liverpool .. .. .	+ .086	+ 2.7	21.1	13	22.2	21.1	-1.1	69

TABLE VI. *Social Conditions.*

Registration District	Regression coefficient, 1879-1906	Percentage of overcrowded tenements of less than 5 rooms	Percentage of one and two-roomed tenements	Percentage of tenements of less than 5 rooms	Paupers per 1000 of the population	Number of families or separate occupiers in one house	Number of persons per acre	Percentage of general labourers; 1871 census
(i) Ulverston .. .. .	- .460	4.32	1.46	23.1	4.49	1.0071	.31	19.25*
(ii) Blackburn .. .. .	- .376	4.08	2.02	52.2	4.93	1.0054	4.95	8.20
(iii) Fylde .. .. .	- .361	5.73	1.75	16.7	1.70	1.0212	1.66	11.14
(iv) Lancaster .. .. .	- .356	7.17	1.54	21.8	3.24	1.0072	1.07	4.41
(v) Haslingden .. .. .	- .355	8.58	11.01	61.5	2.74	1.0050	4.27	7.81
(vi) Burnley .. .. .	- .353	6.59	7.82	55.8	3.89	1.0052	3.12	6.69
(vii) Bury .. .. .	- .353	4.29	3.97	68.7	4.64	1.0059	4.23	8.26
(viii) Ormskirk .. .. .	- .340	7.54	7.88	28.8	3.54	1.0666	1.17	4.50
(ix) Chorley .. .. .	- .329	5.47	2.27	38.6	3.21	1.0079	1.18	8.74
(x) Clitheroe .. .. .	- .327	3.29	2.86	33.5	5.30	1.0131	.20	8.04
(xi) Oldham .. .. .	- .312	5.08	4.71	73.3	5.86	1.0042	12.36	8.93
(xii) Barton-upon-Irwell .. .. .	- .299	5.46	1.44	31.8	3.02	1.0125	4.77	9.16
(xiii) Garstang .. .. .	- .297	3.52	1.96	18.2	2.19	1.0101	.20	5.49
(xiv) Ashton-under-Lyne .. .. .	- .293	4.17	3.95	67.5	5.42	1.0057	4.70	7.52
(xv) Rochdale .. .. .	- .281	5.80	14.30	69.2	7.22	1.0013	3.78	10.20
(xvi) Bolton .. .. .	- .274	5.86	3.83	58.6	3.85	1.0055	5.67	7.27
(xvii) Lunesdale .. .. .	- .263	6.40	1.60	20.6	2.73	1.0056	.09	5.51
(xviii) Barrow-in-Furness .. .. .	- .246	23.24	13.54	33.8	3.94	1.2000	5.40	19.25*
(xix) Preston .. .. .	- .243	3.41	1.06	37.0	5.51	1.0061	2.29	6.08
(xx) Wigan .. .. .	- .219	14.12	9.10	59.6	2.47	1.0280	4.00	7.76
(xxi) Salford .. .. .	- .217	9.13	9.14	54.4	9.78	1.0349	39.18	10.75
(xxii) Chorlton .. .. .	- .215	6.10	6.70	45.5	7.00	1.0334	29.55	8.79
(xxiii) Leigh .. .. .	- .204	8.25	3.23	43.6	3.25	1.0230	3.56	7.33
(xxiv) Warrington .. .. .	- .193	7.59	3.43	41.7	6.20	1.0134	3.63	16.57
(xxv) Prescott .. .. .	- .188	11.45	4.39	49.6	5.70	1.0206	2.92	18.70
(xxvi) W. Derby and Toxteth Park .. .. .	- .162	13.99	13.32	41.7	7.40	1.0788	17.00	11.09
(xxvii) Manchester and Prestwich .. .. .	- .158	7.05	7.41	54.3	11.31	1.0290	24.83	10.38
(xxviii) Liverpool .. .. .	+ .086	14.75	14.74	43.9	25.83	1.3147	86.56	16.18
County .. .. .	- .239	8.01†	7.08†	49.5†	6.78	1.0346	3.45	10.15

\* In 1871 Barrow-in-Furness was included in Ulverston.

† Administrative county.

TABLE VII. Percentages of Males over 10 employed in various occupations\*.

Registration District	County†	Regression coefficient	Commercial or business clerks (v. 2)	Conveyance (vi)	Coal and shale miners (ix)	Iron and steel manufacture, engineering and machine making (x, 1, 3)	Building and works of construction (xii)	Wood, furniture, fittings, etc. (xiii)	Brick, cement, glass, etc. (xiv)	Chemicals, oil, etc. (xv), skins, leather, etc. (xvi)	Paper prints, etc. (xvii)	Textile factories, bleaching, etc. (xviii, 1-6)	Dress (xix)	Food, lodging, etc. (xx)	All other occupations (Census class) (xx)
Ulverston	..	..	3.1	12.0	6.3	8.2	7.9	2.0	1.0	1.8	1.6	12.3	2.8	6.0	—
Blackburn	..	..	1.3	6.3	.0	9.4	7.6	1.2	.4	1.6	1.9	.0	2.7	5.1	45.2†
Fylde ..	..	..	1.8	6.3	2.9	6.4	7.2	1.4	1.4	1.0	2.7	33.1	2.4	5.9	15.2
Lancaster ..	..	..	1.9	8.5	.0	4.7	14.9	2.8	.3	1.3	1.4	.0	2.6	11.0	28.4
Haslingden	..	..	1.8	5.1	3.0	10.6	6.5	1.2	.8	.7	1.1	2.5	2.7	6.3	31.2
Burnley	..	..	1.4	4.7	4.2	4.8	6.7	1.4	.6	1.0	.9	30.3	5.4	4.9	18.3
Bury	..	..	2.2	6.9	2.1	8.7	7.4	1.2	.3	1.4	3.2	41.3	2.2	5.5	13.6
Ormskirk	..	..	2.3	11.1	5.4	1.6	11.4	2.2	.5	1.0	1.4	28.1	3.1	5.3	18.0
Chorley	..	..	1.8	5.5	7.5	4.3	7.4	1.4	.2	2.8	.7	.8	3.2	8.2	30.5
Clitheroe	..	..	..	..	..	..	..	..	..	..	..	29.7	2.4	6.1	20.1
Oldham	..	..	2.0	5.4	1.6	17.2	6.6	1.4	.3	.6	.7	..	1.7	4.6	15.4
Barton-upon-Irwell	..	..	6.7	10.8	9.2	6.7	8.3	1.6	.5	1.1	2.0	..	2.4	5.9	24.4
Garstang	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ashton-under-Lyne	..	..	2.3	6.8	4.4	11.0	6.8	1.1	.3	1.0	1.0	..	6.6	5.8	16.2
Rochdale	..	..	2.1	6.5	1.4	10.5	8.2	1.5	.6	1.7	1.1	29.5	2.6	5.6	18.0
Bolton	..	..	1.9	6.5	10.5	13.3	7.2	1.2	.6	1.2	1.2	20.4	2.0	5.0	16.8
Lunesdale	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Barrow-in-Furness	..	..	1.8	9.0	.0	28.9	8.2	1.4	.5	.4	1.1	.4	1.6	3.9	31.0
Preston	..	..	1.8	9.2	.1	6.9	8.1	2.7	.4	.9	1.1	21.1	3.5	7.5	22.6
Wigan	..	..	1.3	6.3	44.7	5.9	5.1	.8	.3	.4	.4	..	1.7	4.3	12.8
Salford	..	..	4.2	15.2	2.1	9.0	9.1	2.5	.6	2.1	3.4	7.2	8.9	5.9	21.9
Chorlton	..	..	5.4	12.5	.3	10.7	8.5	2.8	.7	2.3	2.4	3.8	4.2	6.4	25.6
Leigh ..	..	..	1.2	4.0	38.4	5.3	5.3	.5	.5	.4	.8	11.8	1.6	5.1	12.6
Warrington	..	..	2.4	8.5	2.1	16.9	7.7	1.8	1.3	4.2	2.0	.9	1.7	5.6	31.0
Prescot	..	..	1.8	6.5	13.5	4.9	6.6	1.6	14.5	10.3	.4	.1	1.3	4.3	18.8
West Derby and Toxteth Park	..	..	5.2	26.0	.0	4.8	8.5	3.2	.3	1.7	1.7	.3	2.4	8.1	21.8
Manchester and Prestwich	..	..	4.0	13.7	.7	10.4	8.4	3.2	.8	2.5	2.3	5.4	4.5	6.5	23.5
Liverpool	..	..	5.1	26.7	.0	4.7	8.4	3.2	.3	1.7	1.8	.3	2.5	8.3	21.0
Totals	..	..	3.2	11.7	5.3	8.8	8.0	2.1	1.0	1.8	1.7	12.9	2.9	6.2	20.6
Rural Districts	..	..	1.3	6.0	7.9	2.9	5.6	1.1	.9	1.4	.7	9.5	1.2	3.5	—

\* Roman numerals in column headings refer to Registrar-General's classes in 1901 Census.

† Administrative county.

‡ Includes ironstone miners.

TABLE VIII. *Percentages of Females over 10 years employed in various occupations.*

Registration District	Regression coefficient	Teaching (iii. 4)	Domestic, char-women, laundry (iv)	Papers, books, etc. (xvii)	Textile factories (xviii. 1-6)	Tailoresses, etc. (xix)	Food, lodging, etc. (xx)	All other occupations	Total occupied
County* .. .. .	- .239	1.2	8.7	.7	16.6	4.2	3.0	4.4	38.8
(i) Ulverston .. .. .	- .460	1.6	10.5	.9	.2	5.2	2.7	3.1	24.2
(ii) Blackburn .. .. .	- .376	1.0	4.2	.3	44.5	2.9	2.0	1.7	56.6
(iii) Fylde .. .. .	- .361	1.2	12.9	.3	.3	2.8	10.4	7.0	34.9
(iv) Lancaster .. .. .	- .356	1.3	8.7	.3	6.7	3.4	5.1	5.5	31.0
(v) Haslingden .. .. .	- .355	1.0	4.1	.1	36.7	2.4	1.6	3.0	48.9
(vi) Burnley .. .. .	- .353	.9	3.8	.1	41.2	2.7	1.9	1.7	52.3
(vii) Bury .. .. .	- .353	1.0	4.5	1.3	35.3	2.5	2.0	2.3	48.9
(viii) Ormskirk .. .. .	- .340	1.5	16.3	.3	.4	4.4	4.8	6.0	33.7
(ix) Chorley .. .. .	- .329	1.2	4.9	.2	37.2	2.7	1.8	2.8	50.8
(x) Clitheroe .. .. .	- .327	.8	5.2	.2	37.6	3.4	2.0	1.5	50.7
(xi) Oldham .. .. .	- .312	1.0	4.5	.3	31.1	2.2	2.1	2.0	43.2
(xii) Barton-upon-Irwell .. .. .	- .299	1.6	9.5	.6	11.5	4.6	2.0	4.9	34.7
(xiii) Garstang .. .. .	- .297								
(xiv) Ashton-under-Lyne .. .. .	- .293	.9	4.8	.5	29.4	2.3	2.5	5.7	46.1
(xv) Rochdale .. .. .	- .281	1.0	5.2	.3	34.4	2.4	2.0	2.1	47.4
(xvi) Bolton .. .. .	- .274	1.0	5.1	.6	28.0	2.5	2.2	2.7	42.1
(xvii) Lunesdale .. .. .	- .263								
(xviii) Barrow-in-Furness .. .. .	- .246	1.5	7.4	.8	2.6	3.7	2.0	2.9	20.9
(xix) Preston .. .. .	- .243	1.2	6.0	.2	35.5	3.2	2.6	2.8	51.5
(xx) Wigan .. .. .	- .219	1.2	5.6	.2	14.7	4.6	2.1	3.9	32.3
(xxi) Salford .. .. .	- .217	1.1	8.3	1.8	11.4	6.0	3.2	6.1	37.9
(xxii) Chorlton .. .. .	- .215	1.2	10.3	1.2	5.8	8.3	3.5	7.7	38.0
(xxiii) Leigh .. .. .	- .204	1.1	4.7	.2	23.1	2.4	1.6	2.8	35.9
(xxiv) Warrington .. .. .	- .193	1.3	6.4	2.0	7.0	3.1	1.9	4.7	26.4
(xxv) Prescot .. .. .	- .188	1.7	7.0	.2	.1	2.8	1.9	5.0	18.7
(xxvi) W. Derby and Toxteth Park .. .. .	- .162	1.4	12.2	.9	.7	4.5	4.3	6.7	30.7
(xxvii) Manchester and Prestwich .. .. .	- .158	.9	8.1	1.4	7.9	8.8	3.7	8.1	38.9
(xxviii) Liverpool .. .. .	+ .086	1.3	11.6	1.0	.8	4.7	4.6	6.9	30.9
Totals .. .. .	—	1.2	7.7	.7	18.6	3.9	3.0	4.6	39.7
Rural Districts .. .. .	—	1.2	12.0	.3	12.5	2.2	1.4	4.8	34.4

\* Administrative county, which differs slightly from Registration county.



II. *Lancashire. The Individual Registration Districts.*

(i)

*Ulverston* registration district includes the rural district of *Ulverston* (17,716) and the urban districts of *Ulverston* (10,064), *Dalton-in-Furness* (13,020) and *Grange* (1,973).

See Plate I	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. ..	3899	4738	7768	5920	5843	5865
No. of births .. .. .	924	1183	2052	1525	1233	1024
No. of births per 100 married women (15-55)	23.7	25.0	26.4	25.8	21.1	17.4
Potential birthrate (Tait's) (15-55)* .. ..		19.8	21.6	20.8	19.3	18.8

Regression coefficient (1876-1906),  $- .460 \pm .027$ ; (1851-1875),  $+ .272 \pm .036$ .

Percentage of district included in tables of occupations, 53.9.

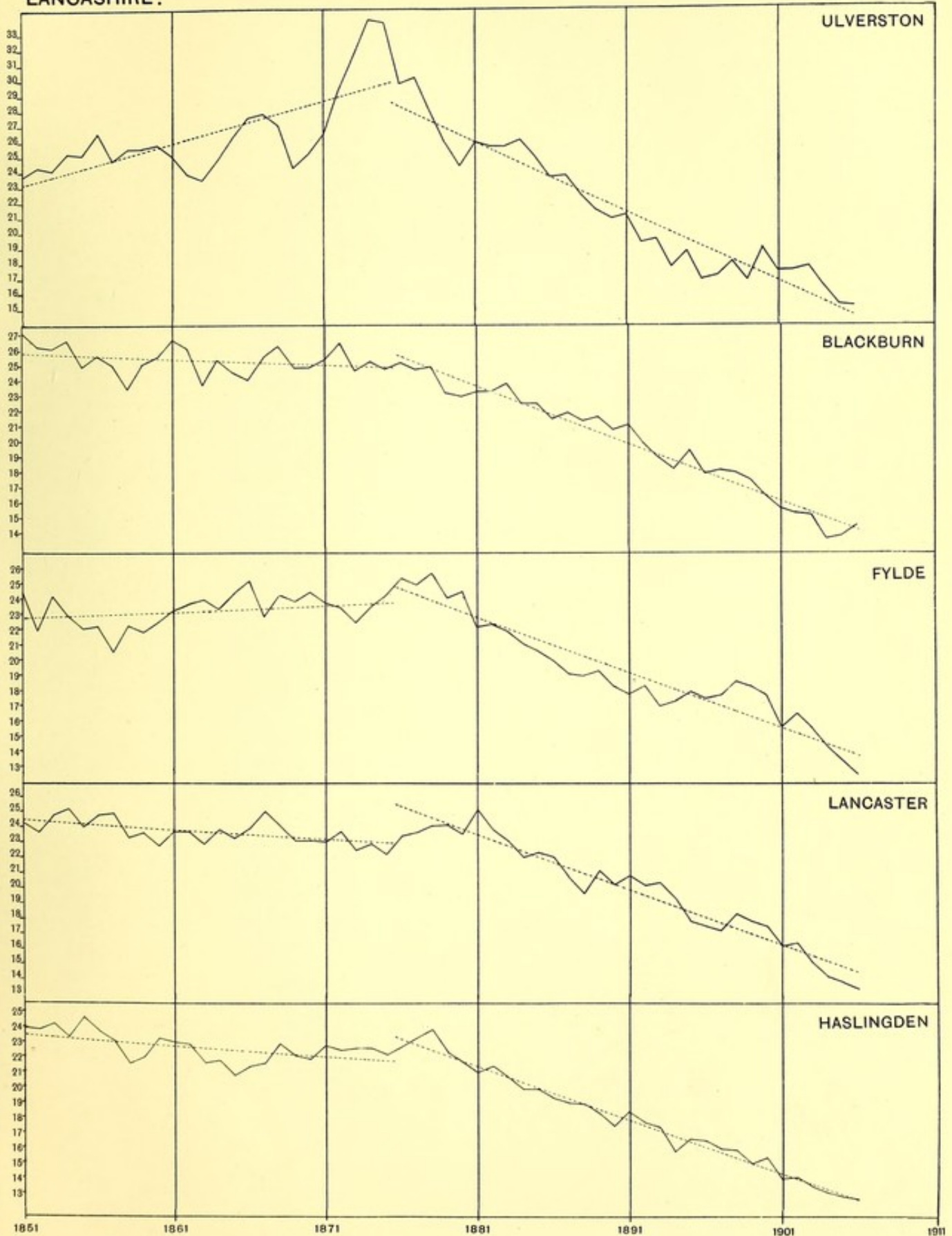
Changes in boundaries of the registration district: 1876, the *Barrow-in-Furness* registration district was formed from the sub-district of *Dalton-in-Ulverston*.

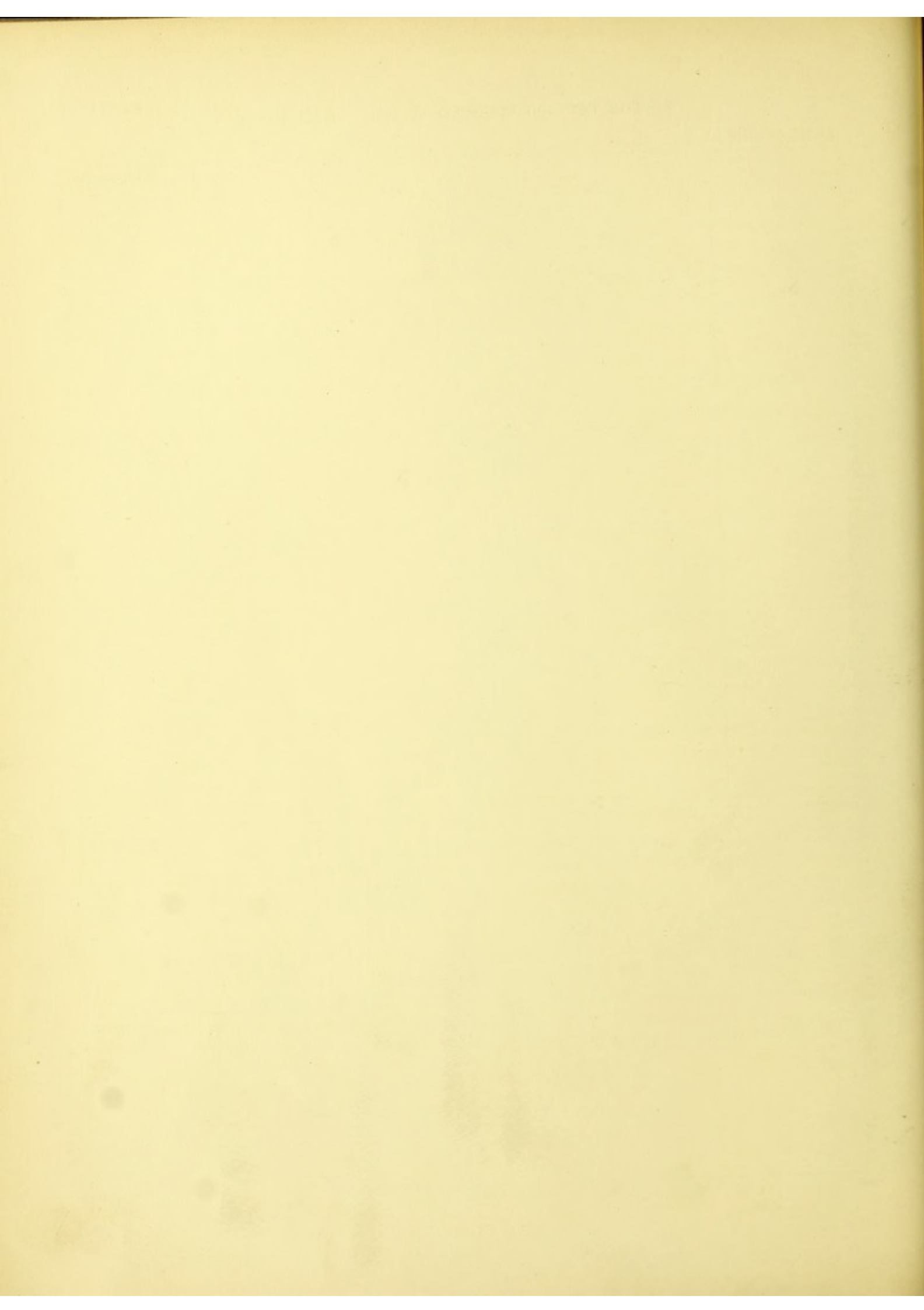
	1861	1871	1901
* No. of births per 100 married women (15-45)	32.4	32.8	23.5
Potential birthrate (15-45)	25.3	26.3	24.6

*Ulverston* is not a working class district as can be seen by the comparatively small percentage of tenements of less than five rooms (Table VI), and in the urban districts (Table VIII) by the higher percentage of domestic servants. The chief industries are ironstone mining and iron works. The amount of overcrowding, etc. is much below the average. The large percentage of general labourers in 1871 was due perhaps to the fact that at that date *Barrow-in-Furness* was still included in *Ulverston*. There was an extraordinary rise in the birthrate in the seventies due to the remarkable boom in the iron trade in the early part of that period. After 1884 the fall was very rapid till about 1896. The chief industry is ironstone mining which employs 32.7 per cent. of the males in *Dalton-in-Furness* and which is also carried on in *Ulverston*; there are also iron works, a paper mill and leather tannery in *Ulverston* and two or three bobbin mills, and there are timber coppice woods and farming in the rest of the district. Nothing has been noted by our correspondent of propagandism for the limitation of the family in this district, although we may remark that the rapid fall in the birthrate—apart from the potential change—suggests that restriction is customary. There has been a large exodus of young people to South Africa and Canada, and since 1871 a rather marked change in the age distribution of married women as judged by the potential birthrate.

BIRTHS PER 100 MARRIED WOMEN AGED 15-55

LANCASHIRE.





## (ii)

*Blackburn* registration district includes the county borough of Blackburn (127,626), the rural district of Blackburn (9,828), the municipal borough of Darwen (38,212) and the urban districts of Great Harwood (12,015), Rishton (7,031), Clayton-le-Moors (8,153), Church (6,463) and Oswaldtwistle (14,192).

See Plate I	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. ..	13381	18572	22258	26858	31437	35837
No. of births .. ..	3631	4935	5623	6233	6608	5541
No. of births per 100 married women (15-55)	27.1	26.6	25.3	23.2	21.0	15.5
Potential birthrate (Tait's) (15-55)* .. ..		21.9	21.1	21.1	20.6	20.1

Regression coefficient (1876-1906),  $-.376 \pm .009$ ; (1851-1875),  $-.041 \pm .015$ .

Percentage of district included in tables of occupations, 95.6.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	32.8	31.9	19.7
Potential birthrate (15-45)	26.6	26.1	24.9

The main part of the population is engaged in the textile factories which employ 33.1 per cent. of the males and 44.5 per cent. of the females, the largest percentage in the whole of Lancashire. The population is in the main an industrial one, apparently in good circumstances, for the percentages of overcrowding and of one and two-roomed tenements, etc. are small. It is noticeable that in this district the age of marriage is older now than formerly as can be seen from the potential birthrate, but this change in the potential birthrate is insignificant in comparison with the well-marked and rapid birthrate fall in Blackburn; the fall seems to have begun rather before 1876, and since that date there has been a loss of 11.7 births; the mean birthrate in the previous 25 years was 25.3 births, so that the birthrate has been nearly halved. The loss in the potential birthrate in the 30 years from 1871 to 1901 is 1.0 births.

The chief occupation in Blackburn county borough is textile manufacture which occupies 30.8 per cent. of the males over 10; the percentage occupied in engineering is 7.8. There is a large amount of employment of women, 42.6 per cent. being employed in the textile factories. There seems to be a general impression amongst medical men in the district that the tendency deliberately to restrict the size of families is gaining ground rapidly. One correspondent informs us that he considers that advertisement has certainly been a factor in the reduction of the birthrate.

The rural district of Blackburn includes several villages and some residential suburbs of the town of Blackburn. Almost every village has its cotton mill. In the district there are the three elements, industrial, agricultural and middle class. The latter consists for the most part of professional men and prosperous tradesmen, active and retired. The fall in the birthrate is reported to be greater in the richer than in the poorer wards.

In Darwen the inhabitants are chiefly of the artisan and labouring classes. The chief industries are cotton, paper, iron, coal mining, etc. 34.4 per cent. of the males are occupied in textile factories, 8.1 in paper, 3.6 in engineering and iron works, and 3.2 in coal mining. The women are mostly engaged in cotton weaving at which they are notable experts and earn good wages, from 22s. to 30s. per week. The percentage of women employed is 47.5. A few women are occupied in sorting in the paper factories, and many in the manufacture of anaglypty, segamoid, etc., trades which have been established recently; many of these women came originally from Lancaster. A large number of boys and girls from 12 to 13 are employed in weaving as half-timers, earning 2s. 6d. per week.

Our correspondent could not call to mind any advertisements with regard to abortifacients or preventives, but had heard reports of this and that person, women, doing a good trade in an illegitimate way; these women are generally old-fashioned midwives. Many applications had been made to him, and if women came to him, they must go to others, and some must comply or the inquiries would cease.

In Great Harwood and in Rishton the main industry is cotton manufacture, and of the men 53.3 and 41.5 per cent. respectively are employed in the textile factories. There is some coal mining employing 4.7 and 7.4 per cent. of the males. The percentage of women employed in the textile factories is 52.0 and 45.9 respectively. Apparently no large series of advertisements has been circulated in the district of Great Harwood and the fall seems to have been common to all classes.

In Church the main industry is the cotton trade which employs 33.6 per cent. of the men, but in this town more than half are employed in bleaching, printing, dyeing, etc.; there are engineering works employing 10.5 per cent. and some coal mining. The percentage of women employed is 44.3, but these are employed almost entirely in the cotton factories, only a small percentage being employed in bleaching, printing and dyeing works.

In Clayton-le-Moors the principal occupations are in cotton weaving, employing men and women, chiefly women, coal mines, brick works and calico printing in all of which men are employed. Of the men 25.2 per cent. are employed in cotton works and calico printing, 17.1 in coal mines and 5.2 in brick works, etc. The percentage of women employed in cotton factories is 41.5. Among the weavers the men are of a fair education, social problems are discussed, but good wages and ease are the chief aims of life. The houses occupied are of a very fair type and a desire for comfort is apparent. Marriage is entered into with the object of increasing finances; morals are of a fair standard. During the last 50 years the conditions of labour have improved. Literature and advertisements dealing with the limitation of the family are common and means for the limitation of the family are eagerly sought after\*.

\* A point should be noted here. A number of our correspondents, who have not before our inquiries remarked the propagandism by way of advertisement, attributed the fall to the emigration of the younger people. Unless the relatively insignificant fall in the potential birthrate has been impressed upon them, they are apt to consider the change in age of married women, slight as it actually

In Oswaldtwistle the same industries are found. Cotton weaving and bleaching, etc. occupy 33·7 per cent. of the men, coal mining 11·2 per cent., and engineering works 6·3 per cent. The percentage of women employed is 44·9. Further there are 52·2 per cent. of less than five-roomed tenements.

(iii)

*Fylde* registration district includes the rural district of Fylde (11,220), the municipal borough of Blackpool (47,348) and the urban districts of Fleetwood (12,082), Lytham (7,185), St Anne's-on-Sea (6,838), Thornton (3,108), Kirkham (3,693) and Poulton-le-Fylde (2,223).

See Plate I	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. ..	2774	3384	3977	5497	7900	14358
No. of births .. .. .	676	785	941	1215	1400	2225
No. of births per 100 married women (15-55)	24·4	23·2	23·7	22·1	17·7	15·5
Potential birthrate (Tait's) (15-55)* .. ..		19·4	19·3	20·0	19·3	20·0

Regression coefficient (1876-1906), -·361 ± ·014; (1851-1875), +·039 ± ·018.  
 Percentage of district included in tables of occupations, 78·4.  
 Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	30·7	31·6	20·0
Potential birthrate (15-45)	25·0	25·0	25·1

This district is not a working class district; it is largely a residential district or place of seaside resort as can be seen from the number of women employed as domestic servants which is much above the average; the relatively large percentage of men employed in "food, lodging, etc." also shows the nature of the place. There are practically no factories and the district has the smallest percentage of tenements of less than five rooms in the county, and the percentage of one and two-roomed tenements is much below the average for the county.

The birthrate shows great irregularities and the fall does not begin till about 1880, but since that date it has been rapid and continuous except between about 1895 and 1901 when there was a temporary rise corresponding to the rapid growth of the district between 1891 and 1901, when the population was nearly doubled. There has been practically no change in the age distribution of married women.

In Blackpool the chief characteristics of employment are those associated with catering for the visitors in the way of keeping boarding houses, etc. and the occupations accompanying such catering, e.g. clothing, furnishing, building, etc. The town increased very rapidly from a population of 14,229 in 1881 to a population of 47,348 in 1901. Our correspondent is not aware that any propagandism is, a sufficient cause for the general fall, and do not seek further for factors which may not have come previously to their notice. A negative reply to our question as to the currency of advertisements may mean only absence of observation; a positive reply generally signifies widespread propagandism which has reached quarters where the circulation of such advertisements is not customary.

for the limitation of the family has been conducted in the district and cannot state whether the fall has been specially marked in any particular class of the community.

Fleetwood is now an important fishing centre and the average value of the fish brought into the port is £16,000 a week.

Lytham is a residential district with a ship building yard and two large steam laundries; fishing is also an important industry. The population is prosperous and it is a place of residence of numerous business men who travel to the large manufacturing towns daily. The population has increased rapidly since 1876. The limitation of the family according to our correspondent is not due so much to propagandism by advertisement as to the fact that the population is intelligent, and this subject receives considerable attention and discussion in various circles, and people determine to keep down the size of the family. The community is a pleasure seeking one with many facilities for indulgence in Lytham itself and in Blackpool which is only 8 miles away. Drink, love of dress, self-indulgence, motor-cars, etc. are reported to contribute to the low birthrate which has occurred in all classes. The old fashioned home life is becoming a thing of the past and luxury and extravagance render limitation of families absolutely essential.

St Anne's-on-Sea is only about 30 years old and is composed of (1) people who come from the surrounding towns on account of delicate families, (2) of lodging-house keepers, mainly old maids and widows, and (3) tradesmen, labourers and farmers. The proportion of domestic servants per hundred families, namely 53.4, is one of the largest in the county and indicates the nature of the population. In the four wards of the town the only one which has maintained its birthrate is the east ward\* which contains chiefly tradesmen, labourers and farmers. It is probable that amongst the working classes the birthrate is equal to that of the county, but amongst the other classes it is very much lower. No propagandism to restrict families is reported except advertisements in local papers of which copies were received, but it is clear that there is an increasing desire to limit in all classes and more especially in the upper and middle classes. There is also, according to a medical correspondent, an increasing difficulty in parturition † resulting often in some slight injury to the organs which is sufficient to prevent further conception.

Thornton as a separate urban district has only been in existence since 1900. Until about 16 years ago the only local industry was agriculture; since then a local chemical works (United Alkali) has been built and now gives employment to about 600 men. During the same period lodging-house keeping for summer visitors has developed in the west ward. There is also a certain number of residents who do not earn their living locally. There does not seem to be any marked propagandism for the limitation of the family in the district, although instances are known to our correspondent where measures to restrict their families are adopted by married people of limited means who have come to the district from large towns.

In Kirkham we have not succeeded in finding a correspondent.

\* The numbers are very small.

† It appears to be suggested that this difficulty arises from the relative infrequency of parturition.

Poulton-le-Fylde is a small town with no special industries other than those of any unimportant country town; there has been some influx of retired residents from Manchester, Bolton, Blackpool and other towns, but otherwise there has been practically no change in the district.

The birthrate has fallen very slightly in this district, and the fall, such as it is, is attributed to those who have come from the towns and bring with them the knowledge of preventive methods.

(iv)

Lancaster registration district includes the municipal boroughs of Lancaster (40,329) and Morecambe (11,798), the rural district of Lancaster (8,837), and the urban districts of Heysham (3,381) and Carnforth (3,040).

See Plate I	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. ..	4346	4601	4359	5500	7153	10027
No. of births .. .. .	1054	1089	1001	1379	1489	1627
No. of births per 100 married women (15-55)	24.3	23.7	23.0	25.1	20.8	16.2
Potential birthrate (Tait's) (15-55)* ..		19.5	19.4	20.5	20.4	19.8

Regression coefficient (1876-1906),  $-0.356 \pm 0.11$ ; (1851-1875),  $-0.067 \pm 0.11$ .

Percentage of district included in tables of occupations, 77.4.

Changes in boundaries of registration district: 1st of July, 1869, Lunesdale registration district was separated from Lancaster.

	1861	1871	1901
* No. of births per 100 married women (15-45)	31.3	30.5	20.8
Potential birthrate (15-45)	25.1	24.9	24.8

Lancaster is largely a residential district in the centre of an agricultural area; at the same time there are some factories but they are mostly small, employing few hands. The percentage of tenements of less than five rooms is only 21.8 and there is practically no overcrowding; building and works of construction occupy the largest percentage of the males, but the factories mentioned above employ both men and women.

The birthrate was high about 1881, but there was a distinct rise in the potential birthrate at that time; the fall in the birthrate has, however, been rapid and well marked since. Changes in the age distribution of married women are not well marked and indeed show a gain of .4 births between 1871 and 1901, the actual total loss being 11 births as measured by the regression coefficient between 1876 and 1906.

An old resident in Lancaster has sent us a very full list of occupations, etc. in this district, and we are much indebted to him for the facts contained in the following summary:

Lancaster is surrounded by agricultural lands; there are about 250 farms and on an average there are  $2\frac{1}{2}$  labourers to a farm earning from 18s. to 20s. a week. The chief works in Lancaster are linoleum works, which employ men and boys and girls; unskilled labour forms about 50 per cent. of all labour and is paid from 4s. to 9s. to 26s. a week; the skilled labourer can earn from 34s. to 40s. a week.



A wagon and carriage works opened in 1863 was closed in 1910 ; it employed about 90 per cent. of skilled labour. A furniture manufactory employs about 400 men, and there skilled labourers can earn 9*d.* per hour and unskilled 22*s.* a week. There are mills for making prints of pictures, etc. which employ skilled labourers at 30*s.* to 60*s.* a week and boys, girls and women at 4*s.*, 6*s.* and 9*s.* per week. There are three breweries and mineral water manufactures in which the labour is unskilled on the whole and wages are low. Throughout the registration district in the building trade the skilled workman receives on an average 9*d.* per hour, taking all branches of the trade. In tailoring the usual pay is 5*s.* a day for men, and women earn from 8*s.* to 12*s.* a week, although a few very good tailoresses can earn 13*s.* a week. The Lancaster Corporation gives employment to about 400 hands, half of whom are skilled labourers earning from 30*s.* to 40*s.* a week.

Morecambe is largely a summer resort with a percentage much above the average for the county of women who let lodgings and do similar work. During the season the Winter Gardens, the Alhambra, the Tower Gardens and the two piers provide employment for attendants, waiters, etc. Fishing and boating occupy about 200 men.

Heysham has developed lately as a port and the railway employment there is largely seasonal ; there is work in connection with the harbour both on land and in boats and dredgers.

At Carnforth there are iron works employing now about 200 hands, and linen works at Carnforth and Silverdale (in the rural district of Lancaster). There are also silk waste spinning mills at Galgate employing chiefly women and girls, besides other smaller concerns.

The chief changes in the industries during the last 50 years are the closing of cotton spinning mills in 1876 and of the Lancaster ship building about the same date ; the latter was a large concern, employing about 1500 men, and there the skilled labourer earned about £2 per week. Ship building at the Glasson has also largely decreased and silk mills and a brick and pipe company have ceased working.

Another correspondent informs us that he has no knowledge of any propagandism for the limitation of the family except by advertisement, but he has known instances where medical men have advocated family limitation, and in recent years some advanced women have become rather notorious for their teaching with regard to this matter. In certain recent books, by no means appealing to the purely medical reader, instruction as to the means to be adopted is very openly given. The part played by advertisement has been considerable no doubt, but the information usually travels by word of mouth. One correspondent reports an afternoon gathering of women, many of whom were "good church-workers," and the subject under discussion was not the legitimacy of restriction, but the most effective means of restriction.

In towns, even among the poor, knowledge of preventive means is fairly well spread and the large families of the very poor are mostly to be accounted for by their general improvidence and the fact that preventives are relatively costly. In rural areas knowledge is not so widely spread and opportunities for purchase

are fewer, and moreover the child in the country has still a certain economic value, and to the small farmer and farm labourer a large family is often a real asset. The decline in the size of family is said to be least marked in the rural, the Roman Catholic, and the clerical sections of the population; it is in the large families of these sections according to one correspondent that idiocy most frequently occurs\*.

(v)

*Haslingden* registration district includes the municipal boroughs of Haslingden (18,543), Accrington (43,122), Rawtenstall (31,053) and Bacup (22,505).

See Plate I	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. ..	7515	10820	12648	14703	15880	18494
No. of births .. .. .	1794	2486	2879	3089	2925	2590
No. of births per 100 married women (15-55)	23.9	23.0	22.8	21.0	18.4	14.0
Potential birthrate (Tait's) (15-55)† ..		21.3	20.5	20.9	20.1	19.6

Regression coefficient (1876-1906), - .355 ± .006; (1851-1875), - .074 ± .036.

Percentage of district included in tables of occupations, all.

Changes in boundaries of registration district: 1895, 9428 transferred from Rochdale, 3003 transferred to Bury.

	1861	1871	1901
† No. of births per 100 married women (15-45)	28.7	29.3	18.3
Potential birthrate (15-45)	26.1	26.0	24.9

This district is a working class area and the population is engaged mainly in textile industries which employ 30.3 per cent. of the males and 36.7 per cent. of the females. Engineering works occupy 10.6 per cent. of the males, and there are some quarries. The percentage of women employed as domestic servants, etc. is much below the average. The amount of overcrowding, the number of one and two-roomed tenements and the number of tenements of less than five rooms are above the average for the county, but the number of paupers, the number of separate occupiers in a house and the percentage of general labourers are below the average for the county. The fall in the birthrate since 1881 is well marked and rapid, and since 1876 amounts to a loss of 11 births, practically a halving of the birthrate.

In Haslingden borough the main occupation is in the textile factories which employ 43.1 per cent. of the males and 42.7 per cent. of the females; there are also some quarries employing 3.9 per cent. of the males.

In Accrington the chief industries are cotton weaving, cotton spinning, the manufacture of cotton spinning machinery, mining and brick making. A large

\* On the relationship of Mongolian idiocy to size of family, see Pearson: "On the Handicapping of the Firstborn," *Eugenics Laboratory Lectures*, No. x. Dulau and Co. There is a tendency for the Mongol to be the last child of a large family.

proportion of the females is engaged in the cotton mills, including many married women. In the textile factories 19.5 per cent. of the males and 35.7 per cent. of the females are employed; in machine making 22.0 per cent. of the males are employed and in the collieries 4.6 per cent. There have been no great changes in the character of the employment during the last fifty years except that the demand for labour has increased considerably. For several years and at the present time appliances for the limitation of the family are displayed in the most barefaced manner on the counters of local chemists' shops so that no one can miss seeing them. The fall in the birthrate is probably greatest amongst the thrifty classes.

In Rawtenstall the chief industries are calico manufacture and dyeing, bleaching and printing calico, which occupy 36.7 per cent. of the males and 33.3 per cent. of the females. There are also felt and slipper manufactures, coal mining and dairy farming. Practically all the coal produced is used in the borough and consequently the prosperity of those engaged in coal mining varies directly with the prosperity of the other trades. Wages on the whole are good. There are 300 farms, some very small, and the members of the farmers' families generally work in a cotton mill or coal mine. The cotton trade has been unstable for many years and the cotton operatives cannot earn the full week's wage for long at a time. Children are employed from 12 years of age as half-timers. Women are employed as weavers and in the cardroom, but not often in the bleaching and printing works as the work is heavy. Block printing which was a well paid trade has almost died out, and a block printer who formerly could earn £3 to £4 a week can now only earn 25s. to 30s. or less on an average. Employment in the felt trade is regular, but is largely unskilled and the rate of wage is low. The slipper trade has grown rapidly during the last 25 years and employs men, women and children. The work is monotonous although not laborious, and good wages can be earned; but owing to the specialised nature of the work a man or woman may be very busy at one time of the year and comparatively idle at another.

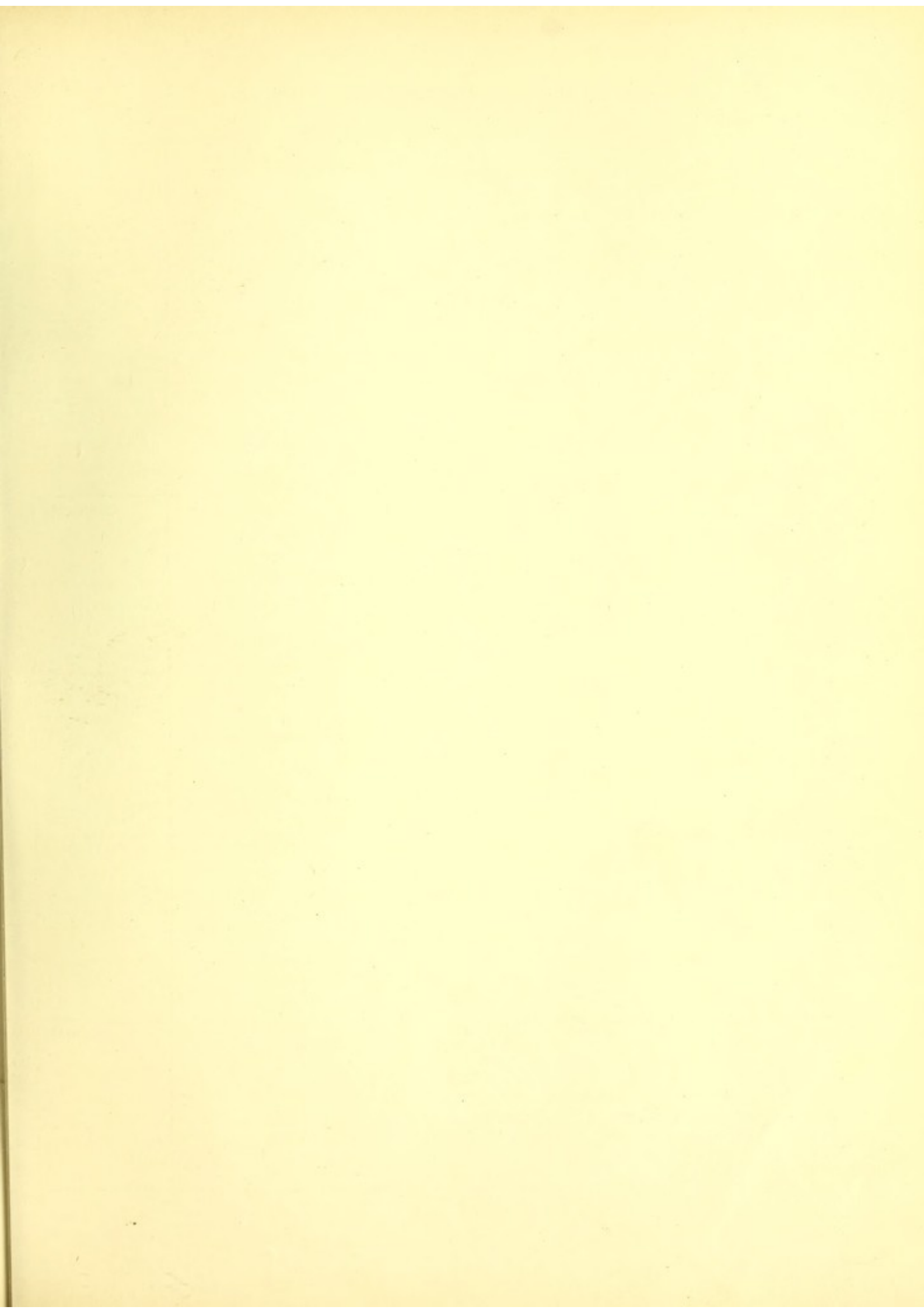
The fall in the birthrate is locally ascribed to

- (1) Irregularity of employment in the cotton and slipper trades.
- (2) Young people finding that their pleasures are limited by a family.

Further, if the family be small it is realised that the mother can continue her work at the cotton or slipper works.

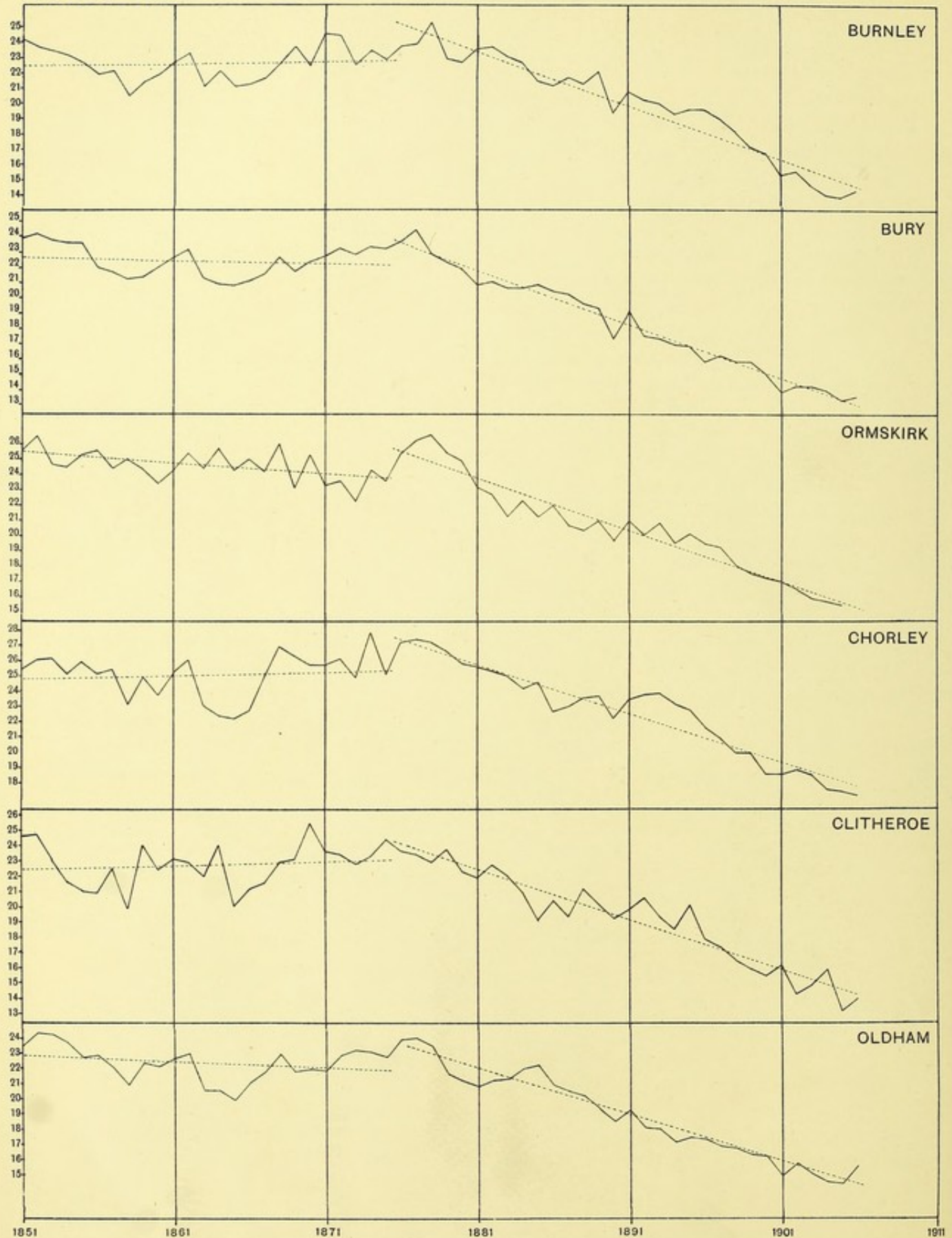
- (3) Later age of marriage.
- (4) Increased cost of living; not only is food more costly, but rates and rent have to be paid whether a man is in full work or not.
- (5) Work in the cotton mills leading to miscarriages, and to the birth of stillborn and premature children, but this factor probably has more effect on the infant mortality than on the actual birthrate.

While no propagandism for the limitation of the family is reported from this district, one of our correspondents remarks, that like other practitioners he has been requested to procure abortion for unmarried pregnant girls, and has been asked at confinements to state methods for preventing conception. A certain



BIRTHS PER 100 MARRIED WOMEN AGED 15-55

LANCASHIRE.



number, roughly estimated at 10 per cent. of girls in the district, are pregnant when they marry; the number of illegitimate children born is about 3 per cent. of the total. The same correspondent considers that the fall in the birthrate in the working classes is due to the growth of income not keeping pace with the growth of expenditure.

The population of Bacup is almost entirely industrial; the chief occupations are cotton manufacture which employs 31.9 per cent. of the males and 35.7 per cent. of the females, stone quarrying which occupies 11.4 per cent. of the males and some coal mining. Socially the town has gone down since the seventies as manufacturers and others who are wealthy now leave Bacup and reside in the seaside towns. Methods for restriction of the family have filtered down from the higher classes to the working classes. The reduction of the birthrate has been chiefly in the middle classes; there are very few representatives of the upper classes. There are several thousand Irish in the borough and the birthrate among them is much higher than among the English working classes. The limitation of the family is attributed to the severe competition in the struggle for existence, to the extra cost of the present standard of living and to the recurrent spells of short time employment. A larger proportion, it is said, of those born now survive and fare better; in fact according to our correspondent the quality is now improved and this is a gain to the State.

(vi)

*Burnley* registration district includes the county borough of Burnley (97,043), the rural district of Burnley (16,589), the municipal boroughs of Nelson (32,816) and Colne (23,000), and the urban districts of Padiham (12,205), Brierfield (7,288), Barrowfield (4,959) and Trawden (2,641).

See Plate II	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. ..	9242	11493	13555	18377	26103	32652
No. of births .. .. .	2236	2611	3326	4314	5396	4951
No. of births per 100 married women (15-55)	24.2	22.7	24.5	23.5	20.7	15.2
Potential birthrate (Tait's) (15-55)* ..		21.3	21.2	21.7	21.3	20.6

Regression coefficient (1876-1906),  $- .353 \pm .012$ ; (1851-1875),  $+ .012 \pm .020$ .

Percentage of district included in tables of occupations, 87.7.

Changes in boundaries of registration district: 1904, 888 transferred from Clitheroe.

	1861	1871	1901
* No. of births per 100 married women (15-45)	28.5	31.2	19.2
Potential birthrate (15-45)	26.1	26.4	25.4

Burnley is essentially a working class and in particular a calico manufacturing district; textile industries employ 41.3 per cent. of the males and 41.2 per cent. of the females. The percentage of tenements of less than five rooms is well above the average and the percentage of tenements of one and two rooms is slightly

above the average for the county, but overcrowding, etc. is below the average. The fall since 1881 has been well marked and continuous. Changes in the age distribution of married women account for a loss of 0.6 births since 1871, the actual loss since 1876 being one of 10.9 births.

In Burnley borough the staple trade is calico manufacturing, the town being one of the largest weaving centres in the world; the textile industries employ 34.1 per cent. of the males and 40.4 per cent. of the females. Children from 12 years, if healthy, work as half-timers, and when 14 or 15 can earn 12s. to 14s. a week. Both father and mother work in the mill, and a whole family of five or six persons living in a four-roomed house may be earning £7, £8 and even £10 a week. There have not been many changes in the conditions of labour during the last 30 years, except great improvements in the sanitary condition of the mills and workshops. Reluctance to undertake the duties of parentage has impressed the medical men of the district; this reluctance is most noticeable in the upper classes, but there is more than a suspicion that abortion is freely practised in the working classes. Abortifacient medicines though not so called in the advertisements are openly sold (female pills guaranteed to remove all irregularities, etc.) and are freely resorted to. The moral life is of rather a low standard and frequently marriages amongst the working class do not take place unless there is reason to believe the woman is pregnant.

Nelson is almost entirely engaged in cotton manufacture and 55.7 per cent. of the males and 42.7 of the females are engaged in the textile factories.

Colne and Brierfield are also cotton towns and 43.9 per cent. of the males and 38.3 per cent. of the females are employed in textile factories in Colne and 57.9 per cent. of males and 44.4 per cent. of females in Brierfield.

In Colne the chief factors in the reduction of the birthrate are said by a medical correspondent of experience to be the professional abortionists and the use of abortifacients (e.g. diachylon).

In Padiham the staple industry is cotton spinning and weaving, employing 43.7 per cent. of the males and 46.7 per cent. of the females. In 1909 there were 21 cotton and spinning mills, 6 iron works and various other factories. The employees work 55 hours a week in the cotton factories.

Propagandism for the limitation of the family has certainly existed for the last 20 years; it is not undertaken with reference to the advantage of a limited family, that appears to be taken as accepted, but in favour of one or other mode of limiting it. It is carried on by advertisements in local papers, etc. and also orally\*. There are numerous preventives on the market which have a good sale, and the sale is believed to be increasing. The reduction of the birthrate is not ultimately due to the propagandism, but chiefly to the fact that the thrifty and temperate desire to lead a life of comfort and even luxury, devoid of family anxiety and worries. A provident working man thinks that the wages of both husband and wife are not sufficient to bring up a large family. A woman prefers everyday life to the pains and discomfort of gestation and labour and the responsibility of

\* Bills giving instructions for the use of soluble pessaries are widely circulated.

bringing up children. This is no doubt due to the fact that she has been brought up in the factory earning wages which make her look forward to an easier and more comfortable life.

In Barrowfield we have found no correspondent.

Trawden is a large area ; there are many scattered farms, but the population mainly lives in Trawden village and in the hamlet of Minewall ; both sexes are employed in the cotton sheds ; there is only one class, working people. Women can earn up to 24s. to 27s. a week and men who weave, the same amount ; tacklers and warp dressers can earn from 35s. to 40s. a week. At one time there was a coal pit but it has not been working for 25 years. The people are of a fine type, tall and sturdy, very much after the style of dalesmen. There does not seem to have been any marked fall of the birthrate in this district during the last ten years and the people have fairly big families, though, perhaps, not as large as their fathers had. There has been no propagandism by advertisement of the means of limiting the family except an occasional small poster in a urinal which is soon destroyed. The people are rather ignorant and do not see much of the outside world except at holiday times, when they go to Blackpool or the Isle of Man. The one case of restriction known to our informant was desirable as a defective child had been born to the union.

## (vii)

*Bury* registration district includes the county borough of Bury (58,029), the rural district of Bury (8,088), the municipal borough of Heywood (25,458) and the urban districts of Radcliffe (25,368), Ramsbottom (15,920), Whitefield (6,588) and Tottington (6,118).

See Plate II	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. ..	13104	15302	16699	19654	20606	22470
No. of births .. .. .	3136	3453	3784	4095	3935	3097
No. of births per 100 married women (15-55)	23·9	22·6	22·7	20·8	19·1	13·8
Potential birthrate (Tait's) (15-55)* ..		20·8	20·8	20·7	20·0	19·5

Regression coefficient (1876-1906),  $-.353 \pm .007$  ; (1851-1875),  $-.029 \pm .019$ .

Percentage of district included in tables of occupations, 94·4.

Changes in boundaries of registration district: 1895, 2350 transferred from Rochdale, 3003 transferred from Haslingden.

	1861	1871	1901
* No. of births per 100 married women (15-45)	28·5	29·1	18·0
Potential birthrate (15-45)	25·7	26·1	24·7

The main part of the population is engaged in the textile factories, in which both men and women are employed ; there are also engineering works. The percentage of women employed is 35·3. There is a large percentage of tenements of less than five rooms but otherwise there is less overcrowding, and fewer one and two-roomed tenements, etc. than the average for the county. The fall in the birthrate is well marked and continuous since 1876. Changes in the age distribution of married women account for a loss of 1·3 births since 1871, the actual loss between 1876 and 1906 being one of 10·9 births.



In the county borough of Bury the chief works are textile factories, employing 20·8 per cent. of males and 32·9 per cent. of females, and engineering works which employ 11·2 per cent. of males.

In Bury rural district the chief works are engineering, textile and paper factories. There have not been great changes in the district during the last 30 or 40 years; one woollen mill and one or two small hat factories have been closed and there has been increased output from the engineering, textile and paper factories.

With regard to the limitation of the family all methods appear to be in use in this district, the most frequent method is the coitus interruptus; but others use sheaths and quinine pessaries. The more scrupulous observe the intermenstrual periods.

The reasons given by the people themselves for limitation of the family are, either that they cannot afford a large family, or that there is nothing for children to do; a few married people openly state that they will not sacrifice their pleasures for the sake of a family.

In Heywood, Radcliffe, Ramsbottom and Whitefield also the main occupation is in textile factories; 34·2 per cent. of males and 40·9 per cent. of females are employed in these factories in Heywood; 28·5 per cent. of males and 33·8 per cent. of females in Radcliffe; 39·7 per cent. of males and 40·8 per cent. of females in Ramsbottom; and 25·6 per cent. of males and 24·9 per cent. of females in Whitefield.

In Heywood, Radcliffe and Ramsbottom there are also engineering works employing 9·4, 6·7 and 5·3 per cent. of the men respectively, and in Radcliffe 10·1 per cent. are employed in mines.

In Tottington the population is composed almost entirely of the working classes; the industries are printing, bleaching and weaving in which 47·3 per cent. of the males are engaged; the men are mostly engaged in unskilled labour and the females in calico weaving in which a smaller number of males are also engaged. The occupation of the inhabitants is steady except in the case of the unskilled labourers, among whom there has been some depression for the last 3 or 4 years. The people generally are frugal, hard working, and thrifty, but the wages of the males are not as a rule large enough to support a family (3 to 4) without the wife's work. The inhabitants are fairly well housed and some own their own houses and have small resources in co-operative concerns. There have been very few changes in the industries during the last 50 years.

No very *active* propagandism for the limitation of the family seems to have been carried on during the last 20 years, but it is certain that much is done by newspaper advertisements and by quacks; the knowledge is also spread by verbal means in the factories where the sexes work together.

(viii)

*Ormskirk* registration district includes the rural district of West Lancashire (26,645), the county borough of Southport (48,083) and the urban districts of Birkdale (14,197), Lathom with Burscough (7,113), Ormskirk (6,857) and Skelmersdale (5,699).

See Plate II	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	4699	5961	7650	10877	12724	14469
No. of births .. .. .	1201	1451	1782	2523	2669	2480
No. of births per 100 married women (15-55)	25.6	24.3	23.3	23.2	21.0	17.1
Potential birthrate (Tait's) (15-55)* ..		20.2	20.1	20.7	19.7	19.1

Regression coefficient (1876-1906),  $-.340 \pm .011$ ; (1851-1875),  $-.075 \pm .016$ .

Percentage of district included in tables of occupations, 75.5.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	31.5	30.5	22.5
Potential birthrate (15-45)	25.5	25.6	24.5

This district is largely a residential one in the midst of an agricultural population. The percentage of tenements of less than five rooms is much below the average for the county; there are no factories of importance and the chief occupations are in "conveyance" and building, but there is a little mining; there is practically no industrial employment of women, and the chief occupation for women is in domestic service, the percentage thus employed being the largest in the county. The birthrate was high towards the end of the seventies and there was a rise in the potential birthrate in 1881, but the general tendency from 1851 was towards a fall. The fall in the birthrate since 1880 has been well marked. The potential birthrate in 1881 was still high and changes in the age distribution of married women did not occur till after that date; such changes are responsible for a loss of only 1 birth per 100 married women of 15 to 55 years between the years 1871 and 1901.

Southport is largely a residential place as may be judged by the large number of domestic servants, the proportion being 34.2 to 100 separate families; there are no factories of importance.

Birkdale is essentially a residential district, a garden suburb of Southport, having mostly well-to-do, even rich residents; there are 48.8 domestic servants per hundred separate families. There are no cotton mills and few industries. The declining birthrate is stated locally to be due in this district as in other districts to the use of preventive measures, knowledge of which is handed about from "mouth to mouth"; the limitation of the family would seem to be common to all classes except the very lowest; the practice of limitation has probably become more common during the last 20 years.

In Lathom with Burscough the chief occupations are agriculture and work on the Leeds and Liverpool Canal; 8.3 per cent. of the males over 10 are

bargemen, etc.; there are brickfields, saw mills and one corn mill; little change has taken place in the industries during the last 50 years. The lower birthrate is locally considered to be due to the determination of married people to limit their families, owing to the increased cost of living due to higher rates, rent, etc.; wages in this district do not seem to have risen, the average wage being about £1 a week while rent averages about 4s. a week.

Limitation of the family is most marked in the middle classes, but is now occurring also in the poorer classes.

Ormskirk is largely a residential place and the district round is purely agricultural; the local trade consists chiefly in brewing, making sausages, brawn and confectionery, and there is some printing and basket making. Great changes have taken place in the industries, as 50 years ago silk weaving was extensively carried on, many of the cottages having looms. Rope making which was a busy trade is now confined to one firm, and silk hat making has disappeared. There has been, apparently, no active propagandism for the limitation of the family in Ormskirk, but there seems little doubt that it is practised, especially among the well-to-do classes.

Skelmersdale differs widely from the other districts in this registration group; 60.0 per cent. of the tenements have less than five rooms as compared with 28.8 for the whole district. Skelmersdale is essentially a mining district and 57.0 per cent. of all males over 10 years are engaged in the mines.

(ix)

*Chorley* registration district includes the rural district of Chorley (19,310), the municipal borough of Chorley (26,852) and the urban districts of Leyland (6,865), Adlington (4,523), Withnell (3,349) and Croston (2,102).

See Plate II	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	4733	5631	5809	6447	7416	8977
No. of births .. .. .	1203	1422	1491	1649	1743	1674
No. of births per 100 married women (15-55)	25.4	25.2	25.7	25.6	23.5	18.6
Potential birthrate (Tait's) (15-55)* ..		20.2	19.8	20.3	20.2	19.7

Regression coefficient (1876-1906),  $- .329 \pm .011$ ; (1851-1875),  $+ .022 \pm .026$ .

Percentage of district included in tables of occupations, 53.5.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	32.9	33.7	24.0
Potential birthrate (15-45)	25.7	25.5	24.8

The district is mainly a manufacturing one, 26.7 per cent. of all males being engaged in the textile factories; the percentage of females employed is 50.8, 37.2 being engaged in factories; the percentages of overcrowding and of all inferior social conditions are below the average for the county. The birthrate

was low in the sixties and high from about 1868 to 1877 and since then the fall has been fairly continuous except during the first half of the nineties.

In Chorley municipal borough 25·8 per cent. of the males and 38·7 per cent. of the females are engaged in the textile factories and there is some mining, employing 9·5 per cent. of all males ; there are some engineering works.

In Leyland also the main part of the working population is engaged in the textile factories ; 30·3 per cent. of the males and 31·5 per cent. of the females are employed there.

In Croston the chief industries are calico manufacturing and agriculture ; there are rather fewer men employed in the latter than formerly ; the weavers are chiefly women and girls. There have been practically no changes in the industries except that in the fifties hand-loom weaving was still in existence.

The habits of the people have improved considerably and are decidedly more temperate, and this probably has an effect on the birthrate. Most men and women in the country districts know that a woman is more likely to be impregnated at a period about the time of menstruation and a great many avoid this time when sober.

Limitation of the family by intention prevails to a large extent and is on the increase ; pregnancy is regarded by most as a thing to be avoided if possible. Large families are rare, and generally speaking prevail amongst the most shiftless and careless of the population. Among the working classes, people who desire to "get on" are house-proud and like to be well dressed and enjoy pleasure ; small families are the rule, and considering that the work of the progressive is much the same as that of the shiftless, the small families can only be due to intentional limitation. The poor (when poverty is due to their own fault as it often is in this district), the "ne'er do weels" and the drinkers have as a rule plenty of children, the ambitious have few. The knowledge of methods of limitation is fairly widespread and seems generally to have filtered down from the so-called educated classes and is handed on secretly from one couple to another.

Newspaper advertisements are more responsible for abortion at the present day than for limitation ; the publication of certain books has probably had more to do with the spread of the knowledge of methods of limitation of the family than advertisements. A medical correspondent considers that "quite a lot of drugs" are taken by the women to procure abortion in the early stage, and that the information comes through advertisements. The practice is, however, conducted so secretly that it is a very difficult matter to estimate, and it is only when affairs are very bad that a medical man is called in, and even then the offence is rarely admitted.

In Adlington and Withnell we have found no correspondents.

(x)

*Clitheroe* registration district includes the municipal borough of Clitheroe (11,414) and the rural districts of Clitheroe (6,726) and Bowland (5,237).

See Plate II	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. ..	2667	2619	2791	3081	3084	3267
No. of births .. .. .	655	604	660	674	604	527
No. of births per 100 married women (15-55)	24.6	23.1	23.6	21.9	19.8	16.1
Potential birthrate (Tait's) (15-55)* ..		19.3	19.5	19.8	19.2	18.7

Regression coefficient (1876-1906),  $-.327 \pm .012$ ; (1851-1875),  $+.036 \pm .024$ .

Percentage of district included in the tables of occupations, 47.8.

Changes in boundaries of registration district: 1904, 888 were transferred to Burnley.

	1861	1871	1901
* No. of births per 100 married women (15-45)	30.7	31.6	21.7
Potential birthrate (15-45)	25.0	25.3	24.4

Clitheroe is omitted from the table of occupations, as not half the district could be included. The district varies in character, as can be seen from the percentage of tenements of less than five rooms; in Clitheroe borough it is 42.2, in the rural district it is 31.5, while in Bowland it is only 16.8. In the amount of overcrowding, etc., Clitheroe is much below the average for the whole county; it is, indeed, the district with the least overcrowding in the county. In half the district the principal occupation is cotton weaving.

The birthrate is based on smaller numbers than in most of the other districts and shows great irregularities, but the fall on the whole has been continuous and rapid.

In Clitheroe borough most of the working classes are employed in cotton weaving; a print works situated a mile and a half away employs a number of Clitheroe hands; there are also extensive lime quarries in the neighbourhood. In the textile factories 34.9 per cent. of the males and 37.6 of the females are engaged. In 1854 and again in 1881 and 1883 large firms failed in the town, seriously crippling it. Except for the scarcely veiled advertisements in the weekly newspapers, which circulate widely, there seems to have been no active propagandism for the limitation of the family. The fall in the birthrate may be slightly overestimated as the census of 1901 was taken when a fair was being held in the town and many non-residents were thus included.

The chief change in social conditions has been in the direction of increased luxury; people work less, eat more and richer food and enjoy themselves more, and it is suggested locally that more feeding tends to lessened fecundity, to increased sterility (apart from the use of direct preventive measures), and to an increased number of young mothers who are unable to suckle their offspring. There seems to be no diminution of the birthrate amongst the comparatively few families who are notoriously shiftless, incompetent, and only casually

employed; they are not overfed and do not mind how many children they have, for they know that the public through the Guardians will have to keep them.

The improvement in the condition of the better working classes has given them a taste for luxury and enjoyment which cannot be gratified if they are hampered by large families\*. It has been noticed that where a young married couple (probably both working in the mills) have lost by death an only child of four or five years or even more, the mother has almost immediately become pregnant again. This looks as if there had been deliberate prevention previously unless we can assume that a desire for children in itself increases the probability of impregnation. Socialistic teaching, it is said, has led and is leading to a loss of the old fashioned sturdy independence amongst workers, and to a greater leaning on the State. Better feeding according to another local opinion tends to sterility, better education to a taste for luxury and enjoyment and to the consequent employment of preventive measures. Modern legislation, a correspondent asserts, has led directly to the limitation of families. Many years ago a young child in a manufacturing district could almost keep itself, and at ten years of age it was an asset to the parents; now a child is an encumbrance until 12 or 14 years old.

Bowland is purely an agricultural district and there seems to be no diminution there in the birthrate.

(xi)

*Oldham* registration district includes the county borough of Oldham (137,246), the municipal borough of Middleton (25,178) and the urban districts of Chadderton (24,892), Royton (14,881) and Crompton (13,427).

See Plate II	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. ..	13531	18257	20670	27201	31770	35070
No. of births .. .. .	3168	4123	4505	5619	6059	5173
No. of births per 100 married women (15-55)	23.4	22.6	21.8	20.7	19.1	14.8
Potential birthrate (Tait's) (15-55)† ..		21.8	21.1	21.2	20.8	20.1

Regression coefficient (1876-1906),  $-0.312 \pm 0.009$ ; (1851-1875),  $-0.048 \pm 0.020$ .

Percentage of district included in tables of occupations: all.

Changes in boundaries of registration district: 1895, 684 transferred from Bury, 852 transferred from Prestwich, 681 transferred to Rochdale.

	1861	1871	1901
† No. of births per 100 married women (15-45)	27.9	27.4	18.8
Potential birthrate (15-45)	26.4	25.9	25.1

The main part of the population is engaged in the textile factories, 30.8 per cent. of males and 31.1 of females being so employed. There are also engineering works in which 17.2 per cent. of males are engaged. The population is essentially

\* It is not uncommon to come across cases of miscarriage, where there is a strong suspicion that the abortion has been deliberately procured.

an industrial one. There is a large percentage of tenements of less than five rooms, the largest in the county, but there is less overcrowding, etc. than in the county as a whole. The birthrate shows some irregularities, but the fall is well marked. The fall before 1876 can be accounted for by changes in the age distribution of married women.

The population of Oldham borough is chiefly industrial; the main occupation is cotton spinning, 23.9 per cent. of the males being engaged in the textile factories; engineering works (chiefly for textile machinery) employ 21.3 per cent. of the males; there are also boiler works, gas-meter works and some coal mining. During the last 50 years there has been an extension of these industries and the extinction of the hat-making trade. The work people generally receive good wages, have plenty of good food and live in comfortable and well-furnished houses; there are slums and there is poverty, but the main cause of the latter is intemperance, gambling and vice. Years ago there was much propagandism for the limitation of the family and this has been a factor in the reduction of the birthrate. Our correspondent reports that there is ample proof of it and that many women make no secret of their use of preventives. The fall is reported to have occurred equally in all classes in this district.

Middleton contains chiefly an industrial population, and the chief industries are cotton spinning and the weaving, dyeing, bleaching and printing of cotton fabrics; these processes occupy 41.0 per cent. of the males. Formerly silk weaving on hand-loom was carried on to a large extent in the home, but this occupation has practically disappeared. There is a very considerable employment of women in the industries named and this employment has increased in amount during late years.

There does not seem to have been any active local propagandism for the limitation of the family in this town, but as the town is only five miles from Manchester and there is a large distribution of Sunday newspapers, there is no doubt that a very great amount of more or less direct information on the subject of abortion and of the means of prevention of conception has been spread broadcast for a long period of years. There does not seem to be a large amount of instrumental procuring of abortion; chief reliance is placed on drugs.

The artisan class has a much higher standard of living and pleasure than formerly, and it is only among the lower artisan class that large families continue to occur. The upper classes, who are few in number, generally have one or no children and the better class artisan is following this example. Further, from the point of view of thrift, a large family is not considered a good investment, the people in many cases preferring the possession of their own houses. The fall in the birthrate is locally attributed to increased education and consequent increased desire of individuals for the comforts and luxuries of the present day.

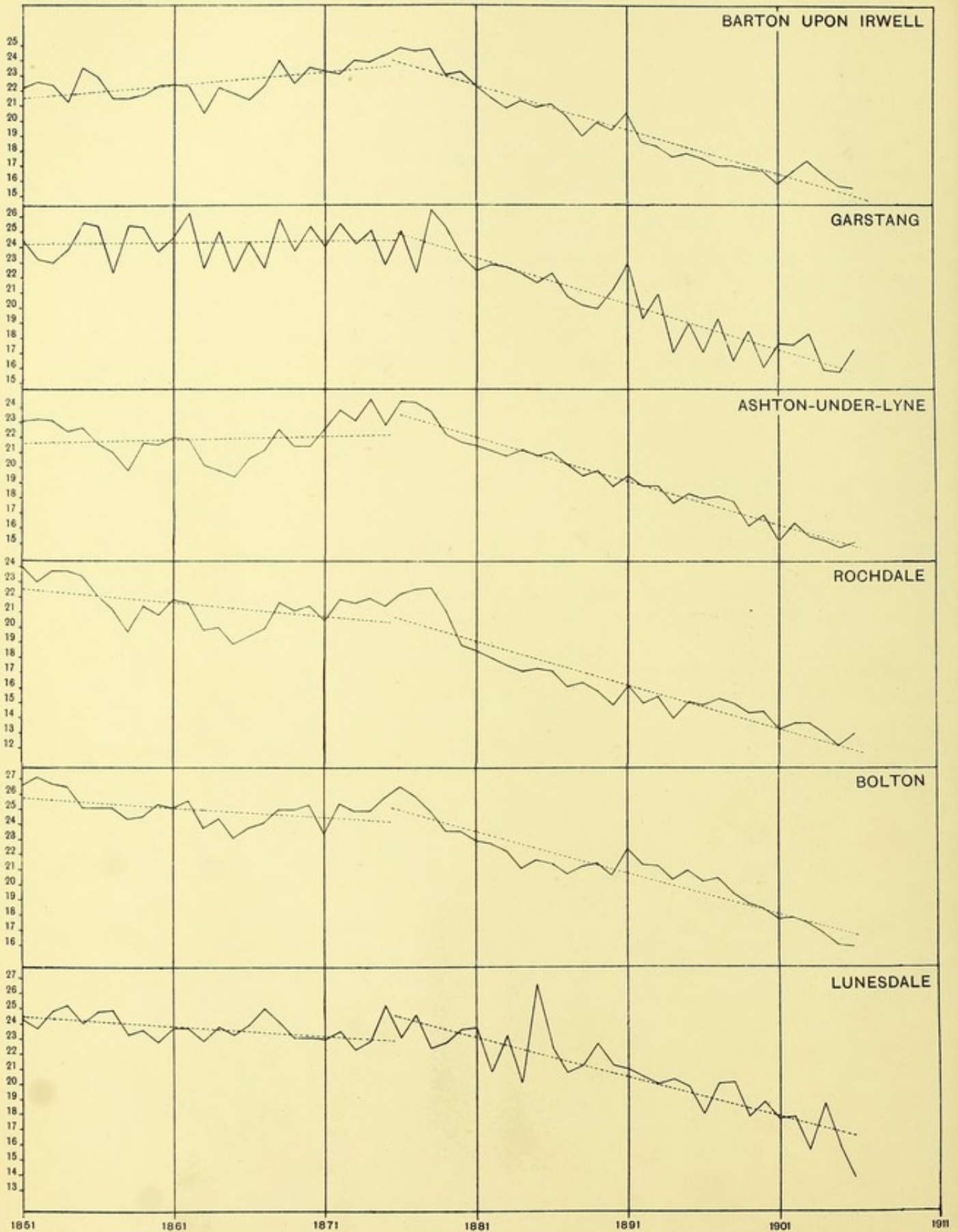
Chadderton is also an industrial community of very rapid growth; it is practically an overflow from Oldham. By far the largest industry is cotton spinning and 34.6 per cent. of males and 33.2 per cent. of females are employed in the various branches of the cotton industry; there are also machine making





BIRTHS PER 100 MARRIED WOMEN AGED 15-55

LANCASHIRE.



in which 20·7 per cent. of the males are engaged and a few minor industries, and there are still about 60 small dairy farms in the district. Wages are fair when full time is being worked. Our correspondent states that in the cotton mills men can earn from 28s. to 55s. a week, boys (piecers) from 18s. to 24s., and women in the cardroom can earn about 25s. a week. There seems to have been no active propagandism for the limitation of the family; people of all classes endeavour to limit their families, and in this probably the educated and more well-to-do are the most successful. The poorer are too careless or too ignorant to make any very effectual attempt to prevent conception; besides, although children have to be brought up, they become wage earners at the age of 14, and may eventually help to support their parents, or their mother if a widow.

In Royton the chief occupation is cotton manufacture and 49·3 per cent. of the males are engaged in this and other textile factories and in bleaching and printing works. The percentage of women employed is 32·5.

Crompton is very similar in character to Royton, 51·3 per cent. of the men being engaged in the various branches of the cotton trade, and the percentage of women employed is actually larger than in Royton, namely 37·4.

(xii)

*Barton-upon-Irwell* registration district includes the rural district of Barton-upon-Irwell (8,065), the municipal borough of Eccles (34,369) and the urban districts of Urmston (6,541), Stretford (30,436), Worsley (12,462), Irlam (4,335) and part of Swinton with Pendlebury (18,565).

See Plate III	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	4314	5468	7362	10476	13467	17657
No. of births .. .. .	959	1224	1718	2337	2759	2782
No. of births per 100 married women (15-55)	22·2	22·4	23·3	22·3	20·5	15·8
Potential birthrate (Tait's) (15-55)* ..		20·6	20·9	20·8	20·3	20·2

Regression coefficient (1876-1906),  $-0.299 \pm 0.009$ ; (1851-1875),  $+0.070 \pm 0.015$ .

Percentage of district included in tables of occupations, 89·2.

Changes in boundaries of the registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	28·7	29·7	19·9
Potential birthrate (15-45)	25·8	26·0	24·9

The district of Barton is very varied in character; there is some mining, employing 9·2 per cent. of the males, some iron and engineering, employing 6·7 per cent. of the males, some textile factories, employing 5·7 per cent. of males and 11·5 per cent. of females, and some parts of the district are residential in character as can be seen from the fact that the proportion of domestic servants, etc. is above the average, and that the percentage of tenements of less than five rooms is decidedly below the average. In Barton rural district, Eccles and

Irlam the percentages of tenements of less than five rooms are 34·2, 30·7 and 38·1 respectively, while in Urmston and Stretford they are 13·4 and 9·4 respectively.

The amount of overcrowding, etc. is also below the average. The fall in the birthrate has been steady and continuous since 1876.

Barton rural district consists of two portions; the northern is a working class district, the population of which is engaged in coal mining and cotton manufacture; the southern, from being chiefly a residential and farming district, is now approaching the northern portion in character, and the chief industry is cotton manufacture. The general local impression is that there are two reasons for the fall in the birthrate: (1) the age at marriage is rising and there are fewer married women between the ages of 15 and 25 years when fecundity attains its maximum\*, (2) the influence of the expedients now so extensively used for preventing conception.

In Eccles the working class population is mostly employed in the textile and iron trades; in the former 6·6 per cent. of the males and 11·1 of the females are engaged; there are also silk mills, metallurgical works and other industries. It is pointed out in the Annual Report (1905) of the Medical Officer of Health for this borough that the birthrate in Winton, where there is an essentially working class population, was nearly at the normal figure, while in the relatively well-to-do Monton and Park Ward the rate was far below what it should be. The fall in the birthrate is attributed to the Education Act of 1870, to compulsory education, to pernicious literature, etc., and also to the desire for comfort. "To a certain extent," one of our correspondents writes, "we are combating the low birthrate by a reduction in the infantile mortality, but the question arises as to whether we are doing good work for the county in preserving the undesirable lives of the children of neurotic and effete parents."

In Urmston the majority of the residents are persons employed in the warehouses and shops of Manchester; the small percentage of tenements of less than five rooms and the large proportion of domestic servants, i.e. 22·3 per hundred separate families, indicate the nature of the district; the working class people are employed in engineering works at Trafford Park and some in a cotton mill at Flixton, and there are a few farmers. Fifty years ago there was more agricultural work, and hand-loom weaving and fustian cutting were still carried on in the cottages.

Stretford is suburban and many of its inhabitants find employment within the city of Manchester in the various warehouses, offices and other works; the percentage of tenements of less than five rooms is only 9·4. In 1868 the population was practically a rural one, but during the past 30 years the working class population has changed from an almost purely agricultural to an industrial character. This change followed the construction and opening of the Manchester Ship Canal about the year 1892, and a further change followed the development of the Trafford Park Estates subsequent to the year 1889. The principal means

\* The potential birthrate shows that this increased age of marriage is responsible in this town for a fall of 0·7 births per 100 married women between 1871 and 1901, which is a slight matter compared with the actual fall of 8·8 births per 100 married women since 1876.

of employment within the district are engineering, flour milling, bacon curing, lead pipe making, cable making, timber mills, agriculture and the contingent and casual employment connected with the landing of goods from vessels at a port. During the last 20 years or more, certain advertisements dealing with the limitation of families have been placed before the public very freely, but in local opinion it is not possible to state whether this has been a marked factor in reducing the birthrate; the fall in the district is stated to be rather limited to the upper classes, who, it is suggested, perhaps sacrifice their duty to the nation to that of social enjoyment. Economic conditions are perhaps better than they were 50 years ago.

In Worsley and in Swinton with Pendlebury the main occupation is coal mining, which employs 29.9 per cent. and 30.6 per cent. respectively of the males in these districts; there are also some engineering works and cotton factories.

(xiii)

*Garstang* registration district includes the rural district of *Garstang* (10,437) and the urban district of *Preesall with Hackersall* (1,423).

See Plate III	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	1517	1529	1435	1504	1394	1552
No. of births .. .. .	372	378	344	337	318	273
No. of births per 100 married women (15-55)	24.5	24.7	24.0	22.4	22.8	17.6
Potential birthrate (Tait's) (15-55)* ..		19.8	18.5	19.2	18.8	18.5

Regression coefficient (1876-1906),  $-.297 \pm .016$ ; (1851-1875),  $+.007 \pm .021$ .

Percentage of district included in tables of occupations: none.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	32.1	32.7	23.9
Potential birthrate (15-45)	25.1	24.4	24.4

This district is not an industrial one and there are practically no factories; the percentages of overcrowding, of one and two-roomed tenements, etc. are much below the average for the county. The birthrate shows great irregularity due in part probably to the small population, but the fall has been well marked since about 1880.

In *Garstang* rural district the population is very stationary. The labour is mostly farming and the out-door men earn from 17s. to 20s. a week. There is one small cotton weaving shed, two small paper works, one small file cutting works and one small steel roller making works. The characteristics of the district have changed very little during the last 50 years. Our correspondent knows of no active propagandism for the limitation of the family, but among certain families, rather of the upper middle than of the working classes, there is no doubt that restriction has taken place.

(xiv)

*Ashton-under-Lyne* registration district includes the municipal boroughs of Ashton-under-Lyne (43,890), Mossley (13,452), Dukinfield (18,929) and Stalybridge (27,673), the rural districts of Limehurst (10,338) and Tintwistle (2,105), and the urban districts of Hurst (7,145), Lees (3,621), Droylsden (11,087), Audenshaw (7,216), Hollingsworth (2,447) and Mottram (3,128).

See Plate III	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	18185	21728	20497	23877	24896	27676
No. of births .. .. .	4203	4784	4627	5135	4857	4216
No. of births per 100 married women (15-55)	23.1	22.0	22.6	21.5	19.5	15.2
Potential birthrate (Tait's) (15-55)* ..		21.2	20.5	20.8	20.2	20.1

Regression coefficient (1876-1906),  $- .295 \pm .007$ ; (1851-1875),  $+ .020 \pm .024$ .

Percentage of district included in tables of occupations, 87.6.

Changes in the boundaries of registration district: 1895, 3328 transferred to Prestwich, 4224 transferred from Saddleworth.

	1861	1871	1901
* No. of births per 100 married women (15-45)	27.8	29.2	19.6
Potential birthrate (15-45)	26.2	25.9	25.2

This district is mainly an industrial district, and most of the population is engaged in the textile factories, which employ 23.7 per cent. of males and 29.4 per cent. of females; there are also engineering and machine works, employing 11.0 of males, and some coal mining, employing 6.8 per cent. The percentage of tenements of less than five rooms is much above the average, but the amount of overcrowding, etc. is decidedly below the average for the county. The birthrate showed great irregularities before 1876 and was low between about 1856 and 1870. The fall began in the late seventies and has been continuous since then. It is to be noticed that the potential birthrate has fallen by .4 births between 1871 and 1901 and the actual birthrate, judged from the regression coefficient, by 9.1 births since 1876.

In Ashton-under-Lyne borough the labour is chiefly skilled; 20.6 per cent. of the males and 28.3 per cent. of the females are employed in textile mills; 9.1 per cent. of males are employed in iron works, etc. There are also a number of men employed in casual labour, out-door work, etc., and there is some tanning and brewing. The industries have not changed since 1876, but have increased in size. The fall in the birthrate is attributed to the use by the better class workman and all above him of preventives in the shape of sheaths, quinine pessaries, etc. Young wives will not be tied down by small children; they wish to dress, walk out and amuse themselves more than of old. The reduction has not occurred in the lowest and poorest class, who either cannot afford to buy, or will not trouble to use preventives. The use of these has come in chiefly during the last 20 years. There has been little or no propagandism by advertisement in local papers, which refuse such sources of income, but very much in certain Sunday papers and one

or two other outside papers which circulate freely\*. There is no *quantitative evidence*, only local opinion available as to how far the reduction in the number of births varies in the different social strata.

In Mossley the chief work is cotton spinning and some woollen weaving; in the textile factories 53·6 per cent. of the males and 37·9 per cent. of the females are engaged. The wages paid in many cases are very high, but these are the people who have the smallest families; only the very poor and improvident have many children. There does not seem to have been many advertisements pushing limitation of the family, but there is a distinct feeling amongst the women against having many babies. The fall seems to have been mostly among the better class working-people but it has occurred also in all other classes. The work-people leave home more frequently to go to places of entertainment, which are cheaper now, and they realize that this would not be so possible if they had babies at home.

Dukinfield, Stalybridge, Droylsden and Hurst are all chiefly cotton and engineering towns, and in Dukinfield and Hurst there is also some mining. 22·4 per cent. of males and 31·6 per cent. of females are employed in the textile factories in Dukinfield, 26·2 per cent. of males and 37·9 per cent. of females in Stalybridge, 19·8 per cent. of males and 22·2 per cent. of females in Droylsden, and 27·2 per cent. of males and 38·9 per cent. of females in Hurst. In engineering works, etc. the percentages of men employed are 16·0 in Dukinfield, 14·0 in Stalybridge, 14·8 in Droylsden and 7·7 in Hurst.

Audenshaw differs from the other districts as only a small percentage of the population is employed in the textile factories, namely 6·0 of the males and 12·5 per cent. of the females; engineering employs 16·9 per cent. of the males, and there is a hat and cap industry employing 9·7 of the males and 6·8 per cent. of the females.

(xv)

*Rochdale* registration district includes the county borough of Rochdale (83,114) and the urban districts of Norden (3,907), Littleborough (11,166), Whitworth (9,578), Wardle (4,427) and Milnrow (8,241).

See Plate III	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	10879	14398	17658	18860	18992	19468
No. of births .. .. .	2615	3138	3628	3496	3069	2585
No. of births per 100 married women (15-55)	24·0	21·8	20·5	18·5	16·2	13·3
Potential birthrate (Tait's) (15-55)† ..		21·3	20·9	20·3	19·6	19·7

Regression coefficient (1876-1906), -·281 ± ·014; (1851-1875), -·091 ± ·022.

Percentage of district included in tables of occupations, 93·1.

Changes in boundaries of registration district: 1895, 2350 transferred to Bury, 9428 transferred to Haslingden.

	1861	1871	1901
† No. of births per 100 married women (15-45)	27·2	26·2	17·2
Potential birthrate (15-45)	26·0	26·0	24·8

\* Newspaper advertisements concerning pills "to prevent irregularities in women" were also obtained from this district.

Rochdale is mainly a working class district; the chief works are textile factories which employ 29.5 per cent. of the males and 34.4 per cent. of the females; engineering works employ 10.5 per cent. of the males. The percentage of tenements of less than five rooms and, except for Liverpool, the percentage of one and two-roomed tenements are the highest in the county; the percentage of paupers is also above the average. Though Rochdale is a textile factory town to nearly as great an extent as Blackburn, it differs from Blackburn in social condition and in the kind of textile factory; in Blackburn borough practically all the factories are cotton factories, while in Rochdale borough 23.6 of those engaged in the textile factories are in the Registrar-General's group "other textile factories." Rochdale shows a low birthrate from the middle of the fifties till the end of the sixties and a high birthrate in the seventies; a sudden fall from 1878 to 1880 has been followed by a continuous and fairly rapid fall since. There is a somewhat greater change than usual in the potential birthrate, so that changes in age distribution of married women may be said to be responsible for a decrease of 1.2 births between 1871 and 1901; but the actual decrease is 8.7 births per 100 married women. Changes in the potential birthrate only account to a limited extent for the fall before 1876.

In Rochdale borough the chief employment is in the textile factories in which 26.1 per cent. of the males are employed, but there are other occupations of importance, as for instance engineering which employs 12.9 per cent. of the males. The average weekly rent for two rooms is 2s. 9d.; for three rooms is 4s. 1½d. and for four rooms is 4s. 10½d.\* In the report referred to below an interesting comparison is made between the birthrate in the 11 worst districts and in the 20 best districts; in the worst districts the birthrate per 1000 of the population was 27.7 and in the best it was 21.5; these figures are, however, uncorrected for age distribution or for proportion of married women in the population.

In Littleborough, Whitworth and Milnrow the population is chiefly employed in the textile factories; those factories employ 43.9 per cent., 37.0 per cent. and 34.2 per cent. respectively of the males in the three towns. In Littleborough there is some engineering which employs 4.3 per cent. of the men; in Whitworth 17.7 per cent. are employed in stone quarrying, etc., and in Milnrow 8.5 per cent. in mining.

(xvi)

*Bolton* registration district includes the county borough of Bolton (168,215) and the urban districts of West Houghton (14,377), Horwich (15,084), Turton (12,355), Little Lever (5,119), Farnworth (25,925), Little Hulton (7,294) and Kearsley (9,218).

The district is in the main a working class district, but the industries are many. Textile factories employ 20.4 per cent. of the males and 28.0 per cent. of the females; engineering works, etc. employ 13.3 per cent. of the men and mining 10.5 per cent. The percentage of tenements of less than five rooms is

\* *Report on an Investigation as to Housing Conditions, etc.*, by A. G. Anderson, M.D., D.Sc., M.A., D.P.H. E. Wrigley and Sons, Ltd., Rochdale, 1911, p. 21

above the average, which points to a working class district, but the amount of overcrowding, etc. is below the average and we may assume that on the whole it is not the lower type of working class in this district. The potential birthrate has fallen by .9 births since 1871, and was lower in 1871 than in 1861.

See Plate III	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. ..	16757	19741	24290	28733	33597	39338
No. of births .. .. .	4461	4954	5691	6621	7537	7011
No. of births per 100 married women (15-55)	26.6	25.1	23.4	23.0	22.4	17.8
Potential birthrate (Tait's) (15-55)* ..		21.3	21.0	20.9	20.6	20.1

Regression coefficient (1876-1906), - .274 ± .011 ; (1851-1875), - .063 ± .016.

Percentage of district included in tables of occupations: all.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	31.4	29.5	22.6
Potential birthrate (15-45)	26.1	25.9	25.0

In Bolton borough the bulk of the population is engaged in the textile factories and in bleaching, etc., which together employ 22.8 per cent. of the males and 27.5 of the females ; engineering works account for 14.5 per cent. of the males, mining for 3.5 per cent., and there are other industries. There have been no considerable changes in the industry of the district during the last 30 years, and until the last few years there was a run of prosperity.

It is generally considered that propagandism for the limitation of the family began about 30 years ago and that it was conducted not so much by advertisement as by personal communications. Amongst the lower classes there has been an increase in abortion brought about by drugs and illegal operations. It is agreed that deliberate limitation is the most important factor in the reduction of the birthrate, "we are not having any children just yet" being a common statement. The classes mostly affected are the upper and middle classes.

In West Houghton the main occupation is mining which employs 51.6 per cent. of the males ; there are also textile factories which employ mostly women ; 22.8 per cent. of women and 7.3 per cent. of men work in these factories.

In Kearsley mining is the main industry and employs 23.0 per cent. of the men, while the textile factories employ 13.2 per cent. of the males and 33.3 per cent. of the females. There have not been great changes in the occupations since 1885, but the men employed in the mines were then worse educated and of a lower type, the cottages were poorly furnished and there was very little attempt even at cleanliness. The women and girls prefer mill work to household work and remain at the mills often when they have two or three children. There are few upper class people, but in the middle and better class of operatives the falling birthrate has been most conspicuous. No active propagandism on the subject of limitation of the family has been noticed by our correspondent.



In Little Hulton and Little Lever the main occupation is mining which employs 49.2 and 36.6 per cent. of the males respectively. The textile factories employ chiefly women; in Little Hulton 33.4 per cent. of the women and 6.4 per cent. of the men, in Little Lever 35.4 per cent. of the women and 11.6 per cent. of the men are employed in textile production.

In Turton and Farnworth the textile factories account for the bulk of the population. In Turton 37.9 per cent. of the men and 30.6 per cent. of the women are employed in the cotton factories mostly in bleaching works, and in Farnworth 21.1 per cent. of the males and 36.6 per cent. of the females. There are also mining and engineering in Farnworth, the former employing 17.9 per cent. and the latter 5.8 per cent. of the males.

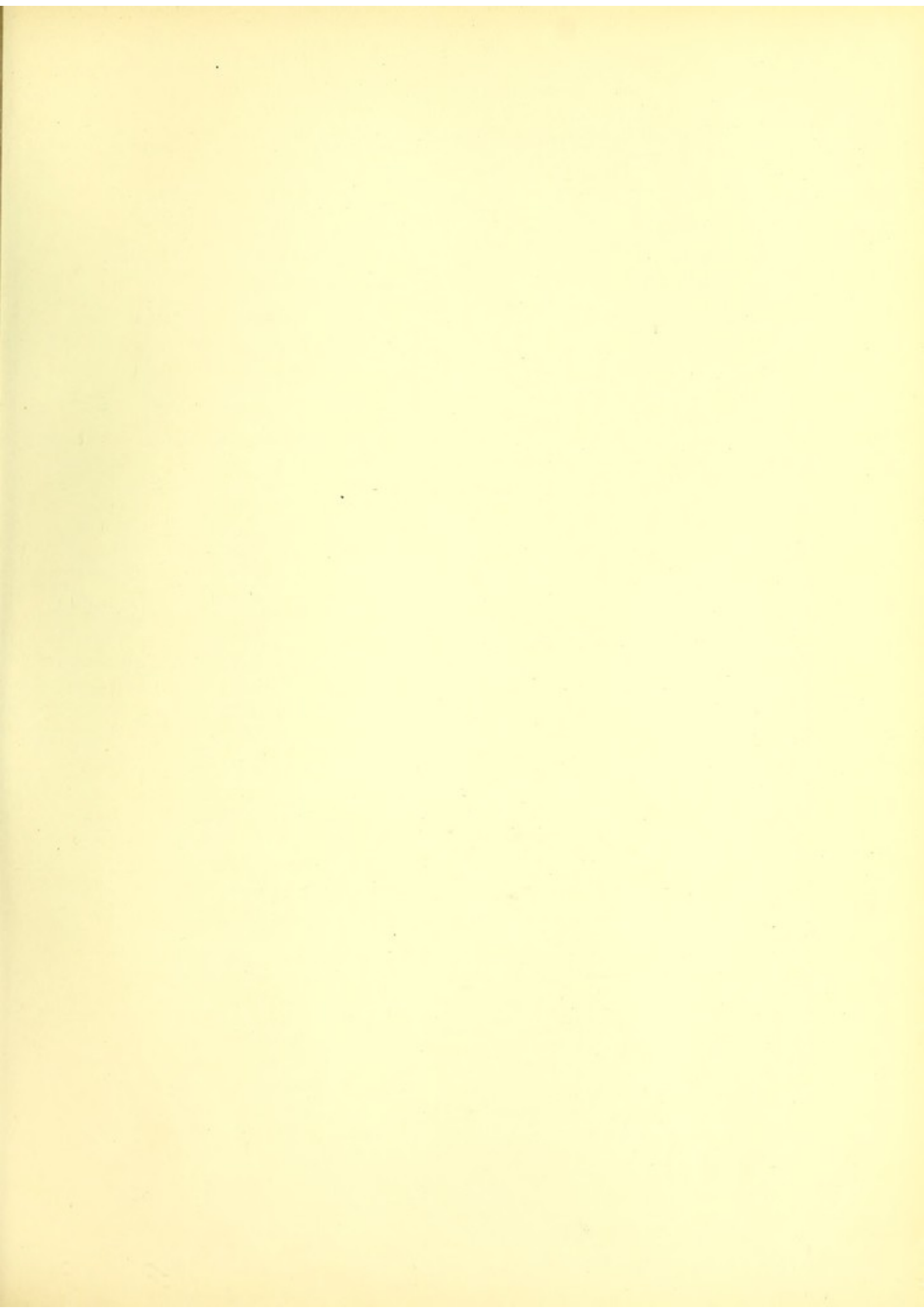
Horwich differs in character from all the other districts in Bolton. The majority of the inhabitants are engaged in locomotive building and repairing, which with boiler making occupy 36.9 per cent. of the males; there is also some cotton spinning, weaving and bleaching, which employ 9.1 per cent. of the females. Horwich has grown to its present size during the last 25 years from a population of a few thousands, owing to the foundation of the Lancashire and Yorkshire railway works. Propagandism for the limitation of the family has certainly been carried on of late years. The reduction in the birthrate although general throughout the population is most marked in the higher social scale and is attributed locally to the stress of competition; the higher cost of living and perhaps a greater love of ease induce the inhabitants to resort to artificial means to prevent large families.

Another correspondent writing of Bolton says that the practice of limitation is prevalent in the working classes. It takes various forms, the favourite nostrum being "bitter apples" (colocynth). There used to be women who did a big trade in this line, and the general mode of advertisement was from mouth to mouth. The practice has become more common in the last 20 years; formerly our correspondent did not meet many cases, but he admits that in later years he may have become more expert in diagnosing them. The falling birthrate is in his opinion due to such practices in all classes but the lowest, in which alone big families are common. "The confirmed drunkard pays no heed to the remonstrances of his wife."

(xvii)

*Lunesdale* registration district includes only the rural district of Lunesdale (6,948).

Lunesdale is a purely rural district, containing no town of any size; agriculture is carried on as well as the usual occupations of small towns. The percentage of tenements of less than five rooms is only 20.6 and there is little overcrowding. The fall does not seem to have begun till the middle of the eighties, but the birthrate shows great irregularities owing to the small size of the district. The fall before 1876 can probably be accounted for by a change in the age distribution of married women which is well marked between 1861 and 1871.



BIRTHS PER 100 MARRIED WOMEN AGED 15-55

LANCASHIRE.

BARROW IN FURNESS

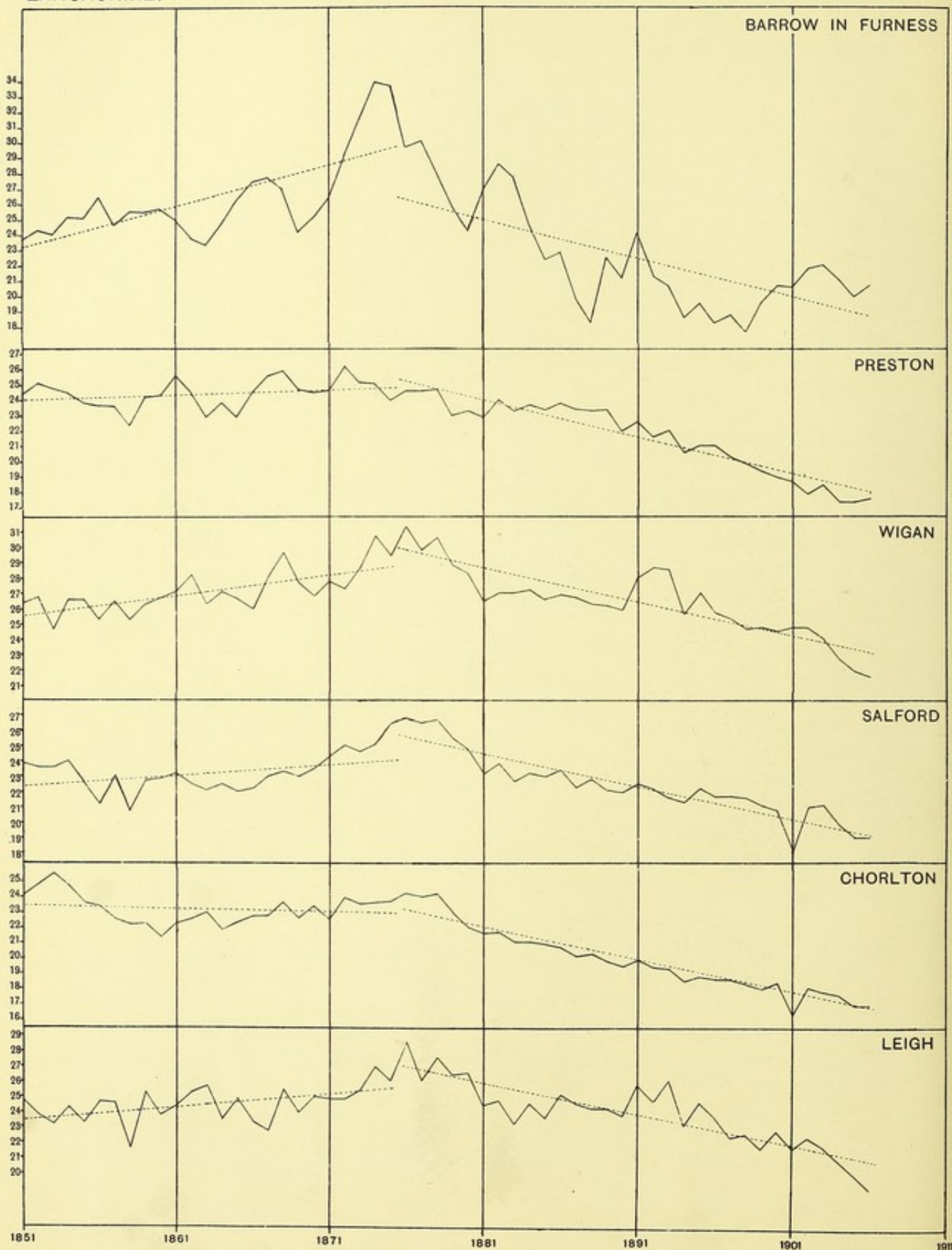
PRESTON

WIGAN

SALFORD

CHORLTON

LEIGH



See Plate III	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. ..	4346	4601	822	838	887	904
No. of births .. .. .	1054	1089	190	199	186	160
No. of births per 100 married women (15-55)	24.3	23.7	23.1	23.7	21.0	17.7
Potential birthrate (Tait's) (15-55)* ..		19.5	18.0	18.7	18.8	18.7

Regression coefficient (1876-1906), - .263 ± .019 ; (1851-1875), - .067 ± .011.

Percentage of district included in tables of occupations: none.

Changes in boundaries of registration district: Separation of Lunesdale registration district from Lancaster, July 1st, 1869.

	1861	1871	1901
* No. of births per 100 married women (15-45)	31.3	31.9	23.7
Potential birthrate (15-45)	25.1	23.8	24.1

In the sub-districts of Wray, Tunstall and Arkholme the occupation of the people is chiefly agricultural. In Caton there is greater variety of occupation, there are agricultural workers and also three mills employing cotton operatives and bobbin turners, with a large sprinkling of retired tradesmen and others whose incomes probably just allow them to live without occupation but with little to spare. There is certainly a serious falling off in the birthrate which can only be attributed to unwillingness on the part of married persons to bring up large families. The emigration of the more virile young men and healthy young women which is locally stated to have something to do with the fall in the birthrate is not indicated by any considerable change in the potential birthrate. The coming of the cheap bicycle, and the various attractions of such places as Lancaster and Morecambe cause the young people to desert their homes and spend more time in places of amusement; the habits thus acquired cannot be lightly thrown aside, but they are incompatible with the support of even a small family.

(xviii)

*Barrow-in-Furness* registration district includes only the county borough of Barrow-in-Furness (57,586).

See Plate IV	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. ..	3899	4738	7768	7396	7746	8524
No. of births .. .. .	924	1183	2052	1988	1863	1758
No. of births per 100 married women (15-55)	23.7	25.0	26.4	26.9	24.1	20.6
Potential birthrate (Tait's) (15-55)* ..		19.8	21.6	23.1	21.1	21.4

Regression coefficient (1876-1906), - .246 ± .037 ; (1851-1875), + .272 ± .036.

Percentage of district included in tables of occupations: all.

Changes in boundaries of the registration district: This registration district was not formed until 1876, and until that date the figures are identical with Ulverston.

	1861	1871	1901
* No. of births per 100 married women (15-45)	32.4	32.8	25.8
Potential birthrate (15-45)	25.1	26.3	26.3

Barrow is essentially an iron industrial district and 28.9 per cent. of the males are employed in iron works, etc. There is very little female labour, the least in the county, and a very small proportion of the married women are employed. The amount of overcrowding is the greatest to be found in any district in the county, and the percentage of one and two-roomed tenements is much above the average, as is also the number of families to one house. The birthrate shows an extraordinary rise in the seventies and great irregularities since then. The potential birthrate has remained high.

The industries have not changed materially since Barrow became a town about 50 years ago. From that time Barrow has always been a centre of the iron industry. In 1851 Barrow practically was non-existent, but about 1865 iron smelting works were erected and then steel works. Docks were made and iron ship building was begun. There was a rush of young men into the town and it continued to expand. The general desire for the limitation of the family affects this district as it affects others, and according to one correspondent results in lowering the type of the child-bearing women of the race. There seems to have been no special propagandism in this direction. The fall has probably taken place in all classes with the exception or part exception of the lower half of the workers.

(xix)

*Preston* registration district includes the county borough of Preston (112,989), the rural district of Preston (18,429) and the urban districts of Fulwood (5,238), Walton-le-Dale (11,271) and Longridge (4,304).

See Plate IV	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	13508	16256	16891	18541	20396	22232
No. of births .. .. .	3291	4158	4155	4242	4602	4167
No. of births per 100 married women (15-55)	24.4	25.6	24.6	22.9	22.6	18.7
Potential birthrate (Tait's) (15-55)* ..		21.4	20.6	20.3	20.5	20.0

Regression coefficient (1876-1906),  $- .243 \pm .010$ ; (1851-1875),  $+ .038 \pm .026$ .

Percentage of district included in tables of occupations, 85.1.

Changes in the boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	32.3	29.3	23.9
Potential birthrate (15-45)	26.4	25.5	24.9

The chief occupation in Preston is cotton manufacture, and the percentage of men employed in the cotton factories is 21.1 and the percentage of women is 35.5. The percentage of overcrowding, etc. is less than the average for the whole county. The fall in the birthrate was slight from 1876-1889, but has been more rapid since.

In Preston borough textile factories employ 19.7 per cent. of the males and 35.9 per cent. of the females and engineering employs 7.6 per cent. of the males.

The birthrate has been declining steadily although the conditions under which the working classes live and work are much improved; the fall is

undoubtedly due in part to the preventive teaching which, as cheap literature and in other forms, has of late years invaded the country. This limitation is met with more frequently amongst the thrifty and careful, who look after their children; the careless and intemperate continue to breed and bury children as before.

Fulwood is largely a residential district and there are no factories; the percentage of men in "other occupations" is 53·8, and the number of domestic servants per hundred separate families is 42·2. Perhaps one-sixth of the population might be termed working people, some of these being married couples, soldiers and their wives, living out of the barracks.

Walton-le-Dale is composed of a number of villages with grass country intervening; all the villages are thoroughly sewered and there is a good water supply. The staple industry is cotton which employs 45·6 per cent. of the males and 45·2 of the females; the hands work under the most improved sanitary conditions. There has been, according to our correspondent, no active propagandism for the limitation of the family. The young women of the district are strong and could have large families, but they do not have them.

In Longridge the main industry is cotton weaving, but there are also stone quarries and two small brass and iron foundries.

(xx)

*Wigan* registration district includes the county borough of Wigan (60,764), the rural district of Wigan (6,045) and the urban districts of Orrell (5,436), Upholland (4,773), Standish with Langtree (6,303), Blackrod (3,875), Aspull (8,388), Pemberton (21,664), Billinge (4,232), Ashton-in-Makerfield (18,687), Ince-in-Makerfield (21,262), Abram (6,306) and Hindley (23,504).

See Plate IV	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. ..	10788	13874	16377	19991	23645	27973
No. of births .. .. .	2850	3761	4560	5298	6619	6915
No. of births per 100 married women (15-55)	26·4	27·1	27·8	26·5	28·0	24·7
Potential birthrate (Tait's) (15-55)* ..		22·0	21·6	21·7	21·5	21·2

Regression coefficient (1876-1906), -·219 ± ·015; (1851-1875), +·132 ± ·018.

Percentage of district included in tables of occupations, 96·8.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	33·4	35·0	30·8
Potential birthrate (15-45)	26·6	26·6	25·9

This district is essentially a coal mining district since 44·7 per cent. of the males are engaged in coal mines. There are some textile factories, but the employees are mostly women; only 2·2 per cent. of the men are engaged in these factories, but 14·7 per cent. of the women work there. The percentages of overcrowding, of one and two-roomed tenements and of tenements of less than five rooms are decidedly above the average for the county.

The birthrate was very high in the seventies as in other mining districts in the north and this increases the appearance of the fall ; an examination of the birthrate at the census years shows that the fall in Wigan is of later date than in the cotton towns.

In all the districts except Wigan borough mining is practically the only industry of importance ; it employs 44·8 per cent. of males in Orrell, 56·1 per cent. in Standish, 50·9 per cent. in Aspull, 49·6 per cent. in Pemberton, 60·0 per cent. in Ashton-in-Makerfield, 43·5 per cent. in Ince-in-Makerfield, 65·0 per cent. in Abram and 56·8 per cent. in Hindley.

In Wigan borough 29·1 per cent. of the males are employed in mining, 2·6 per cent. in iron and steel works, 6·3 per cent. in engineering works and 3·2 in textile factories.

Great changes have taken place in the industries in Orrell during the last 50 years. Orrell was originally an agricultural district but the main occupation is now coal mining, which employs 44·8 per cent. of the males, and there are also a cotton mill and a roburite factory. Fifty years ago the chief industries were nail, bolt and nut making (by hand), in which men, women and children were employed, who were paid in kind (groceries and bread) with a small sum of money ; this industry is now only carried on in three very small workshops. Coal mining gave employment to a fairly large proportion of the population. The miners, paid fortnightly, earned good wages and better relations existed then between employers and employees than now. The inhabitants work now chiefly in the neighbouring coalfields. Hand-loom weaving at home was carried on to a slight extent. The birthrate, based on the population, has risen, the probable reason being that the influx of population to the district has been of the labouring classes. There has been, to the knowledge of our correspondent, no active propagandism for the limitation of the family.

In Blackrod the chief industry is mining and no change has occurred during the last 50 years. The women either work in the mill as cotton weavers or at the pit brow. Propagandism for the limitation of the family began here about 12 years ago and has been a factor in the reduction of the birthrate. The fall is principally noticeable in the middle classes though by no means absent in the working classes.

(xxi)

*Salford* registration district includes the county borough of Salford (220,957) and part of the urban district of Swinton and Pendlebury (8,493).

The district is a working class district as can be seen from the percentage of tenements of less than five rooms and judged from the amount of overcrowding, etc. which is above the average ; it is a lower class working district than is usual in Lancashire. The percentage of women employed is below the average ; there are some textile factories, but only 11·4 per cent. of the females and 7·2 per cent. of the males are employed there. The birthrate was very high in the seventies ; since 1881 the fall has been continuous but not very rapid.

See Plate IV	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. ..	13851	16923	20776	29139	31811	35857
No. of births .. .. .	3309	3920	5040	6767	7145	6538
No. of births per 100 married women (15-55)	23.9	23.2	24.3	23.2	22.5	18.2
Potential birthrate (Tait's) (15-55)* ..		21.9	22.2	22.0	21.4	21.3

Regression coefficient (1876-1906), - .217 ± .011 ; (1851-1875), + .076 ± .019.

Percentage of district included in tables of occupations: all†.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	28.6	29.7	22.5
Potential birthrate (15-45)	26.5	26.6	25.8

† It must be noted that only *part* of Swinton and Pendlebury is included and that the occupations of that part are assumed to be the same as those of the whole district.

The chief industries in Salford borough are engineering, employing 9.1 per cent. of the males, and textile manufacture in which 7.2 per cent. of the males and 11.0 per cent. of the females are engaged. The decade from 1871 to 1881 was one of very rapid growth, with great fluctuations in the rate of increase. A correspondent informs us that 16,000 houses were built during these ten years and 6,000 (approximately) were demolished for public improvements, railway extensions, etc. As the building was most active in the earlier part of the decade and the demolishing most active from the middle of the decade onwards, it is difficult to estimate the population, but it was probably as large in 1876 as in 1881 and this would explain the high apparent birthrate at the end of the seventies. At the beginning of 1870 the trade of Lancashire received a tremendous impetus, but trade fell off before 1880, building operations were brought to a standstill and there is reason to believe that a considerable amount of emigration took place.

In Swinton and Pendlebury the main occupation is coal mining, which employs 30.6 per cent. of the males, while 8.8 per cent. of males and 20.8 per cent. of females work in the textile factories.

(xxii)

*Chorlton* registration district includes the urban districts of Withington (36,202), Levenshulme (11,485), Gorton (26,564), Moss Side (26,677) and part of the City of Manchester (241,715).

See Plate IV	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. ..	19601	27068	33445	39692	45057	53549
No. of births .. .. .	4726	6042	7558	8617	9004	8756
No. of births per 100 married women (15-55)	24.1	22.3	22.6	21.7	20.0	16.4
Potential birthrate (Tait's) (15-55)* ..		21.9	22.0	21.8	21.1	21.0

Regression coefficient (1876-1906), - .215 ± .008 ; (1851-1875), - .027 ± .017.

Percentage of district included in tables of occupations: all.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	27.3	27.7	20.3
Potential birthrate (15-45)	26.2	26.4	25.6



This district varies greatly in occupation and general characteristics, and it is difficult to estimate these in the whole district as 75 per cent. of the population is contained in the City of Manchester, an area that naturally varies within itself, and the portion that forms part of Chorlton may differ widely from the average for the whole city. There are few textile factories. Except in the number of paupers and in the number of people per acre Chorlton has a better social condition than the average for the county. The fall has been continuous but not very rapid since 1876; compared with the potential birthrate the actual birthrate has always been low. The percentage of tenements of less than five rooms and the percentage of women employed as domestic servants show very clearly the varied character of the district.

Urban District	% Tenements less than 5 rooms	% Women employed as domestic servants, charwomen, etc.
Gorton	60.0	4.4
Levenshulme	22.5	9.2
Moss Side	4.7	10.5
Withington	12.5	25.1

Withington is a residential district; the vast majority of the male population is at work in the city and no small part of the female population also. No changes seem to have taken place in the character of the labour in the district during the last 50 years, but there has been much building since 1876 and a rapid increase in the population. The fall in the crude birthrate seems to have taken place about 1886; the rates for the five years prior to this date were 26.5, 28.4, 31.0, 28.6, and 26.5, while the rates for the five years after 1886 were 22.0, 23.0, 21.8, 22.7, and 22.8 per 1000. There is no evidence as to whether the fall occurred equally in all classes, but it seems to our correspondent probable that the reduction has occurred more particularly in the middle and upper classes. There is reported to have been no active propagandism for the limitation of the family since the days of Mr Bradlaugh and Mrs Besant, with the exception of advertisements in certain weekly newspapers and periodicals, but these have probably been a factor in the diminishing birthrate.

The inhabitants of Levenshulme are chiefly lower middle and working class people, living in houses rented at 6s. to 12s. a week; they are largely warehousemen, clerks, shop assistants, etc., who have their business centres in Manchester. The principal industries in the district are carpet manufacturing employing mainly females, calico printing works recently reopened after being closed for some years, and two small engineering works, but the district is chiefly a residential one. The chief changes that have taken place in the district during the last 20 years are a large increase in the population, a diminution of the number of well-to-do people who have gone to live further away and a great increase in the number of girls who go into Manchester to earn their own living. There seems to have been no active propagandism for the limitation of the

family except the correspondence in a weekly paper which has a wide circulation ; but there is no doubt that the people in the district limit the number of their children, especially in the lower middle and upper middle classes, and that such limitation does not exist to the same extent in the working classes.

Gorton has grown very rapidly and is gradually being absorbed into Manchester. Fifty years ago Gorton (then East Gorton) was a mere village ; between 40 and 50 years ago a cotton mill was erected ; about 45 years ago an engineering firm started which employs many hands, and many more are employed in the works of Armstrong, Whitworth and Co., which border on Gorton. The Great Central Railway also has its works there. The district is almost entirely a working class district, 30.9 per cent. of men being engaged in engineering, 7.0 per cent. being railway employees and 3.2 per cent. employed in textile factories, in which also 10.0 per cent. of the females are engaged. West Gorton, which is now part of Manchester, is purely a working class district.

In Gorton the birthrate, based on the population, remained high from 1891 to 1904. The birthrate is lower amongst the better class and amongst the better educated artisan class. It is highest amongst the labourers and the least educated of the people.

With regard to limitation of the family probably not much has been done by actual advertisement, but the subject is freely talked about and openly discussed in the workshops where girls and young women work, and also during the dinner hour ; the same subject is part of the general conversation of the lads and young men at their work and at meal times. The married women have frankly told our correspondent that they make their husbands take precautions to prevent conception, the two methods of prevention in use being the sheath and the coitus interruptus. The young men and women marry with the full intention and knowledge of preventing pregnancy.

In Moss Side there are practically no factories and 34.0 per cent. are engaged "in other occupations" ; the small percentage of tenements of less than five rooms and the large percentage of servants imply a residential district, but probably of not such a high class as Withington.

(xxiii)

*Leigh* registration district includes the municipal borough of Leigh (40,001), the rural district of Leigh (8,410) and the urban districts of Golborne (6,789), Atherton (16,211) and Tyldesley with Shakerley (14,843).

This district is a working class district, mainly a mining district with some textile factories. Mining occupies 38.4 per cent. of the males and 11.8 per cent. of males and 23.1 per cent. of females are engaged in the textile factories. The percentage of overcrowding is slightly above the average for the county, but the percentage of one and two-roomed tenements, etc. is below the average. In the middle and late seventies the birthrate was high and the fall since has been irregular and intermittent, notably about 1891 when the rate was again higher ; there has been practically no change in the potential birthrate.

See Plate IV	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. ..	4431	5577	6174	8348	10436	13046
No. of births .. .. .	1097	1362	1535	2049	2692	2829
No. of births per 100 married women (15-55)	24.8	24.4	24.9	24.5	25.8	21.7
Potential birthrate (Tait's) (15-55)* ..		21.1	20.9	21.4	21.4	21.1

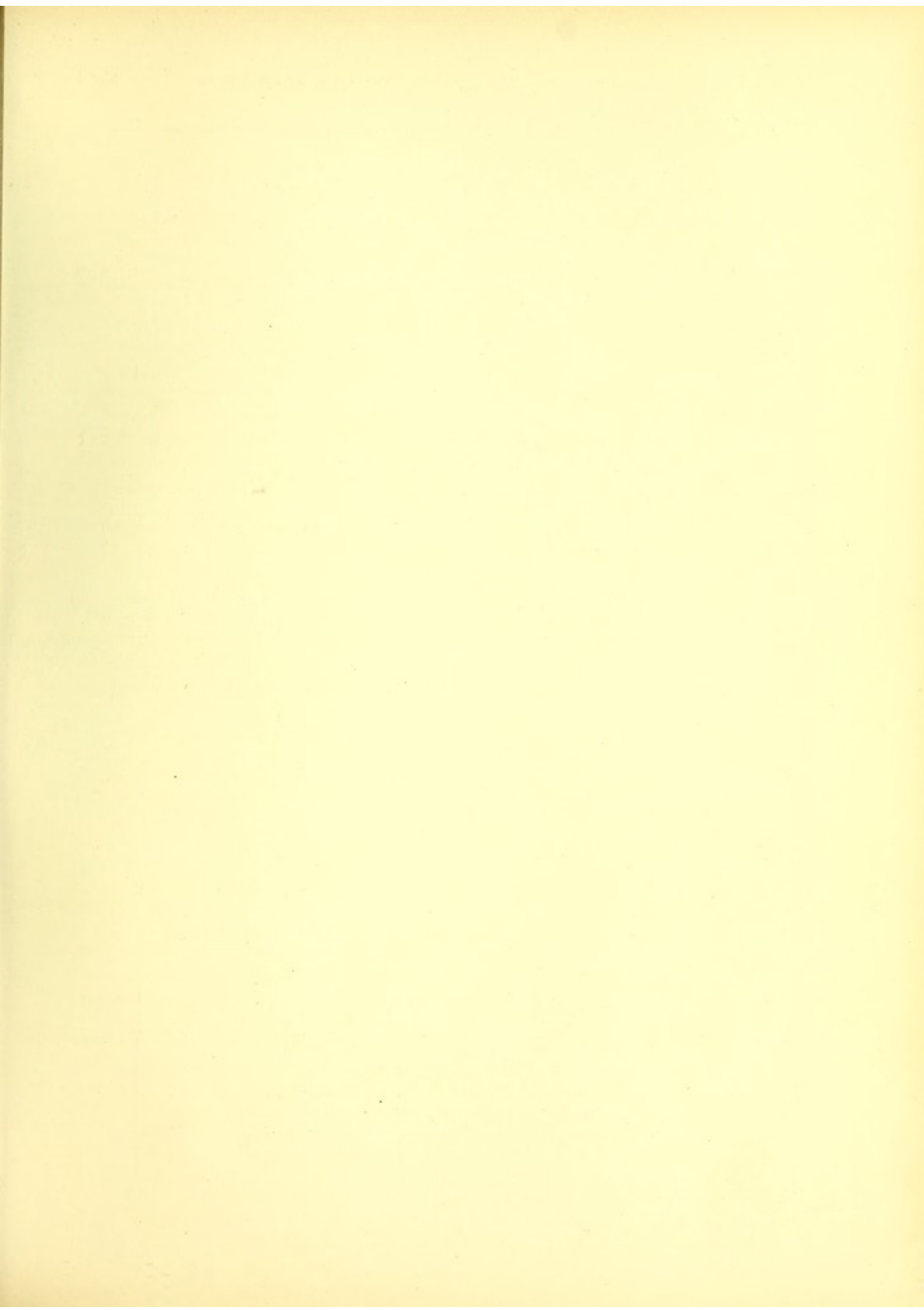
Regression coefficient (1876-1906),  $-.204 \pm .014$ ; (1851-1875),  $+.078 \pm .017$ .

Percentage of district included in tables of occupations, 90.2.

Changes in boundaries of registration district: none.

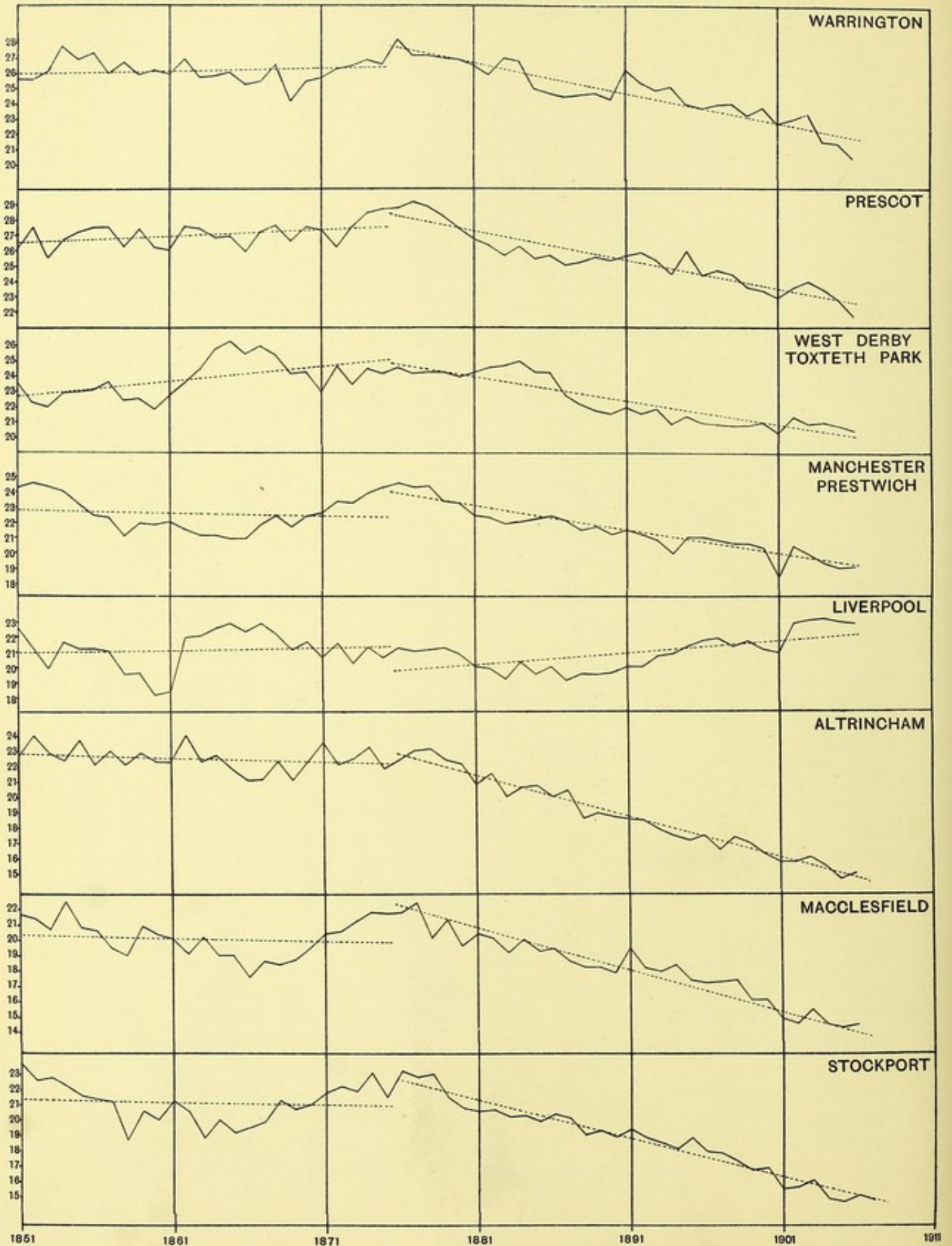
	1861	1871	1901
* No. of births per 100 married women (15-45)	30.8	31.9	27.0
Potential birthrate (15-45)	26.1	26.1	25.8

In the borough of Leigh the principal occupations are mining which employs 35.4 per cent. of the males, cotton manufacturing which employs 11.4 per cent. of the males and 25.0 of the females, and engineering and machine works which employ 7.4 per cent. of the males. The increase in the population has been principally among the collier class, the numbers in one colliery having increased from 664 in 1885 to 1867 in 1909, and there has been much the same development in all the collieries in the district. The increase in the number of cotton operatives has been small in comparison with the increase among the colliers. There are marked social differences between these two classes of the population. The colliers, though earning high wages at times, are subject to considerable fluctuations both in the number of days per week which they work and in the amount of their earnings. The cotton spinner has very regular hours of labour and constant wages, a far higher standard of comfort on the whole and a markedly lower birthrate than the collier. The town was visited on several occasions by Mr Bradlaugh and Mrs Besant in the early eighties; well-attended meetings were held at which neo-Malthusian doctrines were advocated and tracts distributed. This appears (see Plate IV) to have affected the birthrate for about ten years, but there was some recovery towards the end of the nineties. It probably had permanent effect in encouraging the limitation of the family which is now extremely common and on the increase. Advertising quacks push this practice. One man visits the town and gives "Lectures to Women only," when various sexual matters are discussed and information is given. This is followed by the sale of various medicines and appliances, vaginal syringes, preventive pessaries, etc. Local opinion holds that this trade affects the birthrate chiefly among the better class working people and the small shop keeping and lower professional classes. To the lowest classes, who have little sense of parental responsibility and a low standard of comfort, children are a good investment as they cost little to rear and become a source of income at 13 years of age. To the better class people children are an anxiety and expense and it is this class that resorts freely to preventive measures, so that families of more than two or three children are now almost unknown among them, and among the fairly wealthy there is a remarkable number of childless married couples.



BIRTHS PER 100 MARRIED WOMEN AGED 15-55

LANCASHIRE. CHESHIRE.



We are informed by a correspondent that one if not the principal explanation of the fall in the birthrate is the Education Act of 1870. That Leigh was later in feeling the effect may be due to the poorer people being slower to change and possibly also to the fact that there is a considerably larger percentage of Roman Catholics in the town than in the county as a whole.

The chief industries in Leigh rural district are cotton mills, coal mining and agriculture. There seems to have been no active propagandism in the rural district by advertisement or otherwise for the limitation of the family.

In Golborne, Atherton and Tyldesley the same characteristics of labour are found; the bulk of the people are engaged in the mines which employ 41·2, 35·3 and 48·5 per cent. in the three districts respectively, and there are also textile factories in Golborne employing 7·5 per cent. of males and 21·0 of females; 15·1 per cent. of males and 21·3 per cent. of females in Atherton and 11·0 per cent. of males and 20·5 per cent. of females in Tyldesley are similarly employed.

(xxiv)

*Warrington* registration district includes the county borough of Warrington (64,242), the rural district of Warrington (10,496) and the urban districts of Newton-in-Makerfield (16,699) and Haydock (8,575).

See Plate V	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. ..	5106	6632	8346	10338	12457	15014
No. of births .. .. ..	1307	1719	2139	2730	3249	3389
No. of births per 100 married women (15-55)	25·6	25·9	25·6	26·4	26·1	22·6
Potential birthrate (Tait's) (15-55)* ..		22·5	21·9	21·9	21·6	21·7

Regression coefficient (1876-1906),  $-0.193 \pm 0.009$ ; (1851-1875),  $+0.021 \pm 0.013$ .

Percentage of district included in tables of occupations, 89·5.

Changes in boundaries of registration district: 1895, 2194 transferred to Runcorn.

	1861	1871	1901
* No. of births per 100 married women (15-45)	31·1	31·4	27·6
Potential birthrate (15-45)	26·6	26·4	26·1

This district is mainly a working class district as can be seen from the percentage of women employed in domestic service, etc., which is below the average, but it is not a cotton town and the percentage of women employed is small. The amount of overcrowding, etc. is just under the average for the county, but in 1871 the percentage of general labourers was decidedly above the average. The birthrate was above the previous average in the middle of the seventies. There was a fairly sharp fall from 1875 to 1880, and a more or less continuous fall since.

Warrington is a town where a variety of trades flourish and consequently it has been more or less uniformly prosperous. From 1887 to 1894 there was an influx of people into the town and its vicinity owing to the construction of the

Manchester Ship Canal; the men belonged to the labouring classes and were for the most part married, and this may account for the higher birthrate about that date. The staple trades are iron and tanning, but there are other industries. Iron and steel works employ 8.6 per cent. of the males, engineering employs 6.8 per cent., and 5.3 per cent. are engaged in tanning, etc. (Groups XV and XVI in Census report). A small percentage of women, 9.4, is engaged in calico manufacturing.

A comparison of a well-to-do ward and a poor ward in the town shows that the mean birthrate for the years 1902 to 1909 inclusive was 38.5 in the latter ward and 22.4 in the former ward, but it must be remembered that this is based on the estimated population and that no corrections have been made for age distributions or for proportions of women married. On p. 43 of the *Annual Report of the Medical Officer of Health for Warrington for 1909*, the birthrates in the slums and in the borough as a whole are given; these slum dwellings are not confined to any special district, they include the worst property in the various districts of the borough and are inhabited by the poorest part of the population. The birthrate in the whole borough is estimated at 30.9 per 1000 and in the slums at 54.4 per 1000. Here again the rates are based on the estimated population for 1909 and no correction is made for age distribution or for proportion of women married. There seems to have been no specially active propagandism for the limitation of the family in this district, but abortifacients have been sold for some years past under such titles as "female pills," etc.

Warrington rural district contains mainly an agricultural population, but about 500 of the population are engaged in a colliery, in wire and lead works, and in two tanneries. There are also two manure works in the district but the people employed are not resident in the district.

In Newton-in-Makerfield the occupations are various; mining occupies 9.5 per cent. of the males, engineering and machine making occupy 22.0, the construction of vehicles occupies 10.6 per cent., and there are minor industries.

Haydock has practically a colliery population and 59.7 per cent. of the men are employed as miners; there has been no change in the industries during the last 50 years. No propagandism by advertisement or otherwise for the limitation of the family had come to the notice of our correspondent.

(xxv)

Prescot registration district includes the county borough of St Helens (84,410), the municipal borough of Widnes (28,580), the rural district of Whiston (18,961) and the urban districts of Prescot (7,855), Huyton with Roby (4,661), Little Woolton (1,091), Much Woolton (4,731) and Rainford (3,359).

The occupations of the people in this district are various in character; there are practically no textile factories and little employment of female labour, the least in the districts considered. The amount of overcrowding is above the average and the percentage of general labourers in 1871 was also above

the average. There was a rise in the birthrate in the middle of the seventies possibly due to the establishment of chemical works in Widnes and to the flourishing condition of the watchmaking industry in Prescot.

See Plate V	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. ..	7973	10977	13756	17247	20298	22202
No. of births .. .. .	2077	2852	3750	4605	5187	5069
No. of births per 100 married women (15-55)	26.1	26.0	27.3	26.7	25.6	22.8
Potential birthrate (Tait's) (15-55)* ..		22.1	21.8	22.0	21.6	21.0

Regression coefficient (1876-1906),  $-0.188 \pm 0.009$ ; (1851-1875),  $+0.042 \pm 0.013$ .

Percentage of district included in tables of occupations, 85.1.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	31.8	33.6	28.6
Potential birthrate (15-45)	26.6	26.4	25.8

The fall in the birthrate since 1876 is slight. The district is a working class district, generally speaking, but with a larger agricultural element than in most of the Lancashire districts.

In St Helens the chief occupation is the making of glass, which employs 20.9 per cent. of the males; 18.3 per cent. are engaged as miners and 4.0 per cent. in engineering works.

Widnes is a manufacturing town, but before 1870 had a very small population. After that date chemical works were established and from 1870 to 1880 there was a trade boom and wages were high. About 1889 the works were taken over by a company; for some considerable time past trade is said to have been slack and wages lower. In 1901 the percentage of men employed in the alkali works was 25.3, while 7.6 per cent. were in engineering works.

The rural district of Whiston comprises 12 townships; in the Whiston township many of the residents are engaged in Prescot mainly in the wire works, a comparatively new industry, while others are engaged in the watch industry in which a large number of girls are also employed. In three of the townships the chief occupation is coal mining, and in the townships adjoining Widnes the majority of the men are engaged in chemical and copper works. Agriculture is the chief occupation in the remaining districts. The only changes in industry in this district have taken place in the township of Ditton where a large iron works existed till about 30 years ago; its place has now been taken by copper works, creosoting works, tanning extract works and a small manure manufactory.

The fall has probably occurred chiefly in the middle classes; no special propagandism for the limitation of the family in this district is reported.

In Huyton the chief occupations are general labour, farming, brick making and shopkeeping. There have been practically no changes in the industries except that formerly there were iron smelting works which have now been closed for about eight years.

In Prescot the main industry is watch and clock making, which is an



old-established trade and employs 18.1 per cent. of all males and 8.4 per cent. of all females; there is also some mining employing 13.5 per cent. of the males.

Much and Little Woolton are districts almost entirely of a residential nature and have not changed in this respect during the last 50 years.

(xxvi)

*West Derby and Toxteth Park* registration districts are taken together and include the rural district of Sefton (9,384), the urban districts of Little Crosby (563), Great Crosby (7,555), Waterloo with Seaforth (23,102), Litherland (10,592), Childwall (219), Allerton (1,101), Garston (17,289) and part of the county borough of Liverpool (459,879).

See Plate V	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	23227	35724	54834	74507	87140	102890
No. of births .. .. .	5472	8122	12551	18029	19100	20627
No. of births per 100 married women (15-55)	23.6	22.7	22.9	24.2	21.9	20.2
Potential birthrate (Tait's) (15-55) *		21.9	22.1	22.0	21.2	21.2

Regression coefficient (1876-1906),  $- .162 \pm .009$ ; (1851-1875),  $+ .090 \pm .019$ .

Percentage of district included in tables of occupations, 97.9.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	27.6	27.7	24.9
Potential birthrate (15-45)	26.1	26.3	25.8

It is difficult to sum up the characteristics of this district as 87 per cent. of the population is included in the city of Liverpool. There are practically no textile factories and the percentage of women employed is below the average for the county. A large percentage of men are engaged in conveyance, as dock labourers, etc. Except in the percentage of tenements of less than five rooms, this district is in a far worse social state than the county as a whole.

The birthrate from 1851 to 1875 is irregular (see Plate V) and shows a slightly upward tendency; there is no sign of a fall till the middle of the eighties and since 1891 the descent has been much less rapid than in most of the registration districts in Lancashire; between 1881 and 1891 there was a loss of 0.8 births in the potential birthrate.

Great Crosby and Waterloo with Seaforth are residential districts, only a small proportion of the population being of the working class. Waterloo with Seaforth is bounded on the east by agricultural land; most persons living in the district have their business centres in Liverpool or Bootle and there are no works in the district. The percentage of tenements of less than five rooms is low, 29.2 in Waterloo and 16.7 in Great Crosby. In Waterloo there are small percentages of men engaged as seamen, etc. (3.8 per cent.), and as dock and wharf labourers (4.2 per cent.).

In Litherland 23.9 per cent. of all males are engaged in "conveyance," probably the majority being railway employees; 4.5 per cent. are engaged in engineering works.

In Garston 6·7 per cent. of the men are engaged as seamen, etc., 5·7 as dock and wharf labourers and 7·4 in engineering works.

Childwall is essentially an agricultural district; the inhabitants are mostly farmers and men employed on the farms. There seems to have been no attempt to limit the family nor are there any active agencies at work spreading neo-Malthusian ideas.

We are informed by a resident in a sub-district of this area, which contains a mixed population of a well-to-do residential class, a fairly well paid working class and a very poor casual class, that the practice of limiting the family prevails mostly in the class between the well-to-do and the upper working class, and that it is of recent date and probably has not existed for more than 15 or 20 years. The idea has generally been started by some married woman and passed on from one to another, most often by young married couples from London. A certain chemist quite openly supplies various drugs and "appliances" for terminating or preventing conception; the better class married working woman usually declines his offers, but they are accepted by those who consider that they are a step higher in the social scale; the really well-to-do in this district rarely use means to limit the family. Many women of late years seem to have read pamphlets of a pseudo-scientific type sent to them, for a small sum, in answer to advertisements in some of the lower class London weeklies.

(xxvii)

*Prestwich and Manchester* registration districts are combined and include the county borough of Prestwich (12,839), the urban district of Failsworth (14,152) and part of the county borough of Manchester (275,166).

See Plate V	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. ..	35632	39474	40718	42324	45093	51262
No. of births .. .. .	8607	8687	9218	9479	9675	9417
No. of births per 100 married women (15-55)	24·2	22·0	22·6	22·4	21·5	18·4
Potential birthrate (Tait's) (15-55)* ..		21·9	21·8	21·7	21·4	21·3

Regression coefficient (1876-1906),  $-.158 \pm .007$ ; (1851-1875),  $-.025 \pm .021$ .

Percentage of district included in tables of occupations, all†.

Changes in boundaries of registration district: 1895, 852 transferred to Oldham.

	1861	1871	1901
* No. of births per 100 married women (15-45)	27·0	28·0	22·7
Potential birthrate (15-45)	26·3	26·3	25·8

† Only 50·6 per cent. of the county borough of Manchester are included in this registration district.

A variety of trades flourish in Manchester; 10·4 per cent. of males are engaged in iron and engineering works, 13·7 per cent. in conveyance of men, goods, etc., and 5·4 per cent. in textile factories in which also 7·9 per cent. of the females are employed. From the table of social conditions this district seems to be about the average, except that the proportion of paupers per 1000

is well above the average. The birthrate has shown great fluctuations; it was low from the middle of the fifties till towards the end of the sixties, it rose in the seventies as in many other districts in the north and since 1881 it has fallen slightly; the fall is the least in the north except in the case of Liverpool.

Prestwich borough seems on the whole to be a non-working class district, judging by the fact that the number of domestic servants per hundred separate families is 25.1. There are some textile factories which employ 7.9 per cent. of the males.

Failsforth is a working class district with various occupations; 24.3 per cent. of the males and 24.1 per cent. of the females are employed in the textile factories; 9.4 per cent. of the males are engaged in engineering works and 5.8 per cent. in mining.

In Manchester borough a variety of trades and occupations occur and it is suggested locally that this is one of the principal reasons for a lesser fall in the birthrate in this district\*. Outside towns are almost entirely dependent upon the cotton industry and during a period of bad trade there can be practically no interchange of employment; a cotton spinner, collier, or engineer could not obtain other employment where he could earn anything like the same money, and probably only the collier would be useful as a general labourer. In Manchester the prosperity of the cotton trade has a general influence, but as there is very little actual spinning or weaving this is not so marked as in the surrounding towns. A considerable number of warehousemen and clerks are engaged in distribution, and loss of employment in one method of distribution does not debar them from obtaining employment in another.

Increased education is reported to be a factor in the reduction of the birthrate in Manchester as in other towns; with increased education there is undoubtedly greater desire for luxury in all classes, and the increased expenses for dress, holidays, literature and amusements leave less for the upbringing of a family; food is also dearer than formerly. There has been a great deal of general knowledge on the subject of the limitation of the family for 20 years in this district; it has an influence on the birthrate, but the extent of its influence is modified by the main factor of "prosperity." The decline has occurred in all classes, but there is no doubt that there are proportionally fewer births among the middle classes.

Another correspondent writes: Propagandism for the limitation of the family has been active for a long series of years, but it was specially energetic when Mr Bradlaugh and Mrs Besant were lecturing. Mr Bradlaugh came to Manchester a number of times. The birthrate curve (Plate V) shows the decline, steady but not very marked, since the years of these visits.

This fact is of special interest because the birthrate has not fallen in Manchester as it has in Burnley or Blackburn. It supports the view that, if

\* Trade influences the marriage rate, but when the birthrate is calculated on the number of married women trade effects are less noticed, except as causing irregularities in the increase of married women between the census years.

propagandism has largely affected the birthrate, it must have occurred in a district where owing to social or economic conditions there was an *a priori* readiness to restrict childbirth.

(xxviii)

*Liverpool* registration district includes part of the county borough of the city of Liverpool (147,405).

See Plate V	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	39492	44529	38407	32876	23575	21850
No. of births .. .. .	8910	8205	7898	6589	4710	4564
No. of births per 100 married women (15-55)	22.6	18.4	20.6	20.0	20.0	20.9
Potential birthrate (Tait's) (15-55)* ..		22.3	22.2	22.1	21.4	21.1

Regression coefficient (1876-1906), + .086 ± .012 ; (1851-1875), + .019 ± .023.

Percentage of district included in tables of occupations: occupations are given for the whole of the city of Liverpool and the population of the registration district is only 20.1 per cent. of the whole city of Liverpool.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	22.1	25.0	25.5
Potential birthrate (15-45)	26.4	26.5	26.4

It is impossible to deal adequately with the registration district of Liverpool. In the table of social conditions, the facts as to overcrowding and number of tenements are obtainable for the whole area of the city only; the number of paupers per 1000 of the population and the number of families to one house, both measures of poverty, can, however, be obtained for the registration district, and it is clear that in these two respects Liverpool registration district is much inferior to any other district in Lancashire. In the matter of overcrowding and of one and two-roomed tenements the city of Liverpool has percentages much above the average. In the city 26.7 per cent. of males are engaged in conveyance of goods and messages; the registration district is the most westerly portion of the city and this percentage for the city is probably an underestimate for the registration district, in which a large number of dock hands reside. Liverpool is the only district in the county for which the birthrate has remained steady or has even a slight tendency to rise; judged from the table of social conditions it is the worst district in Lancashire. That the Liverpool registration district differs from the whole city can be seen from the following table.

	Liverpool registration district	Liverpool urban sanitary district
1881. General labourers (xxii. 2) .. .. .	8297	20071
Dock, harbour, wharf, etc., service (vi. 3) ..	7863	26736
Together .. .. .	16160	46807
Total males 20 years and upwards .. .. .	61229	526253
Percentage of men engaged as general labourers, dock, harbour, etc. .. .. .	26.4	8.9

We owe these figures for 1881 to Mr Martin of the General Register Office ; the figures for the Liverpool registration district for 1901 cannot be obtained from the census but the figures given above show how much larger the proportion of dock and general labour is in the registration district than in the urban sanitary district, and we are probably justified in assuming from general information and from the statistics available that the type of labour in the registration district is of an even inferior kind to that in the city as a whole.

The large percentage of Irish in the dock population of Liverpool and the fact that the majority of these are Roman Catholics may help to account for the steady birthrate. Here again we are faced by the difficulty that marriages of different denominations are given for the county and not for each registration district. The birthplaces of males and females are, however, given for the city of Liverpool and we find that 6·7 per cent. of the population there were born in Ireland as compared with 3·3 per cent. in the whole county ; the percentage in the registration district is probably greater than 6·7 per cent. ; moreover this only includes those Irish who were actually *born* in Ireland. There can, however, be little doubt that the Irish element is the source of the unique position of Liverpool among Lancashire towns. It is a reflection not without sadness that in the one big town where the birthrate is stationary, the population appears to be inferior in skill and intelligence to nearly all the towns wherein the birthrate is rapidly declining.

## B. *Cheshire.*

### I. *The County as a Whole.*

*Cheshire.* The total population of Cheshire numbered 827,191 in 1901 and of these 657,382 are included in the urban districts, and 169,809 in the rural districts, which is 20·5 per cent. of the whole population.

The chief industries are connected with :

(1) The conveyance of men and goods, which employs 11·5 per cent. of males over ten years ; the principal transit centres are on the Mersey, and in Birkenhead and Runcorn registration districts, while at Crewe, in the Nantwich district, the L. and N. W. Railway Company has its works.

(2) Metal and engineering works, which employ 7·0 per cent. of males over ten years ; engineering and boiler making are the principal branches of this industry in Cheshire and the chief centres are along the Mersey and in Crewe. Ship building is also carried on in the Mersey.

(3) Textile factories which employ 6·5 per cent. of the males and 9·3 per cent. of the females over ten years. The chief branches of the textile industry in which the population of Cheshire are engaged are the less highly paid, i.e. silk weaving and fustian and cord cutting ; the weekly wages in the former trade average in Cheshire 24s. 5d. for men and 11s. 0d. for women, and in the latter, fustian and cord cutting, wages average 24s. 1d. for men and 10s. 10d. for women, but occupation in this trade is irregular and as many as 50 per cent. of the men may not be

working a full week. The only cotton factories of importance are in Stockport and the neighbourhood and at Bollington in the registration district of Macclesfield. Congleton is the chief centre of the fustian cutting industry.

(4) Alkali manufacture, which is carried on chiefly in Northwich and Runcorn.

(5) Agriculture, which occupies 9·2 per cent. of males over ten years.

It will be seen that the occupations in Cheshire are of a varied character and that in the textile industries the population is employed in branches that are less highly paid than the cotton branch of the industry. The percentage of women employed in 1901 was 34·4, and of all those employed 22 per cent. were married or widowed. The percentage of tenements of less than five rooms averages 41·0 over the whole county but shows considerable variation in the different districts; in Nantwich the percentage is 25·5 and in Stockport 53·9. In the amount of overcrowding and in the percentage of one and two-roomed tenements, Cheshire compares favourably with the other districts north of the Humber.

*Changes in the boundaries of the registration districts from 1851 to 1906.*

1853. The limits of Nantwich and Great Boughton were altered on the formation of a new district of Whitchurch, but no details are given.  
 1861. The Birkenhead registration district was formed in July by the severance of parishes from the district of Wirral.  
 1867. 268 of the population of Northwich were transferred to the district of Congleton.  
 1893. 5290 of the population of Congleton were transferred to Leek.  
 1895. 2194 of the population of Warrington were transferred to Runcorn.  
 1903. The sub-registration district of Hawarden was transferred to a new registration district of the same name.

*The percentages of the population living in rural districts and in urban districts of less than 5000 inhabitants and consequently omitted from the tables of occupations of men and women are given below.*

Macclesfield .. ..	33·7	Northwich .. ..	48·9
Altrincham .. ..	40·1	Runcorn .. ..	58·5
Stockport .. ..	1·5	Nantwich .. ..	31·8
Birkenhead .. ..	·04	Wirral .. ..	57·9
Congleton .. ..	50·0	Chester .. ..	47·7

In Cheshire the percentage of each district thus omitted is large, much larger than in Lancashire or in many districts in Yorkshire, and it can be seen from the tables of occupations that the rural districts are in this case largely agricultural, as 31·5 per cent. of the males are engaged in agriculture. At the same time there is probably a residential element of some size as 17·0 per cent. of females are employed as domestic servants in these rural districts, and we know from

our correspondents that this residential element is substantial. An examination of the regression coefficients shows that there is much less variability in the fall in Cheshire than in Lancashire; in no district, however, is the fall to be compared with that found in some of the Lancashire towns; 15 out of 28 of the districts in Lancashire have a greater fall than Macclesfield which is the district in Cheshire with the greatest fall\*. The birthrate curves show great irregularities; Macclesfield and Stockport are strikingly alike and are comparable with the cotton towns of Lancashire; in Northwich and Runcorn there are remarkable irregularities, but no real fall in Northwich until after 1894. Congleton more closely resembles Macclesfield and Stockport but the fall is less marked. In general we find, as we did in Lancashire, the greatest fall in the towns engaged in the textile trades where a large percentage of women are employed in the factories, but it must be remembered that the fall is less marked and the labour of a lower type than in Lancashire.

Runcorn, Wirral and Congleton should scarcely be included in the tables of occupations as the data do not cover 50 per cent. of the population.

In three districts, Macclesfield, Altrincham and Stockport, the birthrate had begun to fall even before 1876, but in Macclesfield and Stockport the fall was scarcely significant, only amounting to .29 and to .23 respectively in the ten years between 1866 and 1876, and the changes in the potential birthrate between 1861 and 1871 would seem to account for this fall.

TABLE IX. *Cheshire. Birthrates.*

(See Plates XVII and XVII *bis*.)

Registration District	Regression coefficient 1876-1906	Actual change in number of births in 31 years	Mean birthrate 1851-1875	Percentage change in number of births	Potential birthrate, women (15-55)		Potential change in number of births in 30 years	See page
					1871	1901		
(i) Macclesfield	-.278	- 8.6	20.1	43	19.2	19.1	- .1	74
(ii) Altrincham†	-.276	- 8.6	22.5	38	20.1	19.7	- .4	76
(iii) Stockport	-.254	- 7.9	21.1	37	20.7	20.1	- .6	77
(iv) Birkenhead	-.199	- 6.2	25.0	25	21.5	21.0	- .5	79
(v) Congleton	-.198	- 6.1	21.5	28	20.6	19.3	- 1.3	81
(vi) Northwich	-.197	- 6.1	24.2	25	20.6	20.2	- .4	82
(vii) Runcorn	-.179	- 5.5	24.2	23	21.1	20.3	- .8	83
(viii) Nantwich	-.171	- 5.3	22.6	23	21.0	20.6	- .4	84
(ix) Wirral	-.133	- 4.1	23.8	17	20.0	20.1	+ .1	85
(x) Chester‡	-.130	- 4.0	21.3	19	20.4	19.7	- .7	87

\* Table IX shows that the variation in the potential birthrate is very slight and that in only one town, Congleton, does it account for a loss of more than one birth. In Macclesfield the birthrate has been nearly halved, and in Altrincham and Stockport it has been reduced by over a third, but generally speaking the outlook in Cheshire is not so depressing as in Lancashire.

† This district was called Bucklow in the 1901 Census.

‡ This district was called Great Boughton in the 1851 and 1861 Censuses.

TABLE X. *Social Conditions.*

Registration District	Regression coefficient 1876-1906	Percentage of overcrowded tenements of less than 5 rooms	Percentage of one and two-roomed tenements	Percentage of tenements of less than 5 rooms	Paupers per 1000 of the population	No. of families or separate occupiers in one house	No. of persons per acre	Percentage of general labourers, 1871 census
(i) Macclesfield	-.278	3.40	5.36	47.4	5.76	1.0034	.70	8.12
(ii) Altrincham	-.276	5.16	2.42	26.2	3.40	1.0136	1.07	9.74
(iii) Stockport	-.254	4.31	5.98	53.9	4.96	1.0056	5.56	6.12
(iv) Birkenhead	-.199	9.33	8.12	30.1	5.90	1.0952	18.26	13.41
(v) Congleton	-.198	4.70	1.45	41.1	5.10	1.0101	.65	6.24
(vi) Northwich	-.197	7.13	4.69	43.1	3.38	1.0129	.89	13.73
(vii) Runcorn	-.179	6.93	4.76	42.4	4.00	1.0138	.80	13.44
(viii) Nantwich	-.171	4.72	1.87	25.5	3.53	1.0136	.73	10.65
(ix) Wirral	-.133	8.53	2.65	25.7	3.93	1.0151	.97	18.95
(x) Chester	-.130	8.41	5.83	41.0	6.42	1.0119	.49	13.02
County	-.215	5.75	5.13	41.0	5.05	1.0260	1.24	10.64

TABLE XI. *Percentages of Males over ten years employed in various occupations.*

Registration District	Regression coefficient 1876-1906	Conveyance (vi)	Agriculture (vii)	Mining (ix. 1)	Engineering, machine making (x. 3)	Chemicals, etc. (xv)	Textile factory (xviii. 1-6)	Dress (xix)	"All other occupations"
County	-.215	11.5	9.2	1.7	7.0	2.6	6.5	3.8	—
(i) Macclesfield	-.278	6.7	2.5	.2	2.3	.5	27.4	4.1	18.6
(ii) Altrincham	-.276	8.5	7.1	.1	6.7	.7	1.6	2.7	28.6
(iii) Stockport	-.254	9.6	2.4	1.5	6.5	.8	14.8	10.2	17.8
(iv) Birkenhead	-.199	18.8	1.2	.0	6.6	1.3	.1	1.9	27.7
(v) Congleton	-.198	6.8	7.3	1.7	3.3	3.4	17.0	4.0	19.6
(vi) Northwich	-.197	9.3	3.3	.0	8.0	19.2	.3	2.2	20.1
(vii) Runcorn	-.179	22.5	.9	.0	5.8	13.3	.4	2.0	22.2
(viii) Nantwich	-.171	17.2	1.1	.1	24.2	.2	.1	4.5	21.0
(ix) Wirral	-.133	8.5	3.8	.0	2.5	7.5	.1	1.4	29.6
(x) Chester	-.130	15.3	3.4	.0	4.5	.9	.1	4.4	27.5
Totals	—	13.3	2.6	5	7.6	2.4	6.4	4.8	23.3
Rural districts	—	7.7	31.5	2.6	3.6	3.3	1.6	1.2	—



TABLE XII. *Percentages of Females over ten years employed in various occupations.*

Registration District	Regression coefficient 1876-1906	Teaching (iii. 4)	Domestic, char-women, laundry (iv. 1, 3)	Paper, books, etc. (xvii)	Textile factories (xviii. 1-5)	Tailoresses, etc. (xix)	Food, lodging, etc. (xx)	"All other occupations"	Total occupied
County	- .215	1.3	12.8	.4	9.3	3.8	2.3	2.6	34.4
(i) Macclesfield	- .278	1.2	6.4	.9	32.5	5.4	2.4	3.0	51.8
(ii) Altrincham	- .276	1.5	18.9	.3	.5	4.2	2.2	5.3	32.9
(iii) Stockport	- .254	1.1	7.9	.6	20.1	3.0	2.6	7.4	42.7*
(iv) Birkenhead	- .199	1.6	14.6	.7	.1	3.3	2.6	5.6	28.5
(v) Congleton	- .198	1.5	8.3	.4	21.4	3.9	3.0	2.9	41.4
(vi) Northwich	- .197	1.4	8.7	1.1	3.0	3.4	2.2	3.2	22.0
(vii) Runcorn	- .179	1.2	9.0	.3	.1	3.5	2.1	2.3	18.5
(viii) Nantwich	- .171	1.1	6.4	.2	.2	12.7†	2.0	2.5	25.1
(ix) Wirral	- .133	1.6	18.8	.9	.1	2.2	3.5	5.8	32.9
(x) Chester	- .130	1.5	13.9	.2	.1	5.6	3.8	5.8	30.9
Totals	—	1.3	11.5	.5	8.8	4.3	2.6	5.4	34.4
Rural districts	—	1.3	17.0	.1	2.0	2.6	1.3	4.8	29.1

\* Four workers in wood and furniture omitted.

† There is a wholesale clothing factory here.

II. *The Individual Registration Districts.*

## (i)

*Macclesfield* registration district includes the municipal borough of Macclesfield (34,624), the rural district of Macclesfield (15,775), the urban districts of Bollington (5,245), Yeardsley-cum-Whaley (1,487) and part of Alderley Edge (2,223) (see p. 76).

See Plate V	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	9124	9195	8614	8908	8261	8485
No. of births .. .. .	1979	1845	1759	1816	1606	1254
No. of births per 100 married women (15-55)	21.7	20.1	20.4	20.4	19.4	14.8
Potential birthrate (Tait's) (15-55)* ..		19.7	19.2	19.7	19.4	19.1

Regression coefficient (1876-1906), - .278 ± .009; (1851-1875), - .029 ± .023.

Percentage of district included in tables of occupations, 66.3.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	26.3	27.5	19.5
Potential birthrate (15-45)	25.2	25.0	24.5

Macclesfield is mainly a working class district as can be seen from the large percentage of tenements of less than five rooms and from the small percentage of domestic servants, the smallest percentage in the county. The textile industry is the main occupation, employing 27.4 per cent. of the males and 32.5 per cent. of the females, of whom the majority are engaged in silk manufacture. This district shows the greatest birthrate fall in Cheshire, but it is slight compared with the fall in the cotton towns of Lancashire. The birthrate was low in the sixties and high in the seventies as in many of the Lancashire cotton towns, and the fall since 1877 has been continuous. The change in the age distribution of married women is of small importance.

In Macclesfield borough the chief occupation is in the textile factories and 26.7 per cent. of males and 32.7 per cent. of females are engaged in these works, chiefly in the manufacture of silk, i.e. in silk piece goods, handkerchiefs, braids, ribbons, etc. Cotton spinning and the manufacture of tapes and bindings are also carried on; Swiss embroideries, blouse and shirt making occupy others, and there are shoe manufactories and paper mills. In practically all these more females are employed than males. Generally speaking the labour is skilled, weaving in all branches being highly skilled. The rate of wages is difficult to estimate as piece work is the rule. Few good weavers earn less than 30s. and they can earn as much as 40s. a week if they wish. Female weavers earn from 17s. to 25s. a week, and boys and girls can earn from 5s. to 11s. The chief change in the industries during the last 50 years has been the gradual dying out of silk throwing, owing to cheaper labour and power in Italy and the South of France; the throwing mills have been left vacant or fitted up with machinery for weaving, warping, reeling, winding, etc. In the making-up trades Japanese silk is now used almost entirely, as owing to cheap labour the Japanese are able to undersell the Macclesfield manufacturers in plain silks. Skilled weavers are no longer so numerous as formerly owing to the uncertainty of the trade. The fall in the birthrate has been locally attributed to the fact that the standard of living is higher and, although food is not dearer, many luxuries are now necessities; young people contemplating marriage reckon on the joint income of husband and wife, and in this town the wife's contribution is often equal to her husband's, so that child-bearing in these cases means serious financial loss.

The town is surrounded by an agricultural district, consisting principally of grazing land, milk being sent to Manchester. Butter and cheese making, cattle breeding and market gardening are also carried on.

Alderley Edge is a purely residential place with houses of rents varying from about £40 to £500 a year, together with cottages occupied by grooms, gardeners and labourers. There have been no marked changes in the industries in this quarter during the last 50 years and the place is inhabited largely by the merchant princes of Manchester. A large agricultural district surrounds Alderley Edge, milk being sent to Manchester. Some butter and cheese is made but much less than formerly.

In Bollington 31.6 per cent. of the males and 31.2 per cent. of the females

are occupied in the textile factories, principally in cotton manufacture. A smaller percentage of the total number of married women is employed, only 16·8 per cent. compared with 33·2 per cent. in Macclesfield.

## (ii)

*Altrincham* registration district includes the rural district of Bucklow (19,890) and the urban districts of Wilmslow (7,361), Sale (12,088), Altrincham (16,831), Lymm (4,707), Bowdon (2,788), Hale (4,562), Knutsford (5,172), Ashton-upon-Mersey (5,563) and part of Alderley Edge (633) (see p. 74).

See Plate V	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	4396	5359	6685	7788	8646	11461
No. of births .. .. .	996	1194	1571	1619	1603	1802
No. of births per 100 married women (15-55)	22·7	22·3	23·5	20·8	18·5	15·7
Potential birthrate (Tait's) (15-55)* ..		19·9	20·1	19·8	19·4	19·7

Regression coefficient (1876-1906), - .276 ± .006; (1851-1875), - .038 ± .014.

Percentage of district included in tables of occupations, 59·9.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	28·7	30·3	20·1
Potential birthrate (15-45)	25·0	25·2	24·6

*Altrincham* is largely a residential district with a small percentage of tenements of less than five rooms, i.e. 26·2, and with a large percentage of women, 18·9, engaged in domestic service, etc. There is some agriculture, 7·1 per cent. of the males being engaged on farms, etc.; there is practically no textile industry. In the amount of overcrowding, etc. *Altrincham* is below the average for the county. The fall in the birthrate seems to have begun about 1878 and to have been continuous and steady; the birthrate was low in the middle of the sixties but not so low as in the manufacturing towns and the high birthrate of the seventies does not occur. There has been very little change in the potential birthrate.

Bucklow rural district is purely agricultural though it touches Manchester at one point and surrounds *Altrincham*.

Wilmslow urban district is partly suburban and partly rural. The residential part of the population is composed chiefly of the families of Manchester business men,—there are about 500 railway season ticket holders. A number of the inhabitants are employed in local trade, a few work at a cotton mill at Styal and at a bleach works at Handforth, and others (11·1 per cent. of the males) are occupied in farming. A print works, employing a few hands, was burnt down a few years ago and has not been rebuilt; there were two fustian cutting shops working for a few years. The working class population is largely of the same character now as it was 50 years ago, but the residential element has increased; 30 years ago it must have been very small. Apparently the only form of propagandism for the limitation of the family is contained in advertisements in

certain newspapers which have been circulated in the district for many years. An extensive trade in rubber preventives is reported and also the sale of *hiera picra* to working women. The use of drugs such as pennyroyal is tried, probably not uncommonly. Limitation of the family by prevention of conception is no doubt practised fairly extensively amongst the residential population and would probably be more practised by the working classes if they had greater physiological knowledge. The will is there, but the knowledge of means is limited. The fall in the birthrate due to limitation of the family is here said to be least in the working class.

Sale is chiefly a residential district, and the people are mainly occupied in Manchester warehouses and shops, either as merchants or warehousemen; there is a small agricultural element (8.5 per cent. of the males) which has become smaller of late years. The fall in the birthrate is in all classes, but chiefly in the wealthier. There seems to have been no special propagandism for the limitation of the family, but means are in many cases taken to prevent conception by persons who already have small families. The methods advocated by Mr Bradlaugh and Mrs Besant, it is reported, were to some extent formerly used.

In Altrincham there are some engineering and machine works which employ 13.6 per cent. of the males; 4.0 per cent. of males are engaged in agriculture.

Knutsford is a small town within the rural district of Altrincham; there are no manufactures and it is almost entirely a residential district. The percentage of domestic servants per hundred separate occupiers or families is 45.9, which is the largest percentage but one in the county.

Ashton-upon-Mersey is also chiefly a residential district, but with an agricultural element, 10.2 per cent. of the males being farmers, etc. Formerly the district was entirely agricultural but probably now about two-thirds of the males go to town for employment in offices. Most of the richer people are past the child-bearing age; clerks and shopkeepers with young children are reported to have a fair number and labourers' families are large. Preventives of French make and various india-rubber contrivances are largely used, while douches are fairly common.

(iii)

*Stockport* registration district includes the county borough of Stockport (78,897), the rural district of Stockport (2,288), and the urban districts of Cheadle with Gatley (10,820), Hazelgrove with Bramhall (9,791), Bredbury with Romiley (7,107), Marple (5,595), Heaton Norris (9,474), Reddish (8,668), and part of the municipal borough of Hyde (23,668).

Stockport is mainly a working class district as can be seen by the large percentage of tenements of less than five rooms; it is the largest in the county. The occupations are varied, the chief being textile manufacturing in which 14.8 per cent. of males and 20.1 per cent. of females are engaged; there is some engineering and machine making employing 6.5 per cent. of the males; the

textile factories are chiefly cotton factories in this district but it is not a cotton town in the sense in which Blackburn is a cotton town; it approaches more nearly to Bolton in the amount of textile employment. The birthrate was low from the middle of the fifties till towards the end of the sixties, high in the seventies and there has been a continuous fall since about 1878 (see Plate V). The change in the ages of married women is more noticeable here and is sufficient to account for .6 of births between 1871 and 1901; the fall in the actual birthrate was 7.9 between 1876 and 1906; the fall before 1876 can be accounted for by changes in the potential birthrate.

See Plate V	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	13897	14951	15257	17930	20334	24574
No. of births .. .. .	3290	3164	3326	3698	3945	3819
No. of births per 100 married women (15-55)	23.7	21.2	21.8	20.6	19.4	15.5
Potential birthrate (Tait's) (15-55)* ..		21.1	20.7	20.7	20.4	20.1

Regression coefficient (1876-1906),  $-.254 \pm .007$ ; (1851-1875),  $-.023 \pm .023$ .

Percentage of district included in tables of occupations, 98.5.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	26.9	27.9	19.9
Potential birthrate (15-45)	26.2	25.9	25.0

In Stockport county borough the working classes are chiefly engaged in the textile factories which employ 16.0 per cent. of males and 21.8 of females; there are also engineering works employing 4.6 per cent. of the males.

Cheadle with Gatley is more of a residential district judging by the number of domestic servants per hundred separate families which is 25.8; the working classes are engaged in textile factories which employ 8.6 per cent. of males and 4.7 per cent. of females and there is some agriculture occupying 8.1 per cent. of the males.

Hazelgrove with Bramhall and Bredbury with Romiley have a variety of occupations; the textile factories employ 8.0 per cent. of males and 14.5 per cent. of females in Hazelgrove, and 8.3 per cent. of males and 8.8 per cent. of females in Bredbury; 7.7 per cent. and 5.9 per cent. of males are employed in agriculture in the two districts, while hat and cap making are important industries especially in Bredbury where 16.1 per cent. of males and 10.2 per cent. of females are thus occupied; in Hazelgrove 9.5 per cent. of males are employed in hat and cap making. In Bredbury there are engineering and machine making works which account for 9.6 per cent. of the males.

Marple, Reddish and Hyde are more essentially cotton districts than those to which we have just referred, and cotton manufacture employs 19.5 per cent. of males and 22.1 per cent. of females, 23.6 per cent. of males and 21.4 per cent. of females, and 17.2 per cent. of males and 33.4 per cent. of females in these districts respectively.

In Marple there is some agriculture occupying 6.7 per cent. of males, and in

Reddish and Hyde some engineering works employing 15·8 and 14·6 per cent. of males in the two districts respectively. In Hyde there is also some hat and cap manufacture accounting for 8·1 per cent. of males and 3·4 per cent. of females.

Heaton Norris contains four wards differing in character, but the district as a whole is chiefly residential. Of these four wards:

Heaton Moor east and west wards consist of good class residential property and of the homes of well-to-do shopkeepers; the birthrates in 1910 were estimated to be only 12·9 and 7·2 per 1000 respectively, which seem almost incredible.

Heaton Chapel ward is also largely residential, but the class of property is smaller than in the east and west wards. The birthrate for 1910 is stated to have been only 8·4.

Heaton Mersey ward has a small amount of residential property, but the greater part is small working class property, the workers being employed in bleach works, a jam factory and a pottery works, all situated in the ward. The birthrate of this district was estimated at 19·5 in 1910. These four rates of course are crude rates, and there is the possibility that the populations in 1910 were estimated.

The whole district has shown a marked increase in wealth and population during the last 50 years. In this district, which is a suburban residential one, marriages are comparatively late. Knowledge of the various means for the limitation of the family is widespread. Some years ago a system of advertising these means came into vogue; on the announcement of a birth in the newspapers, the parents received by post illustrated circulars giving very free and unveiled advice and suggestions about the limitation of the family, with full particulars of a long series of "remedies," assurance being given that the "remedies" were perfectly harmless. This, together with later marriages and an increasing desire for excitement and pleasure are cited locally as the important causes of the falling birthrate. Comparatively few parents in this district have more than three or four children.

Except in the case of Heaton Norris we have been unable to obtain any help from residents in the district and we are conscious that our information about the Stockport registration district is very inadequate.

(iv)

*Birkenhead* registration district includes the county borough of Birkenhead (110,915), the urban district of Wallasey (53,579), and part of the rural district of Wirral (677).

The district varies in character; Birkenhead is largely a working class district and Wallasey is mainly residential. The difference can be seen in the percentage of tenements of less than five rooms, which in Birkenhead is 35·5, in Wallasey 19·7. Birkenhead has 10·3 per cent. of one and two-roomed tenements, Wallasey only 3·8. Except in the percentage of tenements of less than five rooms this district has a larger amount of overcrowding, etc. than the average for the county. There is not much employment of women. It borders on the Mersey and some of the labour is connected with shipping, etc.

See Plate VI	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	8482	11948	11950	15174	19053	24392
No. of births .. .. .	1958	2901	2893	3634	4114	4597
No. of births per 100 married women (15-55)	23.4	24.3	24.2	23.9	21.6	18.8
Potential birthrate (Tait's) (15-55)* ..		21.9	21.5	21.5	20.9	21.0

Regression coefficient (1876-1906),  $-0.199 \pm 0.010$ ; (1851-1875),  $+0.155 \pm 0.028$ .

Percentage of district included in table of occupations, all but the 677 of Wirral, .04 per cent.

Changes in boundaries of registration district: 1861. This registration district was formed in July by the severance of parishes from the district of Wirral.

	1861	1871	1901
* No. of births per 100 married women (15-45)	29.8	29.9	23.4
Potential birthrate (15-45)	25.8	26.0	25.5

The birthrate showed an extraordinary rise in the early sixties and after some fluctuations a steady fall began about 1874, and this has continued since.

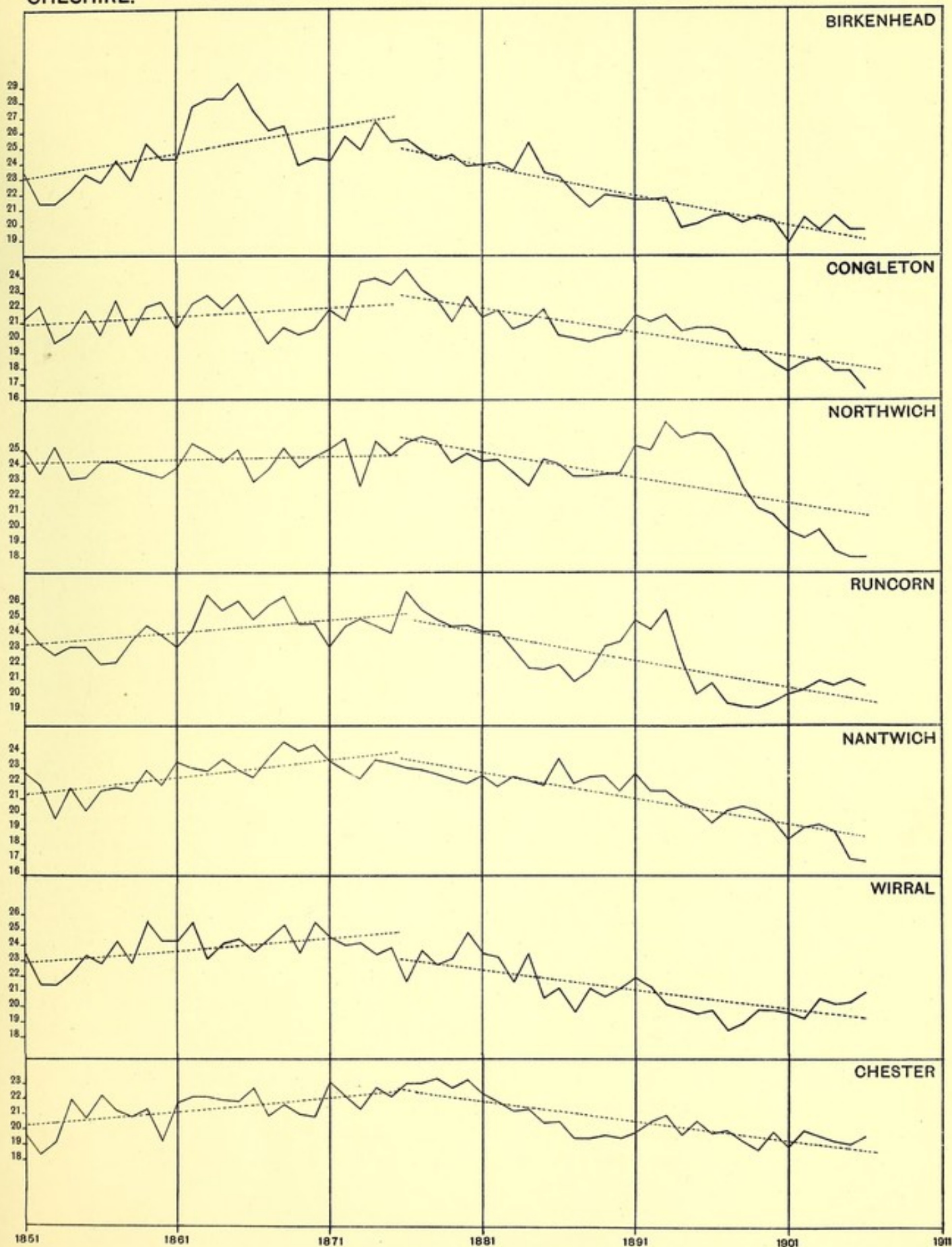
In Birkenhead borough the chief industries are ship building and work at the docks connected with shipping and transporting cargoes to and from railways; 20.7 per cent. of the men are engaged in conveyance of men, goods, etc. and 8.0 per cent. in engineering and machine works. There has been no vital change in the industries except a progressive increase of population and of trade during the last 50 years.

Our correspondent thinks that there has been little propagandism for the limitation of the family in this district, but knowledge of prevention and means of abortion have been spread from one person to another in all classes and limitation is almost universal; he even doubts whether more than a small percentage of children are brought into the world voluntarily. Women of all classes will ask doctors frankly as to the best methods of prevention and whether they are injurious to health, and also of the best and safest method of abortion. Douche tins can be seen unscreened in many bedrooms, and women will frankly state how they avoid pregnancy and recount how they have tried everything to bring an undesired pregnancy to a premature end. Bitter apple, lead plaster, nutmegs, etc. have been taken in many cases with acute symptoms; a few cases have been reported of attempts to introduce knitting needles into the uterus in order to produce abortion. Advertised pills are much tried. These practices are common to most classes, but the labouring classes have not the same facilities.

Wallasey is surrounded by water, except for about a mile and a half where it borders on Wirral, and is a self-contained community. It was an agricultural village 50 years ago with a few large residences and some fishermen's cottages. The town has grown very rapidly and is now almost entirely a residential place, the inhabitants being mostly engaged in Liverpool during the day.

There is a small dock-side population, and in the Wallasey portion of the district some market gardens, two large flour mills, two engineering shops and the Corporation electricity and gas works. These industries have been established during the last 20 years. The working class portions of the district are

CHESHIRE.







Poulton-cum-Seacombe and Liscard, and they have the highest birthrates. Wallasey is purely residential and has the smallest rate.

The drop in the birthrate is least marked in the working classes. No propagandism by advertisement or otherwise for the limitation of the family is reported from this district. Occasionally drugs are used to procure abortion, and it might be inferred from this that other means are taken to prevent conception, but the practice does not seem to have prevailed to any large extent in the working classes and probably not at all among the poorer classes. Amongst other classes the facts are different. The great mass of the population are clerks of moderate to fair incomes, to many of whom the addition of one or two children to the family would make a considerable difference to their personal ease and comfort.

(v)

*Congleton* registration district includes the rural district of Congleton (12,220), the municipal borough of Congleton (10,707), and the urban districts of Sandbach (5,558), Alsager (2,597) and Buglawton (1,452).

See Plate VI	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. ..	4340	5196	5336	5348	5200	4598
No. of births .. .. .	920	1072	1164	1140	1114	817
No. of births per 100 married women (15-55)	21.2	20.6	21.8	21.3	21.4	17.8
Potential birthrate (Tait's) (15-55)* ..		21.3	20.6	19.8	19.8	19.3

Regression coefficient (1876-1906),  $-0.198 \pm 0.011$ ; (1851-1875),  $+0.056 \pm 0.023$ .

Percentage of district included in tables of occupations, 50.0.

Changes in boundaries of registration district: 1867, 268 transferred from Northwich to Congleton; 1893, 5290 from Congleton transferred to Leek.

	1861	1871	1901
* No. of births per 100 married women (15-45)	26.1	28.1	23.4
Potential birthrate (15-45) .. .. .	26.3	25.9	24.7

It must be remembered that only half this district is included in the tables of occupations, but in that portion the chief industry is silk and fustian manufacture; altogether 17.0 per cent. of the males and 21.4 per cent. of the females are engaged in the textile factories. Agriculture employs 7.3 per cent. of the males in this portion of the district. In the whole district the amount of overcrowding, etc. is generally below the average for the county. The birthrate was high in the seventies, but if we omit that period we shall see that the fall in Congleton did not begin to be marked till the middle of the nineties; it was not till 1894 that it remained continuously below the mean for the 25 years from 1851 to 1875 inclusive; the potential birthrate has changed in this district and variation in the age of married women accounts for 1.3 of the smaller number of births; the actual fall in the birthrate from 1876 to 1906 is 6.1.

In Congleton the chief occupations in 1901 were "cutting fustian" which employed 11.4 per cent. of the men and 7.5 per cent. of the women, silk manufacture which then employed 12.3 per cent. of the men and 15.6 per cent. of the women, and agriculture employing 6.4 per cent. of the men. Silk used to be the staple industry of the town, but cutting fustian has become increasingly important. This work is piece work and there is little supervision. Boys and girls can do the work as well as adults; it is very laborious and necessitates the employee walking up and down the room all day long cutting the loops on the fustian. Within the last few years the trade of the town has improved and there is a rising trade in towel weaving.

The working classes do not seem to have been affected by any propagandism for the limitation of the family, but it is prevalent among the middle classes.

The chief occupations in Sandbach arise from agriculture, chemical works, a foundry and salt boiling; 8.8 per cent. of the men are engaged in agriculture and the same percentage in chemical works. In 1901 a small number of men and 6.9 per cent. of the women were employed in the silk trade. Agriculture and salt boiling have declined while other trades have increased.

There seems to be no diminution in the birthrate among the labouring classes earning less than 25s. a week, but there is a diminution among the tradesmen class. The factory hands appear to be of a relatively low type, and fustian workers are not such skilled artisans as the cotton workers.

## (vi)

*Northwich* registration district includes the rural district of Northwich (22,073), and the urban districts of Northwich (17,611), Winsford (10,382) and Middlewich (4,669).

See Plate VI	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. ..	4405	4956	5555	6473	7299	8068
No. of births .. .. .	1100	1182	1391	1566	1839	1579
No. of births per 100 married women (15-55)	25.0	23.8	25.0	24.2	25.2	19.6
Potential birthrate (Tait's) (15-55)* ..		21.0	20.6	20.9	21.3	20.2

Regression coefficient (1876-1906),  $-0.197 \pm 0.025$ ; (1851-1875),  $+0.027 \pm 0.016$ .

Percentage of district included in tables of occupations, 51.1.

Changes in boundaries of registration district: 1867, 268 from Northwich were transferred to Congleton.

	1861	1871	1901
* No. of births per 100 married women (15-45)	30.5	32.2	24.9
Potential birthrate (15-45)	26.2	25.8	25.1

The district is an agricultural one with salt fields interspersed and practically the only industries are salt mining and its offshoot the production of chemicals; 19.2 per cent. of the men are engaged in the manufacture of chemicals. There is very little employment of women; the percentage of tenements of less than

five rooms and the amount of overcrowding are above the average for the county. The fall in the birthrate does not begin till 1898; there was a slight fall between about 1878 and 1890 but it was succeeded by a rise, and the birthrate in the nineties was very high. The potential birthrate in this district was higher in 1891 than in any other year for which statistics are available.

Prior to 1873 there were no chemical works, but in that year Brunner, Mond and Co. started their alkali works and progressed so rapidly that in about ten years they were employing some 3000 hands; this caused a large influx of people of the child-bearing age to the district. On the other hand the formation of the Salt Union in 1888 resulted in a large reduction of labour, much of the labour going to the chemical works. Up to ten years ago Brunner, Mond and Co. had increasing demand for labour, but since then there has not been any great expansion, although works in Lostock and Middlewich begun by others have been absorbed. At times there is a large reduction of labour, and considerable numbers of men may be out of employment.

In Northwich urban district 13·2 per cent. of the men are engaged in alkali works, and in Winsford 23·5 per cent. as salt makers; practically the only industrial employment of women is in Winsford where 6·4 per cent. are engaged in fustian manufacture.

There has been no active propandism for the limitation of the family; the press used to insert advertisements headed: "the obstructions of women removed" and abortion cases were more common 15 years ago than now. Probably sheaths are more used for prevention now than formerly as they are more readily procurable since the people have learnt to read and write. It is the better artisan class who appear to limit their families.

## (vii)

*Runcorn* registration district includes the rural district of Runcorn (23,244), and the urban district of Runcorn (16,491).

See Plate VI	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	3588	3905	4471	4967	6045	5774
No. of births .. .. .	878	904	1031	1196	1500	1155
No. of births per 100 married women (15-55)	24·5	23·1	23·1	24·1	24·8	20·0
Potential birthrate (Tait's) (15-55)* ..		20·9	21·1	20·9	21·5	20·3

Regression coefficient (1876-1906),  $-0.179 \pm 0.019$ ; (1851-1875),  $+0.081 \pm 0.020$ .

Percentage of district included in tables of occupations, 41·5.

Changes in boundaries of registration district: 1895, 2194 transferred from Warrington to Runcorn.

	1861	1871	1901
* No. of births per 100 married women (15-45)	29·6	29·3	25·3
Potential birthrate (15-45) .. .. .	26·1	26·2	25·1

Runcorn borders on the Mersey and although in part an agricultural district has a riverside population of bargemen and dock labourers and some workers in

chemical factories. The amount of overcrowding and of tenements of less than five rooms is just above the average, but the number of one and two-roomed tenements and of paupers per 1000 is below the average for the county. The percentage of general labourers in 1871 was well above the average. There is very little employment of women. The birthrate shows great irregularity; the fall that began about 1878 was arrested towards the end of the eighties and was succeeded by a high birthrate in the early nineties as in Northwich; in fact the curves of the two districts are very similar and the regression coefficients and changes in the potential birthrate are almost identical.

The rural district of Runcorn is mainly agricultural with salt and chemical works at Weston Point; there are also telegraph cable works and bone and manure works. No propagandism for the limitation of the family in this district is reported.

In the urban district the occupations are various; 9.4 per cent. of the males are employed as bargemen, etc., 4.1 per cent. as dock labourers, etc., 10.8 per cent. in alkali works and 5.8 in engineering and machine works.

## (viii)

*Nantwich* registration district includes the rural district of Nantwich (23,197), the urban district of Nantwich (7,722) and the municipal borough of Crewe (42,074).

See Plate VI	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. ..	5237	5998	8195	8958	9081	10995
No. of births .. .. .	1189	1402	1926	2015	2055	2022
No. of births per 100 married women (15-55)	22.7	23.4	23.5	22.5	22.6	18.4
Potential birthrate (Tait's) (15-55)* ..		20.6	21.0	20.2	20.1	20.6

Regression coefficient (1876-1906),  $-0.171 \pm 0.029$ ; (1851-1875),  $+0.110 \pm 0.016$ .

Percentage of district included in tables of occupations, 68.2.

Changes in boundaries of registration district: 1853, the limits of Nantwich and Great Boughton were altered on the formation of a new district of Whitechurch; no details are given.

	1861	1871	1901
* No. of births per 100 married women (15-45)	29.8	29.8	23.2
Potential birthrate (15-45)	25.7	26.1	25.3

The district varies greatly in characteristics; the London and North Western Railway works dominate Crewe, but the district round is largely agricultural. There is very little employment of women, the only factory of importance which employs women being a wholesale clothing factory. The percentage of overcrowding, etc. is below the average for the county. The birthrate rose until 1870 and this rise seems to correspond with the growth of the railway works at Crewe. The fall in the birthrate has been slight but fairly continuous; the total loss of births due to changes in the age of married women is not very marked though the potential birthrate was low in 1881 and 1891.

The rural district of Nantwich, with the exception of the portion immediately surrounding Crewe, is purely agricultural in character. Our correspondent writes that the fall in the birthrate has taken place almost entirely amongst the farmers, tradespeople and artisans, and it is the exception to find more than two or three in a family amongst the younger farmers and tradespeople. The agricultural labourers continue to have large families. Propagandism for the limitation of the family has certainly been active for the last 15 years. Neo-Malthusian appliances are not used to any great extent; the method adopted is that known as coitus interruptus. The following reasons for the decline of the birthrate have been suggested:

- (1) the spread of education and the consequent reading of current literature.
- (2) the knowledge of the ease with which conception can be prevented.
- (3) the growth of luxurious habits, which would need to be curtailed if children are to be borne by women and maintained by men.
- (4) the influence of public opinion which tends to point to a man with a large family as a joke or a freak.
- (5) the decay of religious sentiment and the decline of the idea that the prevention of conception is an immoral act.

In Nantwich urban district a large percentage, 28·2, of women are employed as tailoresses, and 8·3 per cent. of the males are also employed in the same work; 9·6 per cent. of the men are engaged in boot and shoe manufacture.

In Crewe the only big employers of labour are the London and North Western Railway Company whose locomotive works are at Crewe; 28·0 per cent. of the men are engaged in engineering and machine works and boiler making, while 16·3 per cent. are employed on the railways. There is very little employment of female labour. There is a large wholesale clothing factory and one or two smaller ones which employ females; in 1901 the percentage of women employed as tailoresses was 5·9.

(ix)

*Wirral* registration district includes practically the whole of the rural district of Wirral (17,322), and the urban districts of Neston and Parkgate (4,154), Lower Bebington (8,398), Hoylake and West Kirby (10,911), Bromborough (1,891), and Higher Bebington (1,540).

This district seems to be largely an agricultural district with some residential quarters; there is practically no industrial population and the employment of women in the urban districts is almost entirely confined to domestic service, 18·8 per cent. being so engaged in the urban districts of Lower Bebington and Hoylake. The percentage of overcrowding and the percentage of general labourers in 1871 are above the average for the county, but the percentage of one and two-roomed tenements, etc. is below the average. The fall in the birthrate which began about 1880 seems to have ceased in the nineties. The potential birthrate remained practically unchanged from 1861–1906.

In Lower Bebington the only industry of importance is soap making which employs 9.9 per cent. of the males.

See Plate VI	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	8482	11948	3025	3462	4874	6029
No. of births .. .. .	1985	2901	740	811	1064	1177
No. of births per 100 married women (15-55)	23.4	24.3	24.5	23.4	21.8	19.5
Potential birthrate (Tait's) (15-55)* ..		19.9	20.0	20.1	20.1	20.1

Regression coefficient (1876-1906),  $-0.133 \pm 0.014$ ; (1851-1875),  $+0.076 \pm 0.028$ .

Percentage of district included in tables of occupations, 42.1.

Changes in boundaries of registration district: 1861, formation of the Birkenhead registration district by severance of parishes from this district.

	1861	1871	1901
* No. of births per 100 married women (15-45)	29.8	31.9	25.0
Potential birthrate (15-45)	25.2	25.5	25.1

Hoylelake and West Kirby are rapidly merging into a large residential centre for Liverpool merchants, persons engaged in offices, etc.; the large proportion of domestic servants per hundred separate families, 55.5, indicates the nature of the district. In a small way it is becoming a health resort and West Kirby attracts the consumptive. Hoylelake was formerly a flourishing fishing village, but owing to the silting up of sand the greater portion of the fishing fleet has removed to Rock Ferry, although a large proportion of the village people is still employed in the boats. The better class of the population usually receives advertisements of preventives after the birth of a child, and the fall is probably greater in this class than amongst the fisher-folk and villagers. Parkgate, according to Murray's county guide, is a watering place which attracts summer visitors from Liverpool.

Wirral rural district consists of the following sub-districts: (1) Bebington which is largely residential, but is being encroached on by various industries, (2) Woodchurch which is an agricultural district, (3) Gaytham which is residential and partly agricultural, and (4) Neston which has some coal miners, a considerable number of fishermen and an agricultural and residential element. Smallness of wages does not largely enter into the birthrate question in this district, for some of the largest families are those of the casual labourers, while the colliers and the fisher-folk also have large families. Our correspondent thinks that among the working people there is no restriction of family, but that outside the working class there is restriction; and that, though it is wise to be cautious in making any general statement, it is probable that whereas the families of working people average about six to eight children, the classes above have from four to six children. This estimate excludes those who have no children.

(x)

*Chester* registration district includes the rural district of Chester (10,989), the county borough of Chester (38,309), the rural districts of Tarvin (12,614) and Hawarden (15,821), and the urban districts of Hoole (5,341), Tarporley (2,644), and part of Buckley (2,454).

See Plate VI	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	7171	8085	10067	10039	10856	12122
No. of births .. .. .	1407	1752	2330	2239	2151	2283
No. of births per 100 married women (15-55)	19.6	21.7	23.1	22.3	19.8	18.8
Potential birthrate (Tait's) (15-55)* ..		19.9	20.4	19.8	19.8	19.7

Regression coefficient (1876-1906), - .130 ± .011 ; (1851-1875), + .096 ± .018.

Percentage of district included in tables of occupations, 52.3.

Changes in boundaries of registration district: 1903, sub-registration district of Hawarden transferred to new registration district of Hawarden.

	1861	1871	1901
* No. of births per 100 married women (15-45)	28.3	29.8	24.4
Potential birthrate (15-45)	25.3	25.7	24.9

This district as a whole is mainly an agricultural district ; the part for which the occupations can be tabled is to a certain extent residential, if we judge by the number of domestic servants per hundred separate families, which is 23.9. The percentages of overcrowding, of one and two-roomed tenements and of paupers and general labourers in 1871 are above the average for the county. There is practically no industrial employment of women. The birthrate showed a general tendency to rise till about 1880 and since then the fall has been relatively slight. Changes in the age of married women have been slight.

In Chester county borough most of the work is that which is incidental to an inhabited centre, building, retail trade, etc. The main occupation otherwise is engineering which employed 4.5 per cent. of males in 1901 ; there are also lead works, employing about 120 men, and tobacco works and flour mills, each employing about 150 men. There is a boat yard for building canal boats employing about 40 men and there are some minor industries, including candle making and a brewery. Our correspondent also tells us that soap boiling and tanning disappeared about 30 years ago, and further a ship yard which employed some 300 men about 40 years ago. Candle making and breweries have less demand for labour, and the tobacco works now employ chiefly girls. Electricity works, the electric tramways and engineering works have come into existence during the last 50 years. The fall in the birthrate seems to be greatest in classes above the poorest ; thus in 1909 the birthrate in the courts (the poorest places in the city) was 35.0 per 1000 as compared with 24.8 for the city as a whole.

Tarvin rural district is a purely agricultural one. There has been no reduction in the birthrate amongst the labouring classes. It is reported that the only efforts made to limit the family in country districts occur in the upper classes.



In Hoole the chief occupation is work on the railways which employs 16·7 per cent. of the men; 5·2 per cent. are engaged in agriculture.

Hawarden is partly a residential district, but is becoming increasingly a working class district owing to the erection of large works on the banks of the river Dee; one factory alone employs over 4000 men. There is no female labour. In Hawarden village families of five, six and seven children are common. In the colliery districts few families exceed three or four children, while in the industrial district (iron workers) two to three would be about the average. Restriction is practised chiefly amongst the middle classes, as there is a dread of large families owing to the expense of rearing the children and to the interference with social engagements. Preventives are reported by our correspondent to be used by the majority of married people in these classes.

### C. *Yorkshire, West Riding.*

#### I. *The County as a Whole.*

*Yorkshire, West Riding.* The population of Yorkshire, West Riding, in 1901 numbered 2,750,493, and of these 339,963, 14·4 per cent. of the whole population, are included in the rural districts.

Statistics of occupations are given for the whole of Yorkshire by the Registrar-General and the figures which we give for the ridings are obtained (Census Table 35) by the addition of the aggregates of urban and rural districts.

The chief industries are:

(1) The textile industry in which 9·8 per cent. of the males and 13·2 per cent. of the females in the whole riding are engaged. The chief branch is the manufacture of woollen and worsted goods; 72 per cent. of all operatives employed in this industry work in the West Riding of Yorkshire. No district in Yorkshire confines itself exclusively to one branch of this industry, but there are trades which are fairly typical of some district. Thus in Bradford and neighbourhood nearly all the combing of the United Kingdom is done, and this district is also the principal seat of the manufacture of worsted stuffs for women's wear. The Huddersfield district has two distinct trades—the manufacture of the best woollen and worsted cloth for men's wear, and the manufacture of cheap woollen cloths. In and around Dewsbury and Batley\* heavy woollen cloths and blankets are made, to some extent out of waste wool and used wool. The neighbourhood of Leeds has a miscellaneous woollen trade. Halifax is divided between the trades of its neighbours Bradford and Huddersfield. Wages in the woollen and worsted industries are lower on an average than in the cotton trades but higher than in the silk and fustian trades.

(2) Engineering and metal works: these employ 9·4 per cent. of the males over 10 in the West Riding. The chief branches in which the population of the

\* Batley is included in the registration district of Dewsbury.

West Riding are engaged are (a) iron and steel manufacture, chiefly in Rotherham and Sheffield, and (b) engineering and boiler making, the great centres for which are Sheffield, Leeds and Keighley.

(3) Agriculture: in the whole of the West Riding 4.5 per cent. of the males are engaged in agriculture, the north part of the riding being almost entirely agricultural.

(4) Mining: this employs 11.0 per cent. of the males in the West Riding; it is the chief industry in Barnsley, Pontefract, Rotherham and Wakefield and it is carried on in Dewsbury and to a certain extent in other districts.

The percentage of women employed in the riding is 32.8.

There is less variability in social conditions in this district than there is in Lancashire. The percentage of tenements of less than five rooms is 57.7, that of one and two-roomed tenements is 13.76 and that of overcrowding 11.88; it will be seen that in these particulars the West Riding is more overcrowded, etc. than Lancashire and Cheshire, less overcrowded than the mining districts of Durham and Northumberland and most similar to Cumberland in respect of overcrowding and of the percentage of one and two-roomed tenements.

*Changes in boundaries of the registration districts from 1851 to 1906.*

1861.	2582	of the population of	Keighley	were transferred to	Skipton.
	5281	"	"	"	Wharfedale.
1869.	1617	"	"	"	Wetherby.
	16440	"	"	"	Leeds.
	1851	"	"	"	Hunslet.
	6351	"	"	"	Tadcaster.
	6483	"	"	"	Wetherby.
1895.	704	"	"	"	Bedale.
	628	"	"	"	Thirsk.
	1537	"	"	"	Easingwold.
	4224	"	"	"	Ashton-under-Lyne.
	2256	"	"	"	Todmorden.
	2777	"	"	"	Halifax.
	2852	"	"	"	Chesterfield.
1902.	13268	"	"	"	Sheffield.

Sedbergh with Settle, Wortley, Tadcaster with Selby, Pateley Bridge with Hemsworth have had to be omitted entirely from the tables of occupations and we ought, perhaps, to have omitted Goole with Thorne and Knaresborough, etc. as the population that can be included in the tables is less than 50 per cent. The occupational statistics are also quite inadequate for Skipton with Wharfedale, for Ripon and for Doncaster. The variation in the regression coefficients is nearly as great as in Lancashire and a comparison of the two counties is interesting.

\* Included in Wharfedale.

† Included in Hunslet.

‡ Included in Tadcaster.

*The percentages of the population living in rural districts and in urban districts of less than 5000 inhabitants and consequently omitted from the tables of occupations of men and women are given below.*

Sedbergh with Settle .. ..	All	Leeds .. .. .	1.3
Halifax .. .. .	18.7	Ecclesall-Bierlow .. ..	7.9
Bradford with North Bierley ..	1.9	Rotherham .. .. .	19.7
Skipton with Wharfedale .. ..	45.8	Knarborough, Great Ouseburn	
Todmorden .. .. .	21.9	with Wetherby .. ..	56.6
Dewsbury .. .. .	3.4	Tadcaster with Selby .. ..	83.2
Keighley .. .. .	16.8	Sheffield .. .. .	None
Huddersfield .. .. .	24.0	Pateley Bridge .. .. .	All
Hunslet, Holbeck, Bramley ..	5.7	Barnsley .. .. .	20.3
Wortley .. .. .	75.1	Doncaster .. .. .	45.0
Wakefield .. .. .	18.1	Pontefract .. .. .	30.7
Saddleworth .. .. .	27.6	Goole with Thorne .. ..	57.4
Ripon .. .. .	47.0	Hemsworth .. .. .	All

A cursory examination of the tables of occupations shows that where there are textile factories and much industrial employment of women, there is a well-marked fall, but where there are no textile factories the fall is much less. This was the case in Lancashire, but the line of division in Yorkshire is more marked. In Lancashire, however, textile towns showed a small percentage of one and two-roomed tenements, while in Yorkshire as a whole this percentage is decidedly higher. On an average in Yorkshire housing conditions among the people engaged in the textile factories are inferior to the conditions found in the engineering and mining districts.

In the West Riding there are, speaking generally, four types of districts :

(a) The woollen districts where women are employed, though chiefly the unmarried ones (the married women usually work only up to the birth of the first child); in these districts the percentage of tenements of less than five rooms is high and overcrowding and the percentage of one and two-roomed tenements are slightly above the average for the county; the birthrate curves in these districts show generally a fall at the end of the fifties when there was a period of distress following the Crimean War, this was chiefly among the woollen weavers in that part of Yorkshire that lies between Huddersfield and Dewsbury, where many mills were then only working half time. Most of these districts show a tendency for the birthrate to decline during the 25 years from 1851 to 1875, and about 1878 to 1879 there began in Huddersfield, Halifax, Dewsbury and Bradford a well-marked and sudden fall which has continued to the present day.

(b) The engineering and iron and steel districts where there is practically no industrial employment of women; the percentage of one and two-roomed tenements is smaller than in the woollen districts; the birthrate curves in these areas are not so uniform in character as in the woollen districts for the metal trades are usually associated with other industries.

(c) The mining districts; these districts resemble the iron and engineering districts in housing conditions and differ in this respect from the mining centres in Durham and Northumberland. They show a high birthrate in the seventies such as occurs in all mining districts followed by a return to a normal condition, and a relatively slight fall in those districts that are essentially mining districts, as for example, Barnsley; in districts where the mining is associated with iron and engineering works the fall is still comparatively slight, as in Rotherham; but when mining is associated with textile factories and the more frequent employment of women, as in Wakefield, the fall is more marked.

(d) Agricultural districts; these exhibit greater variability; those that are purely agricultural, as Pateley Bridge, show little fall, but few such agricultural districts now exist in the West Riding; Hemsworth, which was a purely agricultural district, is rapidly becoming a mining district, and the same change has been taking place in Tadcaster with Selby, and in Pontefract during the last fifty years.

The change in the age distribution of married women in the different districts is interesting; already in 1861 the potential birthrate in rural districts was low, and where these districts have remained rural the potential birthrate has fallen further, and this is noticeable in all rural districts north of the Humber. Where the rural district has become or is becoming a mining centre, the potential birthrate has risen.

The rural districts in the West Riding when considered in the aggregate are clearly by no means mainly agricultural districts; 20.2 per cent. of the males are engaged in agriculture, 19.6 per cent. in mining, 3.8 per cent. in textile industries and 4.6 per cent. in iron and steel and engineering works. The percentage of women engaged in domestic service and as charwomen, etc. is 10.6, so it seems likely that rural districts in the West Riding are not so largely residential districts as they are in the East Riding, but there is probably great variation in the characteristics of the different rural districts that make up the registration districts.

An examination of Table XIII will show that in six of the districts the regression coefficients are over .3 and in these the loss of births from 1876 to 1906 varies from 9.7 in Dewsbury to 11.1 in Sedbergh with Settle, but the percentage change in the number of births is not so marked as in Lancashire.

The fall in the birthrate began before 1876 in fourteen of the districts; in many cases the fall is hardly significant, but in Bradford, Dewsbury, Keighley, and Huddersfield, it is quite significant; this fall does not seem to be due to changes in the age distribution of married women between 1861 and 1871 (it is of course possible that some changes occurred between 1851 and 1861), so that the birthrate in some woollen towns had apparently begun to fall as in some cotton towns before 1876.

TABLE XIII. *Yorkshire, West Riding.*

Registration District	Regression coefficient 1876-1906	Actual change in number of births in 31 years	Mean birth-rate 1851-1875	Percentage change in number of births	Potential birth-rate, women (15-55)		Potential change in number of births in 30 years	See page
					1871	1901		
(i) Sedbergh with Settle ..	- .357	- 11.1	21.8	51	19.5	17.0	- 2.5	95
(ii) Halifax .. .. .	- .354	- 11.0	22.6	49	20.4	19.2	- 1.2	95
(iii) Bradford with N. Bierley ..	- .333	- 10.3	23.1	45	21.0	19.8	- 1.2	97
(iv) Skipton with Wharfedale ..	- .326	- 10.1	23.2	44	20.1	19.5	- .6	98
(v) Todmorden .. .. .	- .318	- 9.9	20.5	48	19.9	18.8	- 1.1	99
(vi) Dewsbury .. .. .	- .312	- 9.7	24.9	39	21.8	19.8	- 2.0	100
(vii) Keighley .. .. .	- .284	- 8.8	22.9	38	20.0	19.5	- .5	102
(viii) Huddersfield .. .. .	- .278	- 8.6	23.5	37	20.3	19.1	- 1.2	104
(ix) Hunslet, Holbeck, Bramley ..	- .267	- 8.3	24.7	34	21.9	21.0	- .9	106
(x) Wortley .. .. .	- .266	- 8.2	25.4	32	21.4	21.2	- .2	108
(xi) Wakefield .. .. .	- .261	- 8.1	24.1	34	22.3	20.9	- 1.4	109
(xii) Saddleworth .. .. .	- .257	- 8.0	22.9	35	19.7	19.0	- .7	111
(xiii) Ripon .. .. .	- .247	- 7.7	21.2	36	18.7	18.1	- .6	112
(xiv) Leeds .. .. .	- .244	- 7.6	22.9	33	21.8	20.7	- 1.1	112
(xv) Ecclesall-Bierlow .. .. .	- .231	- 7.2	23.5	31	22.3	21.6	- .7	113
(xvi) Rotherham .. .. .	- .183	- 5.7	24.7	23	22.5	21.7	- .8	115
(xvii) Knaresborough, Gt Ouseburn with Wetherby .. .. .	- .159	- 4.9	20.8	24	18.6	19.6	+ 1.0	116
(xviii) Tadcaster with Selby .. .. .	- .146	- 4.5	22.2	20	19.7	20.1	+ .4	118
(xix) Sheffield .. .. .	- .131	- 4.1	23.8	17	23.0	22.1	- .9	118
(xx) Pateley Bridge .. .. .	- .130	- 4.0	23.7	17	18.0	19.3	+ 1.3	120
(xxi) Barnsley .. .. .	- .128	- 4.0	25.3	16	22.5	22.0	- .5	120
(xxii) Doncaster .. .. .	- .111	- 3.4	22.4	15	20.4	21.1	+ .7	122
(xxiii) Pontefract .. .. .	- .083	- 2.6	25.6	10	21.7	21.5	- .2	123
(xxiv) Goole with Thorne .. .. .	- .074	- 2.3	22.2	10	20.0	20.2	+ .2	125
(xxv) Hemsworth .. .. .	+ .030	+ .9	22.0	4	19.0	21.7	+ 2.7	125

TABLE XIV. *Social Conditions.*

Registration District	Regression coefficient 1876-1906	Percentage of overcrowded tenements of less than five rooms	Percentage of one and two-roomed tenements	Percentage of tenements of less than five rooms	Paupers per 1000 of the population	No. of families or separate occupiers to the house	No. of persons per acre	Percentage of general labourers, 1871 census
(i) Sedbergh with Settle ..	- .357	3.68	2.05	24.8	3.78	1.0059	.09	7.87
(ii) Halifax .. .. .	- .354	14.76	26.50	66.8	3.16	1.0057	3.74	7.83
(iii) Bradford with N. Bierley ..	- .333	12.88	19.22	66.5	3.56	1.0069	8.73	8.04
(iv) Skipton with Wharfedale ..	- .326	5.54	5.65	37.4	2.13	1.0071	.45	9.04
(v) Todmorden .. .. .	- .318	5.93	7.31	46.5	3.41	1.0061	1.06	7.66
(vi) Dewsbury .. .. .	- .312	16.18	31.57	79.6	2.31	1.0051	6.61	6.46
(vi) Keighley .. .. .	- .284	10.92	13.62	57.4	3.74	1.0041	2.13	9.37
(viii) Huddersfield .. .. .	- .278	12.42	19.37	67.8	3.01	1.0023	2.35	5.62
(ix) Hunslet, Holbeck, Bramley ..	- .267	11.46	14.25	57.6	3.04	1.0024	8.89	4.29
(x) Wortley .. .. .	- .266	12.24	7.56	48.9	2.56	1.0062	.76	11.53
(xi) Wakefield .. .. .	- .261	13.77	15.61	67.4	3.42	1.0067	2.73	12.27
(xii) Saddleworth .. .. .	- .257	5.73	5.49	56.5	3.88	1.0013	.93	8.46
(xiii) Ripon .. .. .	- .247	4.55	4.30	34.4	5.60	1.0050	.23	5.72
(xiv) Leeds .. .. .	- .244	11.33	13.77	55.9	5.17	1.0101	18.42	7.09
(xv) Ecclesall-Bierlow .. .. .	- .231	11.42	6.29	49.8	4.54	1.0089	7.82	4.11
(xvi) Rotherham .. .. .	- .183	5.82	4.07	55.6	3.33	1.0060	2.24	12.21
(xvii) Knaresborough, Great Ouseburn with Wetherby .. .. .	- .159	6.51	4.90	30.3	3.15	1.0170	.43	5.10
(xviii) Tadcaster with Selby .. .. .	- .146	7.67	6.20	48.6	4.83	1.0062	.36	6.84
(xix) Sheffield .. .. .	- .131	11.50	6.28	50.7	8.07	1.0145	21.48	11.01
(xx) Pateley Bridge .. .. .	- .130	6.34	3.78	34.6	3.48	1.0027	.11	3.91
(xxi) Barnsley .. .. .	- .128	10.54	6.90	63.9	1.84	1.0097	3.29	9.19
(xxii) Doncaster .. .. .	- .111	5.82	3.49	35.3	3.44	1.0073	.75	10.20
(xxiii) Pontefract .. .. .	- .083	11.20	7.11	61.8	3.83	1.0088	1.31	9.21
(xxiv) Goole with Thorne .. .. .	- .074	4.28	4.16	36.7	5.24	1.0106	.37	7.30
(xxv) Hemsworth .. .. .	+ .030	11.04	4.97	48.5	3.17	1.0158	.68	6.82
West Riding .. .. .	- .241	11.88	13.76	57.7	3.86	1.0073	1.59	7.94

TABLE XV. Percentages of Males over ten years employed in various occupations.

Registration District	Regression coefficient 1876-1906	Commercial or business clerks (v. 2)	Conveyance (vi)	Mining (ix. 1)	Iron and steel engineering (x. 1, 3)	Building (xii)	Wood, furniture (xiii)	Brick, cement, glass (xiv)	Chemicals, oil, leather, etc. (xv)	Paper, prints, etc. (xvii)	Cotton manu- facture (xviii. 1)	Wool and worsted (xviii. 2)	Other textiles (xviii. 1-5)	Dress (xix)	Food, lodging (xx)	All other occupations
West Riding .. .. .	-.241	2.0	8.1	11.0	9.4	8.2	1.7	1.4	1.3	1.2	1.7	7.2	.9	3.2	5.4	—
(i) Sedbergh with Settle .. .. .	-.357	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
(ii) Halifax .. .. .	-.354	1.6	7.1	.4	11.8	8.6	2.5	1.3	1.2	1.0	3.8	10.0	4.2	2.7	6.3	26.1
(iii) Bradford with N. Bierley .. .. .	-.333	2.8	8.4	1.3	7.5	8.9	2.2	4	1.4	1.7	1.0	18.1	1.4	3.0	6.1	24.1
(iv) Skipton with Wharfedale .. .. .	-.326	1.7	8.2	—	8.7	10.4	1.3	3	1.8	1.4	10.3	8.5	.8	3.2	6.1	23.5
(v) Todmorden .. .. .	-.318	1.7	5.3	.7	6.6	6.2	5.0	4	1.0	.6	28.7	—	4.1	5.6	5.5	18.6
(vi) Dewsbury .. .. .	-.312	1.7	6.6	13.8	4.9	6.7	1.1	1.6	1.7	.7	.6	19.3	1.5	2.7	5.6	18.7
(vii) Keighley .. .. .	-.284	1.7	5.4	.1	20.0	9.8	3.0	3	1.3	.9	.9	19.2	4	2.8	4.9	18.6
(viii) Huddersfield .. .. .	-.278	2.5	7.3	.5	6.8	8.1	1.5	.7	1.9	1.2	2.8	22.8	.6	3.4	5.7	22.3
(ix) Hunslet, Holbeck, Bramley .. .. .	-.267	2.6	9.7	2.9	13.7	9.1	2.2	2.0	2.9	2.5	.1	3.1	.3	7.9	6.1	21.3
(x) Wortley .. .. .	-.266	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
(xi) Wakefield .. .. .	-.261	1.5	10.5	24.5	7.6	7.0	1.0	1.1	1.4	1.0	.0	2.9	4	1.6	5.8	18.6
(xii) Saddleworth .. .. .	-.257	1.5	5.3	—	9.9	8.5	.5	.2	.5	.4	7.5	21.1	.3	2.2	3.6	25.8*
(xiii) Ripon .. .. .	-.247	1.4	9.0	—	3.6	12.4	2.8	.9	4.3	1.5	.0	.1	.7	4.3	8.9	30.4
(xiv) Leeds .. .. .	-.244	2.7	9.8	1.6	14.1	9.2	2.2	2.1	3.0	2.6	.1	2.9	.3	8.2	6.2	21.4
(xv) Ecclesall-Bierlow .. .. .	-.231	2.7	9.2	2.3	15.9	8.6	1.9	.5	.7	.9	.0	.0	.0	1.9	5.1	37.9
(xvi) Rotherham .. .. .	-.183	1.7	7.1	28.9	12.0	6.6	.8	2.1	.7	.4	.0	.0	.0	1.2	4.5	20.7
(xvii) Knaresborough, Great Ouseburn with Wetherby .. .. .	-.159	1.8	12.0	—	1.3	18.1	2.1	.5	1.1	1.4	.0	.5	.0	3.4	8.9	29.6
(xviii) Tadcaster with Selby .. .. .	-.146	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
(xix) Sheffield .. .. .	-.131	2.6	8.8	6.0	15.1	8.3	1.8	.5	.7	.8	.0	.0	.0	1.8	5.0	36.2
(xx) Pateley Bridge .. .. .	-.130	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
(xxi) Barnsley .. .. .	-.128	1.3	5.6	40.4	4.2	5.6	1.5	5.5	.5	.8	.0	.0	.5	1.9	4.9	14.2
(xxii) Doncaster .. .. .	-.111	1.1	16.1	6.9	12.5	9.7	1.7	3.6	.9	.8	.0	.0	.1	2.2	6.3	23.3
(xxiii) Pontefract .. .. .	-.083	.9	5.4	37.2	1.7	5.7	1.0	9.3	1.1	.4	.0	.0	.1	1.4	5.4	16.0
(xxiv) Goole with Thorne .. .. .	-.074	3.4	38.7†	—	5.0	4.8	1.3	.1	1.2	.9	.0	.0	.0	2.0	6.2	18.1
(xxv) Hensworth .. .. .	+.030	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Totals .. .. .	—	2.2	8.6	7.5	10.6	8.4	1.9	1.5	1.5	1.3	1.4	7.7	.9	3.6	5.7	24.4
Rural districts .. .. .	—	1.1	5.9	19.6	4.6	7.4	.7	1.1	.4	.5	1.9	1.1	.7	1.3	3.8	—

\* Includes 4.4 % of all males engaged in printing and dyeing.

† 7.6 % boatmen, etc., 8.0 % workers on railway, 3.3 % bargemen, etc., 13.8 % dock and wharf labourers.

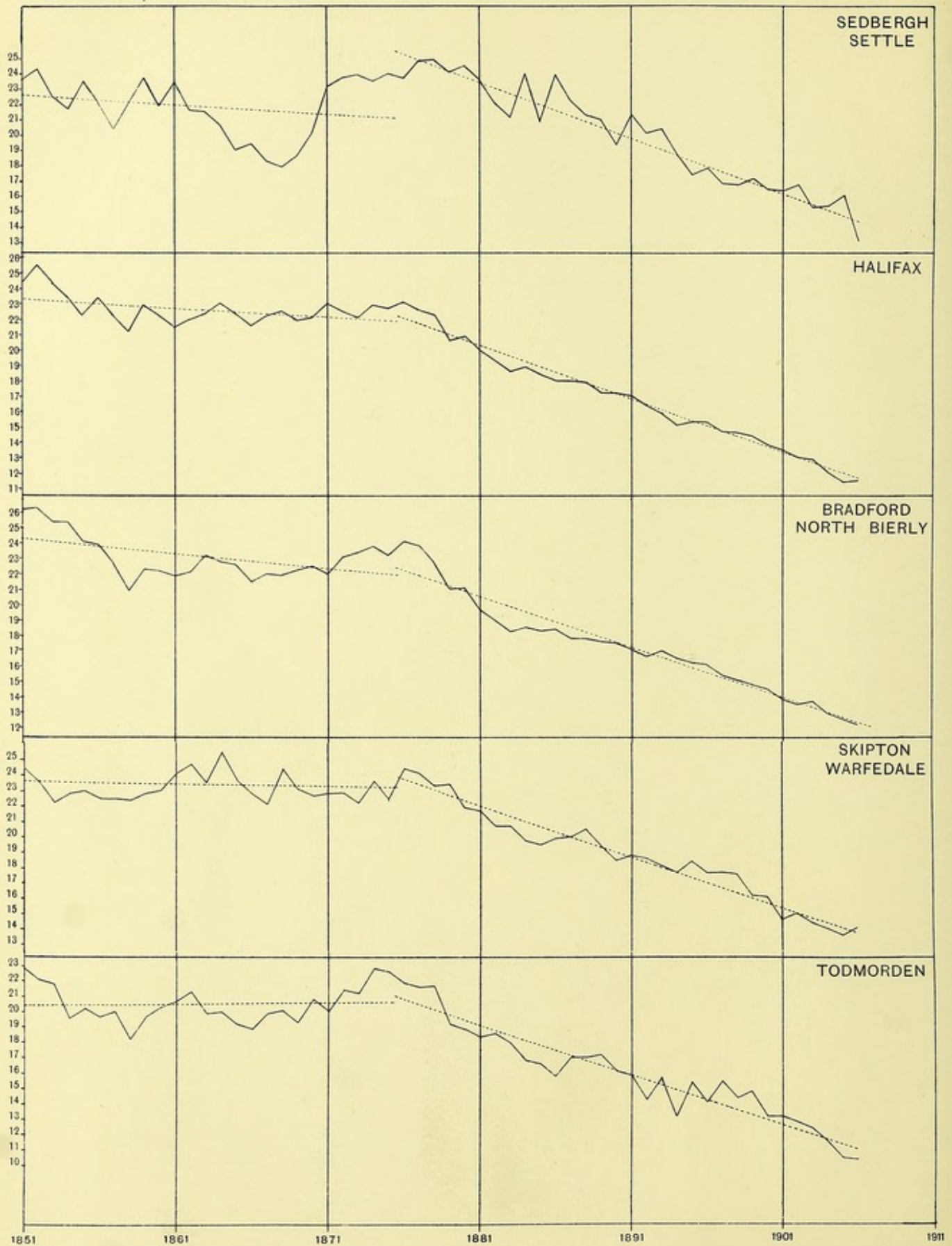
TABLE XVI. *Percentages of Females over ten years employed in various occupations.*

Registration District	Regression coefficient 1876-1906	Teaching (iii. 4)	Domestic, char-women, laundry (iv. 1, 3)	Paper, books, etc. (xvii)	Textile factories (xviii. 1-5)	Tailoresses (xix)	Milliners, dress-makers, etc. (xix)	Food, lodging, etc. (xx)	All other occupations	Total occupied
West Riding .. ..	- .241	1.2	7.7	.5	12.8	1.6	2.2	2.0	—	32.8
(i) Sedbergh with Settle ..	- .357	—	—	—	—	—	—	—	—	—
(ii) Halifax .. ..	- .354	.9	5.1	.3	25.7	.4	3.1	1.8	3.0	40.5
(iii) Bradford with N. Bierley ..	- .333	1.1	5.8	.7	26.6	.3	3.0	2.2	3.3	43.0
(iv) Skipton with Wharfedale ..	- .326	1.5	9.5	.6	19.5	.3	2.7	2.0	3.3	39.4
(v) Todmorden .. ..	- .318	.8	3.2	.1	27.0	9.8	2.2	1.3	2.0	46.5
(vi) Dewsbury .. ..	- .312	1.1	4.8	.1	25.7	.3	2.4	1.5	2.1	37.9
(vii) Keighley .. ..	- .284	1.1	4.5	.2	31.3	.2	2.4	2.0	2.2	43.9
(viii) Huddersfield .. ..	- .278	1.1	6.2	.5	22.6	2.5	2.4	1.7	3.0	40.0
(ix) Hunslet, Holbeck, Bramley .. ..	- .267	1.1	7.1	1.4	5.7	7.7	2.8	2.2	6.0	34.0
(x) Wortley .. ..	- .266	—	—	—	—	—	—	—	—	—
(xi) Wakefield .. ..	- .261	1.4	7.3	.3	7.0	.4	2.5	1.5	3.5	23.9
(xii) Saddleworth .. ..	- .257	1.5	4.2	.0	27.0	.0	2.3	1.4	3.0	39.5
(xiii) Ripon .. ..	- .247	2.0	16.8	.3	.9	.1	4.5	2.4	3.6	30.6
(xiv) Leeds .. ..	- .244	1.1	7.2	1.4	5.4	8.0	2.9	2.3	6.1	34.4
(xv) Ecclesall-Bierlow .. ..	- .231	1.1	8.9	.5	.1	.5	2.4	2.8	11.3	27.7
(xvi) Rotherham .. ..	- .183	1.3	7.5	.2	.1	.2	2.6	1.3	2.6	15.8
(xvii) Knaresborough, Great Ouseburn with Wetherby ..	- .159	1.7	19.1	.2	.1	.1	2.9	5.2	8.4	37.7
(xviii) Tadcaster with Selby ..	- .146	—	—	—	—	—	—	—	—	—
(xix) Sheffield .. ..	- .131	1.1	8.8	.5	.1	.5	2.4	2.8	10.7	26.9
(xx) Pateley Bridge .. ..	- .130	—	—	—	—	—	—	—	—	—
(xxi) Barnsley .. ..	- .128	1.3	6.2	.3	2.2	1.4	3.0	1.6	3.5	19.5
(xxii) Doncaster .. ..	- .111	1.3	8.6	.2	.1	.1	3.5	2.4	3.6	19.7
(xxiii) Pontefract .. ..	- .083	1.5	7.4	.1	.1	.1	2.5	2.8	3.3	17.9
(xxiv) Goole with Thorne .. ..	- .074	1.2	6.1	.3	.1	.1	3.6	1.8	2.9	16.1
(xxv) Hemsworth .. ..	+ .030	—	—	—	—	—	—	—	—	—
Totals .. ..	—	1.3	7.7	.7	14.9	2.4	3.0	2.4	5.6	38.0
Rural districts .. ..	—	1.3	10.6	.1	4.4	.3	1.8	1.4	—	23.5





YORKSHIRE, WEST RIDING.



II. *The Individual Registration Districts.*

## (i)

*Sedbergh with Settle* registration district includes the rural districts of Sedbergh (3935) and Settle (14,319).

	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	2252	2077	2507	2184	2223	2522
No. of births .. .. .	531	487	580	516	474	412
No. of births per 100 married women (15-55) ..	23.6	23.4	23.1	23.6	21.3	16.3
Potential birthrate (Tait's) (15-55)* .. .. .		18.6	19.5	20.2	19.3	17.0

Regression coefficient (1876-1906),  $-0.357 \pm 0.008$ ; (1851-1875),  $-0.046 \pm 0.035$ .

Percentage of district included in tables of occupations, none.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	32.2	31.0	23.5
Potential birthrate (15-45)	24.7	25.3	23.6

We have very little detailed information concerning this district. One correspondent says that there has been no change in the industries of Sedbergh during the last fifty years. He does not think there has been much propagandism for limitation and cites as evidence of this the fact of the large number of illegitimate births\*. Venereal disease is relatively rare and one medical man had only met with four cases in twenty-one years. The only industries of a manufacturing kind are two small woollen mills employing about 100 persons. Of Settle we have still less to report. It is clear from the figures for the potential birthrate that the suggestion of one correspondent that the fall in the birthrate is due to emigration of the younger people cannot account for at most more than a third of the fall in the district.

## (ii)

*Halifax* registration district includes the rural district of Halifax (6476), the county borough of Halifax (104,936), the municipal borough of Brighouse (21,735), and the urban districts of Sowerby Bridge (11,477), Elland (10,412), Rishworth (915), Barkisland (1729), Soyland (3135), Stainland (4516), Greetland (4472), Southowram (2834), Hipperholm (4205), Shelf (2500), Queensbury (6416), Midgley (2359), and Luddenden Foot (3366).

Halifax is mainly a working class district; the males over 10 are engaged chiefly in engineering and machine making and in the manufacture of textile goods, principally wool and worsted; 11.8 per cent. of the males are engaged in iron and steel works and engineering, 10.0 per cent. in wool and worsted works, 3.8 per cent. in cotton factories and 4.2 per cent. in other textile industries. Women are largely employed industrially in the textile factories, the percentage being 25.7. The number of tenements of less than five rooms, the amount of

\* As a rule the number of illegitimate births falls where the knowledge of the means of prevention is widespread.

overcrowding and the number of one and two-roomed tenements are much above the average for the county. The birthrate is very regular; the fall began before 1876 and has been rapid and unbroken since that date, a loss of 11.1 births having occurred; there was no rise in the middle of the seventies and the almost general prosperity of the early seventies does not seem to have touched Halifax. Changes in the ages of married women account for the loss of 1.1 births since 1871.

See Plate VII	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. ..	17265	19351	23665	25521	27763	30597
No. of births .. ..	4211	4160	5278	5109	4703	4135
No. of births per 100 married women (15-55)	24.4	21.5	22.3	20.0	17.0	13.5
Potential birthrate (Tait's) (15-55)* ..		20.6	20.4	20.2	19.7	19.2

Regression coefficient (1876-1906),  $-.354 \pm .006$ ; (1851-1875),  $-.065 \pm .015$ .

Percentage of district included in tables of occupations, 81.7.

Changes in boundaries of registration district: 1895, 2256 transferred to Todmorden; 2777 transferred from N. Bierley to Halifax.

	1861	1871	1901
* No. of births per 100 married women (15-45)	27.3	28.8	17.7
Potential birthrate (15-45)	25.5	25.6	24.6

The chief occupations in Brighouse lie in stone quarrying, silk factories, cotton factories, woollen and worsted factories, iron and brass foundries, wire works, dye works and flour mills; 19.4 per cent. of the men are engaged in the textile factories, and women are also employed in those factories, but not in the other trades enumerated. There is very little real poverty in the district. Our correspondent encloses four "female irregularities" advertisements, cuttings from a single evening newspaper, which he says is very much read; they are inserted indiscriminately among advertisements of baby-linen, food, clothing and furniture, and as three of them are due to one advertiser, it would appear that this scattering succeeds in catching the eye. Though the infantile deathrate is not very high, the percentage of premature births in each yearly list is so large that it suggests that the infants are not wanted.

Advertisements in one issue:

(1) FREE TO LADIES. Large sample of ———'s Pills, post free; the finest remedy known; thousands of testimonials, free advice. ———.

(2) LADIES! ———'s Challenge Remedy is guaranteed under the sum of £100 to cure 25 per cent. more cases than any other advertised remedy. This is proof positive that for all cases of irregularities Challenge Remedy has no equal. Price 2s. 9d., extra strong 4s. 6d., post free. Stacks of testimonials from all parts. Send addressed envelope for particulars. Only address: ———.

(3) LADIES, Consult Mrs ——— on all cases of irregularities. The only reliable lady specialist in ———; 20 years' experience; her remedies never fail; every case guaranteed successful. Consultations daily 10 to 10 or by letter at ———.

(4) MARRIED LADIES should consult Mrs ——— in all cases of irregularities. My special Mixture of Pills is guaranteed to be the most Reliable

Remedy known. My Remedies act in a few hours when all else fails. Price 2s. 9d., extra strong 4s. 6d., or stamp for particulars. Advice Free. Hours 10 to 10.

We do not reproduce all the advertisements of this kind that have reached us from medical correspondents; they abound in certain types of daily and weekly newspapers, which circulate widely. The wording of these advertisements is so vague that it can be taken to apply to a remedy for anaemic amenorrhoea, or to an abortifacient. Their frequency denotes either that there is really a wide sale of abortifacients, or else that many persons trade on the credulity of a large population desiring abortifacients with remedies for anaemic amenorrhoea. Such "remedies" in the case of pregnant women may be physically harmless, but are likely to be mentally deleterious. A very useful service might be performed by a medical journal which would investigate such advertisements and analyse the drugs sold under them.

In Elland the people are mainly occupied in textile factories, 28.4 per cent. of the males and 30.5 of the females being so employed. Engineering is also an important industry employing 8.7 per cent. of the men.

In Queensbury 24.8 per cent. of the men are engaged in the textile factories and 6.8 in engineering, and in Sowerby Bridge 21.1 per cent. in textile and 17.6 in engineering works. In both the last-named districts women are employed in the textile factories, 33.9 per cent. in the first-named and 28.6 in Sowerby Bridge.

(iii)

*Bradford with North Bierley* registration districts are taken together and include the county borough of Bradford (279,767), the municipal borough of Pudsey (14,907) and the urban districts of Shipley (25,573), Cleckheaton (12,524), Huns- worth (1346), Farsley (5579), Calverley (2679), Denholme (2913), Clayton (5119), Drighlington (4218), and part of Bingley (3067).

See Plate VII	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. ..	27453	31111	41635	48698	52292	57348
No. of births .. .. .	7189	6808	9159	9579	8956	7887
No. of births per 100 married women (15-55)	26.2	21.9	22.0	19.7	17.1	13.8
Potential birthrate (Tait's) (15-55)* ..		21.1	21.0	20.5	20.2	19.8

Regression coefficient (1876-1906), - .333 ± .010; (1851-1875), - .105 ± .023.

Percentage of district included in tables of occupations, 98.1.

Changes in boundaries of registration district: 1895, 2777 transferred to Halifax.

	1861	1871	1901
* No. of births per 100 married women (15-45)	27.4	27.8	17.8
Potential birthrate (15-45)	25.8	26.0	24.9

This is a working class district with a large percentage of tenements of less than five rooms, practically identical with the percentage found in Halifax, but there is rather less overcrowding and fewer one and two-roomed tenements than in Halifax. The males are chiefly occupied in the textile factories; 18.1 per cent. are employed in the wool and worsted factories, while 7.5 per cent. are

employed in engineering works and iron manufacture. There is much industrial employment of women, 26.6 per cent. being engaged in the textile factories. The birthrate curve shows great irregularity during the years 1851 to 1875, but since about 1877 the fall has been rapid and well marked. Changes in the age of married women are responsible for a loss of 1.2 births from 1871 to 1901, while the total fall in 31 years is 10.3. The fall before 1871 is also significant. Bradford borough is engaged chiefly in manufacturing "pieces," spinning, dyeing and wool-combing; 20.7 per cent. of the males and 26.5 per cent. of the females are engaged in the textile industries. The half-time system prevails in the factories. Wool-combing, being unskilled labour, is the worst paid of all the industries and attracts the "unfits." Those on night work suffer greatly in health as they get no definite time for meals. Many are physically degenerate. They get little or very broken sleep during the day, owing to the noises inside and outside their homes. The chief changes in the industries are in the conditions of employment of women and children, in the greater safety of machinery and the better hygienic condition of the factories and the consequent greatly improved condition of the health of the working classes. Anthrax is now rare owing to the employment of fans below the sorting boards, to the disinfection of the wool before sorting and to the greater cleanliness of the men's hands before eating. Advertisements for the limitation of the family have been in evidence for 25 years; the urinals are decorated with hand-bills openly advertising preventives and books on prevention. There is also a good deal of abortion practised in this district, and for every case which comes to the notice of the police, there are hundreds that do not\*. The fall in the birthrate seems to have occurred chiefly in the middle and superior working classes, perhaps also in the upper classes, but not much in the very poorest; the very poorest do not seem to think of or to practise prevention in any way as the grades higher in the social scale do; their children are practically taken off their hands by one agency or another.

## (iv)

*Skipton with Wharfedale* registration districts are taken together and include the rural districts of Skipton (22,589) and Wharfedale (9104), and the urban districts of Ilkley (7455), Burley (3310), Otley (9230), Guiseley (4558), Baildon (5797), Yeadon (7059), Rawdon (3181), Horsforth (7784), Skipton (11,986), Barnoldswick (6382) and Silsden (4304).

Wharfedale and Skipton rural districts consist in each case of distinct portions; the northern portions of Wharfedale and of Skipton are rural but in the south both are manufacturing districts. In the manufacturing districts there is a large amount of women's labour in the textile trades, 19.5 per cent. being employed in the larger urban districts. The fall in the birthrate is well marked, but in the district of Wharfedale, we are told, it does not seem at first to have reached the working classes, but began to show itself about 1893 in other classes

\* Many abortions are produced by lead preparations, more by the use of instruments, either by the pregnant themselves or by the women to whom they resort for advice and help.

and was due to the knowledge of preventive measures taught by certain persons whose names are fairly well known. It is now passing down the social scale. The fall is well marked and there has been very little change in the potential birthrate.

See Plate VII	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. ..	7606	8106	10181	11875	12597	15302
No. of births .. .. .	1865	1951	2319	2573	2371	2240
No. of births per 100 married women (15-55)	24.5	24.1	22.8	21.7	18.8	14.6
Potential birthrate (Tait's) (15-55)* ..		20.2	20.1	20.4	19.9	19.5

Regression coefficient (1876-1906), - .326 ± .009; (1851-1875), - .011 ± .016.

Percentage of district included in tables of occupations, 54.2.

Changes in boundaries of registration district: 1861, 2582 transferred from Keighley; 5281 transferred from Hunslet; 1869, 1617 transferred to Wetherby.

	1861	1871	1901
* No. of births per 100 married women (15-45)	27.3	29.9	19.1
Potential birthrate (15-45)	25.3	25.7	24.8

In Barnoldswick, Baildon, and Yeadon the population is mainly occupied in textile industries which employ 57.1, 29.5, and 32.7 per cent. of the males respectively. In Otley engineering and machine making are the staple industries and employ 30.8 per cent. of the males. Ilkley has no factories of importance and in Skipton the occupations are various; 18.0 per cent. are employed in textile factories and 11.5 on the railway, and the same is the case in Horsforth, where 7.5 are employed in engineering, etc., 4.2 in iron works and 5.9 in the textile trades.

Most of the factories in Barnoldswick are cotton factories, while in Baildon and Yeadon they are mostly woollen factories. There is a noticeable difference in the percentage of tenements of less than five rooms in the cotton as compared with the other districts; in Barnoldswick 33.8 per cent. of tenements have less than five rooms and 6.2 have less than three, while in the other two districts 49.1 per cent. have less than five and 10.0 have less than three.

(v)

*Todmorden* registration district includes the rural district of Todmorden (5094), the municipal borough of Todmorden (25,418), and the urban districts of Hebden Bridge (7536), and Mytholmroyd (4159).

See Plate VII	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. ..	3927	4365	4818	5353	5709	6735
No. of births .. .. .	896	901	968	988	901	888
No. of births per 100 married women (15-55)	22.8	20.7	20.1	18.4	15.8	13.2
Potential birthrate (Tait's) (15-55)* ..		20.1	19.9	20.3	19.2	18.8

Regression coefficient (1876-1906), - .318 ± .012; (1851-1875), + .015 ± .022.

Percentage of district included in tables of occupations, 78.1.

Changes in boundaries of registration district: 1895, 2256 transferred to Todmorden from Halifax.

	1861	1871	1901
* No. of births per 100 married women (15-45)	26.5	26.6	17.7
Potential birthrate (15-45)	25.2	25.7	24.5

Todmorden is mainly a working class district engaged in cotton manufacture; 28.7 per cent. of the males and 25.9 of the females work in the cotton factories; the percentage of women employed, 46.5 per cent., is the largest in the district; 27.0 per cent. of all women over ten work in the textile factories. The percentage of one and two-roomed tenements and the amount of overcrowding is decidedly less than in the county as a whole.

Todmorden showed a distinct rise in the birthrate in the seventies, but since then the fall has been well marked, the loss of births being 9.9 in the thirty-one years. The change in the potential birthrate is 1.1 births. Todmorden municipal borough is almost entirely a cotton district; 33.3 per cent. of the males and 32.8 per cent. of the females are engaged in the cotton mills. Hebden Bridge has some cotton mills employing 12.2 per cent. of males and some women, while fustian cutting employs 13.3 per cent. of males. Tailoring work seems to be an important industry followed by both men and women; 34.4 per cent. of all women over ten in Hebden Bridge were employed as tailoresses in 1901.

(vi)

*Dewsbury* registration district includes the municipal boroughs of Dewsbury (28,060), Batley (30,321), Ossett (12,903), and part of Morley (21,617), and the urban districts of Soothill Nether (6104), Soothill Upper (5552), Thornhill (10,290), Mirfield (11,341), Ravensthorpe (5699), Liversedge (13,980), Heckmondwike (9459), Gomersal (3580), Birkenshaw (2178), and Birstall (6559).

See Plate VIII	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	10814	14807	20132	24419	25630	27813
No. of births .. .. .	2809	3669	4819	5023	4409	4341
No. of births per 100 married women (15-55)	26.0	24.8	23.9	20.6	17.2	15.6
Potential birthrate (Tait's) (15-55)* ..		22.3	21.8	20.9	20.2	19.8

Regression coefficient (1876-1906), - .312 ± .012; (1851-1875), - .080 ± .013.

Percentage of district included in tables of occupations, 96.6.

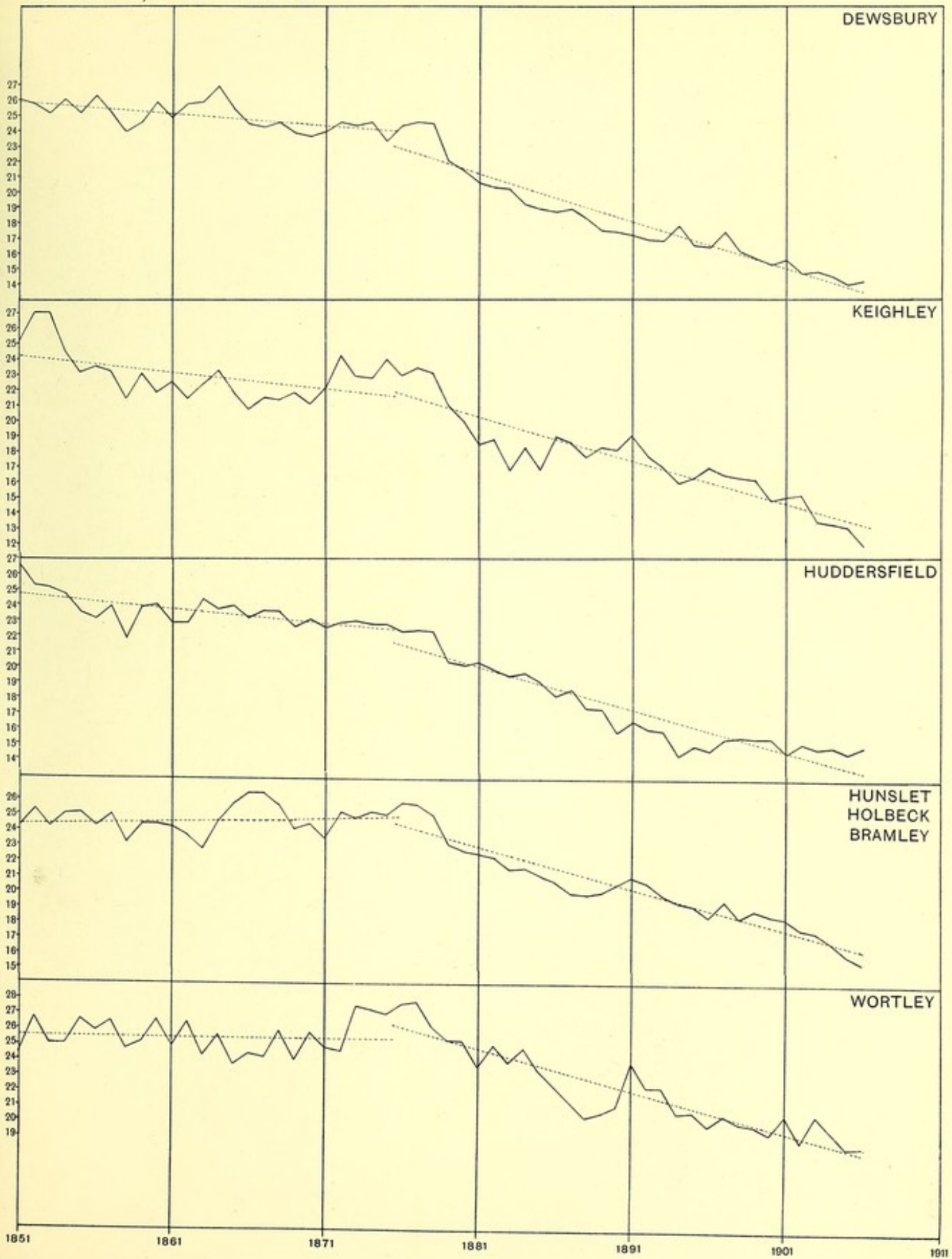
Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	30.4	29.5	20.2
Potential birthrate (15-45)	26.9	26.3	24.9

Dewsbury is mainly a working class district as can be seen by the large number of tenements of less than five rooms, which is the largest in the county; the percentages of overcrowding and of one and two-roomed tenements are also the largest in the county. The chief occupation is the manufacture of wool and worsted goods which employs 19.3 per cent. of the men and a slightly larger percentage of women; 25.7 per cent. of women are employed in the textile factories and these are almost entirely woollen factories. Mining is also an important industry and employs 13.8 per cent. of the males. The fall in the birthrate in Dewsbury seems to have begun about 1864, but it was very gradual till 1878; there was a rapid fall in 1879 and since then the fall has been continuous and well

BIRTHS PER 100 MARRIED WOMEN AGED 15-55

YORKSHIRE, WEST RIDING.







marked. There was also a decided change in the potential birthrate between 1871 and 1901 and it seems that changes in the age distribution of married women may account for a loss of 2.0 births per 100 married women; the actual loss in 1876-1906 was, however, 9.7; the fall before 1871 may, however, be accounted for by the change in the potential birthrate.

Dewsbury municipal borough now includes the urban districts of Thornhill, Ravensthorpe, Soothill Nether and part of Soothill Upper. The chief industry is heavy woollen manufacture, namely of cloths and blankets and this employs 19.3 per cent. of the males and 22.8 per cent. of the females in the old municipal borough; coal mining employs 11.3 per cent. of the males and there are subsidiary trades such as glass bottle making which employed 14.1 per cent. of the males in 1901 in Thornhill, while in this district the employment in the woollen factories is largely confined to women, the men being mostly engaged in the mines. The chief change in methods of manufacture during the last fifty years has been from hand looms to power looms, and during the last few years from slow power looms to fast power looms. In the early seventies many large mills were erected a little way out of the borough and on the river banks, dwellings were built round them and in this way Ravensthorpe, which was known as the "New Town," increased greatly. Houses were also built about this date in Thornhill and in recent years there has been more building of dwellings in the areas adjoining the borough than in the borough itself. The diminished birthrate is chiefly due to deliberate limitation of the family, and propogandism by advertisement takes place in a more or less veiled way as in other parts of the country. Limitation in this district occurs in all classes, but, strange exception as it may seem, some medical experience seems to indicate that it pertains independently of class to those who are the least thrifty and have the least personal pride.

Batley borough is an industrial centre and the population is engaged chiefly in the manufacture of heavy woollen goods which employs 25.8 per cent. of the males and 28.1 per cent. of the females; there are also coal mines employing 13.7 per cent. of the males, whilst others find employment in the rag trade, iron-works, etc. There seems to have been no active steps taken by advertisement or otherwise to promote limitation of the family, but it is well known to local medical men in this part of the country that the fall in the birthrate is to a great extent due to the widespread use of artificial methods of preventing conception.

Heckmondwike is a working class district; 7.1 per cent. of the males are employed in the mines; 12.3 per cent. of the males and 18.0 per cent. of the females in the heavy woollen trade and 6.7 per cent. of the males in making carpets, rugs, etc.

In Gomersal fifty years ago the chief industries were army cloth and hand-loom weaving, chiefly carried on in cottage homes; coal mining has, however, been recently developed.

Mining is carried on in practically all the districts: it is associated generally with woollen and worsted factories in which as a rule a larger percentage of women than of men is employed. In Thornhill there is also glass bottle making in which

14.1 per cent. of the males are employed, while in Liversedge engineering and machine making give employment to 8.4 per cent. of the males and there are also leather and wire works.

(vii)

*Keighley* registration district includes the rural district of Keighley (6037), the municipal borough of Keighley (41,564), the urban districts of Oakworth (4261), Haworth (7492) and Oxenhope (2727), and the greater part of Bingley (15,382).

See Plate VIII	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	6273	6233	7767	9086	10274	12149
No. of births .. .. .	1576	1403	1706	1672	1946	1806
No. of births per 100 married women (15-55)	25.1	22.5	22.0	18.4	18.9	14.9
Potential birthrate (Tait's) (15-55)* ..		19.9	20.0	19.9	20.0	19.5

Regression coefficient (1876-1906),  $-.284 \pm .015$ ; (1851-1875),  $-.115 \pm .026$ .

Percentage of district included in tables of occupations, 89.2.

Changes in boundaries of registration district: 1861, 2582 transferred to Skipton.

	1861	1871	1901
* No. of births per 100 married women (15-45)	29.1	28.5	19.5
Potential birthrate (15-45)	25.1	25.3	24.9

Keighley is largely a working class district and in social conditions is roughly equal to the average for the county. The males are chiefly employed in machine making and in this and allied trades 20.0 per cent. are engaged. Woollen manufacture employs 19.2 per cent. of the males and a larger percentage of females; 31.3 per cent. of women are engaged in the textile factories, the largest percentage in the county. The birthrate shows great irregularities. There was practically no change in the age distribution of married women, but a loss of 8.8 births between 1876 and 1906. The birthrate was low in the sixties.

Keighley borough is a manufacturing town; the male population is chiefly engaged in machine making, which employs 27.5 per cent.; 28.5 per cent. of the women and 15.2 per cent. of the men are engaged in textile factories, almost entirely in the woollen mills. No special changes in the industries or in the nature of employment have taken place during the last 30 or 40 years. The fall has been most marked among the better class in the north-west ward and least marked in the west ward, the poorest part of the town. In the *Annual Report of the Medical Officer of Health for 1909*, p. 20, the average birthrate for the previous 10 years is given for the different wards; for the north-west ward the birthrate was 18.5 and for the west ward 28.8, but it must be remembered that these rates are based on the *estimated* populations and are uncorrected for marriage rate or for age distribution.

It is considered locally that artificial limitation of the family is undoubtedly the most important factor in the reduction of the birthrate. Advertisements referring

more or less plainly to such limitation have been especially common during the past fifteen years.

The following table is of interest, the wards are arranged according to their social scale, beginning with the best ward. We see that, on the whole, the best wards have the lowest birthrates although C. Ward is exceptional. Arranged according to persons per house C. Ward takes its proper place in the birthrate scale.

Wards	Population at census 1901	No. of paupers who died in workhouse infirmary during 1910	Persons per house	Birthrate in 1901 based on population
N.W.	8461	1	4.35	19.9
S.	7838	8	4.50	26.5
{E.	6960	8	4.57	30.9
{N.E.	6727	5	4.68	28.9
W.	6498	21	4.82	34.2
C.	5080	11	4.45	24.8

Bingley contains a population largely engaged in woollen manufacture and other textile trades; about one-fifth of the population live under more rural conditions and are engaged in dairy farming and market gardening. Women find employment in the factories, but many men go to work daily in neighbouring towns where there is greater variety of occupation. There is a considerable demand for child labour, especially in the spinning mills, and the half-time system is extensively made use of. There has been very little change in the condition of labour during the last twenty years; no new industry has been introduced, and wages have not altered greatly. There has been some improvement recently as regards housing accommodation and the building of back to back houses has been abandoned for about fifteen years; these improvements mean higher rents. Records of births from 1907 for four years have been kept for certain areas and show the variation in the birthrate according to the social status of the district. In three of these areas in which the population is described as "mostly poorer working class," and where rents are not generally more than 4s. weekly, the average birthrates were 24, 23 and 26 for the years 1907-1910. In three areas where the population is described as being "mostly better working class," and where the rents vary from about 5s. to 8s. or 8s. 6d., the birthrates were estimated at 15, 16 and 13.5. The rural and village areas take up an intermediate position. Almost the lowest rate of all is found in a district which contains a larger proportion of middle class houses than any other area. It has been pointed out by our correspondent that the population in all these districts is too small to base accurate figures on and we must also remember that the birthrates are based on *estimated* populations, and that no corrections are made for marriage rate or age distribution. But it appears that the cause of the low birthrate is one which affects chiefly the more capable and successful of the working classes, and the general opinion in the district is that voluntary limitation is a common practice among these classes. Probably various means for the prevention of conception are used, but the root of the

custom is undoubtedly the unwillingness on the part of the parents and especially of mothers to have large families. The reason of this unwillingness seems to be that a higher standard of comfort and more of the amenities of life are demanded by the better working classes, and as wages have not risen the number of "encumbrances" is accordingly limited. That neither poverty nor the mother's employment is the cause of the low birthrate is proved by the fact that among the classes where these disadvantages are most in operation the birthrate is highest. There seems to have been no very definite propagandism for the limitation of the family in the district, though occasionally lectures have been given "to women only" and there are the usual advertisements in the local newspapers. There is no doubt that the doctrines enunciated by certain social reformers in the eighties have been adopted by many of the working classes as well as by the wealthier people. The decline has been attributed locally to the teaching that procreation of the human species is a crime where progeny cannot be properly fed, clothed and reared. One doctor has been much impressed by the increasing number of abortions among married women. Another correspondent holds that increased comfort itself generally entails a lowered birthrate; this comfort is now shared to a certain extent by the working classes, and it seems likely that not only the middle classes but also the more highly skilled working classes will in the future have to be recruited from the labouring and the poorer classes.

In Haworth the chief occupation is in woollen and worsted manufacture which employs 40.3 per cent. of the males and 42.4 per cent. of the females.

## (viii)

*Huddersfield* registration district includes the county borough of Huddersfield (95,047), and the urban districts of Honley (4904), Holme (417), Holmfirth (8977), Netherthong (708), Kirkheaton (2492), Kirkburton (2976), Upper Whitley (764), Lepton (2771), New Mill (4630), Shelley (1545), Skelmanthorpe (3331), Shepley (1720), Thurstonland (865), Farnley (484), South Crosland (2974), Linthwaite (6879), Golcar (9261), Scammonden (360), Slaithwaite (4763), Marsden (4370), and Meltham (5000).

See Plate VIII	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. ..	17328	19323	20795	23104	25032	25969
No. of births .. .. .	4616	4401	4674	4676	4092	3676
No. of births per 100 married women (15-55)	26.6	22.8	22.5	20.2	16.3	14.2
Potential birthrate (Tait's) (15-55) *		20.8	20.3	20.3	19.8	19.1

Regression coefficient (1876-1906),  $-0.278 \pm 0.012$ ; (1851-1875),  $-0.096 \pm 0.015$ .

Percentage of district included in tables of occupations, 76.0.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	28.7	29.0	18.5
Potential birthrate (15-45)	25.7	25.5	24.3

This district is again a working class district with a large percentage of tenements of less than five rooms and values of overcrowding and of one and two-roomed tenements above the average for the county. The chief occupation is the manufacture of wool and worsted goods which employs 22.8 per cent. of the males, while 22.6 per cent. of the females are also engaged in the textile factories. The birthrate curve is very regular; there seems to have been a slight tendency to fall between 1861 and 1878 followed by an extraordinary fall in 1879 as in Dewsbury, and from that date onwards the fall has been maintained. Changes in the age distribution of married women may account for the loss of 1.2 births, but the actual loss between 1876 and 1906 has been 8.6 births.

In Huddersfield borough the main occupation is the manufacture of wool and worsted goods which employs 18.9 per cent. of the males and 14.9 per cent. of the females; cotton and other textile factories employ 3.4 per cent. of males and 5.7 per cent. of females, while 7.6 per cent. of the males are engaged in engineering works. There is little doubt that there is deliberate limitation of the family in this district, especially among the better classes of the community, including the superior artisan class. The initiation of the practice corresponded with visits and lectures by the late Mr Charles Bradlaugh, but it cannot be attributed exclusively to him, because if he had not then visited the district, others would have visited it later or the doctrines would have been promulgated by printed matter either openly or otherwise as in fact is done at present. It is now exceptional to find more than one or two children to a family, and our correspondent says that this statement is made by nearly everyone with whom one confers on the subject. This is true of the middle and superior artisan classes, and recently a "Labour" representative at a meeting of the Town Council remarked: "Aye! The time's gone by when we'll breed soldiers to be shot at for a shilling a day or workers to addle brass for manufacturers and starve ther'sen."

Holmfirth, Honley, Holme and Netherthong may be grouped together as the labour in all four is very similar; the bulk of the population is occupied in the woollen trade (spinning, weaving, dyeing, scouring, finishing) which employs 31.0 per cent. of the males and 19.9 per cent. of the females in Holmfirth; a fair number of men are employed in stone quarrying and machine making and there is a cotton mill which employs women chiefly. Very few married women of child-bearing age work in the mills except in the first year or so of married life. The work in woollen factories is monotonous rather than laborious, except in the case of scouring, finishing and dyeing, which are done entirely by males. The hours are from 6.30 till 5.30 for women, with two half-hours off for breakfast and dinner, but the men in busy times work till 7, 8 and even 9 p.m. and very occasionally all night on Friday. Work stops on Saturday at 12. Dinner is often an unsatisfactory meal and dyspeptic troubles and anaemia are common in female factory workers, while menorrhagia is also met with. The free inter-mixing of the sexes in the factories leads generally to lax sexual morality and ante-marital pregnancy is common. The chief changes during the last fifty years have been the supplanting of the employer by limited companies, the final

extinction of weaving at home, a general increase in speed, and improvements in machinery which allow women and boys to do work formerly requiring men.

Advertisements of appliances for limitation of the family have been prevalent in the form of small bills in urinals and on walls, etc. in country roads for 20 years or more, and now the announcement of a birth in a newspaper brings "literature" on the limitation of the family from firms who manufacture and sell preventive appliances. Socialist teaching has made headway and the doctrine is promulgated that the labour market will always be overstocked so long as there are large families. The use of preventive measures is probably the chief factor in the reduction of the birthrate in the lower middle and middle classes, but some are inclined to believe there has been an actual decline in fertility. The fall in the birthrate is greatest in the middle, lower middle and better artisan classes where there is a desire to give a few children a good start in life; possibly selfish motives prevail in this class also.

Kirkheaton, Kirkburton, Upper Whitley and Lepton may all be considered together as the labour is very similar; coal mining, yarn spinning, cloth manufacture and cotton doubling and some farming are carried on. Fifty years ago the spinning was done at home and the work in the mills was confined to carding and slubbing; children were employed before they were 9 and earned 1/6 a week; the half-time for children was not much enforced; young adults earned from 3/- to 5/6 and adult females from 5/- to 7/6 per week. Most of the weaving also was then done at home; Lascelles Hall, where they used to play cricket all day and weave all night, is at Lepton. Some weaving, mostly of broadcloth, was done in the mills then. Linthwaite and Golcar are chiefly engaged in the woollen mills which employ 36.1 per cent. of the males and 27.6 of the females in Linthwaite and 44.6 per cent. of males and 26.6 per cent. of females in Golcar. There is also some cotton manufacture in both these districts, carried on almost entirely by women in Linthwaite but by both sexes in Golcar.

(ix)

*Hunslet, Holbeck and Bramley* registration districts include the rural district of Hunslet (6730), the urban district of Gildersome (3073), and part of the county borough of Leeds (177,642), parts of the municipal boroughs of Morley (2019) and Pudsey (1245), and part of the urban district of Rothwell (5578).

This district is an exceedingly difficult one to deal with as 90 per cent. of the whole is included in Leeds and the amount of overcrowding and percentage of tenements of less than five rooms is not given for this district separately, nor are the employment statistics. In a city of the size of Leeds there may be great diversity in the different parts and Leeds registration district and the district of Hunslet, Holbeck and Bramley may differ widely. Leeds registration district is north of the Aire and the district of Hunslet, Holbeck and Bramley is south of that river. For the general remarks on social condition and employment reference should be made to Leeds registration district. The number of

families occupying one house, the percentage of general labourers employed in 1871 and the number of paupers will be seen to vary in the two districts; as these are facts which were obtained for the registration districts it leads one to think that these districts vary considerably. Hunslet, Holbeck and Bramley would seem to be of a better social standing than Leeds.

See Plate VIII	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	13907	16813	18945	22467	26448	33084
No. of births .. .. .	3374	4062	4453	5054	5559	6092
No. of births per 100 married women (15-55)	24.2	24.2	23.5	22.5	21.0	18.4
Potential birthrate (Tait's) (15-55)* ..		21.8	21.9	21.5	21.3	21.0

Regression coefficient (1876-1906),  $-.267 \pm .011$ ; (1851-1875),  $+.018 \pm .016$ .

Percentage of district included in tables of occupations, 94.3.

Changes in boundaries of registration district: 1861, 5281 transferred to Wharfedale; 1869, 16,440 transferred to Leeds; 1851 transferred to Hunslet from Wakefield.

	1861	1871	1901
* No. of births per 100 married women (15-45)	30.0	29.1	23.0
Potential birthrate (15-45)	26.4	26.6	25.7

The birthrate curve remained fairly steady until 1878 when there was a sudden fall as in Huddersfield, Dewsbury, Keighley and Halifax. Since that date the fall has been continuous but was not so rapid after 1891. Changes in the age distribution of married women account for a loss of only .9 of births between 1871 and 1901, the actual loss being 8.3 per 100 married women between 1876 and 1906.

In Gildersome the chief forms of labour are coal mining and the manufacture of woollen and worsted goods. During recent years the rag, mungo and shoddy trades have developed, and in these trades there is a good deal of employment for women.

In Hunslet rural district the principal occupations are coal mining and agriculture, and there are some stone quarries. The chief changes in the industries during the last fifty years have been an increase in mining and a decrease in agricultural pursuits. In this district itself there has been very little propagandism for the limitation of the family, but intercommunication by tram and train with Leeds is easy and the influence of that city, where neo-Malthusian literature and appliances abound, has been an important factor in the reduction of the birthrate in the neighbourhood. The rapidly increasing desire for pleasure, recreation and excitement amongst the working classes has also been an incentive to the limitation of the family. All classes of the community have been affected.



(x)

*Wortley* registration district includes the rural districts of *Wortley* (46,332) and *Penistone* (6475), and the urban districts of *Penistone* (3073), *Clayton West* (1550), *Cunthwaite* (331), *Thurlstone* (2992), *Hoyland Swaine* (594), *Stocksbridge* (6566), and part of *Denby* and *Cumberworth* (2413).

See Plate VIII	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	4537	5535	6563	7482	8472	10737
No. of births .. .. .	1107	1378	1629	1765	2025	2202
No. of births per 100 married women (15-55)	24.4	24.9	24.8	23.6	23.9	20.5
Potential birthrate (Tait's) (15-55)* ..		22.0	21.4	21.3	20.9	21.2

Regression coefficient (1876-1906),  $-0.266 \pm 0.015$ ; (1851-1875),  $+0.009 \pm 0.020$ .

Percentage of district included in tables of occupations: none.

Changes in boundaries of registration district: 1902, 13,268 transferred to Sheffield.

	1861	1871	1901
* No. of births per 100 married women (15-45)	30.5	31.3	25.7
Potential birthrate (15-45)	26.5	26.4	26.1

In this district the percentage of tenements of less than five rooms is decidedly below the average and so is the percentage of one and two-roomed tenements and the number of paupers. The birthrate showed a rise in the seventies which was common to many districts in the north, but was not noticeable in the woollen towns. In the latter half of the eighties the birthrate was very low. There has been very little change in the age distribution of married women. Those living in the portion of the district transferred to the city of Sheffield in 1902 were mainly the families of artisans engaged in one or other of the Sheffield trades. There is little employment of women.

In this district the industries are of a varied character. There is still a fairly large agricultural population, but it is outnumbered by other workers; most of the farms are small. In the *Ecclesfield* sub-district, which borders on *Rotherham* and *Sheffield*, the population is mainly occupied in coal mining and in iron and steel foundry work. Other industries are stone quarrying, tool grinding, brick making and file cutting. During the last fifty years there has been an extension of the coal mining and iron works and a decrease of the hand file cutting trade; the latter used to be an important home industry, and still exists to a small extent, but the wages in it are poor and it will probably die out altogether. There is very little female labour.

*Bradfield* sub-district is a large agricultural and moorland area with important industries in the valleys, the most important of which are iron and steel works and ganister (silica) mining which have increased greatly during the last fifty years, clay mining and stone quarrying. There is one paper mill and some file cutting, cutlery and razor scale workshops and one or two grinding wheels. Ganister mining is dependent on the prosperity of the steel trade. It is an unhealthy

trade, and wages are not so good as among coal miners. Female labour is employed at the paper mill and at one factory where umbrella frames are made.

The Wortley sub-district includes two divisions, one of which is mainly agricultural and the other is almost entirely a colliery area. In 1902 a considerable portion of this district was incorporated in Sheffield; the population taken over consisted, as we have already noted, mainly of the artisan class engaged in one or other of the Sheffield trades.

There has been no especially active propagandism for the limitation of the family beyond the usual advertisements. Among the miners the birthrate is still fairly high, the reduction being more marked among the better artisan classes. Locally it is generally agreed that the reduction in the birthrate is due mainly to the adoption of artificial measures for the prevention of conception. The coal miners in this district are, on the whole, of a better type than those in some other districts, e.g. in Durham, the south of Scotland and parts of Lancashire. There are a few Irish colliers in the Ecclesfield sub-district.

In Stocksbridge the occupations are various; 17.6 per cent. of the males are engaged in mining, 9.8 per cent. in iron and steel manufacture, 5.3 in engineering and machine making, and 8.3 per cent. as brick, plain tile and terra-cotta makers. There is practically no industrial employment of women except in the manufacture of umbrellas, etc. which employs 12.1 per cent. of females.

The chief types of labour in Thurlstone are steel manufacture, railway and colliery work, wire drawing, umbrella frame making, woollen industry and agriculture. During the last fifty years the woollen industry and agriculture have diminished in importance and the other industries have been either started or increased. Penistone fifty years ago was chiefly an agricultural district, but the industries now are steel manufacture, wooden box making and employment on the railway. There has been no very active propagandism for the limitation of the family in these districts except by occasional advertisement, and the lessened birthrate is considered by one of our correspondents to be only slightly due to that cause. He does not, however, otherwise account for it.

(xi)

*Wakefield* registration district includes the rural district of Wakefield (13,677), the municipal borough of Wakefield (41,413), and the urban districts of Ardsley, East and West (6,226), Stanley (12,290), Altofts (4,024), Normanton (12,352), Sandal Magna (6,843), Emley (1,429), Flockton (1,251), Horbury (6,736), and part of Rothwell (6,124).

Wakefield is distinctly a working class district, but differs widely from the woollen towns for it is almost entirely a mining district and 24.5 per cent. of the males are engaged in the mines. There is very little industrial employment of women, the percentage employed being only 7.0. The percentage of tenements of less than five rooms is above the average for the county, and the percentage of general labourers in 1871 was the highest in the county. The birthrate curve

shows a rise from 1851 to 1875 which we should expect since Wakefield is a mining district, and it further shows a high rate in the middle of the seventies, and a rise in the potential birthrate in 1871. Changes in the age distribution of married women may be responsible for a loss of 1.4 births since 1871, while the total birth loss is 8.1. The birthrate in 1901 was high compared with that generally found north of the Humber.

See Plate IX	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. ..	6845	8142	10618	13624	15169	17662
No. of births .. .. .	1641	1876	2514	3190	3119	3673
No. of births per 100 married women (15-55)	23.9	23.0	23.7	23.4	20.6	20.8
Potential birthrate (Tait's) (15-55)* ..		21.3	22.3	21.7	20.9	20.9

Regression coefficient (1876-1906),  $-.261 \pm .014$ ; (1851-1875),  $+.107 \pm .023$ .

Percentage of district included in tables of occupations, 81.9.

Changes in boundaries of registration district: 1869, 1851 transferred to Hunslet.

	1861	1871	1901
* No. of births per 100 married women (15-45)	29.2	29.2	26.3
Potential birthrate (15-45)	26.5	27.0	25.8

Stanley urban district is almost entirely a working class district engaged in mining which occupied 49.2 per cent. of all males in 1901. The collieries in the parish of Stanley are well looked after and well ventilated. The men earn £1 to £2 a week. In the parish of Stanley there are many market gardens, and market gardeners earn about £1 a week. Large families are still the rule in this district and our correspondent believes that there is little artificial limitation of the family.

Normanton urban district is also almost entirely a mining district; 46.8 per cent. of the males were engaged in mining in 1901, while 12.5 per cent. were employed on the railway, and there are also stone quarrying and chemical works. There is probably no artificial restriction of the family among the lowest classes who are very prolific with a high infantile mortality rate. There is a good deal of drug-taking for abortion, although as a rule with negative results. The better class artisans and tradespeople are reported to use artificial methods of limitation after the first one or two children, generally at the woman's instigation. Books of instructions and various appliances are obtained through advertisements in the daily papers and cheap weekly periodicals which circulate extensively.

Altofts is very similar in type and in the habits of its inhabitants to Normanton, but is smaller and there is more air space round the houses.

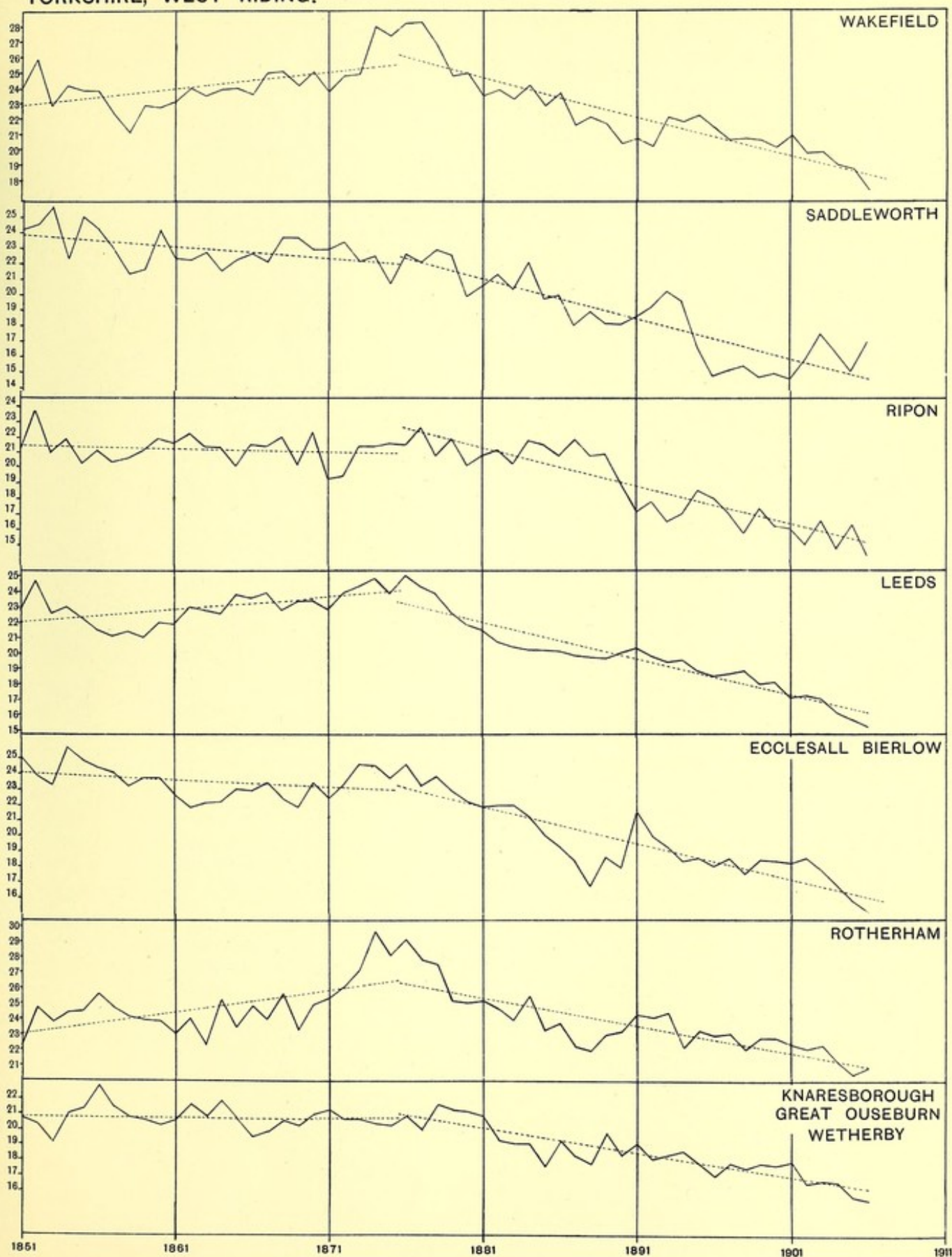
Rothwell and Ardsley, East and West, are mainly mining districts, but in Ardsley there are woollen factories employing 12.6 per cent. of the women.

In Horbury 13.4 per cent. of the men and 15.6 per cent. of the women are engaged in the woollen manufacture and there are some iron and steel works and some mining.

In Wakefield borough there is a variety of occupations, mining, engineering and machine works and some textile factories.

BIRTHS PER 100 MARRIED WOMEN AGED 15-55

YORKSHIRE, WEST RIDING.





(xii)

*Saddleworth* registration district includes the urban districts of *Saddleworth* (12,320) and *Springhead* (4698).

See Plate IX	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	2397	2662	2975	3284	3178	2468
No. of births .. .. .	581	595	681	673	589	359
No. of births per 100 married women (15-55)	24.2	22.3	22.9	20.5	18.5	14.5
Potential birthrate (Tait's) (15-55)* ..		20.4	19.7	19.8	19.6	19.0

Regression coefficient (1876-1906),  $-.257 \pm .017$ ; (1851-1875),  $-.080 \pm .019$ .

Percentage of district included in tables of occupations, 72.4.

Changes in boundaries of registration district: 1895, 4224 transferred to Ashton-under-Lyne.

	1861	1871	1901
* No. of births per 100 married women (15-45)	28.6	30.1	19.1
Potential birthrate (15-45)	25.5	25.1	24.2

*Saddleworth* is mainly a working class district engaged in woollen manufacture and to a certain extent in cotton manufacture also; there are still some farms in the neighbourhood. The percentage of tenements of less than five rooms is about the average for the county, but the percentages of one and two-roomed tenements and of overcrowding are below the average, and *Saddleworth* in housing conditions seems to be more like the textile towns in Lancashire. There was a fall in the birthrate in the fifties and it remained low in the sixties; since 1876 the curve is very irregular and though the fall is well marked on the whole there have been periods when the birthrate was temporarily higher again, as in 1893. The fall began before 1876, but up to that time it may be accounted for by a change in the age distribution of married women.

*Saddleworth* urban district is chiefly engaged in the manufacture of woollen and worsted goods in which 21.1 per cent. of the males are engaged; cotton mills employ 7.5 per cent. and printing, dyeing, etc. 4.4 per cent.; 9.9 per cent. are engaged in engineering and machine making; 27.0 per cent. of the women are engaged in the textile factories.

In *Springhead* urban district cotton spinning is the chief industry, but there are still some farms in the neighbourhood. The chief change in the industries has been a considerable increase in the number of mills.

No information as to restriction of births in this district has been received by us, but the marked fall in the birthrate is strong evidence of its existence.

(xiii)

*Ripon* registration district includes the municipal borough of Ripon (8230), and the rural districts of Ripon (5150) and Wath (2149).

See Plate IX	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	2469	2104	2100	2122	2077	2124
No. of births .. .. .	524	454	406	441	358	343
No. of births per 100 married women (15-55)	21.2	21.6	19.3	20.8	17.2	16.1
Potential birthrate (Tait's) (15-55)* ..		19.1	18.7	19.1	18.7	18.1

Regression coefficient (1876-1906), - .247 ± .011; (1851-1875), - .028 ± .017.

Percentage of district included in tables of occupations, 53.0.

Changes in boundaries of registration district: 1895, 704 transferred to Bedale.

	1861	1871	1901
* No. of births per 100 married women (15-45)	28.7	26.8	22.3
Potential birthrate (15-45)	24.7	25.1	24.1

This is chiefly an agricultural district; the factories in the borough itself are few in number and do not employ many hands. The majority of the lower classes are agricultural labourers. The percentage of tenements of less than five rooms is much below the average for the riding. The proportion per cent. of domestic servants to the total number of separate families is much above the average for the county, and points to the presence of a residential element of some size. The birthrate showed practically no fall until towards the end of the eighties, but since then it has been rapid. There seems to have been no very active propagandism for the limitation of the family, but the practice has probably prevailed not so much amongst the lower classes, but to a greater extent among the lower middle classes, such as small tradesmen and mechanics, and perhaps most amongst the upper middle and upper classes; the fall in the birthrate is locally attributed partly to the spread of knowledge as to limitation amongst all classes and partly to a later age of marriage, but in this district the latter factor can account for a loss of only 0.7 births between 1871 and 1901, whereas the total loss of births between 1876 and 1906 is 8.7.

(xiv)

*Leeds* registration district includes part of the county borough of Leeds (252,326) and the rural district of Leeds (3210).

Leeds presents the same difficulty as Hunslet, Holbeck and Bramley in any discussion of social conditions and statistics of occupation; the facts are given by the Registrar-General for the county borough of Leeds and the registration district forms only 58.8 per cent. of the borough. As was explained when dealing with Hunslet, Holbeck and Bramley, we have reasons for thinking that the portions of the county borough north and south of the Aire differ, and it must be remembered that our percentages are given for the whole area and may not be accurate for the Leeds registration district.

See Plate IX	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	15962	19146	26010	29710	34183	39999
No. of births .. .. .	3638	4200	5944	6394	6948	6856
No. of births per 100 married women (15-55)	22·8	21·9	22·9	21·5	20·3	17·1
Potential birthrate (Tait's) (15-55)* ..		21·7	21·8	21·4	21·3	20·7

Regression coefficient (1876-1906),  $-.244 \pm .010$ ; (1851-1875),  $+.080 \pm .017$ .

Percentage of district included in tables of occupations, 98·7.

Changes in boundaries of registration district: 1869, 16,440 transferred to Leeds from Kirkstall †.

	1861	1871	1901
* No. of births per 100 married women (15-45)	27·3	28·3	21·5
Potential birthrate (15-45)	26·4	26·4	25·5

† Included in Hunslet.

The county borough is chiefly a working class district, but, judged by the percentage of tenements of less than five rooms, not to the same extent as the woollen towns. Women are industrially employed to a less extent and chiefly in a comparatively new industry, the making of ready-made clothes. The fall in the birthrate began in the seventies and has been continuous since that time but not so rapid as in the essentially woollen districts. Changes in the age distribution of married women account for a loss of only 1·1 births per 100 married women of 15 to 55 years between the years 1871 and 1901, as against a fall in the 31 years (1876-1906) of 7·6 births. In Leeds there are various trades, the most important of which are the engineering trades which increased during the late eighties and the nineties and in 1901 employed 12·7 per cent. of the men; the leather trade which at that time employed about 3·0 per cent. of males has shown of late years a tendency to decrease. With the diminution of the weaving, silk and flax trades in Leeds a new industry arose in the making of ready-made clothes which employs 8·2 per cent. of males and about ‡ 8·0 per cent. of females. The distress during the nineties was considerably modified by the multitude of industries in the borough.

Advertisements in other districts point to Leeds as a great centre for the sale of abortifacients and for the distribution of information with regard to the limitation of the family, but the actual change in the birthrate in Leeds itself while considerable will not compare with that of the woollen or cotton towns.

(xv)

*Ecclesall-Bierlow* includes the rural district of Norton (14,176) and part of the city of Sheffield (165,500).

This district again presents great difficulties as actual figures are not obtainable except for the city of Sheffield which includes the greater part of the two registration districts of Sheffield and Ecclesall-Bierlow, and consequently percentages of one and two-roomed tenements, of overcrowding and of tenements

‡ Only approximate, because this 8·0 per cent. is the percentage of tailoresses, and a small number of them are not employed in the factories.



of less than five rooms and all occupational statistics are not accurate for these registration districts. Where particulars are given for registration districts it will be seen that Sheffield is inferior in social position to Ecclesall-Bierlow, the

See Plate IX	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. ..	6015	10321	14162	17858	21669	29226
No. of births .. .. .	1511	2335	3176	3900	4661	5319
No. of births per 100 married women (15-55)	25.1	22.6	22.4	21.8	21.5	18.2
Potential birthrate (Tait's) (15-55)* ..		22.2	22.3	21.9	21.4	21.6

Regression coefficient (1876-1906),  $-0.231 \pm 0.016$ ; (1851-1875),  $+0.051 \pm 0.018$ .

Percentage of district included in tables of occupations, 92.1.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	27.7	27.7	22.5
Potential birthrate (15-45)	26.6	27.1	26.1

number of paupers and the number of families to the house and the percentage of general labourers in 1871 being much in excess. A point of interest is the comparison of the infant mortality rates in the registration sub-districts. In those that compose the registration district of Sheffield the percentages of deaths of children under a year to the number of births between 1899 and 1909 † were 22.6, 15.6, 18.7, 16.0, 18.7 and 13.3, while in the Ecclesall-Bierlow sub-districts they were 14.4, 13.0, 11.3, 15.5, 11.0 and 10.0. In the Sheffield sub-districts the average was taken over ten years except in the last case when the average over seven was taken. In the Ecclesall sub-districts the average of three years was taken except in the last case when the average over seven was taken; these differences were due to changes in the registration sub-districts. Dr Scurfield, M.O.H. for Sheffield, has most kindly tried to find some statistics for us to show what difference, if any, exists between the two registration districts, and we are indebted to him for a copy of the Report of the Overseers of the Poor of the Townships of Sheffield and Ecclesall for the year ending March 31st, 1911. If we may assume that the number of unoccupied houses of a given rent is proportional to the total number of houses of that rent, some light will be thrown on the point. In Sheffield 77.3 per cent. of unoccupied houses were assessed at £10 and under, while in Ecclesall the number was only 58.5 per cent., thus it seems reasonable to assume that in Ecclesall social conditions are better than in Sheffield. A further point is that in spite of the high rateable value of the works situated in the Sheffield district, the poor-rate for the current half-year (letter dated October 2nd, 1911) is 2s. 4d. in the pound in Sheffield and only 2s. in Ecclesall. Dr Scurfield has also provided us with the number of children on the rolls of the elementary schools of the two unions of Sheffield and Ecclesall in July 1911. In Sheffield 18 per cent. of the population attended the elementary schools and 15 per cent. in Ecclesall, but the percentages of children between 4 and 14 years of age (inclusive) were

† *Annual Report on the Health of the City of Sheffield for the Year 1909*, Harold Scurfield, M.D., C.M., Table x and p. 19.

23·9 in Sheffield and 22·4 per cent. in Ecclesall in 1901, and assuming the age distribution of the population to be the same in 1911 the number of children in the Sheffield Union who make use of the elementary schools is  $1\frac{1}{2}$  per cent. higher than in the Ecclesall Union.

The fall in the birthrate was 3·1 more in Ecclesall-Bierlow than in Sheffield between 1876 and 1906, thus indicating that the socially better district has the greater fall.

(xvi)

*Rotherham* registration district includes the municipal borough of Rotherham (54,349), the rural district of Rotherham (18,830), and the urban districts of Greasbrough (3131), Rawmarsh (14,587), Swinton (12,217), and Wath-on-Dearne (8515).

See Plate IX	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. ..	5059	7012	9207	11739	13961	17761
No. of births .. .. .	1131	1615	2327	2945	3376	3943
No. of births per 100 married women (15-55)	22·3	23·0	25·3	25·1	24·2	22·2
Potential birthrate (Tait's) (15-55)* ..		21·9	22·5	22·0	21·6	21·7

Regression coefficient (1876-1906),  $-·183 \pm ·014$ ; (1851-1875),  $+·138 \pm ·024$ .

Percentage of district included in tables of occupations, 80·3.

Changes in boundaries of registration district: 1895, 2852 transferred to Chesterfield.

	1861	1871	1901
* No. of births per 100 married women (15-45)	28·5	31·1	27·6
Potential birthrate (15-45)	26·6	27·3	26·4

Rotherham borough is mainly a working class district engaged in mining, in iron and steel manufacture and in engineering and machine works. Of the males 28·9 per cent. are engaged in mining and 12·0 per cent. in iron and engineering works; there are no textile factories and practically no industrial employment of women, the total percentage of women employed being the smallest in the riding. The percentage of tenements of less than five rooms is just below the average for the county, the percentages of overcrowding and of one and two-roomed tenements are much below the average for the county. The birthrate was exceptionally high in the seventies as we should expect, and this increases the apparent fall since 1876; an examination of the birthrate at the census years shows that the fall has been slight since 1851 and that the birthrate in 1901 was not a very low one; there has been practically no change in the age distribution of married women, though the potential rate was somewhat high in 1871 as we should expect.

The population of Rotherham borough is chiefly engaged in mining which employs 17·1 per cent. of the males; the next most important forms of labour are brass and iron working. There is a considerable number of artisan or skilled workmen in the borough and the birthrate among them is low, but among the collier and labouring classes the diminution in the birthrate is not so noticeable. There

seems to have been no special propagandism by advertisement or otherwise during recent years to account for the decline in the birthrate. Abortion is attributed by one correspondent chiefly to hard work during pregnancy and to some extent to alcohol and insufficient food\*.

In Rotherham rural district the labour is of the same class as in the borough; the men are engaged as miners and as steel workers. There has been no great decrease in the birthrate of late years and apparently no limitation of the family.

In Rawmarsh, Swinton, Greasbrough and Wath-on-Dearne the main occupation is mining which employs 48·7 per cent. of males in Rawmarsh, 43·6 per cent. in Swinton and 48·6 per cent. in Wath. Other industries are steel manufacture, glass bottle making (chiefly in Swinton) and file making, and a certain amount of farming. During the last fifty years potteries have almost entirely disappeared and steel is largely manufactured in place of iron; the former gives off more gases in its manufacture but rather less smoke. The men in the steel works have long hours; there is no female labour to speak of in the mines and steel works, but some women are employed in the file cutting shops, and in dressmaking and farming; the girls seem to be brought up in a haphazard sort of way, and we are told prefer walking about the streets to doing useful work. Wages are not quite so good as they used to be and there is an absolute want of thrift and management. Large families have difficulty in securing houses. The fall in the birthrate has occurred in all classes, but probably chiefly in the more prosperous; during the last six years lead was largely used as an abortifacient with success but at the cost of great suffering to the mother and one or two deaths; it does not appear to be so much used now.

(xvii)

*Knaresborough, Great Ouseburn and Wetherby* registration districts include the rural districts of Knaresborough (7102), Great Ouseburn (9574), and Wetherby (15,343), the municipal borough of Harrogate (28,423), and the urban district of Knaresborough (4979).

This district consists of two parts: an agricultural district and the borough of Harrogate. There is practically no industrial employment in factories nor in mining, and the chief employments, other than agriculture, consist in work on the railway and in building, which is extensively carried on in Harrogate. The percentage of tenements of less than five rooms is low, the lowest in the riding except for Sedbergh with Settle and the percentages of one and two-roomed tenements and of overcrowding are also below the averages for the riding. The birthrate, though showing some irregularities, remained steady till 1881; since that date the fall has been gradual but continuous; the birthrate from 1851 onwards has never been high and the potential birthrate is low, a feature common to most agricultural districts since 1861.

\* Hall and Ransom, *Brit. Med. Journal*, vol. I. 1906, p. 429, give reports from medical men, showing at least 20 to 30 cases, some fatal, of abortion produced by lead within two years in this district.

Harrogate borough has grown rapidly during the last thirty-four years; the most important industry is house building; the chief secondary occupation is that of railway employment. The majority of the residents are well-to-do business people conducting their businesses in Leeds, Bradford, Wakefield, Dewsbury and the various surrounding districts. The number of domestic servants per hundred separate families, which is 40.1, shows the nature of the place. The working classes have earned good wages and employment has been continuous until the last four years when there has been a lull in the building trade. The majority of the workers are well housed, there is an excellent and copious water supply and rigorous sanitation; there are no slums and very little poor property. There seems to have been no open propagandism for the limitation of the family but there is no doubt that means to that end are extensively used among the well-to-do classes, and not so extensively but in an increasing degree among the shop assistants and working classes; consequently the decline in the birthrate has so far been much greater in the former class.

See Plate IX	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. ..	3770	4913	5903	6508	6529	8860
No. of births .. .. .	783	1011	1259	1362	1250	1584
No. of births per 100 married women (15-55)	20.7	20.6	21.3	20.9	19.1	17.9
Potential birthrate (Tait's) (15-55)* ..		18.8	18.6	18.9	18.6	19.6

Regression coefficient (1876-1906),  $-.159 \pm .010$ ; (1851-1875),  $-.000 \pm .013$ .

Percentage of district included in tables of occupations, 43.4.

Changes in boundaries of registration district: 1869, 6483 transferred to Wetherby from Bramham†; 1895, 2165 transferred from Great Ouseburn to Thirsk and Easingwold.

	1861	1871	1901
* No. of births per 100 married women (15-45)	28.0	29.3	23.2
Potential birthrate (15-45)	24.7	24.7	24.8

† Bramham included in Tadcaster.

Great Ouseburn is an agricultural district and there has been no change in this industry during the last fifty years. There seems to have been no propagandism for the limitation of the family, and in an agricultural community of the type of Great Ouseburn such propagandism would be unlikely to influence the birthrate.

Wetherby rural district is mainly agricultural, and the proportion of the agricultural element has increased during the last fifty years. A flax industry has disappeared, breweries are fewer, mills have decreased, fewer limestone quarries are worked and there has been a tendency for work done in connection with agricultural implements to be transferred to the larger towns and greater industrial centres. The town of Wetherby has declined as a market town and the increase in the population seems to be mainly of a residential nature.

In Knaresborough the labour is chiefly agricultural; there was formerly a thriving linen industry, but this has now almost disappeared. It seems that in this district there has been no propagandism for the limitation of the family and the birthrate has not materially decreased.

(xviii)

*Tadcaster with Selby* registration districts include the rural districts of Tadcaster (29,507), Selby (5822) and Riccall (3100), and the urban district of Selby (7786).

See Plate X	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. ..	4733	4670	5221	5404	5640	6745
No. of births .. .. .	960	1040	1237	1185	1297	1379
No. of births per 100 married women (15-55)	20.3	22.3	23.7	21.9	23.0	20.4
Potential birthrate (Tait's) (15-55)* ..		19.4	19.7	20.1	20.2	20.1

Regression coefficient (1876-1906),  $-0.146 \pm 0.009$ ; (1851-1875),  $+0.041 \pm 0.017$ .

Percentage of district included in tables of occupations, 16.8.

Changes in boundaries of registration district: 1869, 6351 transferred to Tadcaster from Pontefract; 6483 transferred from Bramham † to Wetherby.

	1861	1871	1901
* No. of births per 100 married women (15-45)	29.4	31.7	26.4
Potential birthrate (15-45)	24.9	25.7	25.3

† Bramham included in Tadcaster.

This district was formerly almost entirely an agricultural one, but changes are taking place and the population is being more employed in mines and factories. The percentage of tenements of less than five rooms, etc. is below the average for the county but the proportion of paupers is greater. No statistics of occupations can be given except for the urban district of Selby. There was a general tendency for the birthrate to rise until about 1880 and the fall since that date has been very gradual. In this district the potential birthrate has increased since 1861 and this is probably due to the growth of a mining and manufacturing population in what was formerly an entirely rural district.

In Tadcaster rural district an increasing number of the population is each year being engaged in coal mining and a diminishing number in agriculture.

In Selby factories have been started, and from being a small market town it is gradually changing into a manufacturing one; there is some employment of women in the textile factories, while 11.5 per cent. of the males in Selby urban district are engaged on the railway.

There does not seem to have been any open or active propagandism for the limitation of the family in these districts.

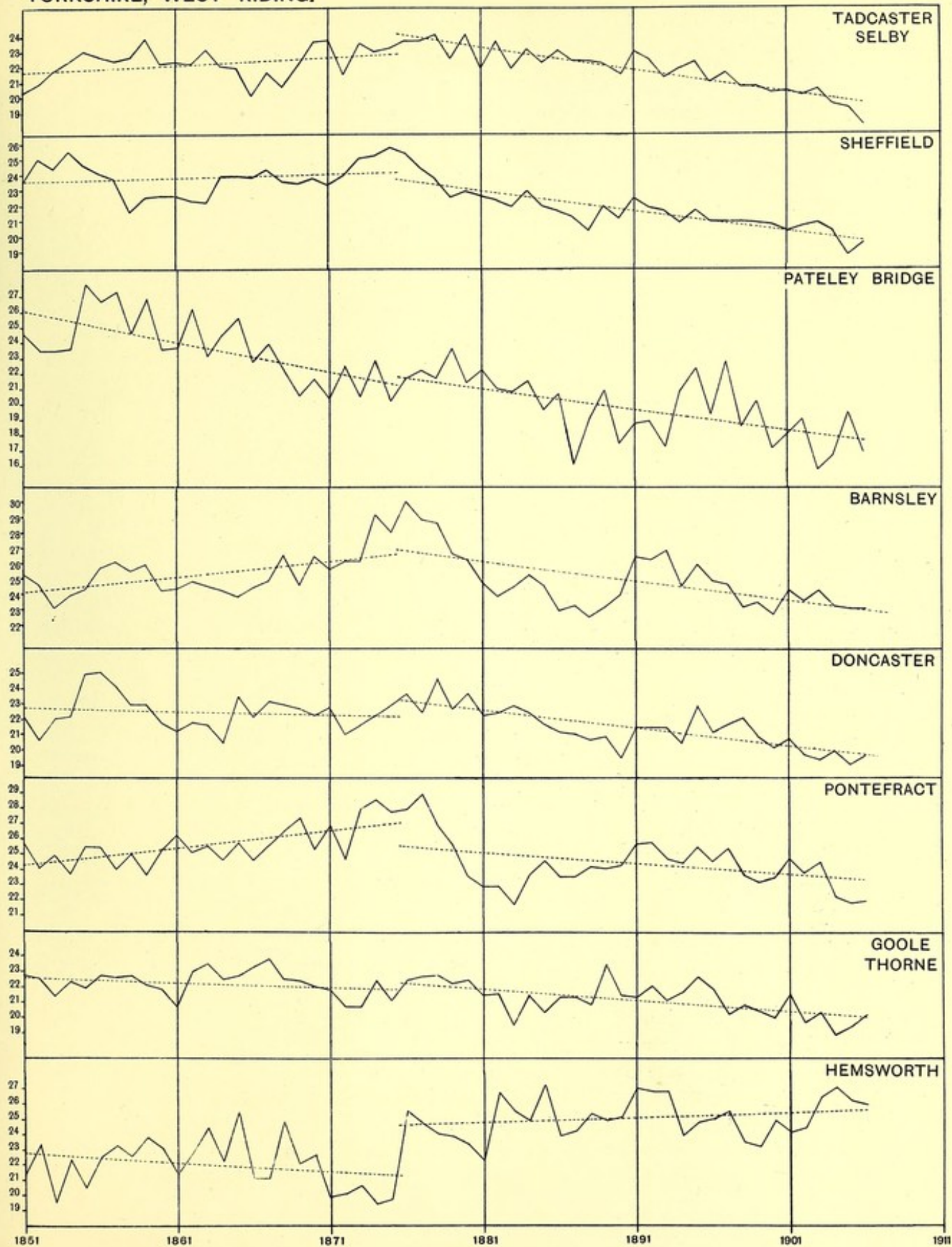
(xix)

*Sheffield* registration district includes part of the city of Sheffield (215,293) and the urban district of Handsworth (14,161).

Percentages of occupations, etc. are based on the figures for the city of Sheffield and consequently will not be accurate for the registration district, but they are given as being the best obtainable. The district is a working class district and the chief occupation lies in iron, steel and engineering works in which 15.1 per

BIRTHS PER 100 MARRIED WOMEN AGED 15-55

YORKSHIRE, WEST RIDING.





cent. of the males are employed, but 6.0 per cent. of males are engaged in mining ; there are no textile factories and very little industrial employment of women. The percentage of paupers, which was obtained for the registration district, is by far the largest in the county, and the number of families in one house, also obtained for the registration district, is the largest but one in the county.

See Plate X	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	17555	22181	27677	30121	32996	37977
No. of births .. .. .	4133	5007	6443	6802	7394	7695
No. of births per 100 married women (15-55)	23.5	22.6	23.3	22.6	22.4	20.3
Potential birthrate (Tait's) (15-55)* ..		22.9	23.0	22.2	21.9	22.1

Regression coefficient (1876-1906),  $- .131 \pm .009$  ; (1851-1875),  $+ .023 \pm .019$ .

Percentage of district included in tables of occupations : all.

Changes in boundaries of registration district : 1902, 13,268 transferred to Sheffield from Wortley.

	1861	1871	1901
* No. of births per 100 married women (15-45)	27.3	28.0	25.0
Potential birthrate (15-45)	27.2	27.2	26.7

The birthrate showed a rise in the seventies, not so great as we find in the purely mining districts but corresponding to that we have found in the iron and engineering towns, due to the boom following the Franco-German War. The fall has been continuous but not rapid and changes in the age distribution of married women are slight and account for a loss of only 0.9 births between 1871 and 1901 ; the actual loss is 4.1 births between 1876 and 1906.

In Sheffield city the chief occupations are iron and steel manufacture employing 8.4 per cent. of the males, and engineering and machine making employing 8.5, while 9.2 per cent. are employed in conveyance. The chief changes in the industries have been the growth, during later years, of the heavy trades such as the manufacture of armour plates and railway material. There was no doubt a great deal of discussion of neo-Malthusian doctrines, etc. as the result of the publication of *The Fruits of Philosophy* by Charles Bradlaugh and Mrs Besant, but opinions in the locality differ as to the extent of the influence of this discussion on the birthrate †.

Handsworth contains comparatively few factories within its borders though many residents are employed in the large works surrounding the district. The chief occupation is coal mining which employs 48.5 per cent. of the males.

† Hall and Ransom, *Brit. Med. Journal*, vol. 1. 1906, p. 429, report between 50 and 60 cases of lead poisoning produced by diachylon abortifacients within two years in this district.



(xx)

*Pateley Bridge* registration district includes the rural district of Pateley Bridge (8040).

See Plate X	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. ..	948	1216	1155	1185	1035	1104
No. of births .. .. .	232	288	236	263	194	19.9
No. of births per 100 married women (15-55)	24.5	23.7	20.4	22.2	18.7	18.0
Potential birthrate (Tait's) (15-55)* ..		19.6	18.0	19.5	18.5	19.3

Regression coefficient (1876-1906),  $-0.130 \pm 0.021$ ; (1851-1875),  $-0.202 \pm 0.030$ .

Percentage of district included in tables of occupations: none.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	30.9	28.2	23.3
Potential birthrate (15-45)	24.9	24.0	24.3

This district is an agricultural one with a small percentage of tenements of less than five rooms and with good housing conditions. The chief fall in the birthrate seems to have taken place between 1855 and 1869; since that date the birthrate has shown great variations but the general fall since 1876 has not been rapid. We have failed to secure any correspondents in this district and have not been able to ascertain what local circumstances were in existence during the 25 years from 1851 to 1875 inclusive to cause the well-marked fall in those years. The change in the potential birthrate between 1861 and 1871 seems to be responsible for a part of the fall between the same years.

(xxi)

*Barnsley* registration district includes the municipal borough of Barnsley (41,086), the rural district of Barnsley (4044), and the urban districts of Wombwell (13,252), Hoyland (12,464), Worsbrough (10,336), Ardsley (6226), Royston (4397), Cudworth (3408), Monk Bretton (3955), Darfield (4194), Dodworth (3022), and part of Darton (7134).

See Plate X	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. ..	5329	7315	9104	12362	14859	17882
No. of births .. .. .	1350	1777	2333	3057	3927	4335
No. of births per 100 married women (15-55)	25.3	24.3	25.6	24.7	26.4	24.2
Potential birthrate (Tait's) (15-55)* ..		22.5	22.5	22.6	22.4	22.0

Regression coefficient (1876-1906),  $-0.128 \pm 0.021$ ; (1851-1875),  $+0.106 \pm 0.020$ .

Percentage of district included in tables of occupations, 79.7.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	29.7	31.5	30.0
Potential birthrate (15-45)	27.0	27.1	26.6

This district is a working class district chiefly engaged in mining which employs 40.4 per cent. of males; there are practically no textile factories and very little industrial employment of women. The percentage of one and two-roomed tenements is decidedly below the average and overcrowding is also slightly below the average for the county. The birthrate curve showed a general upward tendency from 1851 and it was very high in the seventies; a period of depression in the eighties was followed by another rise in the nineties and, as can be seen from the birthrates at the census years, the fall did not begin till the middle of the nineties and the actual birthrate in 1901 was still high. The potential birthrate has changed only slightly.

In Barnsley borough the chief occupation is coal mining which employs 22.8 per cent. of the males, but there are other industries such as glass factories which employ 7.4 per cent. of the males and engineering works employing 5.8 per cent. A small percentage of women is employed in the manufacture of linen.

In Wombwell, Hoyland and Darton mining is practically the only occupation and employs 60.0 per cent., 57.8 per cent. and 56.7 per cent. of the males over 10 in the three districts respectively.

In Ardsley the occupations are coal mining, which occupies 31.5 per cent. of the males, and glass bottle making in which 17.4 per cent. are engaged. Practically no changes have taken place in the industries though the glass works do not employ so many men as in former years. No new industry has been opened out. There seems to have been no very active propagandism for the limitation of the family either by newspaper advertisements or by circulars, but remarks are made on the point by socialist miners and they are generally favourable to limitation of the family\*. The birthrate in this district shows very little fall.

In Worsbrough mining is again practically the only industry and it employs 56.2 per cent. of the males; fifty years ago there was a larger agricultural population, there were also glass works and some weaving was carried on, but these two industries have now entirely disappeared.

Darfield used to be a rural district populated by farmers, farm labourers and their families, with a few large residences or "halls" giving employment to a limited number of servants. It has now become a colliery district; hundreds of small colliers' houses have sprung up and the large residences are occupied by pit-managers or officials. The type of farmer is also deteriorating, for the better class found their fields were continually trespassed on by the colliers, hedges destroyed and gates left open, so that stock strayed. The farms have now been distributed among small farmers, who provide milk, poultry and dairy produce for which there is a ready market among the colliers. The colliers earn good wages, but are thriftless and improvident, and the general ignorance is reported to lead to much waste and a high infant mortality. The lives of the girls are unsatisfactory, for they receive no education after school, their mothers can teach them little, and therefore they make neither good servants nor good mothers.

\* Some cases of lead poisoning due to the use of diachylon abortifacients are reported from the Barnsley district by Hall and Ransom, *Brit. Med. Journal*, vol. 1. 1906, p. 429.

They can only become pupil-teachers or dressmakers, both of which occupations are overcrowded.

(xxii)

*Doncaster* registration district includes the rural district of Doncaster (27,756), the municipal borough of Doncaster (28,932), and the urban districts of Balby-with-Hexthorpe (6781), Wheatley (3580), Tickhill (1565), Mexborough (10,430), Bolton-on-Deerne (3828), and part of East Retford in Lincolnshire (960).

See Plate X	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	4945	5791	6709	7928	9426	13187
No. of births .. .. .	1096	1229	1528	1760	2017	2732
No. of births per 100 married women (15-55)	22.1	21.2	22.7	22.2	21.4	20.7
Potential birthrate (Tait's) (15-55)* ..		20.1	20.4	21.0	20.5	21.1

Regression coefficient (1876-1906),  $-.111 \pm .011$ ; (1851-1875),  $-.021 \pm .021$ .

Percentage of district included in tables of occupations, 55.0.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	27.9	29.6	26.0
Potential birthrate (15-45)	25.7	25.8	25.9

This district is most varied in character, in social condition, and in occupations; mining, engineering and machine works, glass bottle making, and railway work are all followed. There are practically no textile factories and no industrial employment of women. The percentage of tenements of less than five rooms is only 35.3, but there are great differences in the districts; in Doncaster borough the percentage is 29.3; in Balby, where the workers are chiefly railway men, it is 21.8; in Mexborough, where the workers are chiefly miners, it is 55.1 per cent.; it is 42.7 per cent. in Tickhill, which is an agricultural district with a few pit sinkers, and in Wheatley, which is a lower middle class district, it is 17.4 per cent. The birthrate seems to have reached its highest points in the middle of the fifties and towards the end of the seventies and the fall is very slight. The potential birthrate was slightly higher in 1901 than in 1861 and is no doubt due to the increase in coal mining at the expense of agriculture in the rural district.

In Doncaster borough 14.7 per cent. of males are engaged in engineering works, 12.8 per cent. on the railway and 9.2 per cent. in the construction of vehicles, more than half of them being engaged in the construction of coaches, etc. for the railway.

In Doncaster rural district the two chief industries are agriculture and coal mining. Of other minor industries there are glass and tile works, lime burning, pipe and brick making, malting, fat extracting and sugar boiling, but all on a small scale. This district is undergoing very rapid increase owing to the opening up of the South Yorkshire coal fields; of the working mines the Denaby mine was sunk in 1864 and others followed in 1889, 1892, 1907 and 1908, and in the early part of 1911 six more were being sunk. The growth of the population

in the vicinity of each boring is most remarkable, and houses are rushed up and occupied before they are really dry and before an adequate drainage system has been evolved. The miners are mostly young, strong men, and the birthrate is high. The houses in the neighbourhood of the older mines are mostly back to back, slum-like and dreary, the sanitary arrangements being of the privy midden type. Round the newer pits the housing is of a different kind, and round the Brodsworth colliery there is a model village with well-spaced houses and ample garden room; the roads are wide and the houses are well built and fairly well drained. There seems to be no limitation of the family in this district; the agricultural labouring classes are too ignorant and indolent to take any such precautions and the high birthrate among the miners shows that they do not do so either.

Wheatley and Balby-with-Hexthorpe are merely parts of Doncaster town and present no particular features of their own; they are both clean, well kept and flourishing, and composed of artisans' and clerks' dwellings with just a few of the better class houses. In Balby 16.5 per cent. of the males are employed on the railway, 10.1 per cent. in the making of railway coaches, etc. and 16.7 per cent. in engineering and machine making.

In Mexborough the main occupation is mining which employs 29.7 per cent. of the males; there are glass bottle factories employing 12.0 per cent. and some other minor industries.

The general impression we have received from numerous inquiries is that both the rural and mining populations in this district do not artificially restrict their families to any large extent\*.

(xxiii)

*Pontefract* registration district includes the rural district of Pontefract (12,399), the municipal borough of Pontefract (13,427) and the urban districts of Methley (4271), Knottingley (5809), Featherstone (12,093), Whitwood (4873), and Castleford (17,386).

Pontefract is mainly a working class district engaged in mining; the percentage of tenements of less than five rooms is 61.8, which is above the average for the county, and the percentage of general labourers in 1871 was also above the average, but in other social conditions Pontefract is rather better than the county as a whole. Mining occupies 37.2 per cent. of the males, and 9.3 are employed in cement, glass, etc.; there are no textile factories and practically no industrial employment of women. The birthrate showed a general tendency to rise till about 1877, which we expect in a mining district, and this rise was followed by a sudden fall which reached its lowest point in 1883; a rise followed till 1891,

\* This is not wholly in accordance with the evidence given by Hall and Ransom, *Brit. Med. Journal*, vol. i. 1906, p. 429, who report between 20 and 30 cases of lead poisoning from the use of diachylon abortifacients in two years. A chemist who set up in Doncaster in a small way stated that he must have sold 100 penny lumps of diachylon in six months. These cases, however, occurred probably in the *urban* population.

and between 1891 and 1901 the birthrate remained very steady. The potential birthrate has fluctuated and was high in 1891 and the actual birthrate is still high.

See Plate X	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	4318	5058	5234	8292	8498	10778
No. of births .. .. .	1108	1323	1402	1895	2178	2659
No. of births per 100 married women (15-55)	25.7	26.2	26.8	22.9	25.6	24.7
Potential birthrate (Tait's) (15-55)* ..		20.9	21.7	19.6	21.6	21.5

Regression coefficient (1876-1906),  $-0.83 \pm 0.19$ ; (1851-1875),  $+0.109 \pm 0.18$ .

Percentage of district included in tables of occupations, 69.3.

Changes in boundaries of registration district: 1869, 6351 transferred to Tadcaster.

	1861	1871	1901
* No. of births per 100 married women (15-45)	33.2	33.7	30.8
Potential birthrate (15-45)	25.9	26.7	26.3

Pontefract, until fifty years ago, was principally an agricultural district, but since then coal pits have been opened and the mining population has increased; in the borough 28.1 per cent. of the males are engaged in mining. With regard to the limitation of the family it is reported that a good deal of literature on the subject was distributed about the West Riding in the eighties and a pamphlet written by a medical man, whose name, it is reported, was afterwards erased from the medical register, was very popular for a time. It is thought that the greatest decline in the birthrate has occurred in the middle class. It is stated that many women take lead pills to procure abortion, but definite cases are not easily ascertained.

Methley is a farming and coal mining district, and the latter industry has developed during the last 50 years.

In Knottingley the chief works are glass works and 25.3 per cent. of the males are employed as glass workers, nearly all of whom are makers of glass bottles.

Featherstone fifty years ago was a purely rural district, but since then coal mines have been opened and the population now consists almost entirely of miners; 63.5 per cent. of the males are engaged in the mines. There is a large youthful population. There has been no propagandism by advertisement or otherwise for the limitation of the family in this district and, according to our correspondent, little or no fall in the birthrate.

Castleford is another working class district; 37.1 per cent. of the males are employed in the mines and 13.2 per cent. in glass bottle making.

(xxiv)

*Goole with Thorne* registration districts include the rural districts of Thorne (7246) and Goole (7937), part of the rural district of Isle of Axholme (6680) and the urban districts of Crowle (2769) and Goole (16,576).

See Plate X	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	4276	4644	5233	5234	5713	6142
No. of births .. .. .	972	963	1141	1118	1216	1323
No. of births per 100 married women (15-55)	22.7	20.7	21.8	21.4	21.3	21.5
Potential birthrate (Tait's) (15-55)* ..		20.0	20.0	20.1	20.3	20.2

Regression coefficient (1876-1906),  $-0.74 \pm 0.12$ ; (1851-1875),  $-0.27 \pm 0.15$ .

Percentage of district included in tables of occupations, 42.6.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	27.0	28.6	28.1
Potential birthrate (15-45)	25.4	25.5	25.7

This district is almost entirely an agricultural one, except in Goole urban district where there is work in connection with the docks. There are no textile factories and practically no industrial employment of women. The birthrate has remained very steady and showed no tendency to fall permanently until about 1896. The potential birthrate has slightly increased and the actual birthrate in 1901 was still high in comparison with other districts, though the potential birthrate is low.

In Goole rural district the labour is almost exclusively agricultural.

In Goole urban district 7.6 per cent. of the males are engaged as boatmen, etc., 13.8 per cent. as dock and wharf labourers, 3.3 per cent. as bargemen, etc., and 8.0 per cent. as workers on the railway. In these two districts propagandism by advertisement for the limitation of the family does not seem to have been a factor in the reduction of the birthrate. The fall, according to our correspondent, has not occurred in the labouring classes so much as in those better circumstanced.

(xxv)

*Hemsworth* registration district is the rural district of Hemsworth (23,379).

See Plate X	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	950	960	1047	1482	2058	3522
No. of births .. .. .	202	205	208	330	554	846
No. of births per 100 married women (15-55)	21.3	21.4	19.9	22.2	26.9	24.0
Potential birthrate (Tait's) (15-55)* ..		19.3	19.0	20.5	21.5	21.7

Regression coefficient (1876-1906),  $+0.30 \pm 0.17$ ; (1851-1875),  $-0.62 \pm 0.28$ .

Percentage of district included in tables of occupations: none.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	28.5	26.7	29.7
Potential birthrate (15-45)	25.0	24.8	26.3

Hemsworth is now becoming a mining centre. In the 1871 census it was practically an agricultural district and 47·7 per cent. of the males over 10 were engaged in farming and as agricultural labourers. The change to a mining district has taken place chiefly during the last twenty years. The population consists principally of young active men, who earn good wages and can afford to marry early; there is very little real poverty and the miners have large families and seem fond of their children. There is a good deal of illegitimacy, the chief cause being the presence of one or two lodgers in the house, which is then frequently overcrowded. An examination of the table of social conditions shows that the average number of families to a house is the largest in the county and that though there are few one and two-roomed tenements there is overcrowding in 11·0 per cent. of tenements of less than five rooms. The district has developed very rapidly; the infant mortality rate is high and is said to be due to the carelessness and ignorance of the mothers and to the dirty and stuffy homes. According to our correspondent, the wives do no work at all except house work, and do not seem to trouble much about that. The district is very healthy and the miners live some distance from the pits. There appears to be a tendency among some women to keep the family down to one or two and use seems to be made of pills and other preparations to produce abortion. No literature dealing with these preparations is reported to be distributed but a rather low class of newspaper is generally read which contains innumerable advertisements of such things. It will be noticed that changes in the age distribution of married women should have caused an increase of 2·7 in the births between 1871 and 1901, and this increase is probably due to the change from an agricultural to a mining population.

#### D. *The County of Yorkshire, East Riding.*

(See Plates XI, XVII and XVII *bis.*)

##### I. *The Riding as a Whole.*

*East Riding of Yorkshire.* The administrative East Riding in 1901 contained a population of 385,007 and of these 91,687, 23·8 per cent. of the whole population, are included in the rural districts.

The chief occupations are:

(1) The conveyance of men and goods, which employs 17·5 per cent. of the males in the riding; this high percentage is chiefly due to the borough of Kingston-on-Hull which includes the registration districts of Sculcoates and Hull.

(2) Engineering and machine making, which occupy 4·9 per cent. of the males in the riding.

(3) Agriculture, which occupies over 50 per cent. of all the males in the rural districts.

There is practically no industrial employment of women and the chief source of their employment is in domestic service; in the rural districts 15·6 per cent.

of women over 10 are so employed, while in the whole of the districts entered in the table 10·8 per cent. are so employed. The percentage of tenements of less than five rooms in this riding together with York is 47·0, and in 6·3 per cent. of these there is overcrowding; the percentage of one and two-roomed tenements is 7·4, and in these particulars the East Riding is socially superior to the West Riding, but in the number of families per house it is inferior. In the tables of occupations the figures are given for the aggregate of the rural districts obtained from the Census of 1901; these districts cannot be distributed among the various registration districts, but the figures show clearly that the districts classed as rural are in this riding largely agricultural, with probably a certain residential element since the percentage of women employed as domestic servants is higher than the average for any one of the counties as a whole. Hull and Sculcoates registration districts present the same difficulty as Liverpool and Toxteth Park, all figures being given for the whole borough, but the percentage of paupers in the workhouse in Hull is more than double that in Sculcoates and the registration districts probably differ; this is discussed more fully in the description of each district.

*Percentages of population living in rural districts and in urban districts of less than 5000 inhabitants and consequently omitted from the tables of occupations of men and women given below:*

Bridlington and Driffield ..	52·0
Patrington and Skirlaugh ..	All
Sculcoates .. .. .	8·8
York .. .. .	15·3
Beverley .. .. .	46·1
Hull .. .. .	None
Pocklington and Howden ..	All

The fall in individual districts in this county is not so marked as in Lancashire or in the West Riding of Yorkshire, as can be seen from Table XVII, but the fall is more uniform. There was no extraordinary rise in the potential birthrate about 1871, in fact the time when the potential birthrate was highest in the districts in the East Riding seems to have been about 1881, but we have not been able to discover whether about that date there was a period of prosperity sufficient to account for any increase in the number of young mothers. Throughout this riding the fall in the birthrate does not begin generally till the middle of the eighties\*.

\* In Pocklington and Howden there was a fall following a period of a high birthrate between 1856 and 1864 and for the succeeding 20 years the rate was very steady.



TABLE XVII. *Yorkshire, East Riding. Birthrates.*

Registration District	Regression coefficient, 1876-1906	Actual change in no. of births in 31 years	Mean birth-rate, 1851-1875	Per-centage change in no. of births	Potential birthrate, women (15-55)		Potential change in no. of births in 30 years	See page
					1871	1901		
(i) Bridlington and Driffield	-.259	- 8.0	22.1	36	19.8	18.7	- 1.1	130
(ii) Patrington and Skirlaugh	-.235	- 7.3	21.8	33	18.9	18.5	- .4	132
(iii) Sculcoates.. ..	-.210	- 6.5	22.2	29	21.7	21.2	- .5	133
(iv) York .. ..	-.179	- 5.5	21.2	26	20.1	20.4	+ .3	133
(v) Beverley .. ..	-.178	- 5.5	21.5	26	19.3	18.8	- .5	140
(vi) Hull .. ..	-.177	- 5.5	19.7	28	22.1	21.3	- .8	141
(vii) Pocklington and Howden	-.095	- 2.9	22.9	13	18.5	18.4	- .1	142

TABLE XVIII. *Social Conditions.*

Registration District	Regression coefficient	Percentage of over-crowded tenements of less than five rooms	Percentage of one and two-roomed tenements	Percentage of tenements of less than five rooms	Paupers per 1000 of the population	Number of families or separate occupiers in one house	Number of persons per acre	Percentage of general labourers, 1871 census
(i) Bridlington and Driffield	-.259	4.32	4.13	34.3	3.55	1.0092	.21	5.46
(ii) Patrington and Skirlaugh	-.235	3.23	3.28	34.4	3.57	1.0107	.14	2.35
(iii) Sculcoates .. ..	-.210	6.37	7.39	53.3	3.95	1.0150	4.45	10.91
(iv) York .. ..	-.179	7.93	10.15	40.7	5.37	1.0178	1.15	8.15
(v) Beverley .. ..	-.178	5.01	5.86	39.8	3.11	1.0127	.31	6.84
(vi) Hull .. ..	-.177	6.56	7.77	54.7	8.72	1.0184	77.59	5.32
(vii) Pocklington and Howden	-.095	3.78	4.68	37.9	5.50	1.0033	.14	5.65
Riding .. ..	-.187	6.31	7.36	47.0	5.10	1.0147	.66	7.10

TABLE XIX. Percentages of Males over ten years employed in various occupations.

Registration District	Regression coefficient 1876-1906	Commercial or business clerks (v. 2)	Conveyance (vi)	Agriculture (vii)	Iron and steel engineering (x. 1, 3)	Building (xii)	Wood, furniture (xiii)	Brick, cement, glass (xiv)	Chemicals, oils, etc. (xv); skins, leather, etc. (xvi)	Paper, prints, etc. (xvii)	Textile factories (xviii. 1-5)	Dress (xix)	Food, lodging (xx)	All other occupations
East Riding .. .. .	-.187	2.6	17.5	14.7	4.9	7.6	2.7	.7	3.2	1.1	.2	2.4	6.6	—
(i) Bridlington with Driffield	-.259	1.3	10.3	—	2.1	14.2	3.4	.5	2.1	1.3	.2	4.0	10.6	29.7
(ii) Patrington with Skirlaugh	-.235	—	—	—	—	—	—	—	—	—	—	—	—	—
(iii) Seuloates .. .. .	-.210	3.6	24.1	—	6.6	8.0	3.8	.6	4.0	1.4	.2	2.4	7.6	21.4
(iv) York .. .. .	-.179	2.4	14.8	—	6.5	11.9	2.8	1.3	1.5	1.7	.1	3.0	10.0	27.1
(v) Beverley .. .. .	-.178	1.8	8.5	—	3.6	9.3	2.5	.8	12.5*	2.1	.1	3.5	8.1	27.8
(vi) Hull .. .. .	-.177	3.6	24.1	—	6.6	8.0	3.8	.6	4.0	1.4	.2	2.4	7.6	21.4
(vii) Pocklington with Howden	-.095	—	—	—	—	—	—	—	—	—	—	—	—	—
Totals .. .. .	—	3.2	20.7	—	6.2	9.2	3.5	.7	3.6	1.5	.2	2.7	8.2	23.3
Rural districts .. .. .	—	.4	5.8	51.5	1.9	4.8	.4	.7	.7	.2	.2	2.1	3.2	—

\* 10.3 per cent. tanners

TABLE XX. *Percentages of Females over ten years employed in various occupations.*

Registration District	Regression coefficient	Teaching (iii)	Domestic, char-women, laundry (iv)	Paper, books, etc. (xvii)	Textile factories (xviii)	Tailoresses (xix)	Milliners, dress-makers, etc. (xix)	Food, lodging, etc. (xx)	All other occupations	Total occupied
East Riding .. .. .	- .187	1.3	12.5	.5	.5	3.7		2.5	—	25.0
(i) Bridlington with Driffield ..	- .259	1.4	15.1	.1	.1	.1	4.2	6.1	4.6	31.9
(ii) Patrington with Skirlaugh ..	- .235	—	—	—	—	—	—	—	—	—
(iii) Sculcoates .. .. .	- .210	1.3	9.7	.8	.7	.6	3.4	2.6	5.2	24.4
(iv) York .. .. .	- .179	1.5	12.3	.4	.2	.1	3.5	5.7	4.7	28.4
(v) Beverley .. .. .	- .178	1.8	15.3	.6	.1	.1	4.3	2.2	3.1	27.5
(vi) Hull .. .. .	- .177	1.3	9.7	.8	.7	.6	3.4	2.6	5.2	24.4
(vii) Pocklington with Howden ..	- .095	—	—	—	—	—	—	—	—	—
Totals .. .. .	—	1.4	10.8	.6	.5	.5	3.5	3.5	4.9	25.8
Rural districts.. .. .	—	1.2	15.6	0.0	.1	2.5		1.2	—	23.9

II. *The Individual Registration Districts.*

## (i)

*Bridlington with Driffield* registration districts were taken together and include the rural districts of Driffield (11,988) and Bridlington (7747), the municipal borough of Bridlington (12,482) and the urban district of Great Driffield (5766).

See Plate XI	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	4475	4706	4714	4875	4510	5069
No. of births .. .. .	978	999	1072	1135	977	887
No. of births per 100 married women (15-55)	21.9	21.2	22.7	23.3	21.7	17.5
Potential birthrate (Tait's) (15-55)* ..		20.0	19.8	20.0	18.9	18.7

Regression coefficient (1876-1906), - .259 ± .010; (1851-1875), - .003 ± .014.

Percentage of district included in tables of occupations, 48.0.

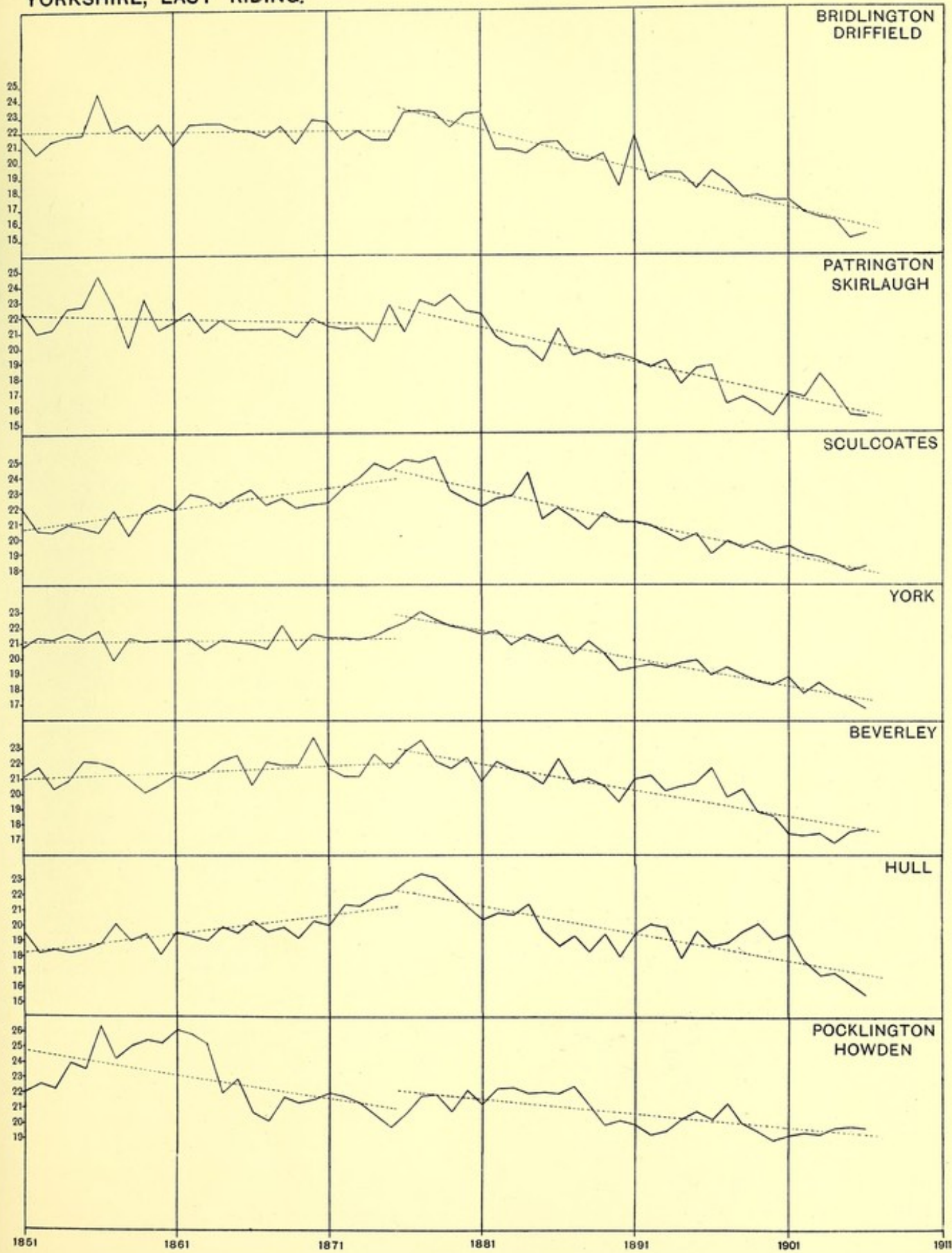
Changes in boundaries of registration district: none.

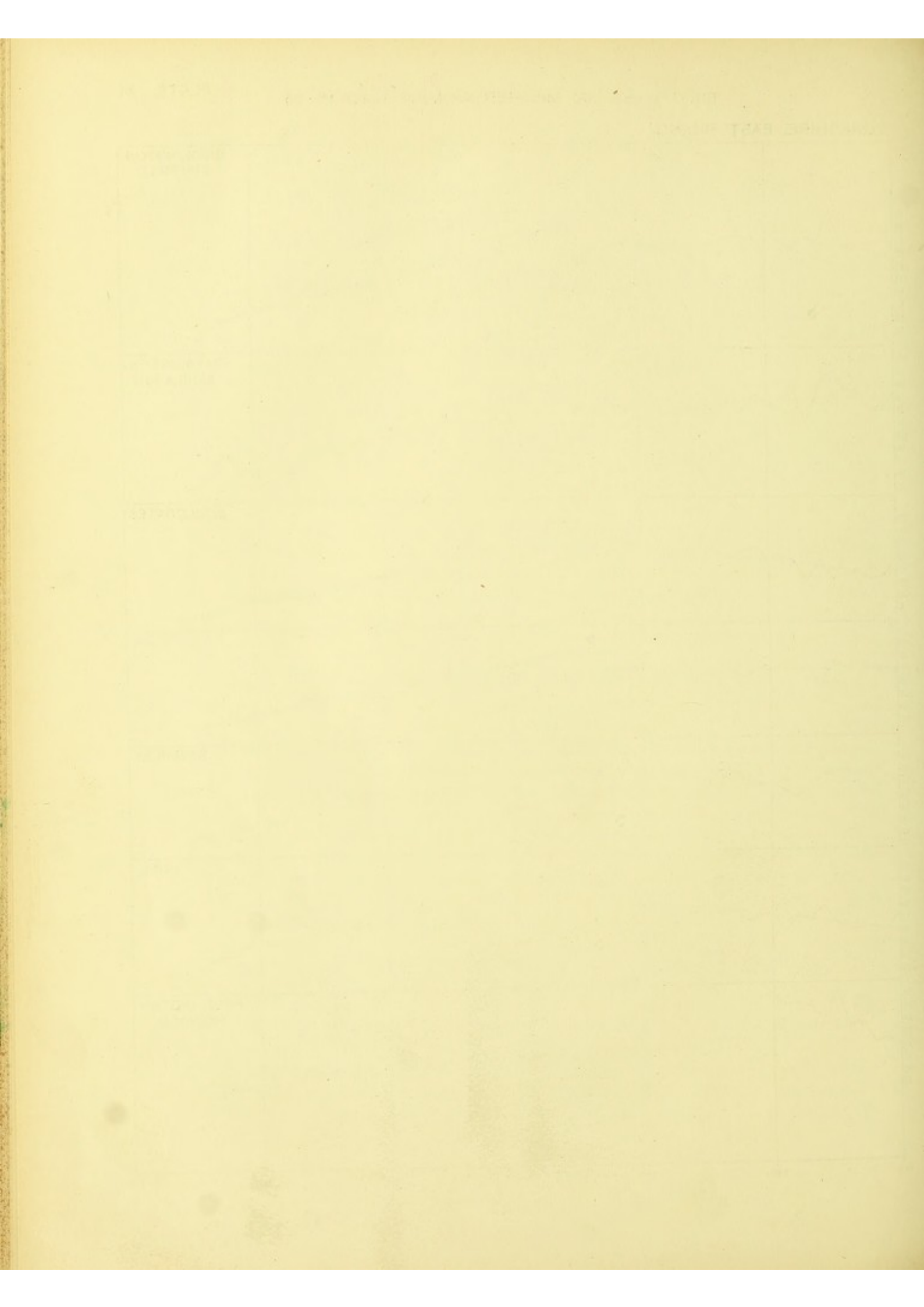
	1861	1871	1901
* No. of births per 100 married women (15-45)	27.9	30.4	23.8
Potential birthrate (15-45)	25.7	25.8	24.6

This district is largely an agricultural one, but there seems to be a residential element of some size in the towns and Bridlington is largely a seaside resort. There are no factories of importance and no industrial employment of women.

BIRTHS PER 100 MARRIED WOMEN AGED 15-55

YORKSHIRE, EAST RIDING.





The percentage of tenements of less than five rooms is 34.3, but there is considerable variation in the different districts; in the rural districts of Driffield and Bridlington the percentages are 49.7 and 44.1 respectively, while in Great Driffield urban district the percentage is 29.1 and in the borough of Bridlington it is 17.7. There was no fall in the birthrate till after 1881, and practically no change in the age distribution of married women, but between 1881 and 1891 there was a loss of 1.1 in the potential birthrate.

In Driffield rural district the labour is entirely agricultural with one or two industries subsidiary to agriculture such as the making of artificial manures and feeding stuffs. Since 1881 there has been practically no change in the industries except the introduction of labour saving machinery into agriculture and a consequent decline in the population due to the emigration of the more vigorous men and women; the physical level of the remaining population has deteriorated. Artificial limitation of the family most certainly occurs. It is recognised as a fact by the bulk of general practitioners. The decline in the size of families is more marked in the case of farmers' wives than in that of labourers' wives, but the tendency exists among the labouring classes. The more general diffusion of knowledge and the cheapness of the daily press have both contributed to this fall in the birthrate. The half-penny evening press takes a more prominent part in this direction than the morning papers. The difficulty of settling on the land, which is held chiefly on large tenures, has tended to accentuate the exodus to the towns of young enterprising labourers. Illegitimacy is reported to be very rife in this district.

The borough of Bridlington has a very small percentage of tenements of less than five rooms; it has practically no factories and no industrial employment of women, and the chief occupations other than those of any seaside town are "building" which occupies 16.7 per cent. of the males, a decidedly higher proportion than is found on the average, and the providing of food, lodging, etc. which employs 11.1 per cent. of the males; there is also some fishing carried on. Of women over ten years 15.5 per cent. are engaged in domestic service, etc. and 7.7 per cent. in providing food, lodging, etc. These facts are what we might anticipate would hold for a residential and seaside district.

Great Driffield is a town situated in an agricultural district and the percentage of tenements of less than five rooms is greater than in Bridlington; there are no factories and the only important occupation for women is in domestic service in which 14.3 per cent. of the women are engaged.

## (ii)

*Patrington with Skirlaugh* registration districts are taken together and include the rural districts of Patrington (7167) and Skirlaugh (6978), and the urban districts of Withernsea (1426) and Hornsea (2381).

See Plate XI	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	2468	2629	2533	2403	2278	2404
No. of births .. .. .	554	571	541	533	437	409
No. of births per 100 married women (15-55)	22.4	21.7	21.4	22.2	19.2	17.0
Potential birthrate (Tait's) (15-55)* ..		19.1	18.9	19.5	18.6	18.5

Regression coefficient (1876-1906),  $-.235 \pm .012$ ; (1851-1875),  $-.036 \pm .018$ .

Percentage of district included in tables of occupations: none.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	29.0	29.4	23.2
Potential birthrate (15-45)	24.9	25.3	24.5

This district is largely an agricultural one and we can obtain no evidence from the census as to whether it is to any extent a residential district; some of the rural districts in the East Riding must be largely residential in character otherwise the percentage of women employed in domestic service would not be as high as 15.6, nor would the percentage of under five-roomed tenements be as low as it is; in social character as judged by housing conditions this district is very similar to Bridlington with Driffield, the percentages of tenements of less than five rooms are only 5.2 and 18.9 in the urban districts of Withernsea and Hornsea respectively, and we are probably right in assuming that Patrington with Skirlaugh closely resembles socially Bridlington with Driffield. The birth curves are very similar but the change in the potential birthrate is less marked in Patrington with Skirlaugh than in Bridlington with Driffield. Except for a little shore and river fishing the occupation of the people in Patrington rural district is agriculture. There was a flax mill, but the workers have left. There seems to have been no very active propagandism with regard to the limitation of the family in the neighbourhood, but limitation occurs in all classes except among some of the very poorest of the labourers. The well-to-do farmers who farm not less than 400 acres have one or two children where their fathers had four, six or more. The whole standard of living has risen and there are cheap fares to Hull two or three times a week and so frequent visits of all classes. There are fewer divorces and fewer unmarried people living together than twenty years ago.

Skirlaugh rural district is purely agricultural, and the rate of wages is much the same as thirty years ago. The declining birthrate in this district is locally attributed to the restriction of the family by the French system on account of the increased cost of living during the last twenty years and the relative steadiness of wages.

## (iii)

*Sculcoates* registration district includes the rural district of *Sculcoates* (6778), the urban districts of *Hedon* (1010), *Hessle* (3754), *Cottingham* (3751), and part of the county borough of *Kingston-on-Hull* (158,014).

See Plate XI	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. ..	7023	8382	11013	15978	21479	28297
No. of births .. .. .	1535	1837	2459	3527	4537	5509
No. of births per 100 married women (15-55)	21.9	21.9	22.3	22.1	21.1	19.5
Potential birthrate (Tait's) (15-55)* ..		21.3	21.7	21.9	21.3	21.2

Regression coefficient (1876-1906),  $-0.210 \pm 0.009$ ; (1851-1875),  $+0.138 \pm 0.013$ .

Percentage of district included in tables of occupations, 91.2.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	27.7	28.2	24.4
Potential birthrate (15-45)	26.3	26.9	26.1

The same difficulty occurs in the discussion of this district that we have noticed in *Ecclesall-Bierlow* and *Sheffield*. Statistics of employment are given for the county borough of *Kingston* which includes the registration district of *Hull* and 91.2 per cent. of the registration district of *Sculcoates*. An examination of the social conditions whenever statistics can be obtained for the registration districts shows that differences exist between the two parts of the borough, the most noticeable is the smaller percentage of paupers and the greater fall in the birthrate in *Sculcoates*. Judged by the number of paupers in the work-houses and by the number of families per house, *Sculcoates* is superior in social conditions to *Hull*. *Sculcoates* union includes 15 rural villages as well as the larger portion of the county borough of *Kingston-on-Hull*; it includes the docks to the west of *Hull* and has a central residential district. An increasing number of girls are employed in this union who earn from 8s. to 18s. a week. The prosperity of the workers is on a higher plane than twenty years ago; wages which were 25s. a week then for artisans are now 36s. a week and there is less broken time. Labourers now earn from 21s. to 26s. a week. There has, according to our correspondent, been no open propagandism for the restriction of the family, and no effort seems to have been made amongst the poorest class to teach them that they have any responsibility for their children.

## (iv)

*York* registration district includes the county borough of *York* (77,914) and the rural districts of *Bishopthorpe* (1960), *Escrick* (5214) and *Flaxton* (6924).

*York* city is situated in an agricultural district; the amount of overcrowding is the most marked in the county, but only occurs in 7.9 per cent. of tenements of less than five rooms; the birthrate remained fairly steady till about the middle



of the eighties but the fall has been continuous if not very marked since then. The potential birthrate has hardly varied; it reached its highest point in 1881. The loss of births per 100 married women was somewhat over 5 in the 31 years.

See Plate XI	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	8017	8702	9033	10693	11322	13451
No. of births .. .. .	1663	1851	1935	2325	2205	2546
No. of births per 100 married women (15-55)	20.7	21.2	21.4	21.7	19.5	18.9
Potential birthrate (Tait's) (15-55)* ..		20.2	20.1	20.9	20.1	20.4

Regression coefficient (1876-1906),  $-0.179 \pm 0.005$ ; (1851-1875),  $+0.018 \pm 0.009$ .

Percentage of district included in tables of occupations, 84.6.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	27.8	28.0	24.1
Potential birthrate (15-45)	25.7	25.5	25.4

Escrick and Flaxton were and still are almost entirely agricultural districts; but during the last fifty years *near* the city the agricultural population is being supplanted by railway clerks, employees of Messrs Rowntree's cocoa works and of local brick yards. A valuable picture of the social condition of York is provided by Mr Seebohm Rowntree's work *Poverty, a Study of Town Life*, 1901.

Owing to the kindness of correspondents in York we have been able to obtain a considerable amount of information regarding the state of affairs there. Preventive measures appear to be largely used by nearly all sections of the population in York, although some of our correspondents are not acquainted with the sale of preventives in public places. One correspondent finds the source of the falling birthrate not in economic depression, but in the rapid growth of prosperity among the working classes in York, and in particular in the exceptional opportunities for the remunerative employment of unmarried women. These unmarried women—often several in one home, earning good wages—connote that the standard of home comforts is a high one. When these women marry, they will not put up with large families and the resulting poverty, incessant toil and drudgery; if they have any knowledge at all of the means of prevention, they check births. This correspondent does not think there is a large resource to methods of abortion, but that there is greater acquaintance with methods for preventing conception. Indirectly therefore the employment of women, it is suggested, has raised the standard of living and lowered the birthrate. A second correspondent finds that preventives are used more freely in the upper classes of York society, the county and military sets, and to a somewhat lesser extent in the middle and lower middle classes. In the artisan classes means of prevention are not so often adopted, but if pregnancy does occur abortifacients are resorted to. The poorest classes of all, those who cannot provide for themselves, but seek public dispensaries and maternity charities for attendance, do not appear to limit their families, for very many have large families running up to thirteen or more. It is clear, however, that if certain members of this class used preventives,

they would not come under observation to the same extent as the normally fertile. But those in touch with the lowest class of the population do not appear to have met with many cases in which they suspected the use of abortifacients.

A third correspondent who had been for nearly twenty years in a large drug stores in York gives us the advantage of his experience. The upper classes do not as a rule come under the chemist's observation, they order from wholesale dealers and expense is no consideration; they use mechanical more frequently than drug preventives. In the case of abortion, there is no connivance with the medical profession, but women apply for a medicine on the ground of some slight irregularity and then take such large doses as to produce the desired effect. The middle class also as a rule adopts neo-Malthusian practices; appliances are purchased in chemists' shops, but they are also obtained from various barbers and tobacconists. Among the very poor, although the desire to limit the family is filtering down to them, more natural lives are led; they cannot in fact afford drugs, etc., but they are less "sophisticated" and act more instinctively. There is no doubt that the habit of artificial limitation is growing rapidly in both the upper and middle classes, but our correspondent's experience brought him more closely in touch with skilled artisans, clerks, small shopkeepers, with from £2 a week income upwards. Those with more than £250 a year tend to a proportionally larger use of mechanical preventives. Voluntary self-restraint, or cohabitation at certain times only has hardly anything to do with the decline in the birthrate in this class. The current tone in the matter may be illustrated by two stories, the one told by a married woman with wide experience, namely that if you hear a knot of young married women of this class talking together, the chances are that the topic will be the means of prevention, and the second the words of a male acquaintance to our correspondent himself "on the arrival of one of my youngsters": "Well, you are a fool,—and you in a chemist's shop!"

Our correspondent considers that—accompanying the growing desire for pleasure and excitement, the increasing love of dress and the greater opportunities for amusement—there has been a growing fear of childbearing and an increasing dislike for the responsibilities of parenthood. This has developed till, in his judgment, six out of ten married couples in the £100 to £250 a year class restrict their families.

As to methods of propagandism there appears to be no public hawking of appliances or drugs. There are continual advertisements in the daily press, sometimes twice, sometimes four or five times in the same paper. The lower middle class which is afraid to ask for drugs over a counter is reported to be most given to answering such advertisements. There is said to be one well-known dealer, but it is asserted that resort is not usually had to him by the married. Some years ago a handbook was sent out advertising certain drugs, and offering an interview with "our special doctor" if they failed to act. At another place violent purgatives were administered, and this appears to be a frequent practice when other means have not prevented conception. Not a few women will take 6 to 12 pills at one dose of a well-advertised aperient remedy. Every conceivable ecboic

appears to be in request at York; colocynth, pennyroyal, "Widow Welch's Female Pills," apiol and steel pills, borax, etc. A common "remedy" is reported to be gin and gunpowder, the latter being purchasable at the ironmongers. Our correspondent was asked recently for some "gunpowder pills," and suspecting what was the matter, sent some harmless pills. The woman complained later that they had "done no good." When a teaspoonful of gunpowder and gin has proved ineffectual, then resort is had to diachylon, which is often used in the second or third month of gestation; it was actually recommended by one midwife, when, owing to a previous engagement, she could not arrange to take a patient, with the remark, "I've told many an one." Thus "remedies" are passed on from one to another. Our correspondent supplies diachylon plaster only when he knows from personal knowledge that the case is all right. But "When I ask, what for?" and the answer is, "Oh, for a neighbour," he sends resin plaster instead. In the same way calumba is given for colocynth, and various other harmless drugs for other abortifacients. But the fact that these things are frequently asked for, is sufficient to show that they are known and that they are supplied by less conscientious chemists than our correspondent.

Our correspondent is of opinion that the various methods pursued are undermining the health of the lower middle classes, and destroying the possibility of fertility, when children are afterwards desired. He believes that he has evidence, that if a child in spite of the drugs taken is born, it is liable to idiocy, blindness or deformity. Statistics on such a point, however, are very hard to procure; it is a possibility which must be borne in mind, but we must not allow our strong racial instincts to force us to form any premature conclusion. The evidence which follows is, however, of some weight from this standpoint.

We have next obtained shrewd expressions of opinion from one or two wives of York working men. It is best to give their views in their own words which convey the very atmosphere of their thought. The first working woman is the wife of a man who earns 24s. weekly, but he is often ill. She is a keen but uneducated observer.

"Six out of ten working women take something, if it is only paltry stuff... One tells another. There's no hawking here; it's all done in secrecy... Sometimes they can take a druggist's shop and it does no good... the child comes just the same; but it's puny, it's half-starved... I knew a child nine months only weighed about four pounds; they kept it alive the twelvemonth: then it died. The mother died too... she'd been taking all sorts, and she went into a rapid consumption... more than half the consumption in our class is due to that and nought else... You see it is not like rich folks that can support themselves with all kinds of luxuries and good food when they bring on these mishaps. And they can go to private homes and pay endless... Our folk go on taking what weakens them, and they can't make up for it like the rich. One woman said to me, 'I'd rather swallow the druggist shop and the man in't than have another kid.' She used to boil ten herbs together, I forget the names on 'em now, mixed up with gin and salts... and take a glass every morning before breakfast. It ran her

tenpence a pint....I mind saying to her: 'Whatever is't a boiling?'—nauseous stuff it was. And she told me, and I said, 'Thou wants a blooming job to sup that hot....If I supped it I should think I was ready for my box!'...And the kid came in the end, but was neither nought nor summat....You see, the poor know as much as you, but they can't afford it,...and then when they go on weakening themselves may get shot off rapid...Aye, and half t' lunacy's caused by using these preventives."

Being asked a question, she continued:

"Self-restraint?...Not much! If my husband started on self-restraint, I should jolly well know there was another woman in the case! Nay"—with blinding contempt—"tain't *that*!....There's any amount of illegal operations. I could mention a young thousand....There was a woman lived opposite to us in the last house; women came to her from all over the city; swells came too.... I'd never have letten her lay her hands on me....I'd have trubed her brains out.... They want burning, they do....But most women goes on taking pennyworths here and there....Or they'll try as many as twenty different kinds one after the other...caraway seeds, salts, diachylon, turpentine, bitter apples, 'hikey pikey' (probably a folk-corruption of *hiera picra*!)...they're endless."

Two other working women, of most respectable type, put the proportion of working women who take drugs, etc., as at least seven and probably eight in ten. "They'll rise money for that, if they rise it for nothing else....The working class are equally bad, as bad as the rich....I think nearly all on 'em have a try... and there's *that* many half poison themselves....They're half dead, but do nothing....I know one that's ill continually, lips like death... and she goes out nursing herself....Then the one tells another....You'll hear 'em talking, 'Oh, I ain't going to have any more...I knows summat.'"

The same women said it was very frequent for working women to perform illegal operations on themselves in the crudest and most appalling fashions.

These statements are from women of the working classes in York, but the like could undoubtedly be procured from a wide range of towns.

In the case of York five advertisements of various types were taken from one evening paper, and requests for further information were sent to the advertisers. The addresses were in no cases at York itself; one was in Middlesbrough, one in Blackpool, one in Leeds and two in London. It is worth considering these advertisements in detail because they are a measure of the extent of the trade in preventives and also of the dislike of childbirth at the present day.

The first advertisement ran:

BOOK FOR THE MARRIED. The most reliable information obtainable. Post Free for one stamp. Send now. \_\_\_\_\_ Established 36 years.

The date of establishment would carry us back to the year after the Bradlaugh-Besant trial. The application produced a pamphlet of 30 closely printed pages, giving details of the goods sold by a herbalist and his wife, and stating that they may be consulted between certain hours. Innumerable preventives of all types are figured and priced, and offered for sale singly or made up in lots

from the value of a few pence to 20s. The prices show that they do not appeal essentially to the poorer classes. They are recommended as preventives against disease as well as conception. The book contains extracts from Matthew Arnold and W. E. Gladstone and reference is made to Mrs Annie Besant in *The Law of Population*. A page is devoted to a "Special Notice to Ladies, ——'s Female Pills." These pills contain, as we are told, "Apiol, Betin (?), Tansy, and other Ingredients, only known to the sole maker," and they are "a never failing remedy, quickly removing all obstructions, curing all irregularities," etc... 2s. 9d., 4s. 6d. and 7s. 6d. per box. Here again the appeal is not to the poorest class. An analysis of these pills would be of value.

The second advertisement runs :

FREE TO LADIES. Irregularities, etc. removed by an up-to-date method without Medicine or Pills. It is speedy—sometimes immediate. Medical science knows no better cure. Letters of testimonials received daily. Send at once for FREE particulars and testimonials, guaranteed genuine under a penalty of £5000. Mrs ——.

This produced, when application was made, a type-written letter accompanying a circular recommending a remedy, "the result of twenty years' incessant research, experiment and experience." It appears to be of the nature of a soluble pessary, the prices being 4s. 8d. the box, and 11s. 2d. "extra strong." The applicant is requested to state whether she is Mrs or Miss, and is told that :

"Married ladies particularly have found —— invaluable when their period has stopped," and various testimonials assert relief after nine or even thirteen weeks, and the users state that they have been put "all right" more than once.

The third advertisement runs :

LADIES. Consult Mrs ——, the only Ladies' Specialist known. My Remedies never fail. My Special Mixture or Pills are guaranteed to be the only Reliable Remedy known. Acts in a few hours after all else fails. Quick, Safe and Sure. Price, 2s. 9d. Special, 4s. 6d. ; post free in plain wrapper or stamp for particulars. Only address : ——.

This produced a type-written letter from a person, Mrs ——, calling herself "Ladies' Medical Specialist," and the same caution to be careful to state whether "Miss" or "Mrs" when writing. The remedies are said to remove all irregularities. "Ladies who desire this need not despair. Don't Delay." Special remedies undescribed are priced at 11s. and 21s. Special mixture at 11s. is recommended for "the most obstinate cases."

The fourth advertisement was as follows :

FREE TO LADIES. If you write, mentioning this paper, I will send you a large free Trial Packet of my Pills for all Female Ailments. They supersede ordinary apiol, pennyroyal and steel, etc. and are recommended by all who use them ; or send 15 stamps for large box, with full directions and advice in plain wrapper, from Mrs ——.

The answer from this advertiser was a letter beginning "Dear Miss X," X being the name sent, and advising a 4s. 6d. box of strong Compound

Pills at once. The testimonials are of the usual type and profess to be from women who have tried other things for *four* months, or from those who have proved their value *many* times. "This is the seventh time I have used your Pills and they have never failed yet," etc., etc. "Many ladies like to keep a box handy\*."

The fifth and last advertisement culled from the same issue runs:

LADIES. ———'s Challenge Mixture never fails to afford relief in all cases. Far superior to Pills, Pellets, or Continental treatment. Price, 2s. 9d., Special, 4s. 6d. Do not waste time or money experimenting with unknown remedies. Stamp for Advice and Book of Requisites. Mr and Mrs ———, Specialists, ———.

The answer to a request for information brought the usual statements as to the remedies acting "in a most harmless and natural manner," the suggestion that the writer should be careful to say whether she is Miss or Mrs, and the paragraph: "Special attention is given to single ladies as well as married ones, and no one need despair till our treatment has had a trial."

Besides "Corrective Medicine" and "Corrective Pills," the advertisers include in their list "Pennyroyal and Steel Pills," and "Apiol and Steel Pills." The testimonials are of the usual type, but the advertisement of the drugs is accompanied by a price-list of preventives.

Now the above advertisements appear in *one* paper on *one* day in York, and it is hard to believe that they will appeal only to women suffering from anaemic amenorrhoea. In the first place two of the advertisers also sell preventives, and three of them refer to apiol, pennyroyal and steel, which (the last in large doses) are reputed abortifacients. No warning is given to pregnant women, and there is little doubt that women seeking abortifacients largely reply to advertisements of the above nature. Till the pills, etc. have been fully analysed, it would be idle to assert that they are a source of grave danger to prospective motherhood, but the daily appearance in provincial papers of scores of such advertisements demonstrates that there is a widespread feeling against childbirth and that many persons are willing to pay quite considerable sums in the hope of purchasing "remedies" †. That very fact and all that it involves, both to old and young life, is essentially a measure of the wide demoralisation that exists north of our present Humber line.

The state of affairs depicted above as existing in York is confirmed by the letter of a medical correspondent, who has, perhaps, the best opportunity in York for knowing the true state of affairs. He writes that extensive restriction of the family does occur in York, more particularly amongst the lower middle and better artisan classes. It does not prevail to any extent among the very poor. Some of the druggists sell preventives, and many are obtained from places in London, advertised in the press. Sometimes preventives are hawked among the men

\* No reply being sent to this person's letter, another letter followed it asking Miss X if she were cured and offering an 11s. 6d. case of concentrated pills for 3s. 6d.

† If the reader examines our Newcastle-on-Tyne section, he will see that in certain cases women have really been able to procure the drugs they are seeking.

leaving the North Eastern Railway Carriage Works in Holgate Road, but no sale in other public places is reported. Several local papers advertise medicines, etc. which our correspondent has much reason to suspect are really abortifacients. All sorts of things are sold in this line—diachylon, pills, herbs, etc.—and according to midwives and others, a great deal of damage is done by these things; their use is followed not only by abortion, premature-birth or still-birth, but also by permanent injury to the mother's womb, lead-poisoning from the diachylon, etc., or by the birth of puny children whose physique is half ruined in utero by the attempts at abortion. "Some foolish people spend as much as £4 or £5 in medicines of this kind." This correspondent concludes: "As Professor Pearson writes, the matter is certainly becoming one of urgent national importance. Besides the damage to motherhood and childhood, as he says, there is involved a terrible indifference or contempt for motherhood."

(v)

*Beverley* registration district includes the municipal borough of Beverley (13,183) and the rural district of Beverley (11,271).

See Plate XI	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. ..	2735	2968	2947	3202	3271	3321
No. of births .. .. .	576	628	640	665	686	579
No. of births per 100 married women (15-55)	21.1	21.2	21.7	20.8	21.0	17.4
Potential birthrate (Tait's) (15-55)* ..		19.6	19.3	19.9	19.9	18.8

Regression coefficient (1876-1906),  $-0.178 \pm 0.11$ ; (1851-1875),  $+0.043 \pm 0.14$ .

Percentage of district included in tables of occupations, 53.9.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	28.4	29.6	23.2
Potential birthrate (15-45)	25.6	25.6	24.4

Beverley registration area is an agricultural district surrounding the municipal borough. There are no textile factories and no industrial employment of women. Except for tanneries and agriculture there are no occupations except those usually found in a country town. The percentage of tenements of less than five rooms is below the average for the county and there is very little overcrowding, etc. The fall in the birthrate is relatively slight and can hardly be said to have begun seriously before the nineties. The potential birthrate has shown some variation and again reached its highest point in 1881.

In the municipal borough of Beverley the main occupation, other than the industries of a country town, is tanning, which employs 10.3 per cent. of the males; 3.6 per cent. are employed in engineering and machine works. The percentage of women employed is small, and more than half of those employed are engaged in domestic service, laundry work, etc.

Beverley rural district is a purely agricultural one, and labour characteristics have not changed during the last fifty years except that improvements

in methods have been introduced. The farm servants and labourers are in comfortable circumstances, and are of an independent character. There is no evidence and no reason to suspect that there has been any very active propaganda for the limitation of the family, and, according to our correspondent, the birthrate in the rural district, as apart from the urban, does not yet seem to be a diminishing one.

(vi)

*Hull* registration district includes part of the county borough of Kingston-on-Hull (82,245).

See Plate XI	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	8219	9459	11378	12973	12458	13192
No. of births .. .. .	1604	1846	2265	2650	2435	2554
No. of births per 100 married women (15-55)	19.5	19.5	20.0	20.4	19.5	19.4
Potential birthrate (Tait's) (15-55)* ..		22.0	22.1	22.3	21.6	21.3

Regression coefficient (1876-1906),  $-0.177 \pm 0.014$ ; (1851-1875),  $+0.124 \pm 0.012$ .

Percentage of district included in tables of occupations, all—but see remarks on constitution of district.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	24.0	24.7	24.4
Potential birthrate (15-45)	26.6	26.9	26.3

The following remarks on employment and social condition apply to the whole borough of Kingston-on-Hull and not especially to the portion included in the Hull registration district. There are no textile factories nor any industrial employment of women. The district is a working class district with a percentage of tenements of less than five rooms above the average for the county. There is not much overcrowding nor a large number of one and two-roomed tenements, but the number of paupers is much above the average for the county. The birthrate in the registration district showed a steady rise till about 1878, but compared with the potential birthrate has always been low, and in 1861 the actual birthrate per 100 married women between the ages of 15 and 55 was below the potential birthrate, which is a most unusual occurrence north of the Humber before the seventies. There has been very little change in the age distribution of married women, though the slight rise in this rate up to 1881 increases the appearance of a change. The fall in the birthrate is not very marked and if the mean for the 10 years from 1861 to 1871 be compared with the mean for the 10 years from 1891 to 1901 it will be found to differ by only .31 births, the means being 19.65 and 19.34 births per 100 married women respectively. Since 1901, however, there is the suggestion of a rapid fall.

Kingston-on-Hull, city and port, is situated in a purely agricultural district; provisions are of good quality and exceedingly cheap; the majority of the property is freehold and the rents moderate for the class of house. The artisan



population is a large one, wages are moderate, but work is fairly regular. Besides the conveyance of men and goods which is the chief industry and employs 24.1 per cent. of the males, there are local industries such as seed crushing, paint and varnish works, fish curing, engineering and ship building, which give fairly regular employment to the artisan. The fact that the fall in the birthrate up to 1901 was slight may be attributed to cheap food, regular wages and an absence of any very active propagandism regarding the limitation of the family.

(vii)

*Pocklington and Howden* registration districts are taken together and include the rural districts of Pocklington (11,246) and Howden (12,274), and the urban district of Pocklington (2463).

See Plate XI	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	4066	4251	3911	3572	3397	3272
No. of births .. .. .	895	1110	860	762	681	631
No. of births per 100 married women (15-55)	22.0	26.1	22.0	21.3	20.0	19.3
Potential birthrate (Tait's) (15-55)* ..		19.8	18.5	19.0	18.7	18.4

Regression coefficient (1876-1906),  $-0.95 \pm 0.10$ ; (1851-1875),  $-0.151 \pm 0.030$ .

Percentage of district included in tables of occupations: none.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	34.5	30.5	26.3
Potential birthrate (15-45)	25.5	24.8	24.4

This area is entirely an agricultural one and no changes seem to have taken place in the industries during the last fifty years beyond the general depression of agriculture and more recently of the horse breeding industry. The percentage of tenements of less than five rooms is only 37.9 per cent. and there is very little overcrowding and a very small number of one and two-roomed tenements. The birthrate was very high from the middle of the fifties till about 1863, but this may possibly be due to some irregularity in the registration. Since the middle of the sixties the fall has been continuous, if slight, as can be seen by the curve (Plate XI) or by a comparison of the birthrates at the census years. We have not been able to obtain any information to account for the high birthrate around 1861; the potential birthrate was, however, higher than in later years. In 1871 both the potential and actual birthrates had fallen and it is unfortunate that these rates cannot be calculated for 1851. There is reported to have been little or no propagandism for the limitation of the family in these districts.

E. *Yorkshire, North Riding.*(See Plates XII, XIII, XVIII and XVIII *bis*.)I. *The Riding as a Whole.*

The total population of the North Riding administrative county is 377,338, and of these 133,832 are included in the rural districts which thus contain 35·5 per cent. of the whole population. This district consists of two parts, an agricultural area, and the area round Middlesbrough which is engaged in ironstone mining and various iron trades. Until 1851 the whole riding was rural in character, but in that year iron was discovered in the Cleveland Hills and the growth of the iron industry in that neighbourhood has been rapid since that date. In some districts in the rural part of the riding, such as Scarborough, the residential element has become of much importance. There are no textile factories and practically no employment of women except in domestic service and as milliners and dress-makers. The percentage of tenements of less than five rooms is 42·0, of one and two-roomed tenements 6·07, and of overcrowding 9·23, and it will be noticed that this riding resembles the East Riding very closely in these particulars. Occupational statistics are only of value for three of the registration districts, Middlesbrough, Guisborough and Scarborough. Whitby has been included in the table, but the figures are based on only just over 50 per cent. of the population.

In the whole riding 16·9 per cent. of the males over 10 years are engaged in agriculture and in the rural districts the proportion is 41·4 per cent. The rural districts are thus largely agricultural, but that there is a residential element of importance is seen by the percentage of women engaged in domestic service, which is 14·7 in the rural districts and 12·2 in the whole riding.

The chief point to be noticed in the birth curves in this district is the extraordinary rise in the birthrate in the middle of the seventies in Guisborough and Middlesbrough; the rise is also noticeable to a slight extent in the surrounding districts. This rise has been discussed in the introduction to this paper, and in the descriptions of the two districts and it is unnecessary to repeat that discussion here.

*Percentages of the population living in rural districts and in urban districts of less than 5000 inhabitants, and consequently omitted from the tables of occupations of men and women.*

Guisborough .. .. .	23·8	Stokesley .. .. .	All
Whitby .. .. .	45·9	Reeth and Richmond .. .. .	All
Thirsk and Northallerton .. .. .	All	Middlesbrough .. .. .	1·5
Malton .. .. .	58·0	Helmsley .. .. .	All
Scarborough .. .. .	25·3	Aysgarth .. .. .	All

*Changes in the boundaries of the registration district from 1851 to 1906.*

1858.	721	transferred from	Helmsley to Stokesley.
1875.	957	„	Stokesley to Middlesbrough.
	2051	„	Stockton to Stokesley.

Middlesbrough registration district was formed in 1875 by the union of nearly the whole of Kirkleatham, a sub-registration district of Guisborough, and of nearly the whole of Yarm, a sub-registration district of Stockton, together with the addition of 957 from Stokesley and of 6967 from Stockton registration sub-district.

1895.	704	transferred from	Ripon to Bedale.
	628	„	Great Ouseburn to Thirsk.
	1537	„	Great Ouseburn to Easingwold.

Except for Guisborough the fall in individual districts is less marked in the North Riding than in Lancashire or the West Riding of Yorkshire, and changes in the potential birthrate are greater. An examination of the potential birth-rates for the different districts shows that in this Riding, as in the East Riding, the highest potential rates are generally found in 1881.

TABLE XXI. *Yorkshire, North Riding. Birthrates.*

Registration District	Regression coefficient, 1876-1906	Actual change in number of births in 31 years	Mean birth-rate, 1851-1875	Percentage change in no. of births	Potential birthrate, women (15-55)		Potential change in no. of births in 30 years	See page
					1871	1901		
(i) Guisborough.. ..	- .418	- 13.0	24.7*	53	22.9*	20.2*	- 2.7	147
(ii) Whitby .. ..	- .261	- 8.1	23.3	35	20.5	17.9	- 2.6	149
(iii) Thirsk with Northallerton	- .259	- 8.0	22.1	36	18.8	18.4	- .4	150
(iv) Malton .. ..	- .257	- 8.0	22.4	36	19.2	18.0	- 1.2	151
(v) Scarborough.. ..	- .249	- 7.7	21.7	35	19.8	19.2	- .6	152
(vi) Stokesley .. ..	- .249	- 7.7	23.8	32	19.5	18.0	- 1.5	153
(vii) Reeth with Richmond ..	- .234	- 7.3	22.8	32	19.0	17.8	- 1.2	154
(viii) Middlesbrough .. ..	- .219	- 6.8	28.2	24	22.9*	22.1	- .8	155
(ix) Helmsley, Pickering, and Easingwold .. ..	- .199	- 6.2	22.0	28	19.5	17.9	- 1.6	157
(x) Aysgarth, Bedale, with Leyburn .. ..	- .196	- 6.1	22.5	27	17.9	17.5	- .4	158

\* Not absolutely comparable; the mean birthrate for Guisborough, 1851-1875, is for Guisborough without Middlesbrough as far as it could be ascertained, but the potential birthrate for 1871 is based on Guisborough including Middlesbrough as it was not then possible to find the age distribution of married women in Middlesbrough apart from Guisborough.

TABLE XXII. *Social Conditions.*

Registration District	Regression coefficient, 1876-1906	Percentage of overcrowded tenements of less than five rooms	Percentage of one and two-roomed tenements	Percentage of tenements of less than five rooms	Paupers per 1000 of the population	Number of families or separate occupiers in one house	Number of persons per acre	Percentage of general labourers, 1871 census
(i) Guisborough.. ..	- .418	6.94	2.05	36.4	2.23	1.0124	.48	12.10
(ii) Whitby .. ..	- .261	7.77	8.06	37.7	4.42	1.0384	.27	4.75
(iii) Thirsk with Northallerton ..	- .259	3.83	3.75	37.7	4.20	1.0059	.18	5.55
(iv) Malton .. ..	- .257	6.90	7.13	38.8	4.60	1.0098	.17	4.00
(v) Scarborough.. ..	- .249	6.13	5.40	23.3	4.68	1.0199	.58	6.91
(vi) Stokesley .. ..	- .249	7.87	8.26	41.0	5.87	1.0083	.14	8.86
(vii) Reeth with Richmond ..	- .234	9.33	10.83	41.6	5.96	1.0156	.09	5.81
(viii) Middlesbrough .. ..	- .219	12.22	7.08	58.5	5.14	1.0275	6.29	*
(ix) Helmsley, Pickering, Easingwold .. ..	- .199	5.51	4.83	31.5	4.41	1.0139	.11	3.61
(x) Aysgarth, Bedale, Leyburn	- .196	6.05	6.42	33.6	4.16	1.0101	.09	4.63
North Riding .. ..	- .271	9.23	6.07	42.0	4.46	1.0196	.30	6.53

\* Included in Guisborough.

TABLE XXIII. Percentages of Males over ten years employed in various occupations.

Registration District	Regression coefficient 1876-1906	Commercial or business clerks (v. 2)	Conveyance (vi)	Ironstone mining (ix. 1)	Iron and steel engineering (x. 1, 3)	Building (xii)	Wood, furniture (xiii)	Brick, cement, glass (xiv)	Chemicals, oils, leather (xv)	Paper, prints (xvii)	Textile factories (xviii. 1-5)	Dress (xix)	Food, lodging (xx)	All other occupations*
North Riding †	-.271	1.3	6.5	5.2 †	10.3	7.5	.9	.6	.7	.6	.2	1.9	5.1	—
(i) Guisborough	-.418	1.5	5.9	34.2	7.5	5.6	.5	.5	.4	.4	.0	2.3	4.7	18.7
(ii) Whitby	-.261	1.3	14.0	.0	2.1	11.3	1.7	.2	.9	1.0	.0	3.7	8.0	35.4
(iii) Thirsk with Northallerton	-.259	—	—	—	—	—	—	—	—	—	—	—	—	—
(iv) Malton	-.257	—	—	—	—	—	—	—	—	—	—	—	—	—
(v) Scarborough	-.249	1.5	11.4	.0	1.3	15.3	2.2	.8	1.0	1.6	.2	4.6	10.9	28.3
(vi) Stokesley	-.249	—	—	—	—	—	—	—	—	—	—	—	—	—
(vii) Reeth with Richmond	-.234	—	—	—	—	—	—	—	—	—	—	—	—	—
(viii) Middlesbrough	-.219	2.0	10.7	.9	28.5	6.8	1.0	.8	.7	.6	.0	1.7	4.4	26.3
(ix) Helmsley, Pickering, Easingwold	-.199	—	—	—	—	—	—	—	—	—	—	—	—	—
(x) Aysgarth, Bedale, Leyburn	-.196	—	—	—	—	—	—	—	—	—	—	—	—	—
Totals	—	1.9	10.2	5.7	20.0	8.1	1.1	.7	.7	.7	.0	2.3	5.6	25.9
Rural districts	—	.4	5.8	3.8 †	2.4	6.5	.4	.4	.6	.2	.4	1.0	3.8	§

\* Ironstone miners and some workers in iron excluded.

† These include ix. 1-2.

‡ Sum of urban and rural districts.

§ 41.4 per cent. in agriculture.

THE UNIVERSITY OF CHICAGO PRESS  
CHICAGO, ILLINOIS

BIRTHS PER 100 MARRIED WOMEN AGED 15-55

YORKSHIRE, NORTH RIDING.

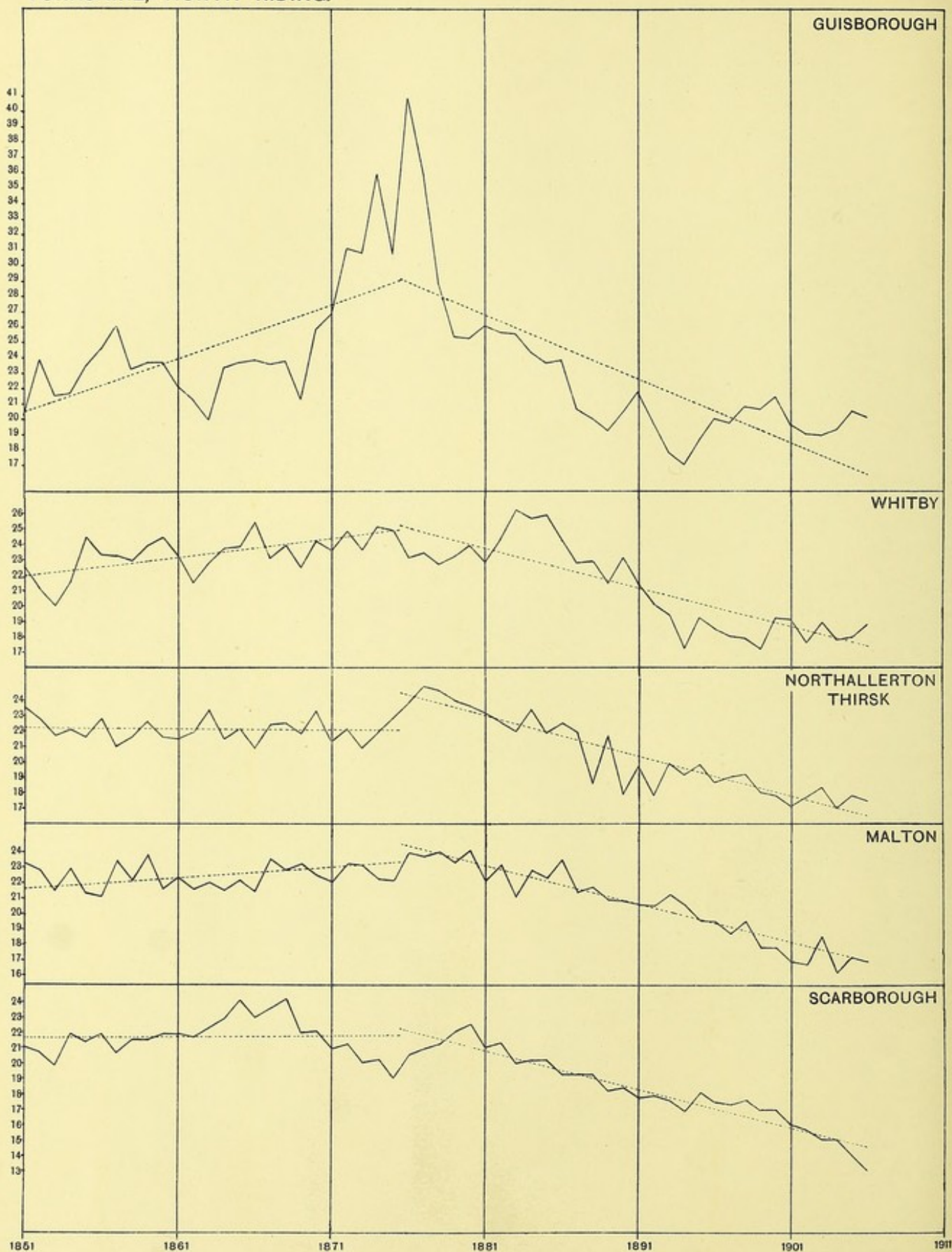


TABLE XXIV. *Percentage of Females over ten years employed in various occupations.*

Registration district	Regression coefficient, 1876-1906	Teaching (iii. 4)	Domestic, char-women, laundry (iv)	Paper, books, etc. (xvii)	Textile factories (xviii. 1-5)	Tailoresses (xix)	Milliners, dress-makers, etc. (xix)	Food, lodging, etc. (xx)	All other occupations	Total occupied
North Riding* .. ..	- .271	1.3	12.2	.2	.2	3.5	2.3	3.5	23.2	
(i) Guisborough .. ..	- .418	1.5	8.8	.0	.1	.0	3.2	1.7	2.0	17.2
(ii) Whitby .. ..	- .261	1.7	14.0	.2	.1	.1	5.0	4.8	4.1	30.1
(iii) Thirsk with Northallerton ..	- .259	—	—	—	—	—	—	—	—	—
(iv) Malton .. ..	- .257	—	—	—	—	—	—	—	—	—
(v) Scarborough .. ..	- .249	1.4	16.9	.3	.1	.3	5.1	5.2	5.5	34.8
(vi) Stokesley .. ..	- .249	—	—	—	—	—	—	—	—	—
(vii) Reeth with Richmond ..	- .234	—	—	—	—	—	—	—	—	—
(viii) Middlesbrough .. ..	- .219	1.3	7.1	.3	.2	.2	2.9	1.7	3.1	16.9
(ix) Helmsley, Pickering, Easingwold .. ..	- .199	—	—	—	—	—	—	—	—	—
(x) Aysgarth, Bedale, Leyburn ..	- .196	—	—	—	—	—	—	—	—	—
Totals .. ..	—	1.4	9.9	.2	.2	.2	3.5	2.7	3.5	21.6
Rural districts .. ..	—	1.1	14.8	.1	.3	2.8	1.6	4.0	24.6	

\* Sum of urban and rural districts.

II. *Yorkshire, North Riding. The Individual Registration Districts.*

(i)

*Guisborough* registration district includes the rural district of Guisborough (7754) and the urban districts of Guisborough (5645), Skelton with Brotton (13,240), Loftus (6508), Saltburn (2578), and Redcar (7695).

See Plate XII	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. ..	1411	2171	3689	6483	5690	6342
No. of births .. ..	287	483	991	1695	1244	1252
No. of births per 100 married women (15-55)	20.3	22.2	26.9	26.1	21.8	19.7
Potential birthrate (Tait's) (15-55)* .. ..		22.1†	22.9†	22.5	20.3	20.2

Regression coefficient (1876-1906), - .418 ± .046; (1851-1875), + .346 ± .052.

Percentage of district included in tables of occupations, 76.2.

Changes in boundaries of registration district: Owing to the necessity of separating Middlesbrough in 1875, we used the figures for Guisborough less Kirkleatham down to that date; the proportion of married women was taken to be the same as for the whole district, but the births for the district less Kirkleatham were used.

	1861	1871	1901
* No. of births per 100 married women (15-45)	30.3	32.5	25.9
Potential birthrate (15-45)	26.5	27.2	25.8

† For whole district.



The districts combined in Guisborough vary greatly in the nature of their population and in their occupations. There are no textile factories and the chief industry is ironstone mining, which employs 34.2 per cent. of the males; 7.5 per cent. are engaged in iron and engineering works. There is no industrial employment of women and very little employment at all. The birthrate showed a most extraordinary rise in the early seventies; this was partly due to the remarkable boom in the coal and iron trades which occurred in the early seventies, and to which reference has already been made. There was a rush of the young and strong to Guisborough and Middlesbrough, and we see from the high potential birthrate that there must have been a large proportion of young wives and consequently a high birthrate. The birthrate was probably above the average in the seventies, but there is no doubt that the rise has been exaggerated, owing to the difficulty of estimating the number of married women between the census years. We can only make them increase uniformly, and a glance at the actual births in Guisborough and Middlesbrough taken together will show how the fall has been artificially increased.

*Births in Guisborough and Middlesbrough.*

1873	..	..	..	2135
1874	..	..	..	2502
1875	..	..	..	2987
1876	..	..	..	5878
1877	..	..	..	5521

The birthrate from 1873 to 1875 increased naturally, but between 1875 and 1876 it almost doubled, and after 1876 it began to go down. The exodus from these districts started probably between 1876 and 1877 and there may well have been a decidedly larger number of married women in Guisborough and Middlesbrough in 1876 than in 1881. This artificial rise in the birthrate has exaggerated also the appearance of the fall, and probably the fall in Guisborough is decidedly less than the regression coefficient would lead us to imagine; the change in the age distribution of married women is also very marked and accounts for a loss of nearly 3 births between 1871 and 1901.

Guisborough rural district has become largely a mining district.

In Guisborough urban district the small market town is now largely occupied by ironstone miners; 33.6 per cent. of the males are occupied in mining and the percentage of tenements of less than five rooms is 47.2, decidedly above the average for the registration district.

Skelton with Brotton and Loftus are both mining centres; 51.9 per cent. are engaged as ironstone miners in Skelton with Brotton and 36.0 per cent. in Loftus; in Loftus 11.3 per cent. are engaged in iron and engineering works; the percentages of tenements of less than five rooms in these two districts are 52.7 in Skelton with Brotton and 17.1 in Loftus.

Redcar and Saltburn are residential towns and seaside resorts; further in Redcar a large number of small houses which have been built recently are almost

entirely occupied by clerks, shopmen and skilled workmen whose work is outside the district. In Saltburn the nature of the place is indicated by the small percentage of tenements of less than five rooms, only 10.0 per cent., while Redcar has the largest number of domestic servants per hundred separate families in the county, i.e. 29.3 per cent.

During the last 20 years there has probably been relatively small variation in the birthrate in the ironstone mining districts. There is little doubt that artificial limitation of the family is practised, and in some instances there is no hesitation among the married in stating that it is their intention. This applies to the upper classes more especially, but the practice is percolating to the higher stratum of the working classes. In one working class district we are informed that the number of enemas sold was far larger than could be accounted for on the ground that they were required for ordinary purposes. It seems probable that the spread in this district of the use of preventives is due more to information conveyed by one married person to another than directly to advertisements.

## (ii)

*Whitby* registration district includes the rural district of Whitby (8051) and the urban districts of Whitby (11,755) and Hinderwell (1937).

See Plate XII	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	3116	3409	3713	3615	3155	2799
No. of births .. .. .	702	790	875	824	676	536
No. of births per 100 married women (15-55)	22.5	23.2	23.6	22.8	21.4	19.1
Potential birthrate (Tait's) (15-55)* .. .. .		20.3	20.5	20.0	19.0	17.9

Regression coefficient (1876-1906),  $-.261 \pm .021$ ; (1851-1875),  $+.122 \pm .019$ .

Percentage of district included in tables of occupations, 54.1.

Changes in boundaries of registration districts: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	29.8	30.7	26.4
Potential birthrate (15-45)	25.5	26.0	23.9

Whitby is a district which seems to have declined of recent years; the town itself is now dependent on its position as a holiday resort and as a small market town. Thirty years ago work was plentiful, and men earned good money in working jet which was then fashionable as an ornament for women "in mourning," and the fishing industry was very prosperous. In 1901 only 4.3 per cent. of the males were described as being workers in jet and men brought up to the trade are now out of work and get their living as labourers, porters and touts, making a little money during the visiting season. There was also a shipyard, which employed a number of men, boiler makers, riveters, carpenters, etc., but this is now closed down. The line and net-fishing industry has also declined owing to the increase of steam trawlers which do not use Whitby as a port of call because of the difficult harbour bar. A number of men are engaged in various grades of the mercantile marine.

There seems to have been no propagandism for the limitation of the family beyond small bills advertising rubber appliances which have been posted for the last twenty years. The birthrate, according to local opinion, has declined among the upper middle more than among the lower classes. Until about 1885 there was no fall in the birthrate, and in the early eighties the birthrate was still high, but since that date the fall (from about 24 to 18) has been well marked; it can be partly accounted for by a rapid fall in the potential birthrate (about 2.1).

## (iii)

*Thirsk with Northallerton* registration districts are taken together and include the rural districts of Thirsk (12,710) and Northallerton (7581), and the urban district of Northallerton (4009).

See Plate XII	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	3137	3061	3032	3078	2879	3194
No. of births .. .. .	737	658	647	714	568	547
No. of births per 100 married women (15-55)	23.5	21.5	21.3	23.2	19.7	17.1
Potential birthrate (Tait's) (15-55)* .. .. .		19.0	18.8	19.6	17.9	18.4

Regression coefficient (1876-1906), - .259 ± .013; (1851-1875), - .013 ± .013.

Percentage of district included in tables of occupations, none.

Changes in boundaries of registration district: 1895, 628 transferred to Thirsk from Great Ouseburn.

	1861	1871	1901
* No. of births per 100 married women (15-45)	29.3	29.6	23.5
Potential birthrate (15-45) .. .. .	25.2	25.1	24.4

The people in Northallerton are engaged in agricultural work and in small trades. Many are also employed on the North Eastern Railway and in a linoleum factory. There is practically no overcrowding in the whole district, and very few one and two-roomed tenements. There was an extraordinary drop in the potential birthrate between 1881 and 1891 accompanied by a decrease in the actual birthrate, but though the fall in the potential birthrate did not continue after 1891 the birthrate continued to fall. Emigration of the young folk from the rural district to Middlesbrough, Stockton, etc., accounts for the fall in the potential birthrate.

There seems to have been much propagandism in Northallerton for the limitation of the family, advertisements of means for "the prevention of large families" seem to have been fixed to gate posts, etc. as long ago as 1877. More recently the advertisements are of quinine pessaries, and of the "wonderful whirling spray douche" which "may be carried ready filled and used without spilling." The "spread of education" seems to have brought knowledge on these points not only to the married, but to young people generally. Their use is the chief cause in the diminution of the number of illegitimate births. Our correspondent reports a general disinclination for domestic work and home life; girls are allowed to

wander about at night when they should be in bed or helping their parents, and this leads to the understanding of these advertisements, to immorality, and to the limitation of the family when married. The fall in the birthrate, however, does not appear to be equal in all classes, the thriftless and dirty having as many children as ever. The middle, upper middle and better classes are those that chiefly limit their families, and in many cases when babies arrive they are the result of what is termed a "mistake." The evidence from this district would seem to point to a demoralisation of the better artisan and of the lower middle classes, a result not necessarily associated with the restriction of the family, but not unnaturally flowing from the manner in which preventives are pushed for commercial profit. Our correspondent attributes the result largely to a type of primary education which does not prepare the children for their ordinary home life, with its occupations and handicrafts.

## (iv)

*Malton* registration district includes the rural districts of Malton (6116) and Norton (5738), and the urban districts of Malton (4758) and Norton (3842).

See Plate XII	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	3060	3097	2901	2868	2626	2654
No. of births .. .. .	710	691	639	633	542	448
No. of births per 100 married women (15-55)	23.2	22.3	22.0	22.1	20.6	16.9
Potential birthrate (Tait's) (15-55)* .. ..		19.0	19.2	19.8	19.0	18.0

Regression coefficient (1876-1906),  $-.257 \pm .010$ ; (1851-1875),  $+.076 \pm .017$ .

Percentage of district included in tables of occupations, none.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	30.3	30.2	23.3
Potential birthrate (15-45)	24.9	25.5	24.1

The population of this district is engaged almost entirely in agriculture, and there have been no changes in the industries during the last fifty years. There is no land out of cultivation, the farming is of a high class and there are no small holdings, or very few. Wages are poor, but slowly increasing, and there is less demand for labour owing to machinery and the laying down of land to grass. The birthrate showed a slight upward tendency till the end of the seventies, but since the middle of the eighties the fall has been continuous. The potential birthrate is low as in all purely agricultural districts owing to the exodus of the young adults to the towns, and it has fallen in Malton since 1871; this potential fall accounts for the loss of 1.2 births, but the actual loss is 8.0 between 1876 and 1906. The fall in the number of children is due in many cases ("to the certain knowledge" of our correspondent) to the use of measures of prevention, and though this may be mainly in the more educated classes, yet isolated cases are definitely known even among agricultural labourers; advertising of the means of limitation occurs but is not now and has never been very common. The proportion of illegitimate births has not increased.

(v)

*Scarborough* registration district includes the rural districts of Scarborough (7760) and Sherburn (2186), the municipal borough of Scarborough (38,161), and the urban district of Filey (3003).

See Plate XII	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	3567	4436	5155	5889	6083	7015
No. of births .. .. .	750	973	1080	1240	1087	1127
No. of births per 100 married women (15-55)	21.0	21.9	21.0	21.1	17.9	16.1
Potential birthrate (Tait's) (15-55)* .. .		20.0	19.8	20.0	19.2	19.2

Regression coefficient (1876-1906),  $-0.249 \pm 0.009$ ; (1851-1875),  $+0.006 \pm 0.023$ .

Percentage of district included in tables of occupations, 74.7.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	28.5	27.6	21.0
Potential birthrate (15-45)	25.3	25.4	24.5

Scarborough is a residential district surrounded by an agricultural population, the percentage of tenements of less than five rooms is the smallest in the county, only 23.3 per cent. The birthrate curve showed a rise in the sixties and a fall in the seventies, and in this respect differs from practically every district in the north. The fall since 1881 has been continuous and well marked. The potential birthrate in 1901 was low, doubtless owing to the increasing number of retired business people of middle and advanced life who have come to reside in the borough. There are no factories, but the percentage of women employed is the highest in the riding owing to the large number employed as domestic servants and as milliners and dressmakers.

The rural districts of Scarborough (except the Scalby\* urban district) and of Sherburn are purely rural in character, containing only small villages and hamlets; there have been practically no industrial changes in these districts, only a very gradual reduction in the number of employees per farm owing to the introduction of machinery. The Scalby urban district has as its nucleus the two villages of Scalby and Newby which have increased in size because they take now a residential overflow from Scarborough; the rest of the district is rural in character.

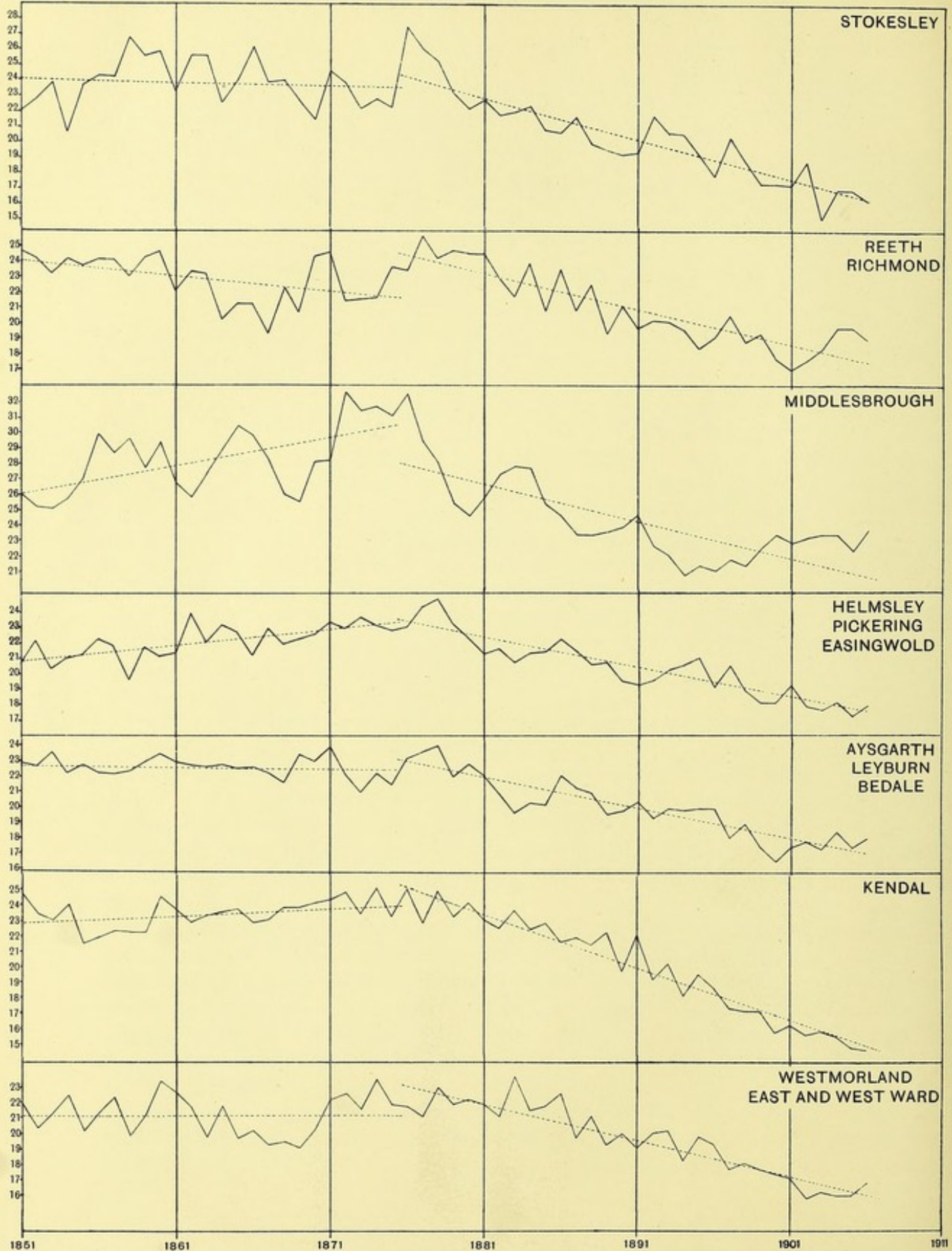
Scarborough has become of recent years increasingly a residential place for retired business people of middle and advanced life. The residential and lodging-house letting character of the borough is shown by the large number of domestic servants per hundred separate occupiers or families, which is 28.4, and the number of men included in Group XX (food, tobacco, drink and lodging), namely 10.9 per cent. as compared with 5.6 in all districts, while building occupiers 15.3 per cent. of males as compared with 8.1 per cent. in all districts.

The sixties were a time of great prosperity; there was a flourishing boat building trade and a large fleet of fishing boats, and boats built and manned

\* Formed since 1901.



YORKSHIRE, NORTH RIDING. WESTMORLAND.



in Scarborough carried on an active coasting trade, and even held communication with Baltic and other ports. There was also a flourishing jet industry, the jet being procured from Whitby. In the seventies the boat building trade decreased owing to the introduction of iron and steam propelled vessels. The coasting and foreign trades are now practically extinct. The numerous fishing vessels have been replaced largely by steam trawlers and drifters, and men who were formerly fishermen now obtain a precarious livelihood with pleasure boats in the summer season. The jet industry has long since vanished, as it has gone out of fashion for ornaments.

The changes in the Filey urban district have been of a similar character but much smaller in degree. There has been no special propagandism respecting the limitation of the family, but there is no doubt, our correspondent reports, that limitation is in operation in the middle classes.

## (vi)

*Stokesley* registration district includes the rural district of Stokesley (11,247).

See Plate XIII	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	1110	1350	1415	1511	1377	1458
No. of births .. .. .	244	314	348	244	268	252
No. of births per 100 married women (15-55)	22.0	23.3	24.6	22.8	19.4	17.3
Potential birthrate (Tait's) (15-55)* .. .. .		20.2	19.5	19.7	19.3	18.0

Regression coefficient (1876-1906),  $-0.249 \pm 0.016$ ; (1851-1875),  $-0.020 \pm 0.029$ .

Percentage of district included in tables of occupations, none.

Changes in boundaries of registration district: 1875, 957 transferred from Stokesley to Middlesbrough; 2051 transferred to Stokesley from Stockton.

	1861	1871	1901
* No. of births per 100 married women (15-45)	30.0	33.1	23.7
Potential birthrate (15-45)	25.5	25.6	23.9

Stokesley is a purely agricultural district with a whinstone quarry or two. The percentage of tenements of less than five rooms, etc. is about the average, but the percentage of paupers is decidedly above the average for the riding, and the percentage of general labourers in 1871 was high. In 1876 the birthrate suddenly rose, but this may be only a spurious rise due to changes in the registration district and to the difficulty of dealing with them. There used to be some small manufactures and an ironstone mine, but the latter has not been worked for over thirty years. The closing of factories and iron mine may account for the large fall in the potential birthrate which has dropped from 20.2 to 18.0 between 1861 and 1901; the district is now purely agricultural and the potential birthrate is consequently very low. There has not been much propagandism in this district for the limitation of the family, but when allowance is made for the difference in the age distribution of married women, the fall amounts to about 5 or 6 births, which is considerable for a purely agricultural district. It should be noted that many of the farm holdings are small, and that



in certain parts of the district there is a considerable, although diminishing number of yeomen. There are few labourers on the farms, and the work is still largely conducted by the family. In many cases one of the sons, who eventually takes the farm, stays at home to work with his father, while the other members of the family pass out into the trading classes of urban districts. The result of this system is that the home-staying son often does not marry till late in life, perhaps not till the death of his father; an abnormal age distribution of the males, although it may be of secondary importance, is, of course, not considered in Tait's potential birthrate. A dalesman may be often forty before marriage. Quite apart from this, however, one who has known the dalesmen for many years reports that the average size of family has certainly decreased in the yeoman and farming classes.

## (vii)

*Reeth with Richmond* registration districts include the rural districts of Reeth (2520) and Richmond (7889), and the urban district of Richmond (3837).

See Plate XIII	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	2510	2397	2307	2119	1881	1760
No. of births .. .. .	619	529	567	520	370	299
No. of births per 100 married women (15-55)	24.7	22.1	24.6	24.5	19.7	17.0
Potential birthrate (Tait's) (15-55)* .. .		18.6	19.0	19.9	18.7	17.8

Regression coefficient (1876-1906),  $-.234 \pm .016$ ; (1851-1875),  $-.107 \pm .024$ .

Percentage of district included in tables of occupations: none.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	30.2	33.9	23.3
Potential birthrate (15-45)	24.7	25.3	23.6

This area is almost entirely an agricultural district; the percentage of tenements of less than five rooms is below the average for the riding, but the percentage of one and two-roomed tenements is above the average and in fact the highest in the riding. There are no statistics available for dealing with the occupations of this district. The birthrate shows great irregularities; it fell on the average during the twenty-five years from 1851 to 1876, but it reached a high value in 1877. If we look at the whole curve we shall see that there is little evidence of a continuous fall till the middle of the eighties. The potential birthrate was low in 1861, rose till 1881, and has fallen since that date.

In the Richmond district the labour is almost entirely agricultural; the only other employments arise from a small copper mine, a paper mill and a few stone quarries, and there have been no important changes in the labour during the last fifty years. We have received no report of any active propagandism for the limitation of the family. Our correspondent holds, however, that the numbers of barren marriages and of limited families have increased and are increasing and to a much greater extent in the upper or upper middle than in the lower classes.

(viii)

*Middlesbrough* registration district includes the county borough of Middlesbrough (91,302), the municipal borough of Thornaby-on-Tees (16,054), the rural district of Middlesbrough (2091) and the urban districts of Ormesby (9482), Southbank (9645) and Eston (11,199).

See Plate XIII	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	2258	5345	9404	13991	18499	21490
No. of births .. .. .	587	1429	2649	3606	4569	4927
No. of births per 100 married women (15-55)	26.0	26.7	28.2	25.8	24.7	22.9
Potential birthrate (Tait's) (15-55)* .. ..		†	†	22.8	22.4	22.1

Regression coefficient (1876-1906), - .219 ± .024 ; (1851-1875), + .178 ± .032.

Percentage of district included in tables of occupations, 98.5.

Changes in boundaries of registration district: 1875, this district was formed ; until that date figures for Kirkleatham and Yarm have been used.

	1861	1871	1901
* No. of births per 100 married women (15-45)	—	—	28.2
Potential birthrate (15-45)	—	—	26.7

† The number of married women is not given for sub-registration districts, and consequently the potential birthrate in 1861 and 1871 cannot be obtained.

This district is largely a working class district engaged mainly in iron and engineering works, which employ 28.5 per cent. of the males ; the percentages of tenements of less than five rooms, of overcrowding and the average number of occupiers to one house are the largest in the riding. There is very little industrial employment of women. Middlesbrough increased rapidly in the early seventies owing to the boom in the iron trade and the further opening up of the ironstone mines in the Guisborough district, and the birthrate was then extraordinarily high, but it is impossible to obtain accurate estimates of the number of married women owing to the changes in the registration districts in 1875 ; there was a tremendous influx of people from other counties and in 1881 the proportion of Yorkshire-born men in Middlesbrough was only 52.6. The birthrate in Middlesbrough is still high compared with the county as a whole, and the potential birthrate is also high.

The principal trade of Middlesbrough county borough is the iron industry ; the majority of the men are smelters, steel workers, foundry men, ship builders, and engineers. The percentage of unskilled labour is very high ; 14.2 per cent. of the males are engaged in the iron trade, and 10.9 in engineering and machine works. There seems to have been no active propagandism for the limitation of the family, but the growth of general education leads to the discussion of such matters.

There is practically no female industrial labour.

In the rural district of Middlesbrough the labour, till the last 3 or 4 years, has been almost purely agricultural, the population consisting of farmers, farming

from 60 to 150 acres, and of those dependent on them. The farmers themselves work on their own lands. There is one small quarry employing about 20 hands. There are three small villages containing tradesmen dependent on the agricultural class, and near one village a number of villas have recently been built occupied by people who go into Middlesbrough to business. There seems to have been no marked limitation of the family in this district.

Thornaby-on-Tees is entirely a working class district; all the nationalities of Great Britain and Ireland are found there and every class of labour from the better artisan to the casual labourer. The principal industries are iron works which employ 11.7 per cent. of the males, engineering and machine works (including iron foundries) which employ 19.0 per cent. of the males and ship building which employs 18.6 per cent. The smaller industries include a flour mill, a sugar mill, in which a small number of females are employed, and a bone manure mill. Until 1910 there was a pottery which employed a considerable number of hands, including a number of girls drawn from the poorest class of the population. Except in the sugar mill female labour does not exist. The prosperity of the town depends entirely on the state of trade. The housing accommodation is good and the rents vary from about 3s. or 3s. 6d. per week up to about 10s. per week, and these rents generally include rates, etc. There are no flats, and all the houses are self-contained. Limitation of the family has increased considerably during the last few years, but is confined to the better class artisans, the poorer classes being as prolific as ever. The local press is remarkably free from all advertisements of this class and the chief propagandism for the limitation of the family has been through the advertisement columns of imported Sunday newspapers. The practice of limitation has spread, especially during the last ten years.

Ormesby is mainly a working class suburb of Middlesbrough; 22.5 per cent. of the males are engaged in the iron works and 20.7 per cent. in engineering and machine works \* (this includes men employed as iron founders). The labourers as a class are not of as good a type as those found in the Yorkshire rural districts; most of them spend their money freely on drink and amusements when trade is good and many have to resort to Poor Law relief during times of depression. The wives are not much better except that they take alcohol in smaller but oft repeated doses. Their physique and stamina consequently is rather inferior; they work in "fits and starts" and most of them cannot do steady and continuous labour. There is not much limitation of the family amongst the labourers, but by the better class artisan and the middle classes means are frequently taken to limit the family. It is felt locally that a large family cannot be brought up properly under present-day conditions with its increasing rates and taxes and the higher cost of living.

Both Southbank and Eston are mainly working class districts; 26.1 per cent. of males are employed in iron works in Southbank and 34.8 per cent. in Eston, where 10.8 per cent. are also employed as ironstone miners.

\* 47.6 according to the figures given by the Registrar-General, but 1000 too many have been probably entered in the corresponding occupation column.

(ix)

*Helmsley, Pickering and Easingwold* registration districts have been grouped and include the rural districts of Helmsley (5176), Pickering (6568), Easingwold (9909) and Kirkby Moorside (4791), and the urban district of Pickering (3491).

See Plate XIII	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	4330	4206	4404	3834	3640	3725
No. of births .. .. .	891	896	1027	818	701	716
No. of births per 100 married women (15-55)	20.6	21.3	23.3	21.3	19.3	19.2
Potential birthrate (Tait's) (15-55)* .. .. .		18.6	19.5	19.1	18.7	17.9

Regression coefficient (1876-1906),  $-0.199 \pm 0.008$ ; (1851-1875),  $+0.098 \pm 0.013$ .

Percentage of district included in tables of occupations: none.

Changes in boundaries of registration district: 1858, 721 transferred to Stokesley; 1895, 1537 transferred to Easingwold from Great Ouseburn.

	1861	1871	1901
* No. of births per 100 married women (15-45)	29.5	31.5	26.3
Potential birthrate (15-45)	25.0	25.7	23.7

This district is almost entirely an agricultural one; the percentage of tenements of less than five rooms is 31.5 and there are few tenements of one and two rooms and very little overcrowding. The birthrate rose from 1851 to 1878. Changes in the age distribution of married women are responsible for a loss of 1.6 births between 1871 and 1901. If the mean birthrate for the 10 years between 1861 and 1871 be compared with the mean birthrate for the 10 years between 1891 and 1901, it will be seen that the difference in births is 3.7 and of these births a loss of .7 only can be attributed to a change in the age of married women.

In Helmsley the labour is almost entirely agricultural; in the town of Helmsley, which is scarcely more than a large village, there are various tradesmen's shops, etc. but the bulk of the labour is agricultural and no change has taken place in the industries during the last fifty years. There has been no very marked fall in the birthrate, but at times a sagging tendency owing to the young people leaving for the bigger towns. There does not seem to have been any active propagandism for the limitation of the family. *The Fruits of Philosophy* exercised an influence among the more educated classes, but amongst the rank and file preventive measures do not seem to be taken, even to prevent illegitimacy\*.

In Easingwold the labour is agricultural and there is practically no residential element; there are no mines nor manufactures and there have been no changes in the industries. There does not seem to have been any active propagandism for the limitation of the family but information seems to be passed

\* One woman alone is reported to have had ten illegitimate children, and ten different men were called on to pay for keep before the magistrates.

on from one to another. Even the better class (the more thrifty) workmen take measures to restrict their families and it seems that only among the very lowest of the residents is no restriction practised. The limitation of the family is locally attributed to the increased burden (mostly financial) thrown on the parents of a large family. In the farm houses the difficulty of obtaining maids is now a general experience, and amongst all agricultural classes the restrictions placed on children as workers are very much felt. The child is not an "economic asset."

(x)

*Aysgarth, Bedale and Leyburn* registration districts are grouped and include the rural districts of *Aysgarth* (4506), *Bedale* (6794) and *Leyburn* (6180), and the urban districts of *Kirklington* (255) and *Masham* (1955).

See Plate XIII	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	2952	3015	2695	2582	2389	2429
No. of births .. .. .	672	690	644	572	488	425
No. of births per 100 married women (15-55)	22.8	22.9	23.9	22.1	20.4	17.5
Potential birthrate (Tait's) (15-55)* .. .. .		18.6	17.9	18.8	20.3	17.5

Regression coefficient (1876-1906). -  $.196 \pm .011$ ; (1851-1875), -  $.009 \pm .012$ .

Percentage of district included in tables of occupations: none.

Changes in boundaries of registration district: 1895, 704 transferred from Ripon.

	1861	1871	1901
* No. of births per 100 married women (15-45)	31.2	33.9	24.1
Potential birthrate (15-45)	24.5	24.4	23.2

This district is almost entirely an agricultural one; the percentage of tenements of less than five rooms is only 33.6, and the amount of overcrowding and of one and two-roomed tenements is small. There is a marked fall in the potential birthrate, accounting for a loss of 1.1 births between 1861 and 1901 and probably due to the emigration of the young persons to the towns. That this emigration had begun before 1861 is clear from the low potential birthrate at that date. There was a marked rise in the potential birthrate in 1891.

*Aysgarth* rural district is an agricultural one, except for some flagstone quarries and there have been practically no changes in the industries during the last thirty years, but the quarries are reported to be less busy now.

*Leyburn* rural district is now almost entirely an agricultural one except for the racing stables at Middleham. Some sixty years ago the greater part of the land was under corn cultivation which provided employment for women and children as well as for men, but the land is now almost entirely grazing land, and at Hunton, where 100 women and children once found employment, there is now scarcely regular work for a dozen. In 1870 there were two large lead mines at work and the miners were very numerous. One of these mines closed about 1878 and the other about 1887. The labourer is well housed and fairly comfortable but the conditions are very feudal. The district has rather poor means of

communication and intermarriage is common; there is said to be much sterility and a very large percentage of mental defectives\*. The tenant farmers and labourers, according to our correspondent, are absolutely ignorant of any method for preventing conception; the illegitimate rate is fairly high, a girl being frequently pregnant before marriage and such cases do not rouse public opinion in the least. On the other hand methods for the prevention of conception seem well known among the better classes and the more educated a man is, the fewer children he has; a man's family is usually in inverse ratio to his means.

F. *Cumberland.* G. *Westmorland.*

(See Plates XIII, XIV, XVIII, and XVIII *bis.*)

I. (a) *Cumberland. The County as a Whole.*

The total population of Cumberland numbered 266,933 in 1901 and of these 166,011 are included in the urban districts and 100,922 in the rural districts which form 37·8 per cent. of the total population, but this total includes Alston, Brampton and Longtown (18,595), which have been combined with Haltwhistle and Bellingham in Northumberland, and so are included in all our tables with that county.

The chief industries are:

(1) Agriculture, which employs 15·4 per cent. of the men of the county † and 34·1 per cent. in the aggregate of the rural districts.

(2) Mining, which employs 13·7 per cent. of the males in the whole county and 14·6 per cent. in the rural districts; the urban districts in which it is chiefly carried on are Whitehaven and Bootle.

(3) The various branches of the metal trades, which employ 8·2 per cent. of the males in the county and 2·6 per cent. in the rural districts; the chief branches are (a) iron and steel manufacture, carried on in Workington (Cockermouth registration district), (b) engineering and machine making, carried on chiefly in Carlisle and Cockermouth, and (c) those trades which are included in the summary of the Registrar-General as "miscellaneous metal trades" and which include a small number of tinplate goods manufacturers whose workmen earn the highest wages of any in the metal trades, their average wage being 42s. for a full time week.

There are practically no textile factories, and no industrial employment of women; in the whole county 26·9 per cent. of the women were employed in 1901, including 11·2 per cent. engaged in domestic work, etc.

The percentage of tenements of less than five rooms is 44·2 for the part of the county included in the tables, but there is some variation in the different districts; the largest percentage is found in Carlisle and the smallest in Bootle.

\* This is probably due to the emigration of the physically and mentally fitter, leaving the feebler to intermarry, rather than to intermarriage itself.

† "County" here includes Alston, Brampton and Longtown.

In the percentage of one and two-roomed tenements and in overcrowding Cumberland is most like the West Riding of Yorkshire. The occupational statistics for the registration districts in our tables are of little value as over 30 per cent. of the population is omitted, except in Carlisle. The figures for Penrith have been retained, but they are not satisfactory as nearly 59 per cent. of the population of the district is not included. Considerable changes were made in the constitution of rural districts under the provisions of the Local Government Act, 1894, and these changes affected Alston, Brampton and Longtown, but as these three districts are combined for the purpose of this paper these changes in constitution are of no importance.

*The percentages of the population living in rural districts and in urban districts of less than 5000 inhabitants and consequently omitted from the tables of occupations are as follows :*

Bootle	..	..	34·4	Cockermouth	..	37·6
Whitehaven	..	..	30·6	Penrith	..	58·6
Carlisle	..	..	27·6	Wigton	..	All

Whitehaven, Bootle, and Cockermouth show a distinct rise in the birth-rate during the first twenty-five years of the period under consideration, and in the first two we find a very high rate in the seventies which we have learnt to anticipate in mining areas (whether for coal or ironstone) and in engineering districts. The potential birthrate is low, and Cumberland is one of the counties north of the Humber which still has a considerable agricultural population.

As in other agricultural districts, especially as in the North and East Ridings of Yorkshire, we must notice that the highest point reached by the potential birthrate was in 1881, and this even applies to the ironstone districts. Cumberland and the North and East Ridings are alike in that the time when they apparently had most young married women centred round 1881.

(b) *Westmorland. The County as a Whole.*

The population of Westmorland numbered 64,409 in 1901 and of these 38,446 were included in the rural districts which form 59·7 per cent. of the whole population.

The chief occupation is agriculture which employs 25·5 per cent. of men in the whole county and 38·1 per cent. in the rural districts. There are practically no textile industries except in Kendal and the chief employment for women is in domestic service, etc. in which 15·5 per cent. of all women are engaged. The percentage of tenements of less than five rooms is only 27·7 and there is little overcrowding and only a small percentage of one and two-roomed tenements. The fall in Kendal began about 1880 and is a steady and well-marked one; the fall in the East and West Wards did not begin till the middle of the eighties. The county is to a certain extent a residential district and is partly supported by summer visitors. There has been a considerable fall in the potential birthrate which has always been low; both in 1861 and 1901 it was the lowest in any county north of the Humber.

TABLE XXV. *Cumberland and Westmorland. Birthrates.*

Registration District	Regression coefficient, 1876-1906	Actual change in number of births in 31 years	Mean birth-rate, 1851-1875	Per-centage change in number of births	Potential birth-rate, women (15-55)		Potential change in number of births in 30 years	See page
					1871	1901		
<b>CUMBERLAND</b>								
(i) Bootle .. .. .	-.448	- 13.9	23.9	58	21.0	19.6	- 1.4	163
(ii) Whitehaven .. .. .	-.244	- 7.6	25.1	30	21.9	20.3	- 1.6	164
(iii) Carlisle .. .. .	-.234	- 7.3	21.9	33	19.8	19.5	- .3	165
(iv) Cockermouth .. .. .	-.219	- 6.8	23.8	29	20.2	19.8	- .4	167
(v) Penrith .. .. .	-.216	- 6.7	22.1	30	18.9	18.1	- .8	169
(vi) Wigton .. .. .	-.172	- 5.3	22.1	24	18.1	18.0	- .1	170
<b>WESTMORLAND</b>								
(vii) Kendal .. .. .	-.348	- 10.8	23.4	46	19.9	18.3	- 1.6	170
(viii) East and West Wards .. .. .	-.232	- 7.2	21.1	34	19.5	18.0	- 1.5	172

TABLE XXVI. *Social Conditions.*

Registration District	Regression coefficient	Percentage of over-crowded tenements of less than five rooms	Percentage of one and two-roomed tenements	Percentage of tenements of less than five rooms	Paupers per 1000 of the population	Number of families or separate occupiers in one house	Number of persons per acre	Percentage of general labourers, 1871 census
<b>CUMBERLAND</b>								
(i) Bootle .. .. .	-.448	5.22	3.94	16.1	3.46	1.0466	.17	2.05
(ii) Whitehaven .. .. .	-.244	11.70	8.28	45.2	5.92	1.0131	.62	10.05
(iii) Carlisle .. .. .	-.234	17.92	22.37	56.3	5.22	1.0278	.92	10.03
(iv) Cockermouth .. .. .	-.219	11.34	6.27	39.3	3.93	1.0154	.42	6.89
(v) Penrith .. .. .	-.216	7.28	6.66	33.8	3.33	1.0069	.12	5.31
(vi) Wigton .. .. .	-.172	7.41	6.72	37.3	3.95	1.0018	.16	6.27
County .. .. .	-.243	13.25	12.21	44.2	4.62	1.0178	.34	7.87
<b>WESTMORLAND</b>								
(vii) Kendal .. .. .	-.348	6.30	3.41	28.9	6.60	1.0161	.33	10.65
(viii) East and West Wards .. .. .	-.232	5.22	4.05	27.2	3.77	1.0091	.07	6.93
County .. .. .	-.309	5.81	3.65	27.7	5.68	1.0137	.13	9.02



TABLE XXVII. Percentages of Males over ten years employed in various occupations.

Registration District	Regression coefficient	Commercial or business clerks (v. 2)	Conveyance (vi)	Agriculture (vii)	Coal and ironstone miners (ix. 1)	Iron and steel engineering, metal trades (x)	Building (xii)	Wood, furniture (xiii)	Skins, leather, etc. (xvi)	Paper, prints, etc. (xvii)	Textile (xviii. 1-5)	Dress (xix)	Food, lodging (xx)	Other occupations
Cumberland County .. ..	-.243	1.0	9.6	15.4	11.7	8.2	7.0	1.0	.9*	1.0	.6	1.5	5.0	—
(i) Bootle .. ..	-.448	1.0	5.8	1.2	28.4	9.3	11.2	.4	.0	.3	.0	1.8	3.4	21.2
(ii) Whitehaven .. ..	-.244	1.2	7.8	3.0	31.4	5.7	5.3	.8	.7	1.1	.6	2.1	4.7	16.1
(iii) Carlisle .. ..	-.234	1.9	18.2	1.3	.0	7.8	9.7	1.9	.7	2.7	1.9	4.4	9.0	23.5
(iv) Cockermouth .. ..	-.219	1.2	13.2	1.7	6.5	25.4	6.3	.8	.9	.9	.4	3.2	5.1	16.4
(v) Penrith .. ..	-.216	1.4	10.7	7.8	.0	3.3	11.9	3.0	1.1	1.4	.2	6.0	10.0	24.7
(vi) Wigton .. ..	-.172	—	—	—	—	—	—	—	—	—	—	—	—	—
Totals .. ..	—	1.4	12.1	2.1	11.8	12.0	7.5	1.2	.7	1.4	.8	3.2	6.1	18.6
Cumberland Rural Districts .. ..	—	.5	5.3	34.1	14.6	2.6	5.4	.5	.5*	.3	.3	1.7	3.1	—
Westmorland County .. ..	-.309	.8	8.0	25.5	3.1	3.8	8.8	2.2	.0	1.4	2.2	4.2	4.8	—

\* Includes chemicals, etc.



BIRTHS PER 100 MARRIED WOMEN AGED 15-55

CUMBERLAND.

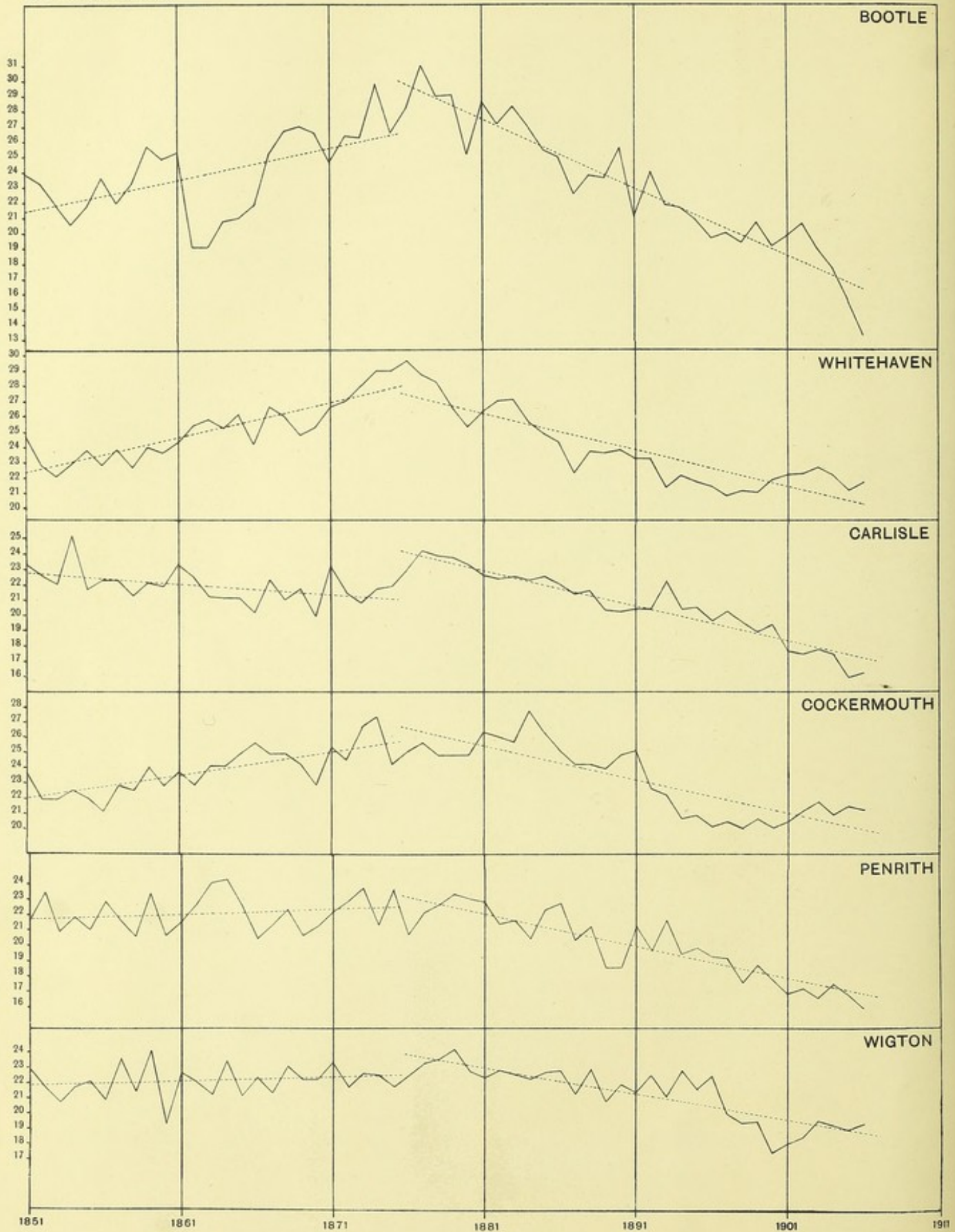


TABLE XXVIII. *Percentages of Females over ten years employed in various occupations.*

Registration District	Regression coefficient	Teaching (iii. 4)	Domestic, char-women, laundry (iv)	Paper, books, etc. (xvii)	Textile factories (xviii. 1-5)	Tailoresses, etc. (xix)	Food, lodging, etc. (xx)	All other occupations	Total occupied
Cumberland County .. ..	-.243	1.4	11.2	.4	1.7	4.2	3.0	5.0	26.9
(i) Bootle .. .. .	-.448	1.8	6.4	.0	.2	3.9	1.9	2.3	16.4
(ii) Whitehaven .. .. .	-.244	1.6	8.8	.6	1.7	4.1	2.6	3.6	23.1
(iii) Carlisle .. .. .	-.234	1.4	8.2	1.4	5.8	4.9	5.8	7.0	34.5
(iv) Cockermouth .. .. .	-.219	1.6	8.5	.3	1.0	4.4	2.7	3.0	21.5
(v) Penrith .. .. .	-.216	1.6	13.5	.1	.0	6.4	3.8	4.8	30.2
(vi) Wigton .. .. .	-.172	—	—	—	—	—	—	—	—
Totals .. .. .	—	1.5	8.8	.7	2.6	4.6	3.7	4.5	26.4
Cumberland Rural Districts ..	—	1.3	14.0	.1	6	3.4	1.8	6.0	27.2
Westmorland County ..	-.309	1.4	14.4	.5	1.8	4.2	3.0	5.3	30.6

II. (a) *Cumberland. The Individual Registration Districts.*

(i)

Bootle registration district includes the urban district of Millom (10,426) and the rural district of Bootle (5467).

See Plate XIV	1851	1861	1871	1881	1891	1901
No. of married women .. .. .	670	675	1094	1660	2025	2238
No. of births .. .. .	160	171	272	476	428	442
No. of births per 100 married women (15-55)	23.9	25.3	24.9	28.7	21.1	19.8
Potential birthrate (Tait's) (15-55)* .. ..		18.9	21.0	21.7	20.4	19.6

Regression coefficient (1876-1906),  $-.448 \pm .018$ ; (1851-1875),  $+.212 \pm .041$ .

Percentage of district included in tables of occupations, 65.6.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	34.6	32.2	26.0
Potential birthrate (15-45)	25.0	26.5	25.2

Bootle district shows a variety of characteristics; it is partly agricultural, partly residential and partly engaged in working ironstone; it has the least amount of overcrowding, etc. in the district and a curiously small proportion

of tenements of less than five rooms, i.e. 16.1 per cent. compared with 44.2 per cent. for the county, which points to the presence of a residential class of some importance. The birthrate in Bootle shows very great irregularities, due no doubt in part to the fact that the district has a small population. The birthrate was exceptionally high from about 1874 till about 1883, the fall being delayed longer than in other northern districts. The age distribution of married women and the potential birthrate have varied considerably; the latter rose from 1861 to 1881 and since that date has fallen, but in 1901 was not as low as in 1861. The mean birthrates for the 25 years from 1851 to 1875 and from 1876 to 1906 were 22.9 and 23.0 respectively, so that in the early nineties the birthrate stood practically where it was before the trade boom of the seventies.

Bootle rural district is to a certain extent a residential district, but is mainly agricultural. There is no report of local propagandism for the limitation of the family beyond the usual advertisements in the daily and weekly press. There has been much emigration of young and virile males with capital during the last twenty years. It is not possible to state whether the fall in the birthrate has taken place equally in all classes.

Millom urban district during the last fifty years has grown from a small agricultural village to a town in which the working inhabitants are engaged chiefly as iron ore miners and blast furnace men; 28.4 per cent. of the males are engaged in the former industry; there is also some stone quarrying. Advertisements dealing with the limitation of the family are not common, but no doubt such limitation exists to a small extent especially in the classes above the labouring class. According to our correspondent the decrease in the birthrate almost exactly coincides with the decrease in wages and in the amount of employment.

## (ii)

*Whitehaven* registration district includes the rural district of Whitehaven (13,317), the municipal borough of Whitehaven (19,324) and the urban districts of Harrington (3679), Egremont (5761), Cleator Moor (8120) and Arlecdon (5341).

See Plate XIV	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	4862	5706	6612	8385	7906	7645
No. of births .. .. .	1201	1388	1763	2204	1834	1689
No. of births per 100 married women (15-55)	24.7	24.3	26.6	26.3	23.2	22.1
Potential birthrate (Tait's) (15-55)* .. ..		21.0	21.9	21.9	20.6	20.3

Regression coefficient (1876-1906),  $- .244 \pm .016$ ; (1851-1875),  $+ .226 \pm .017$ .

Percentage of district included in tables of occupations, 69.4.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	31.1	32.9	28.6
Potential birthrate (15-45)	26.2	26.5	25.7

Whitehaven is mainly a working class district engaged in coal and ironstone mining. The fall in the birthrate since 1851 has been slight as can be seen from

the birthrates at successive census years. The birthrate went up from 1851 till the middle of the seventies and the potential birthrate rose during the same period. Since 1881 both the potential and the actual birthrates have fallen. Housing conditions vary widely, from 65.6 per cent. of tenements of less than five rooms in Arlecdon to 34.6 per cent. in Whitehaven rural district. Overcrowding and the number of one and two-roomed tenements are high in Whitehaven where there is coal mining and low in Arlecdon and Cleator Moor where there is ironstone mining.

The main industry in the borough of Whitehaven is mining, which employs 25.5 per cent. of the males; there is some engineering employing 4.1 per cent. of the males and a small percentage of seamen, dockers and wharf labourers.

Ironstone mining is the main industry in Egremont, in Cleator Moor, and in Arlecdon; the percentages of men employed in this industry are 32.8, 33.6 and 34.0, respectively. In Arlecdon there is also some coal mining and in Cleator Moor some iron works. We have not been able to obtain any correspondents in these districts except one in the parish of Ennerdale who informs us that the population consists of small farmers, iron ore miners, quarrymen and labourers. The actual population has decreased in this particular parish owing to the exhaustion of the iron ore pits at Salter. In this area, except in very rare instances, there seems to be no restriction of the family\*.

## (iii)

*Carlisle* registration district includes the rural district of Carlisle (17,381) and the municipal borough of Carlisle (45,480).

See Plate XIV	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	5742	6169	6179	7002	7209	8630
No. of births .. .. .	1336	1439	1436	1584	1472	1521
No. of births per 100 married women (15-55)	23.3	23.3	23.2	22.6	20.4	17.6
Potential birthrate (Tait's) (15-55)* .. ..		20.5	19.8	20.7	19.7	19.5

Regression coefficient (1876-1906),  $-.234 \pm .009$ ; (1851-1875),  $-.070 \pm .018$ .

Percentage of district included in tables of occupations, 72.4.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	29.9	30.8	23.1
Potential birthrate (15-45)	25.6	25.5	24.9

Carlisle district is one that shows great variety in occupations; the percentage of tenements of less than five rooms, 56.3, is the largest in the county, but this percentage is not large compared with those which often occur in what are essentially working class districts. The percentage of women employed is larger than in the county as a whole and larger than in Durham and Northumberland. It will be seen that changes in the ages of married women are responsible for

\* A father of 13 children spoke of himself as having "poor man's luck," and mothers often say, "You see we can't help these things, we must take matters as they come."

scarcely more than one birth out of a total loss of 7.3. The birthrate rose rapidly about the middle of the seventies owing to important changes about that time in the labour conditions of Carlisle. In the early seventies parliamentary sanction was obtained for several large enterprises, notably by the railway companies, whose lines meet within the City boundaries, and who desired great extensions. In 1874 three of the principal streets of the old City were reconstructed which necessitated rebuilding and the important railway extensions were then begun. In 1875 the extension of the Midland Railway from Settle to Carlisle was opened and several branch railways and the Victoria Viaduct were commenced. In 1877 four or five large factories were built. In 1878 the citadel station was extended, and a large hotel, a bank, barracks, and many houses were built. All this building necessitated outside labour and there was a large influx of workmen into the district.

The chief source of occupation in Carlisle City at present is the railway, which employs 12.7 per cent. of the males; a further 6.9 per cent. are employed in engineering works; there are also printing and lithographing works, textile factories, bleaching, printing and dyeing works, biscuit and cake factories and some minor workshops. The percentage of women employed in the textile factories is 5.8, and women are also employed in the biscuit and jam factories.

There is no evidence of any propagandism of any consequence by advertisement or otherwise for the limitation of the family, but probably the same personal feeling which pervades the country generally as to the avoidance of large families has been active in Carlisle; it seems to have been more manifest amongst the enlightened and successful families than amongst the working and submerged classes and must have operated to some extent towards the fall which has occurred during the last 15 years. It is considered locally however that the following factors are more important.

- (1) The extension of existing premises and the building of new factories in which the labour is principally carried out by girls and women and the introduction of more scientific machinery calculated to remove many of the existing male hands.

- (2) The depression in the building trade and in iron foundry trades.

- (3) The emigration of young adult males owing to the foregoing, thus leaving a larger proportion than the average of single women of child-bearing ages.

It will be seen that these local reasons are not valid, for (i) the potential birthrate showed no sensible change between 1871 and 1901, although there has been a fall in the birthrate since 1881, and (ii) we are here calculating the birthrate on the married women of the district. The *net* fall is something like six births and since 1900 appears to have been still more rapid. There is little doubt that as in other towns, where we have more detailed information, restriction of birth is largely operative.

(iv)

*Cockermouth* registration district includes the municipal borough of Workington (26,143), the urban districts of Maryport (11,897), Cockermouth (5355) and Keswick (4451), and the rural district of Cockermouth (21,690).

See Plate XIV	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	5128	5651	6367	7799	9909	9731
No. of births .. .. .	1209	1342	1609	2051	2488	1987
No. of births per 100 married women (15-55)	23.6	23.7	25.3	26.3	25.1	20.4
Potential birthrate (Tait's) (15-55)* .. ..		20.1	20.2	21.3	21.1	19.8

Regression coefficient (1876-1906), - .219 ± .017 ; (1851-1875), + .156 ± .018.

Percentage of district included in tables of occupations, 62.4.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	30.5	33.0	26.6
Potential birthrate (15-45)	25.2	25.7	25.2

Cockermouth registration district varies somewhat in its different areas, but on the whole it is a working class district. The percentage of overcrowding, etc. is rather below the average for the county. There is very little industrial employment of women. The chief employment is in metal industries. 25.4 per cent. of the males are so employed, the greater number of these being in the iron and steel works. There is some mining employing 6.5 per cent. of the males ; a further 13.2 per cent. are employed in the conveyance of men and goods and of these the majority are boatmen, etc. or dockers and wharf labourers. An examination of the birthrate curve (Plate XIV) and of the birthrates for each census year shows that the birthrate was still high in 1891 and that the fall is only noticeable since that date. There has been practically no change in the age distribution of married women, though the potential birthrate has varied somewhat, being at its highest point in 1881.

Workington is a centre for the iron and steel industries in the west, the production of steel rails being the main concern ; 22.9 per cent. of males are employed in the iron and steel works, 7.6 per cent. in the engineering works, and there are 7.5 per cent. of undefined iron workers who are mostly employed in connection with the steel and engineering works. The West Cumberland hematite ore, which abounds in this district, is richer than any other of the iron ores and is frequently mixed with that from Spain. The only other occupations are a little coal mining, accounting for 3.4 per cent. of males, and the employments of dock labourers, boatmen and workers on the railway, but all these are minor industries. The labour in the iron and steel works is most arduous, involving heavy lifting and great heat, and requires men of the very best physique. The furnace-men and pig-lifters are not, however, men of very advanced intelligence. They earn in most cases high wages and drink heavily, which, considering the nature of the work, is not surprising ; they are all fond of sport, especially football, and are addicted to betting, and their motto seems to be : " Let us work, eat and drink, for



to-morrow we die." Most of the furnace-men at least come from Ireland, and there is quite a large Roman Catholic section which is well looked after by the priests. Workington, according to our correspondent, is not a centre of intellectual activity; lectures are not attended, and the only entertainments cared for are boxing encounters, cinematographs, music halls and spicy plays. The population is almost entirely an industrial one, except for the small shopkeepers who are entirely dependent upon the works. The only change in the industries during the last fifty years has been a decline in the once fairly active industry of wooden ship building and an increase in the number of furnaces and rail mills.

There has not, according to local report, been much propagandism for the limitation of the family, nor is it a type of population which would readily adopt any checks; there are very few better class people, and in the majority the purely animal instincts have free and uncontrolled play.

In Maryport the two principal sources of occupation are coal mining and dock labour, but there are some sea-going men; 16.1 per cent. of the males are employed in the coal mines and 16.0 per cent. as dock labourers and seamen. During the last fifty years sea-faring has considerably diminished, and coal mining increased. Propagandism for the limitation of the family is apparently only carried on by advertisements and by articles in the Sunday papers. The fall in the birthrate has, so far, been almost entirely confined to the middle or business class, and, our correspondent asserts, that there is hardly a family of this class in the town during the last twenty years which has more than two children, but the birthrate is now also diminishing amongst the younger or recently married members of the working class. Children seem not to be wanted as they interfere with the pursuit of pleasure. The sale of rubber preventives has increased about five-fold in the last ten years and they are now sold even to the working classes\*. This limitation by the working classes is of such a recent date that it has not had time yet to make its full impression on the birthrate.

Cockermouth urban district has no mining or works of any importance; there is a little agriculture, but otherwise the people seem to be occupied chiefly in building, shopkeeping, etc., and the other occupations usual in a country town. This town has the largest number of domestic servants per hundred separate families in the county.

Keswick has the smallest percentages of one and two-roomed tenements, and of overcrowding in the whole district; it is largely a tourist resort but partly a residential district; there are pencil mills which formerly were very thriving and are still working; these employ males and females, the latter at about 5s. per week. There are quarries in the neighbourhood, and boatmen and drivers find employment in the season. There is more quarrying and less pencil making than there was fifty years ago. No propagandism for the limitation of the family is reported, nor can it be definitely stated that a fall in the birthrate is more noticeable in one class than another, but our correspondent thinks that the birthrate is higher among the working than the middle classes.

\* Information from a chemist in a large way of business.

(v)

*Penrith* registration district includes the urban district of *Penrith* (9182) and the rural district of *Penrith* (13,023).

See Plate XIV	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	2682	2684	2857	2806	2703	2805
No. of births .. .. .	580	578	634	641	573	471
No. of births per 100 married women (15-55)	21.6	21.5	22.2	22.8	21.2	16.8
Potential birthrate (Tait's) (15-55)* .. .. .		18.7	18.9	19.5	18.5	18.1

Regression coefficient (1876-1906),  $-0.216 \pm 0.013$ ; (1851-1875),  $+0.027 \pm 0.022$ .

Percentage of district included in tables of occupations, 41.4.

Changes in boundaries of registration districts: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	29.1	30.3	22.7
Potential birthrate (15-45)	24.5	25.0	23.7

In this district there are no factories and the labour is entirely agricultural. The amount of overcrowding, etc. is below the average for the county. The fall in the birthrate cannot be said to have begun till after 1886, and an examination of the birthrates at the census years shows that in 1891 the rate was still high considering the average for the preceding years. The potential birthrate in 1861 was low, pointing to an exodus at that date of the young. Changes in the ages of married women are responsible for a loss of 0.8 births between 1871 and 1901, but the actual loss from 1876 to 1906 was 6.7 births.

In both rural and urban districts the chief occupation is agriculture. Economic and social conditions have changed for the better during the last fifty years; people live in improved houses with better ventilation and have better food and clothing; the labourers have higher wages, and generally speaking poverty of the extreme type does not exist; the labouring classes have a more varied diet, but tea is too much used; tinned meats and such like are not much used. The labour has not changed and there are still no factories. There are a considerable number of illegitimate births. It would seem that the fall in the birthrate has been more marked in the upper than in the lower classes; the landowners certainly have smaller families than their forebears had. There is no local knowledge of active propagandism for the limitation of the family by public advertisements, but many notices of preventives have come by post since about the year 1889, and the methods of limitation are largely known and their use diffused; many girls are acquainted with such things though it is not possible to say where they obtained the information, and they are generally known and adopted by men, and this knowledge is largely responsible for the fall in the birthrate. Railway excursions and a growing love of pleasure make people less willing to attend to their homes or to rear large families.

(vi)

*Wigton* registration district includes the rural district of *Wigton* (11,449), and the urban districts of *Holme Cultram* (4275), *Wigton* (3692) and *Aspatria* (2885).

See Plate XIV	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	2804	2772	2695	2783	2864	2749
No. of births .. .. .	643	627	627	620	610	492
No. of births per 100 married women (15-55)	22.9	22.6	23.3	22.3	21.3	17.9
Potential birthrate (Tait's) (15-55)* .. .. .		18.3	18.1	19.1	19.0	18.0

Regression coefficient (1876-1906),  $-0.172 \pm 0.013$ ; (1851-1875),  $+0.022 \pm 0.019$ .

Percentage of district included in tables of occupations: none.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	31.3	32.2	24.8
Potential birthrate (15-45)	24.4	24.3	24.0

This district is almost entirely an agricultural one and in amount of overcrowding, etc. closely resembles *Penrith*; the birthrate curves are similar in character, but the general fall in *Wigton* was delayed even longer than in *Penrith*, in fact it was not until after 1896 that the fall became of any importance. Here again the potential birthrate is low, pointing to an exodus of the young from the rural districts as early as 1861. Further as in *Penrith* the highest potential birthrate occurred in 1881.

*Wigton* urban and rural districts are both agricultural districts, and there have been practically no changes in the social conditions during the last fifty years. There seems to have been no active propagandism for the limitation of the family in either district, and considering that out of 89 births in the town in 1910, 12 were illegitimate, the practice of prevention cannot yet be widely prevalent.

(b) *Westmorland. The Individual Registration Districts.*

(vii)

*Kendal* registration district includes the municipal borough of *Kendal* (14,183), the rural district of *South Westmorland* (19,281) and the urban districts of *Amble-side* (2536), *Windermere* (2379), *Kirkby Lonsdale* (1638) and *Grasmere* (781).

See Plate XIII	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	4376	4615	4973	5144	5469	5609
No. of births .. .. .	1080	1093	1210	1185	1203	959
No. of births per 100 married women (15-55)	24.7	23.7	24.3	23.0	22.0	17.1
Potential birthrate (Tait's) (15-55)* .. .. .		19.3	19.9	19.8	19.0	18.3

Regression coefficient (1876-1906),  $-0.348 \pm 0.011$ ; (1851-1875),  $+0.050 \pm 0.016$ .

Percentage of district included in tables of occupations, none.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	31.6	32.0	21.9
Potential birthrate (15-45)	25.0	25.5	24.0

Kendal district is varied in character; there are agricultural and residential elements, while there is some factory employment and several of the districts are well-known tourist resorts. The fall in the birthrate has been rapid. Changes in the age distribution of married women account for the loss of one birth per 100 married women since 1861. Social conditions are very similar to those found in the East and West Wards, but the number of paupers and of general labourers in 1871 was higher than in the East and West Wards. The percentage of tenements of less than five rooms is low compared with the north as a whole and overcrowding and one and two-roomed tenements hardly exist.

Ambleside and Grasmere are tourist resorts. The population of Grasmere in 1891 was reinforced by about 230 navvies engaged in the construction of the Manchester waterworks at Thirlmere, and these navvies added considerably to the birthrate.

Kirkby Lonsdale is a small market town.

Windermere is another tourist resort, but also contains many mansions of retired Lancashire, Yorkshire and Midland manufacturers.

In Kendal there are three industries, (1) an iron foundry, (2) a blouse making factory, and (3) the K-boot factory, employing nearly 1000 hands. The introduction of new machinery into the third named during the last 15 to 20 years has greatly increased the ratio of female to male hands. Fifty years ago carpet weaving, flannel manufacture and tanneries were the trades of the town, but they have nearly disappeared. There are also resident in Kendal a number of men employed on the main line of the London and North Western Railway. In the rural parts of the Kendal registration district there are paper works, combing mills, gunpowder works, matting works, and bobbin mills, all on a small scale.

As far as limitation of the family is concerned in this district and in the East and West Wards there have been from time to time a few bills put up in the urinals, and the druggists' shops have a display of douches and syringes, but otherwise there does not seem to have been any extensive propagandism. Agricultural wages have increased during the last thirty years, and farmers know that if they are to be successful they must have a family of children to work for them without wages in return for food, clothes and a bicycle from, say, 13 to 25 years of age. It is suggested by our local correspondent that there is more limitation in the upper than in the lower classes. This suggestion is to some extent confirmed by the remarkable fall in the birthrate, about 10 births in the 31 years, in a district with a large residential middle class. At the same time we must recognise that at the census-taking time (near Easter) there might be many visitors and householders residing only in vacation time, whose children would be born and registered elsewhere. The slow rate of increase in the number of married women, and the number of Westmorland-born people in other counties, show how heavy emigration must be.

(viii)

*East Ward and West Ward* registration districts are here combined and include the rural districts of East Westmorland (11,454) and West Ward (7711) and the municipal borough of Appleby (1764).

See Plate XIII	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	963	977	995	958	914	1024
No. of births .. .. .	217	210	223	199	170	177
No. of births per 100 married women (15-55)	22.5	21.5	22.4	20.8	18.6	17.3
Potential birthrate (Tait's) (15-55)* .. ..		18.7	19.5	18.8	18.5	18.0

Regression coefficient (1876-1906),  $-.232 \pm .012$ ; (1851-1875),  $+.000 \pm .024$ .

Percentage of district included in tables of occupations, none.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	30.7	28.9	23.3
Potential birthrate (15-45)	24.6	24.8	23.8

The whole district is essentially an agricultural district with a very small percentage of overcrowding, etc., and the percentage of tenements of less than five rooms is far below that found in most districts in the north. Changes in the age distribution of married women are responsible for a loss of 1.5 births between 1871 and 1901, although in 1861 the potential birthrate was lower than in 1881. The fall in the birthrate does not seem to have begun definitely till 1886, and the birthrate in that year was well above the average for the 25 years from 1851 to 1875. Since 1886 the fall has been 5 to 6 births.

In Appleby borough there is no staple trade, but a considerable proportion of the inhabitants are traffic and permanent-way men in the employ of the Midland and North Eastern Railway companies; it is the market town for the district. In Kirkby Stephen and Tebay also a proportion of the inhabitants are in railway employ. Except for railway employment in these towns, East Ward is essentially an agricultural district. In 1871 there were a number of temporary residents employed in constructing the Settle and Carlisle railway. Lead and barytes mines were worked 40 or 50 years ago but are practically non-existent now. Corn has ceased to be cultivated and cattle grazing and butter producing constitute the chief agricultural occupations.

West Ward including the urban district of Shap is essentially agricultural, but there are quarrymen at Shap and lead miners in Patterdale. This district has probably changed less than any other part of the county. The mountains only lend themselves to sheep farming and grouse rearing.

For the limitation of the family reference must be made to the remarks on this subject in our section on the Kendal district, p. 171.

H. *The County of Durham.*(Plates XV, XVI, XVIII and XVIII *bis.*)I. *The County as a Whole.*

*Durham.* The total population of Durham numbered 1,187,474 in 1901, and of these 333,102 are included in the rural districts and form 28·1 per cent. of the whole population.

The chief industries are :

(1) Mining, which employs 23·8 per cent. of all males over 10 ; this is carried on largely in the so-called rural districts of Chester-le-Street, Houghton-le-Spring and Easington, and in Auckland ; it is also carried on in Durham and Lanchester.

(2) Metal, engineering and ship-building trades employ 18·6 per cent. of males over ten in the whole county, the great centres being on the Tyne, the Tees and the Wear ; South Shields, Stockton with Hartlepool, and Sunderland are the three centres of the ship-building trades on the three rivers, and in these towns and Tynemouth the average wage for a full time week is 40*s.* 5*d.* In the engineering works the average for the same towns is 35*s.* 8*d.* In iron and steel manufacture, for which the chief centre is Consett (in Lanchester registration district), the average wage in Durham and Northumberland\* is 37*s.* 10*d.* for a full week's work.

The percentage of women employed in the whole county in 1901 was 17·5 and of these 7·9 were employed in domestic service ; there is practically no industrial employment of women. The county, except for Teesdale with Weardale, is practically entirely a working class district with a large percentage, 76·0, of tenements of less than five rooms, a large amount of overcrowding and a large percentage of one and two-roomed tenements. Durham and Northumberland are very similar in housing conditions and very different from the other counties north of the Humber ; only in Darlington and Stockton with Hartlepool is there a condition more like that found in Cumberland for example. Very great changes took place in Durham during the last century ; as late as 1832 about a third of the labouring classes were engaged in agriculture, but in 1901 only 2·6 per cent. of all males over 10 were engaged in that pursuit, and districts which were formerly agricultural have become largely mining centres ; the same process is to be observed in Northumberland, but there is less agricultural land left in Durham than in Northumberland ; in the rural districts of Durham 46·0 per cent. of all males are engaged in mining. The potteries and the glass factories have vanished during the last fifty years and the building of ships and the working of iron are now the staple industries of the district. Trade in iron and steel progressed steadily for the first half of the nineteenth century, for the next quarter from about 1850 to 1875 it grew very rapidly ; then the substitution of steel for iron rails about 1876

\* In the Board of Trade Report wages are given for Durham and Northumberland taken together.

and a few years later of steel for iron plates in ship building revolutionised the trade. The upward tendency of the birthrate from 1851 is well marked in nearly every district and is accounted for by the growing prosperity and the younger age of married women. Reference has been constantly made to the extraordinary rise in the seventies which is almost more marked in Durham than in any other county. The subsequent fall in the birthrate is not nearly so marked as in the textile towns in Lancashire and Yorkshire, and such as it is, is exaggerated slightly by the excessively high birthrate in the seventies. The greatest contrast exists between Northumberland and Durham on the one hand and Lancashire and Yorkshire on the other; in the one case we have inferior housing conditions, a high average wage, and no industrial employment of women associated with a slight fall in the birthrate; in the other case we have better housing conditions as judged by the amount of overcrowding and the percentage of one and two-roomed tenements, lower wages for the men but probably more money coming into the home, and a large percentage of women employed associated with a rapidly falling birthrate. Significant changes in the boundaries of the registration districts are:

1875. 2051 of the population of Stockton were transferred to Stokesley.  
 47,142     "     "     Stockton     "     "     Middlesbrough.  
 Formation of the new registration district of Lanchester by the union  
 of the two sub-registration districts of Tanfield and Lanchester.  
 1897. 1037 of the population transferred from Chester-le-Street to Lanchester.

*The percentages of the population living in rural districts and in urban districts of less than 5000 inhabitants and consequently omitted from the tables of occupations of men and women are given below.*

Durham .. .. .	38.3	Darlington .. .. .	20.8
Chester-le-Street, Houghton-le-Spring and Easington .. .. .	79.2	Stockton with Hartlepool and Sedgfield .. .. .	21.6
Sunderland .. .. .	12.6	Auckland .. .. .	54.5
South Shields .. .. .	8.6	Lanchester .. .. .	38.2
Gateshead .. .. .	None	Teesdale with Weardale .. .. .	All

This means that in the discussion of occupations Chester-le-Street, Houghton-le-Spring and Easington must be omitted, as well as Auckland and Teesdale with Weardale. It is most unfortunate, especially in this county where rural districts are often mining districts, that occupational statistics are not given for the so-called rural districts.

Table XXIX shows that the mean birthrate between 1851 and 1875 was high and that the percentage loss in the number of births is not very marked. An examination of the potential birthrate in each registration district in Durham is interesting; generally the highest potential rate is found in 1871, but in 1881 it had fallen again and this fall marked the close for Durham of the period of greatest prosperity. We quite recognise that the lesser potential birthrate of the last two census years need not necessarily be due to lesser prosperity, but it is probable that the fall in the potential birthrate in 1881 was due to the fact that

the trade boom of the early seventies was over. In Chester-le-Street, Houghton-le-Spring and Easington the boom seems to have come later and the potential birthrate was highest in 1881, though the highest values of the birthrate have been shifted, perhaps, to a year later.

The rise in the potential birthrate between 1861 and 1871 accounts in part for the rise in the birthrate, but it is difficult to estimate accurately what part the change in the age distribution of married women plays since we have no facts for 1851. It seems unlikely that the rise can be *entirely* accounted for by the change in the potential birthrate.

TABLE XXIX. *Durham. Birthrates.*

Registration District	Regression coefficient, 1876-1906	Actual change in no. of births in 31 years	Mean birth-rate, 1851-1875	Percentage change in no. of births	Potential birth-rate, women (15-55)		Potential change in no. of births in 30 years	See page
					1871	1901		
(i) Darlington .. .. .	-.258	- 8.0	24.5	33	21.9	20.2	- 1.7	177
(ii) Stockton with Hartlepool ..	-.238	- 7.4	25.9	29	23.2	21.6	- 1.6	178
(iii) Durham .. .. .	-.231	- 7.2	27.3	26	22.4*	21.0	- 1.4	180
(iv) Lanchester .. .. .	-.201	- 6.2	26.4	23	22.4*	21.9	- .5	182
(v) Teesdale with Weardale ..	-.196	- 6.1	24.5	25	20.4	19.6	- .8	183
(vi) Auckland .. .. .	-.193	- 6.0	28.4	21	22.8	21.7	- 1.1	184
(vii) Gateshead .. .. .	-.192	- 6.0	25.9	23	22.5	21.9	- .6	185
(viii) South Shields .. .. .	-.186	- 5.8	25.4	23	23.2	21.9	- 1.3	186
(ix) Chester-le-Street, Houghton-le-Spring, Easington .. .. .	-.121	- 3.8	26.8	14	22.4	22.2	- .2	187
(x) Sunderland .. .. .	-.106	- 3.3	24.7	13	22.4	21.7	- .7	189

\* Durham and Lanchester united for this purpose.

TABLE XXX. *Social Conditions.*

Registration District	Regression coefficient, 1876-1906	Percentage of over-crowded tenements of less than five rooms	Percentage of one and two-roomed tenements	Percentage of tenements of less than five rooms	Paupers per 1000 of the population	Number of families or separate occupiers in one house	Number of persons per acre	Percentage of general labourers, 1871 census
(i) Darlington .. .. .	-.258	13.18	11.39	57.5	3.33	1.0336	.86	4.34
(ii) Stockton with Hartlepool ..	-.238	16.69	13.28	58.7	5.50	1.0691	1.68	11.76
(iii) Durham .. .. .	-.231	25.14	27.30	78.6	2.75	1.0546	1.69	11.30
(iv) Lanchester .. .. .	-.201	35.31	37.46	83.7	2.50	1.0256	1.24	11.30
(v) Teesdale with Weardale ..	-.196	17.57	23.93	61.0	3.20	1.0291	.13	3.36
(vi) Auckland .. .. .	-.193	22.19	27.10	79.6	2.97	1.0096	1.48	13.75
(vii) Gateshead .. .. .	-.192	31.15	37.64	85.5	4.40	1.4327	6.65	17.37
(viii) South Shields .. .. .	-.186	29.87	41.39	83.2	4.96	1.6192	10.20	18.90
(ix) Chester-le-Street, Houghton-le-Spring, Easington .. .. .	-.121	29.27	33.29	85.5	2.83	1.0517	1.71	9.47
(x) Sunderland .. .. .	-.106	28.03	33.40	79.0	4.31	1.3865	16.31	12.08
County .. .. .	-.166	26.86†	30.42†	76.0†	3.99	1.1983	1.57	11.91

† Administrative County.



TABLE XXXI. Percentages of Males over ten years employed in various occupations.

Registration District	Regression coefficient, 1876-1906	Commercial or business clerks (v, 2)	Conveyance (vi)	Mining (ix, 1)	Iron and steel engineering and machine making, tools, arms, metal trades, etc. (x)	Ships and boats (x)	Building (xii)	Wood, furniture (xiii)	Brick, glass, etc. (xiv)	Chemicals, etc. (xv); skins, etc. (xvi)	Paper, prints, etc. (xvii)	Dress (xix)	Food, lodging, etc. (xx)	Other occupations
Durham County .. .. .	-.166	1.6	9.3	23.1	12.4	6.2	7.2	1.1	1.3	.8	.7	1.5	4.2	—
(i) Darlington .. .. .	-.258	2.4	12.9	.0	25.2	.0	12.2	1.9	.4	.7	1.5	2.5	5.3	20.4
(ii) Stockton with Hartlepool .. .. .	-.238	2.4	10.8	.0	23.4	14.8	8.0	2.2	.8	.4	.7	1.8	5.1	14.6
(iii) Durham .. .. .	-.231	1.0	4.3	37.2	5.9	.3	6.7	.9	1.2	.5	.9	2.1	4.6	19.4
(iv) Lanchester .. .. .	-.201	1.0	4.0	44.3	12.4	.0	5.9	.4	.4	.3	.8	1.2	3.7	12.5
(v) Teesdale with Weardale .. .. .	-.196	—	—	—	—	—	—	—	—	—	—	—	—	—
(vi) Auckland .. .. .	-.193	1.1	7.9	31.4	8.4	.0	7.3	1.5	1.3	.6	.7	2.4	5.1	16.6
(vii) Gateshead .. .. .	-.192	2.6	10.5	16.7	16.4	1.5	8.7	1.3	2.3	2.1	1.0	1.5	4.4	15.9
(viii) South Shields .. .. .	-.186	1.5	16.8	7.3	14.4	15.1	7.7	1.3	.9	1.1	.6	1.5	4.4	12.6
(ix) Chester-le-Street, Houghton-le-Spring, Easington .. .. .	-.121	.7	6.2	43.6	4.1	.2	7.4	.6	3.6	.4	.2	1.3	4.7	12.1
(x) Sunderland .. .. .	-.106	2.1	12.2	3.2	13.7	17.1	8.4	1.7	2.0	.5	.9	2.0	5.4	14.4
Totals .. .. .	—	1.9	11.1	13.6	15.4	8.7	8.1	1.5	1.4	.9	.8	1.7	4.8	15.0
Rural districts .. .. .	—	.8	5.7	46.0	5.0	.4	4.9	.3	1.0	.5	.3	.6	2.8	—



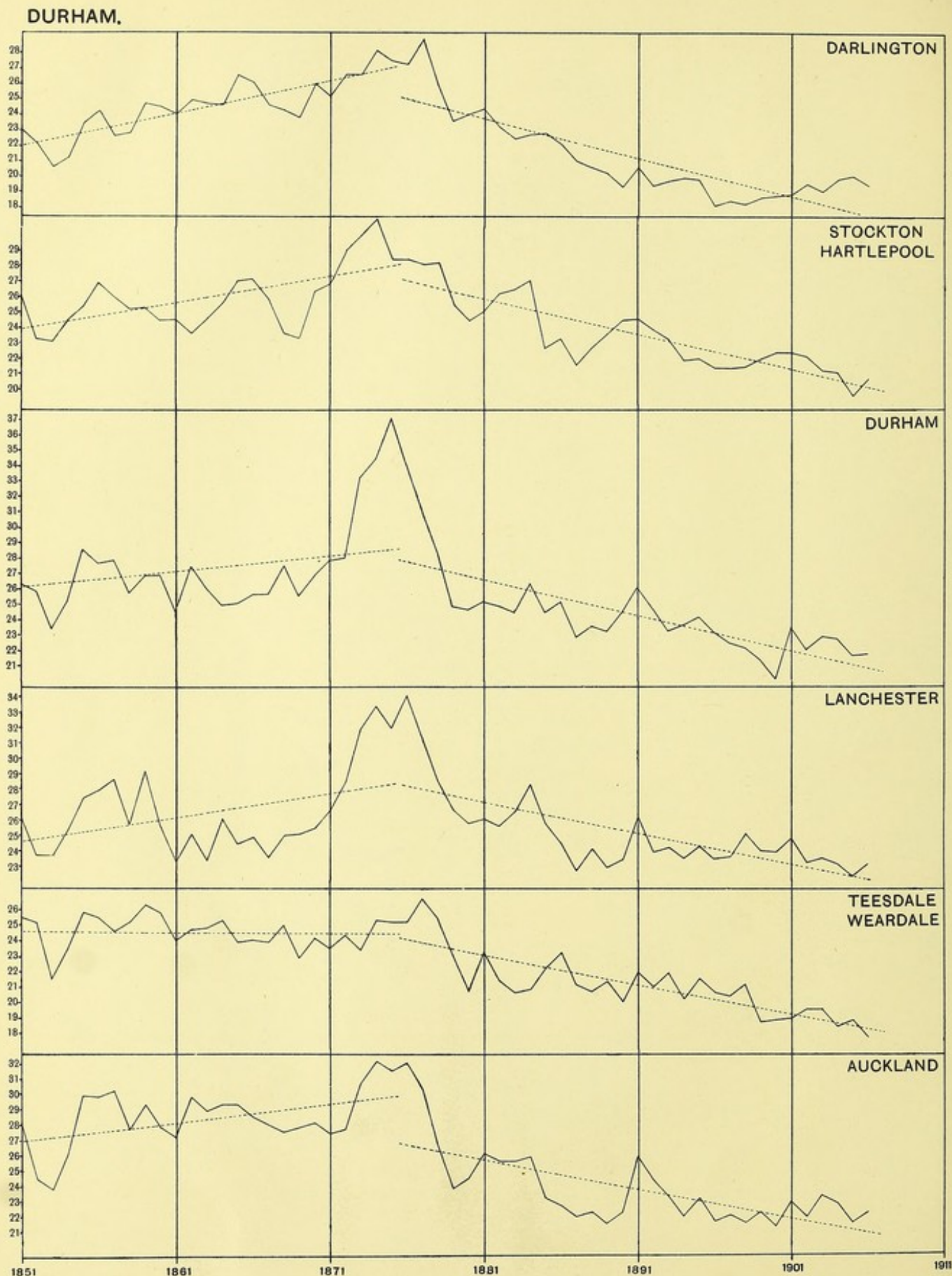


TABLE XXXII. Percentages of Females over ten years employed in various occupations.

Registration District	Regression coefficient, 1876-1906	Teaching (iii. 4)	Domestic, char-women, laundry (iv)	Paper, books, etc. (xvii)	Textile factories (xviii. 1-5)	Tailoresses, etc. (xix)	Food, lodging, etc. (xx)	All other occupations	Total occupied
Durham County .. .. .	- .166	1.3	7.9	.3	.5	3.0	1.7	2.8	17.5
(i) Darlington .. .. .	- .258	1.6	9.9	.3	2.0	4.3	2.3	4.0	24.4
(ii) Stockton with Hartlepool .. .. .	- .238	1.3	8.7	.4	.1	3.0	2.4	3.3	19.3
(iii) Durham .. .. .	- .231	1.3	8.5	.4	.6	3.5	1.6	2.7	18.6
(iv) Lanchester .. .. .	- .201	1.5	6.7	.5	.6	2.8	1.0	1.9	14.4
(v) Teesdale with Weardale .. .. .	- .196	—	—	—	—	—	—	—	—
(vi) Auckland .. .. .	- .193	1.4	7.0	.2	.1	3.3	1.4	2.6	16.1
(vii) Gateshead .. .. .	- .192	1.2	6.8	.7	.5	3.1	2.2	3.9	18.5
(viii) South Shields .. .. .	- .186	1.2	8.1	.2	.6	2.8	2.3	3.2	18.4
(ix) Chester-le-Street, Houghton-le-Spring, Easington .. .. .	- .121	1.3	6.1	.1	.3	3.1	1.1	2.3	14.3
(x) Sunderland .. .. .	- .106	1.2	9.2	.3	.7	3.3	2.3	4.1	21.0
Totals .. .. .	—	1.3	8.0	.4	.6	3.2	2.1	3.4	18.9
Rural districts .. .. .	—	1.2	6.9	.2	.1	2.7	.7	1.9	13.7

II. Durham. The Individual Registration Districts.

(i)

Darlington registration district includes the municipal borough of Darlington (44,511) and the rural districts of Darlington (9591) and Croft in Yorkshire (2107).

See Plate XV	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	2871	3641	6002	6737	6907	8139
No. of births .. .. .	661	873	1511	1643	1424	1529
No. of births per 100 married women (15-55)	23.0	24.0	25.2	24.4	20.6	18.8
Potential birthrate (Tait's) (15-55)* .. .. .		20.8	21.9	20.9	19.8	20.2

Regression coefficient (1876-1906), - .258 ± .019; (1851-1875), + .216 ± .017

Percentage of district included in tables of occupations, 79.2.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	30.6	31.1	24.2
Potential birthrate (15-45)	26.0	26.6	25.4

Darlington is a working class district, but, judging from the number of one and two-roomed tenements, etc., it is of a better social standing than the county

as a whole. There is no mining and the chief industries are engineering and machine making, iron and steel manufacture, etc. which employ 25·2 per cent. of the males. This area has most employment of women and the largest percentage of domestic servants in the county. The rise in the birthrate in Darlington until 1877 was well marked; the mean of the first 25 years from 1851 was 24·5, and after 1881 the birthrate fell much below that mean. Since 1896 the birthrate seems to have taken a slight upward turn. The change in the potential birthrate since 1881 is slight.

In Darlington borough 17·4 per cent. of the males are engaged in engineering and machine making, 7·8 per cent. in steel and iron manufacture and miscellaneous metal trades and 8·7 per cent. on the railway.

The rural district of Darlington is partly agricultural and partly residential. The parish of Aycliffe, however, is not in any sense a residential district, the inhabitants being farmers, labourers and many railway men. There seems to have been very little change in the birthrate during the last twenty years here and no restriction of the family is reported in this particular area of the rural district of Darlington.

## (ii)

*Stockton-on-Tees, Hartlepool and Sedgefield* registration districts are grouped and include the municipal boroughs of Stockton (51,478), Hartlepool (22,723) and West Hartlepool (62,627), the rural districts of Stockton (14,819), Sedgefield (20,355) and Hartlepool (2884), and part of the urban district of Spennymoor (1175): see p. 184.

See Plate XV	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	8197	14735	22352	17695	21980	26702
No. of births .. .. .	2139	3616	5993	4416	5386	5964
No. of births per 100 married women (15-55)	26·1	24·5	26·8	25·0	24·5	22·3
Potential birthrate (Tait's) (15-55)* .. .. .		21·3	23·2	22·2	22·1	21·6

Regression coefficient (1876-1906),  $-0.238 \pm 0.017$ ; (1851-1875),  $+0.171 \pm 0.028$ .

Percentage of district included in tables of occupations, 78·4.

Changes in boundaries of registration district: 1875, 2051 transferred to Stokesley; 47,142 transferred to Middlesbrough.

	1861	1871	1901
* No. of births per 100 married women (15-45)	31·6	22·3	27·6
Potential birthrate (15-45)	26·9	27·5	26·2

This district is a working class district, but the percentages of overcrowding, etc. are decidedly less than in the county as a whole. In social conditions Stockton, Hartlepool and Sedgefield are inferior to Darlington. The principal occupations are ship building which employs 14·8 per cent. of the men, engineering, iron and steel manufacture and miscellaneous metal trades, etc. which employ 23·4 per cent. of the males, and mining in the rural district of Sedgefield.

Here again there is practically no industrial employment of women and the percentage occupied as domestic servants is less than in Darlington. As in nearly

all the districts of Durham there was a marked rise in the birthrate lasting till the middle of the seventies, it was followed as usual by a fall. The potential birthrate was extraordinarily high in 1871, almost high enough to account for the rise in the birthrate between 1851 and 1876.

In Stockton 5.9 per cent. of the men are employed in iron and steel manufacture, 17.4 per cent. in engineering and machine making, 8.6 per cent. in miscellaneous iron trades and 10.0 per cent. in ship building. The rise in the birthrate from 1851 to 1875 is explained by the history of the trade of the district. The great change in the industries took place on the transition from wooden to iron ship building. The first iron ship building yard on the Tees was begun in 1852, the second in 1854, and the industry increased rapidly; the first blast furnaces were established in 1855, and the building of these blast furnaces appears to have been the chief cause of the local boom. There was an influx of stalwart iron workers from Wales and Staffordshire; many earned pounds a day and every kind of luxury was indulged in; these conditions probably reached a climax in the early seventies and during the decennium 1871 to 1881 the population of Stockton nearly doubled itself. Subsequent to these years there were strikes which were succeeded by periods of bad trade. In the year 1864 there were altogether nine iron ship building establishments at the Hartlepoons and on the banks of the Tees.

In the district the general impression is that the declining birthrate is due mainly to the intentional limitation of the family. Propagandism dealing more or less avowedly with this subject began to be active about forty years ago and we are informed that Mrs Besant visited the district and lectured to women, while literature dealing more or less directly with the subject began to be circulated. Later so-called "Professors of Phrenology" lectured to women on such subjects as "Love, Courtship and Marriage." The more suggestive advertisements in newspapers seem to have appeared about thirty-five years ago. It is stated by a local correspondent that the increasing practice of midwifery by women has coincided with knowledge about preventive measures to a degree that suggests cause and effect. There is a general idea that the fall in the birthrate was noticeable first among the middle classes and that it followed afterwards among classes both higher and lower in the social scale.

In Hartlepool engineering, which employs 26.9 per cent. of the men, and ship building, which employs 20.9 per cent., are again the chief industries; 6.7 per cent. of the males are engaged as dock labourers, boatmen, etc.

In West Hartlepool ship building is the chief industry and employs 16.6 per cent. of the males, while engineering, etc. employs 9.5 per cent. and iron and steel manufacture 3.6 per cent.

The rural district of Stockton-on-Tees is an agricultural and residential district; the residential class consists of middle class and working class people engaged in the works at Stockton. The working classes are well paid and when trade is good and free from strikes they have sufficient money for their needs. The changes in the industries of the district have involved increased employment

principally in the different branches of the iron trade. Interference with procreation has been practised in the middle classes for many years, but was not observed among the working classes until after the trial of Mr Bradlaugh and Mrs Besant. Since that date advertisements have regularly appeared in almost all papers, both the local and those with a wider circulation. Preventive practices are now very common, and it is nothing unusual to find a married couple who have settled that they will prevent procreation altogether.

Sedgefield rural districts include 22 townships, only five of which in 1901 had over 100 inhabitants; four out of the five are mining districts, and in the township of Ferryhill there has been an extraordinary increase in the population during the last ten years, the increase being from 3123 in 1901 to 10,138 in 1911. The whole district of Sedgefield is mainly a mining area with some agriculture and quarrying in two and to a certain extent in a third of the small townships. The percentage of tenements of less than five rooms is 76.7, the highest in the registration district, and the percentages of overcrowding and of one and two-roomed tenements are 23.2 and 23.9 respectively.

## (iii)

*Durham* registration district includes the rural district of Durham (28,461), the municipal borough of Durham (14,679), the urban districts of Willington (7887), and Brandon and Byshottles (15,573), and part of the district of Spenny-moor (7652) (see Auckland in Section (vi), p. 184).

See Plate XV	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	5181	6269	7581	9510	9948	11053
No. of births .. .. .	1363	1535	2110	2390	2574	2585
No. of births per 100 married women (15-55)	26.3	24.5	27.8	25.1	26.0	23.4
Potential birthrate (Tait's) (15-55)* .. ..		22.3†	22.4†	22.1	21.7	21.0

Regression coefficient (1876-1906),  $-.231 \pm .024$ ; (1851-1875),  $+.109 \pm .051$ .

Percentage of district included in tables of occupations, 61.7.

Changes in boundaries of registration district: Up to 1875 Durham is taken as consisting of the registration district of Durham less the sub-districts of Tanfield and Lanchester.

	1861	1871	1901
* No. of births per 100 married women (15-45)	29.6	34.4	29.8
Potential birthrate (15-45)	27.0	27.0†	26.1

† Based on whole district of Durham before Lanchester was separated.

Durham is a working class district and above all a mining district, 37.2 per cent. of the males being employed in the mines; the percentages of one and two-roomed tenements, etc. are nearly equal to those of the county as a whole. The rise in the birthrate of this district in the seventies was extraordinarily great, being due to the influx into the county of miners from other parts of the British Isles, but the difficulty of estimating the number of married women must also be taken into account. In the 1881 census the percentage of males who were not born in Durham county was 34.2 which shows what an influx from other parts

of the country must have taken place. The actual birthrate in 1861 was low and it will be seen from the table above that it was not till after 1891 that the birthrate fell markedly below its values for the years 1851 and 1861.

The borough of Durham contains for a city a good proportion of the professional classes, a large number of small clerks and the usual proportion of shopkeepers. There are no factories to speak of; the largest is an organ factory reported to have 60 employees. The indigent element in the borough is composed of miners of the poorer type and labourers and bank top workers who are unable to obtain the free houses provided by the pit proprietors. Durham also contains a considerable number of Irishmen and tramps and has large and disorderly lodging and tenement houses. There was formerly a carpet factory which employed 600 hands, but it was reduced ten years ago to 300 and nothing now remains but one building where 30 or 40 people are said to be employed.

The rural district consists of pit villages, sordid and brutalised, with nothing to raise them except the church, chapel and co-operative store. Some of the people are religious, and there is a strain of the manly virtues, but morality generally seems to be at a primitive standpoint. The pit proprietors supply free houses at the pits, but the supply is generally short and those are favoured who are good workers, or even more those who have many boys, for there has been, according to our correspondent, a boy famine rendered more acute by the 8 Hours' Act\*.

There is no doubt that restriction of the family has been publicly urged in Durham; men and women formerly stood like cheap-jacks on platforms in the market-place and openly sold appliances for preventing conception, and although through the influence of the clergy this has been stopped by the police, literature which advertises every sort of preventive, is still (1913) exposed on a bookstall.

The inhabitants of Willington are occupied in coal mining and coke making; 48.2 per cent. are so employed. The conditions of labour have much improved during the last fifty years and the hours of working are less. The sanitation of the district has improved greatly and the home surroundings are more comfortable. Apparently there has been no very active propagandism for the limitation of the family and the fall seems to have occurred in all classes. Illegitimacy is probably less†. There is a widespread notion that parents ought not to have a large number of children, but our informant cannot state whether this is due to the cost or to the trouble involved in the up-bringing or to both.

The labour in Brandon is coal mining and coke burning, 59.0 per cent. of males over ten being so engaged. When the birthrate is based on the estimated population, without allowing for marriage rate or age distribution, there appears to be no fall in this district between 1899 and 1908‡.

The men in Spennymoor are for the most part engaged in and about the

\* We are locally informed that boys rarely become miners unless they come of a mining family.

† Here, as elsewhere, it may well be doubted whether less illegitimacy means less immorality. It may only denote increased knowledge of the methods for preventing conception.

‡ Annual Report of the Brandon and Byshottles Urban District Council, 1909.



mines; 31.9 per cent. of males over 10 years are employed as miners. Until about ten years ago there were large steel and iron works which are now closed down; in 1901 they employed 7.2 per cent. of the males of the district. Wages are high and many of the men are married when about 20. There seems to be very little limitation of the family in this district and, with the exception of advertisements in the newspapers, no active propagandism.

(iv)

*Lanchester* registration district includes the rural district of Lanchester (27,252), and the urban districts of Benfieldside (7457), Consett (9694), Annfield Plain (12,481), Stanley (13,554), Tanfield (8276), and Leadgate (4657), and a small part of Tow Law (186).

See Plate XV	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	2899	4106	5969	8335	9385	12472
No. of births .. .. .	758	951	1579	2169	2449	3086
No. of births per 100 married women (15-55)	26.1	23.2	26.5	26.0	26.1	24.7
Potential birthrate (Tait's) (15-55)* .. ..		22.3†	22.4†	22.1	22.1	21.9

Regression coefficient (1876-1906),  $- .201 \pm .024$ ; (1851-1875),  $+ .158 \pm .046$ .

Percentage of district included in tables of occupations, 61.8.

Changes in boundaries of registration district: For the curves from which the regression coefficients are worked Lanchester, up to 1875, consists of the registration sub-districts of Tanfield and Lanchester. 1897, 1037 transferred from Chester-le-Street.

	1861	1871	1901
* No. of births per 100 married women (15-45)	26.7	32.7	30.7
Potential birthrate (15-45)	27.0†	27.0†	26.1

† Based on whole district of Durham before Lanchester was separated.

Lanchester is a working class district, the chief occupation being mining, which occupies 44.3 per cent. of the males in the urban districts; 12.4 per cent. are engaged in iron and steel manufacture and there is some engineering and machine making. There is no industrial employment of women and only 14.3 per cent. are employed at all. The chief change in the industries has been the increase of mining at the expense of agriculture. The percentage of tenements of less than five rooms is high, but overcrowding and the percentage of one and two-roomed tenements are below the average for the county. Lanchester showed the very high birthrate in the seventies which occurred in all the mining and iron districts, followed by a very low rate in the eighties; the birthrate from about 1881 to 1891 remained fairly steady. The potential birthrates for 1861 and 1871 for Lanchester alone cannot be accurately calculated as it was not then a separate registration district; it has changed very little since 1881.

The urban districts of Lanchester can be divided naturally into two portions; in the one, including Consett and Benfieldside, the chief industry is iron and steel manufacture in which 34.2 and 23.4 per cent. respectively are employed. In the other, including Annfield Plain, Tanfield and Stanley, the chief industry is mining which employs 60.7, 57.4 and 64.7 per cent. of males in these districts respectively.

There is some mining also in Consett where 7.2 per cent. of the men are employed and in Benfieldside where 12.0 per cent. are employed. An interesting fact showing the difference in housing conditions in the two areas may be noted. In the two districts in which iron manufacturing is the chief industry, there is overcrowding (more than two people per room) in 29.9 per cent. of the tenements under five rooms, but in the three districts in which mining is the chief industry the percentage is 39.7. The proportion of two-roomed tenements shows the same difference; in the iron manufacturing district there are 30.6 per cent. and in the mining district 43.4 per cent. of these smaller tenements.

In Lanchester rural district the bulk of the population is engaged in coal mining and this element has increased during the last 30 years, while the agricultural population has been practically stationary. The residential portion is small and has not varied much. There does not seem to be any abnormal amount of restriction of the family in vogue in this rural district; we make this statement on the authority of one who has practised in the area for many years.

(v)

*Teesdale with Weardale* registration districts have been combined and include the rural districts of Barnard Castle (10,924), Startforth (5009) and Weardale (9710), and the urban districts of Barnard Castle (4421) and Stanhope (1964), and nearly the whole of Tow Law (4185).

See Plate XV	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	4373	4925	5155	4872	4694	4851
No. of births .. .. .	1115	1182	1212	1128	1030	916
No. of births per 100 married women (15-55)	25.5	24.0	23.5	23.2	21.9	18.9
Potential birthrate (Tait's) (15-55)* .. ..		20.5	20.4	20.0	19.6	19.6

Regression coefficient (1876-1906),  $-.196 \pm .016$ ; (1851-1875),  $-.011 \pm .015$ .

Percentage of district included in tables of occupations, none.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	31.0	30.6	24.6
Potential birthrate (15-45)	25.9	25.9	24.8

Except for Sunderland, this is the only district in Durham which shows no rise in the birthrate between 1851 and 1875. It is mainly an agricultural district. The percentage of tenements of less than five rooms, the percentage of overcrowding in those tenements and the percentage of one and two-roomed tenements are all well below the average for the county. The percentage of paupers, the number of separate families in a house and the percentage of general labourers in 1871 were all below the average for the county. The potential birthrate has been falling since 1861.

The labour in the Barnard Castle and Startforth rural districts is agricultural with sheep rearing on the outer moorland farms. The milk trade has developed

recently and large quantities of milk, cheese and butter are sent to the neighbouring coast towns. In the Barnard Castle urban district there is no real local industry, and the town is kept up by cattle and sheep sales and the buying and selling of the surrounding farm products. Carpet weaving was a considerable industry many years ago, but it has now completely ceased; there is still one flax mill. No active propagandism for the limitation of the family is reported, but it is locally considered that the reduction of the birthrate is due to the increased facilities (possibly due to advertisements) for interference with natural conception, to the growing dislike even fear of maternity and also to the gradually increasing impoverishment of the neighbourhood, due apparently to want of capital and to outside competition. This applies to all classes of the community.

## (vi)

*Auckland* registration district includes the rural district of Auckland (51,505), the urban districts of Bishop Auckland (11,969), Shildon and East Thickley (11,759), and Crook (11,471), and part of the urban district of Spennymoor (7838): see p. 178.

See Plate XV	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	4550	7978	10703	12761	13411	14549
No. of births .. .. .	1272	2168	2938	3336	3472	3343
No. of births per 100 married women (15-55)	28.0	27.2	27.4	26.1	25.9	23.0
Potential birthrate (Tait's) (15-55)* .. .		23.3	22.8	22.7	22.3	21.7

Regression coefficient (1876-1906),  $-0.193 \pm 0.024$ ; (1851-1875),  $+0.125 \pm 0.021$ .

Percentage of district included in tables of occupations, 45.5.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	32.6	33.6	28.5
Potential birthrate (15-45)	27.6	27.4	26.4

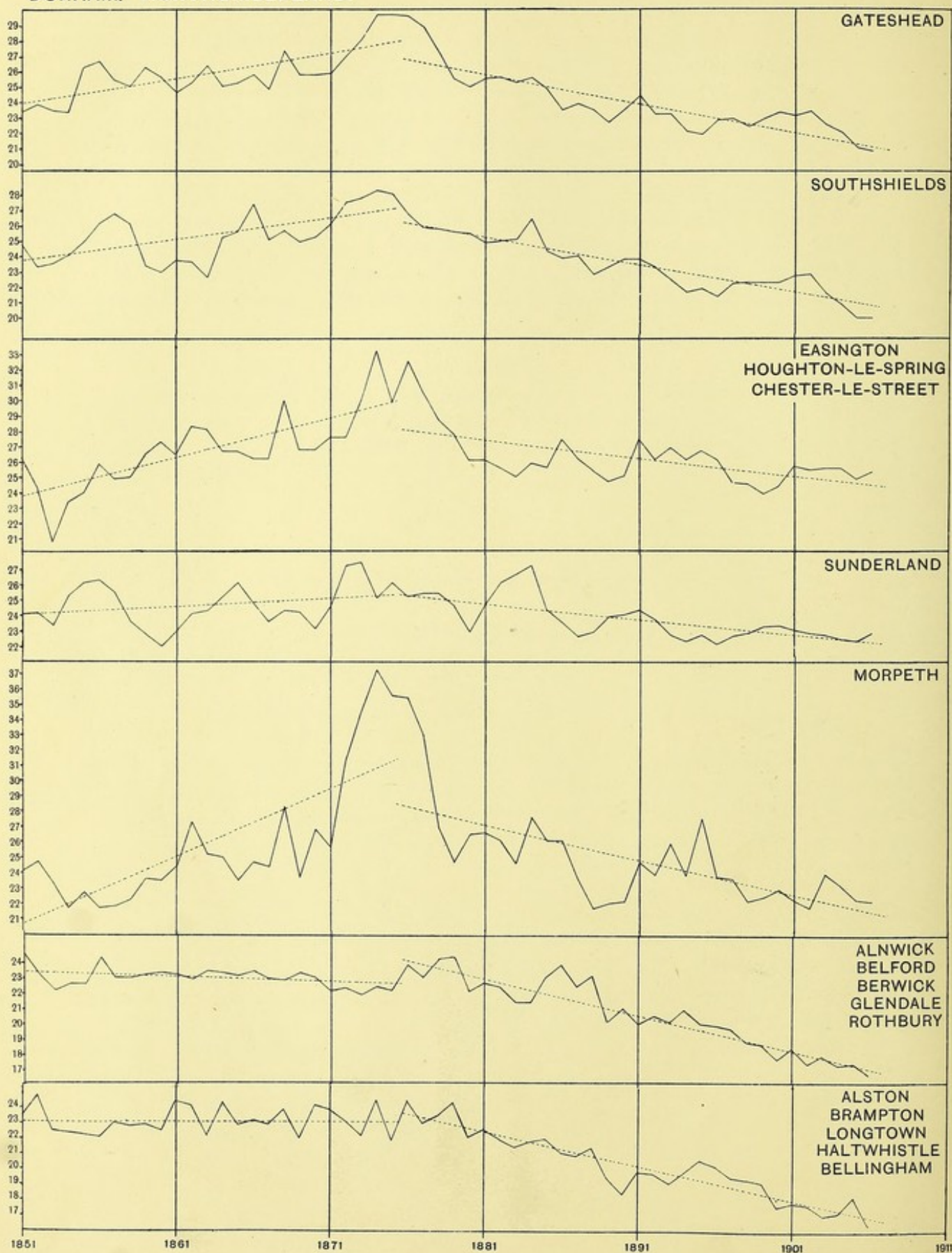
Auckland is a working class mining district; the percentage of tenements of less than five rooms is 79.6, which is above the average for the county; but the other percentages, high values of which mark bad social conditions, are, except the percentage of general labourers in 1871, below the average for the county. The percentage of women employed as domestic servants in the urban districts is below the average; in the urban districts 31.4 per cent. of males are employed in mining and 8.4 per cent. in iron and engineering works, etc. Changes in the age distribution of married women are responsible for a loss of 1.1 births since 1871, while the actual loss between 1876 and 1906 is 6.0 births. The birthrate between 1873 and 1877 was above the average, there was a rapid drop till 1879 and since then the fall has been very gradual. The potential birthrate was very high in 1861. Auckland rural district is mainly engaged in mining, but there is a small proportion of general and farm labourers.

Bishop Auckland depends principally upon the dense mining population surrounding it, which it supplies with all kinds of commodities; 14.7 per cent. of the men are employed in mining; the only industries proper are two iron works,



BIRTHS PER 100 MARRIED WOMEN AGED 15-55

DURHAM. NORTHUMBERLAND.



one of which is mainly engineering; in engineering 5·6 per cent. of the males are employed. There appears to be no evidence of active propagandism for the limitation of the family, but, apart from deliberate restriction in this district, nothing has been observed which would account for the fall.

Mining is the chief industry in Shildon, Crook and Spennymoor, employing 33·3, 46·1 and 31·9 per cent. in the three districts respectively. In Shildon and East Thicky 13·4 per cent. of the males are employed on the railway and 7·8 per cent. in engineering works. For further remarks on Spennymoor reference can be made to Durham registration district (p. 181).

## (vii)

*Gateshead* registration district includes the county borough of Gateshead (109,888) and the urban districts of Felling (22,467), Whickham (12,852), Ryton (8452), and Blaydon (19,623).

See Plate XVI	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	7220	9026	12435	16077	19746	27081
No. of births .. .. .	1690	2230	3225	4103	4811	6264
No. of births per 100 married women (15-55)	23·4	24·7	25·9	25·5	24·4	23·1
Potential birthrate (Tait's) (15-55)* .. .. .		22·0	22·5	22·0	21·9	21·9

Regression coefficient (1876-1906),  $-0.192 \pm 0.014$ ; (1851-1875),  $+0.167 \pm 0.020$ .

Percentage of district included in tables of occupations, all.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	30·6	31·7	28·4
Potential birthrate (15-45)	26·7	27·0	26·6

Gateshead is a working class district with percentages of overcrowding, etc. greater even than the averages for the county. The chief occupations are mining which occupies 16·7 per cent. of the males and engineering which occupies 16·4 per cent. of the males (a small proportion of these are engaged in iron and steel manufacture). There is practically no industrial employment of women. Gateshead shows the same rise till the middle of the seventies, which is noticeable throughout Durham. There has been practically no change in the age distribution of married women.

Some discussion of the limitation of the family in Gateshead will be found in our section dealing with Newcastle: see p. 200.

(viii)

*South Shields* registration district includes the county borough of South Shields (97,263), the municipal borough of Jarrow (34,295), the urban district of Hepburn (20,901) and the rural district of South Shields (14,385).

See Plate XVI	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	5688	7376	12345	16517	21979	26101
No. of births .. .. .	1412	1759	3223	4105	5240	5920
No. of births per 100 married women (15-55)	24.8	23.8	26.1	24.9	23.8	22.7
Potential birthrate (Tait's) (15-55)* .. ..		22.4	23.2	22.6	22.0	21.9

Regression coefficient (1876-1906),  $-0.186 \pm 0.009$ ; (1851-1875),  $+0.138 \pm 0.024$ .

Percentage of district included in tables of occupations, 91.4.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	29.2	31.2	28.0
Potential birthrate (15-45)	26.8	27.2	26.4

South Shields is a working class district with larger percentages of overcrowding, etc. than the county as a whole. The average number of families to a house is the greatest in the county. Ship building, employing 15.1 per cent. of the males, is a chief industry; 16.8 per cent. are employed in conveyance of men and goods and 14.4 per cent. in iron and engineering works, etc. The rise in the birthrate during the first 25 years is well marked, but can be partly accounted for by changes in the age distribution of married women, and the fall since 1875 is relatively slight. The average birthrate for the first 25 years was 25.4 and for the succeeding 31 years was 23.4. The chief industries in the county borough of South Shields are ship building and engineering with some mining and shipping of coal. 10.3 per cent. of the men are employed in engineering, 8.5 are engaged in ship building and 8.0 in mining. It is not possible to separate those employed in shipping coal, but 22.9 per cent. are employed in conveyance of men and goods in South Shields and only 9.3 in the whole of Durham.

Three important trades have disappeared from South Shields during the last fifty years, namely salt boiling, which was carried on till about 1860, an extensive chemical industry which employed many people between 1880 and 1890†, and four out of five large works manufacturing glass bottles and plate glass. A very important change was the introduction of iron ship building about 1850, which had practically destroyed all wooden ship building by 1870. The men employed in wooden ship building were carpenters, mostly steady, well-to-do and middle aged men. From 1850 to 1880 the town was very prosperous, increased rapidly and proved attractive to young healthy country-bred people who could earn high wages.

† The extensive nature of this industry may be judged by the fact that the medical man who looked after the workpeople's health alone received £800 per annum.

Neo-Malthusian teaching excited considerable attention in the seventies and books, professing to be medical and dealing largely with sexual subjects, are now constantly imported by seamen from America. The birthrate has fallen most markedly among the well-to-do, but the decline is spreading to the superior artisan class.

Jarrow is entirely a working class community. Its rise dates from 1851 when ship building was started there; prior to that date it was a small colliery village. Ship building is still the principal industry and employs 25·7 per cent. of males over 10 years of age and the other chief industries, i.e. rolling mills, blast furnaces, engine works, and ship repairing docks, are really adjuncts to the ship building; 17·5 per cent. are employed in engineering and boiler making. The population of this district is to a large extent an unstable one, as when the ship building trade is brisk there is a large influx of people and a large exodus when trade is bad. There is a very large proportion of unskilled labour. There used to be some chemical works, but they disappeared many years ago.

There seems to have been no especially active propaganda for the limitation of the family carried on in this district. There were occasional visits of Mrs Besant and others to the district, but it is difficult to say how far this had an influence. The fall is much more marked in the middle than in the poorer classes; among the ordinary working people such teaching seems to have had no influence.

Hepburn is also a working class district; 26·2 per cent. of the males are engaged in ship building, 15·7 per cent. in mining and 10·9 per cent. in engineering works. There are also alkali and copper works.

(ix)

*Easington, Houghton-le-Spring and Chester-le-Street* registration districts are grouped and include the rural districts of Easington (40,562), Houghton-le-Spring (19,316), and Chester-le-Street (60,552), and the urban districts of Seaham Harbour (10,163), Houghton-le-Spring (7858), and Hetton (13,673).

See Plate XVI	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	9322	11712	14378	17984	20120	23235
No. of births .. .. .	2452	3099	3971	4688	5517	5966
No. of births per 100 married women (15-55)	26·3	26·5	27·6	26·1	27·4	25·7
Potential birthrate (Tait's) (15-55)* .. .. .		22·2	22·4	22·6	22·4	22·2

Regression coefficient (1876-1906), -·121 ± ·018; (1851-1875), +·259 ± ·029.

Percentage of district included in tables of occupations, 20·8.

Changes in boundaries of registration district: 1897, 1037 transferred to Lanchester.

	1861	1871	1901
* No. of births per 100 married women (15-45)	32·8	34·4	31·5
Potential birthrate (15-45)	27·0	27·3	26·3

This district is also a working class one, with large percentages of tenements of less than five rooms, of overcrowding and of one and two-roomed tenements,



but the percentages of paupers and general labourers are below the average. The chief occupation is mining, but percentages cannot be given as only 20·8 per cent. of the population are included in the tables. The birthrate was extraordinarily high in the seventies; there was a rapid fall towards the end of the seventies, but since about 1881 the birthrate shows very little change. The mean birthrate from 1851 to 1875 inclusive was 26·8, and from 1876 to 1906 inclusive was 26·2, a high average birthrate. Changes in the ages of married women account for practically nothing of the loss of births.

Easington rural district is essentially a mining district, and about nine pits were in full swing raising coals in 1840. Later, miners came into the district from Yorkshire, Lancashire and Cornwall. All the mines have been extended and developed. In 1870 the boom in the coal trade resulted in high wages. £1 a day was not uncommonly obtained by a workman and the average was about 7s. a day of eight hours. Wages fell towards the end of the seventies to a rate of 4s. 2d. a day, but were again high in 1900 and now average 6s. 2d. per day of seven hours, besides a free house, rates, coals and sometimes a garden. The stamina of the people is generally good, miners' phthisis and tuberculosis among adults being rare. A deficiency of food in any class is unknown. Less than a fourth are teetotal, and a fourth drink to excess at the fortnightly pay. Cleanliness of person is customarily good, but the homes, though usually fair, exhibit every gradation of cleanliness. Generally the people are quiet and law abiding, indeed there is an absence of crime which, considering the population, is rare. Emotion is the great moving power. Since 1880 a taste for expensive and gaudy clothes has been growing among males and females. Before 1870 there was no sanitation, now a fairly satisfactory condition obtains. The houses are well ventilated and there is no overcrowding in the area. Formerly there was a chronic dearth of drinking water, now it is abundant in quantity and quality. Marriage is generally early and almost universal. Prevention of conception is not as yet actively practised, but it is the subject of conversation among the women, who will talk freely with their medical men about it. The desire for dress and comfort inclines them to the consideration of preventive measures.

Houghton-le-Spring rural district is also a mining district, the Lambton Collieries being the greatest employers of labour, and since 1896 the number of employees has been steadily increasing and many young married men have entered the district.

Chester-le-Street rural district is also a mining district; probably about 75 per cent. of the male *working* population is employed in coal mining and coke making. Brick making employs a few hands and there is a little agricultural labour. There is a growing tendency to restrict the number of births in this district; there is said to be no organised propaganda for the restriction of conception, except the usual advertisements in the weekly papers, but there appears to be increasing knowledge of the use of intravaginal douches, sheaths and onanism. There are active endeavours to produce abortion, in some cases by use of pennyroyal, and lead plasters applied to the abdomen are much used in this

district. The multiplicity of cheap amusements which exist in every pit village, cheap excursions to neighbouring towns, etc. cause a desire among young people to be free from the encumbrance of children. The better the social and financial position of the pitman, the smaller the family, and the small family of the thrifty man is recognised generally as due to design, not to accident.

Seaham Harbour is mainly a coal mining district and this occupation employs 20·7 per cent. of the males, while bottle making employs 9·9 per cent.

Houghton-le-Spring and Hetton urban districts are essentially mining districts. In Hetton 58·2 per cent. of the men are engaged in the mines and in Houghton-le-Spring 48·6 per cent.

(x)

*Sunderland* registration district includes the county borough of Sunderland (146,077), the rural district of Sunderland (22,786), and the urban district of Southwick (12,643).

See Plate XVI	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	11807	14719	18045	21652	24434	28020
No. of births .. .. .	2845	3390	4444	5350	5926	6431
No. of births per 100 married women (15-55)	24·1	23·0	24·6	24·7	24·3	23·0
Potential birthrate (Tait's) (15-55)* .. .. .		22·0	22·4	22·2	21·9	21·7

Regression coefficient (1876-1906),  $-0106 \pm 012$ ; (1851-1875),  $+0055 \pm 0024$ .

Percentage of district included in tables of occupations, 87·4.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	28·3	29·8	28·5
Potential birthrate (15-45)	26·6	26·7	26·5

Sunderland is a working class district with a greater amount of overcrowding, etc. than in the county as a whole; the chief occupations are ship and boat building, which employ 17·1 per cent. of the males, engineering, iron works, etc. which employ 13·7 per cent., and work in the docks, which is included under conveyance of men and goods wherein 12·2 per cent. of the males are engaged. Since 1861 there has been no substantial fall in the birthrate and no change in the age distribution of married women. As in other ship building districts, like Stockton, Hartlepool and South Shields, the high rate in the seventies is less marked than in the mining districts; the rise during the years from 1851 to 1875 which is noticeable in the other ship building towns is of no practical importance in Sunderland.

In Sunderland county borough the labouring population consists chiefly of ship-yard workers, engineers and boiler makers, some miners and men engaged in loading and discharging ships in the docks; 16·4 per cent. are engaged in the first named, 12·1 are in engineering works, and 2·5 per cent. in mines. It is not possible to separate dock workers from the general group of those engaged in the conveyance of men, goods, etc., so the actual percentage cannot be given. The only change that has taken place in the industries during the last fifty years

has been the introduction of iron ship building in place of wooden ship building. The sale of various abortifacients is pushed in the usual cryptic manner by advertisements of "steel pills for female irregularities," etc., and a good deal of lead plaster is sold by chemists. We are told that quinine pessaries are advertised in the windows of two patent medicine drug stores and that on the box containing them is a picture of a pair of obstetric forceps, indicating from what the pessaries will save the purchaser. The diminution of the birthrate has occurred rather amongst the well-to-do than the labouring classes.

In Sunderland rural district the population consists largely of coal miners, but there are in addition some agricultural labourers.

In Southwick the ship yards employ 24.0 per cent. of the males, engineering and boiler making employ 15.1 per cent. and mining employs 11.2 per cent.

### I. *Northumberland.*

(Plates XVI, XVII, XVIII and XVIII *bis.*)

#### I. *The County as a Whole.*

*Northumberland.* The population of Northumberland numbered 603,498 in 1901 and of these 478,356 are included in the urban districts and 124,763 in the rural districts which thus contain 20.7 per cent. of the entire population.

The chief industries are :

(1) Mining, which occupies 16.0 per cent. of all males over 10 in the county\* and 26.9 per cent. in the so-called rural districts; the chief centres are Morpeth and Castle Ward.

(2) Engineering and machine making, which employ 9.8 per cent. of all the males, the chief centres being Newcastle and Tynemouth; engineering works in Northumberland cannot be separated from engineering works in Durham, but if we consider the counties together we see from the Board of Trade Report that in every branch of the trade the workers (except turners, who, when working as piece workers, earn just below the average) earn wages above the average for the United Kingdom and in most branches piece workers in these districts earn the highest wages of any district in the country; the average weekly wage for all workers, working full time, was 35s. 8d.†

(3) Ship and boat building, which occupies 4.6 per cent. of all the males; the chief centre is in Tynemouth; for full time in Northumberland and Durham the average weekly wage was 40s. 5d.

(4) Agriculture, which employs 5.9 per cent. of all males in the whole county and 23.3 per cent. in the rural districts.

\* County does not here include Alston, Brampton and Longtown which are included in Cumberland.

† See Appendix I.

There is practically no employment of women except as domestic servants, etc. or in agriculture; 10.9 per cent. of women are employed in domestic service in the county and 13.0 per cent. in the rural districts. It will be noticed that the rural districts are engaged in mining as well as agriculture and, as we shall see in the descriptions of the individual registration districts, mining has been increasing at the expense of agriculture very markedly during the last fifty years.

Housing conditions in Northumberland differ very widely from the conditions in Lancashire, Cheshire, Yorkshire and Cumberland; we find a very high percentage of tenements of less than five rooms which we should probably expect in a county which is largely a working class county, but we have also a percentage of one and two-roomed tenements and an amount of overcrowding which are both extraordinarily high for the north of the Humber; there is overcrowding in 29.3 per cent. of tenements of less than five rooms and there are 36.2 per cent. of tenements of one and two rooms.

It has been necessary to group together rather freely districts in Northumberland; and further three districts from Cumberland—Alston, Brampton and Longtown—have been combined with Haltwhistle and Bellingham; this has caused no difficulties except in the tables of occupations where, in the percentages given for the county, these three districts have been omitted. The only districts for which occupational statistics have real value are Morpeth, Newcastle and Tynemouth; in the other cases not half the district is included.

There have been no significant changes in the boundaries of the registration districts.

*The percentages of the population living in rural districts and in urban districts of less than 5000 inhabitants and consequently omitted from the tables of occupations of men and women are given below.*

Alnwick, Belford, Glendale, Rothbury, Berwick .. .. .	68.1
Morpeth .. .. .	30.3
Haltwhistle, Bellingham, Alston, Brampton, Longtown .. .. .	All
Castle Ward and Hexham .. .. .	55.0
Newcastle .. .. .	None
Tynemouth .. .. .	13.7

Again we realise how unfortunate it is that occupational statistics are not given for the so-called rural districts.

The extraordinary rise in the birthrate in the seventies which is to be seen in Durham is not so marked in Northumberland, except in Morpeth, which is essentially a mining district, and there the rise can be accounted for by the coal boom in the early seventies; we miss badly a census return between 1871 and 1881 as the extraordinary rise in the seventies is most certainly exaggerated; the curve in Morpeth is strikingly like that for the Durham registration district, and the fall in the birthrate is almost identical, although the rise in Morpeth in the first twenty-five years from 1851 is much more marked. All these districts, except the rural districts grouped under Alnwick and under Alston, show an upward tendency from 1851 to 1876. Changes in the potential birthrate between 1871 and

1901 have been very slight, and in three out of six districts the potential birthrate was higher in 1901 than in 1871; this can probably be accounted for by the change of the district from an agricultural to a mining area.

TABLE XXXIII. *Northumberland. Birthrates.*

See Plates XVI and XVII	Regression coefficient, 1876-1906	Actual change in no. of births in 31 years	Mean birth-rate, 1851-1875	Percentage change in no. of births	Potential birth-rate, women (15-55)		Potential change in no. of births in 30 years	See page
					1871	1901		
(i) Alnwick, Belford, Glendale, Rothbury, Berwick .. ..	- .236	- 7.3	23.0	32	18.3	18.7	+ .4	194
(ii) Morpeth .. .. .	- .236	- 7.3	25.9	28	21.3	21.9	+ .6	195
(iii) Haltwhistle, Bellingham, Alston, Brampton, Longtown ..	- .224	- 6.9	23.1	30	19.2	18.8	- .4	197
(iv) Castle Ward and Hexham ..	- .191	- 5.9	23.8	25	19.7	20.1	+ .4	197
(v) Newcastle .. .. .	- .191	- 5.9	23.8	25	22.2	21.6	- .6	198
(vi) Tynemouth .. .. .	- .143	- 4.4	24.8	18	22.2	21.9	- .3	203

TABLE XXXIV. *Social Conditions.*

Registration District	Regression coefficient, 1876-1906	Percentage of overcrowded tenements of less than five rooms	Percentage of one and two-roomed tenements	Percentage of less than five rooms	Paupers per 1000 of the population	No. of families or separate occupiers in one house	No. of persons per acre	Percentage of general labourers, 1871 census
(i) Alnwick, Belford, Glendale, Rothbury, Berwick ..	- .236	30.24	43.55	75.8	3.96	1.1194	.12	6.44
(ii) Morpeth .. .. .	- .236	32.81	38.30	82.1	2.21	1.0723	.57	4.63
(iii) Haltwhistle, Bellingham, Alston, Brampton, Longtown	- .224	19.72	23.65	56.2	5.59	1.0128	.06	7.80
(iv) Castle Ward, Hexham ..	- .191	26.27	29.77	68.5	2.65	1.0731	.23	5.95
(v) Newcastle .. .. .	- .191	28.61	35.01	79.2	4.25	1.6666	33.04	11.62
(vi) Tynemouth .. .. .	- .143	30.88	38.96	80.9	3.75	1.4183	4.36	10.74
County* .. .. .	- .180	29.25	36.18	77.0	3.80	1.3409	.47	9.05

\* Including three districts from Cumberland—Alston, Brampton and Longtown.

TABLE XXXV. Percentages of Males over ten years employed in various occupations.

	Regression coefficient 1876-1906	Commercial and business clerks (v. 2)	Conveyance (vi)	Agriculture (viii)	Coal mining (ix. 1)	Engineering and machine making (x. 3)	Ships and boats (x. 8)	Building (xii)	Wood, furniture, etc. (xiii)	Brick, cement, etc. (xiv)	Skins, leather (xvi)	Paper, prints, etc. (xvii)	Dress (xix)	Food, lodging (xx)	Other occupations
Northumberland County*	-.180	2.3	9.8	5.9	16.0	9.8	4.6	8.0	1.4	.8	.9	.8	1.0	4.9	—
(i) Alnwick, Belford, Glendale, Rothbury, Berwick .. .. .	-.236	1.6	13.4	5.6	1.3	4.1	.2	9.4	3.4	.1	.5	1.2	4.0	9.2	28.8
(ii) Morpeth .. .. .	-.236	.4	5.0	2.3	54.8	2.8	.1	4.3	.3	.7	.2	.3	1.7	4.0	8.9
(iii) Haltwhistle, Bellingham, Alston, Brampton, Longtown .. .. .	-.224	—	—	—	—	—	—	—	—	—	—	—	—	—	—
(iv) Castle Ward, Hexham .. .. .	-.191	2.9	6.9	3.5	22.6	4.2	.1	9.5	.6	1.4	.7	.8	2.1	4.2	23.3
(v) Newcastle .. .. .	-.191	3.8	10.7	.4	1.8	16.9	3.6	9.7	2.5	1.1	.7	1.5	3.0	6.3	22.8
(vi) Tynemouth .. .. .	-.143	1.7	13.2	1.2	18.6	9.2	12.7	7.0	.8	.6	.1	.4	1.4	4.6	13.3
Totals .. .. .	—	2.7	10.9	1.3	12.8	12.0	5.8	8.4	1.7	.9	.5	1.0	2.4	5.6	18.9
Rural districts* .. .. .	—	.6	5.7	23.3	26.9†	2.5	.5	6.7	.3	.5	.2	.2	.9	2.7	—

\* Alston, Brampton and Longtown are not included here.

† This total includes quarrymen (ix. 2).

TABLE XXXVI. *Percentages of Females over ten years employed in various occupations.*

Registration District	Regression coefficient, 1876-1906	Teaching (iii. 4)	Domestic, char-women, laundry (iv)	Business clerks (v. 2)	Brick, cement (xiv)	Paper, prints, etc. (xvii)	Tailoresses, etc. (xix)	Food, lodging, etc. (xx)	All other occupations	Total occupied
Northumberland County* ..	- .180	1.1	10.9	.4	.7	.3	3.2	2.2	3.8	22.6
(i) Alnwick, Belford, Glendale, Rothbury, Berwick .. ..	- .236	1.6	12.1	.4	.1	.3	4.9	3.4	5.5	28.3
(ii) Morpeth .. .. .	- .236	1.0	6.1	.1	.1	.1	3.0	1.3	1.9	13.6
(iii) Haltwhistle, Bellingham, Alston, Brampton, Longtown ..	- .224	—	—	—	—	—	—	—	—	—
(iv) Castle Ward, Hexham ..	- .191	1.2	12.5	.5	.1	.1	3.0	1.3	3.2	21.8
(v) Newcastle .. .. .	- .191	1.1	10.8	.4	.7	.6	3.6	3.1	5.1	25.4
(vi) Tynemouth .. .. .	- .143	1.3	8.5	.3	.1	.2	2.9	2.0	3.0	18.2
Totals .. .. .	—	1.2	9.8	.2	.5	.4	3.4	2.5	4.1	22.2
Rural districts*.. .. .	—	1.0	13.0	.1	.0	.1	2.8	1.0	6.3	24.3

\* Alston, Brampton and Longtown are not included here.

## II. *Northumberland. Individual Registration Districts.*

### (i)

*Alnwick, Belford, Glendale, Rothbury and Berwick* registration districts include the rural districts of Alnwick (12,516), Belford (5198), Glendale (8770), Rothbury (4691) and Norham (6054), the municipal borough of Berwick (13,437), and the urban districts of Alnwick (6716), Amble (4428) and Rothbury (1303).

See Plate XVI	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	8984	8401	7721	7726	7501	8190
No. of births .. .. .	2210	1947	1710	1748	1503	1507
No. of births per 100 married women (15-55)	24.6	23.2	22.1	22.6	20.0	18.4
Potential birthrate (Tait's) (15-55) .. .. .		18.5	18.3	18.9	18.8	18.7

Regression coefficient (1876-1906), - .236 ± .011; (1851-1875), - .043 ± .010.

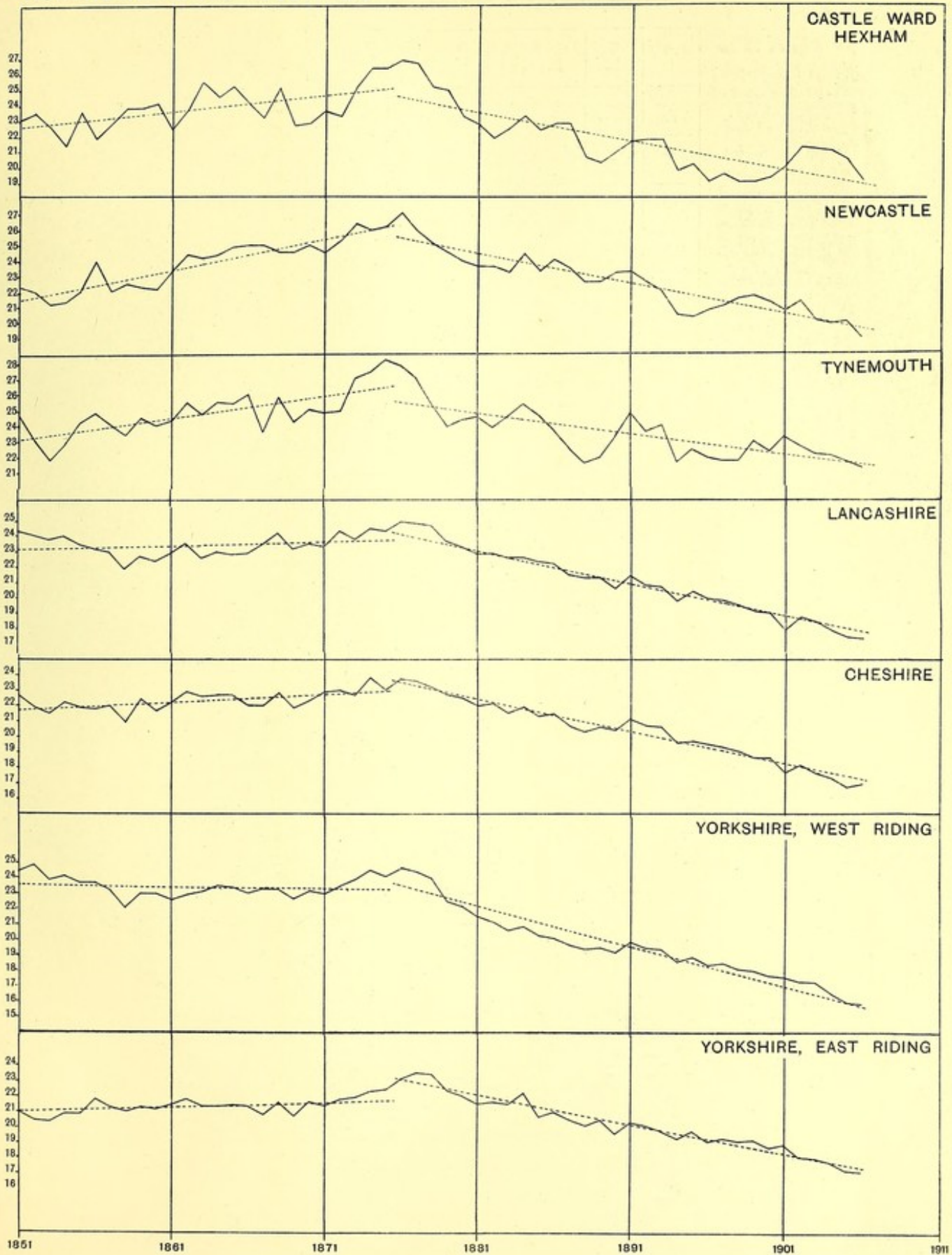
Percentage of district included in tables of occupations, 31.9.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	31.6	30.6	24.7
Potential birthrate (15-45)	24.5	24.5	24.4

These districts are largely agricultural districts while in Alnwick and Berwick there are the ordinary occupations of country towns. There seem to be no factories

NORTHUMBERLAND. COUNTIES.







and no mining. There is probably a residential element of some importance in Alnwick judging from the number of domestic servants. Both the potential and the actual birthrates have remained low, and the fall in the birthrate hardly began till towards the end of the eighties.

The district of Rothbury, both rural and urban, is entirely agricultural, and the only change that has taken place in the industry during the last fifty years is that arable land has largely become pasture land. The percentage of overcrowding is the least in this group of districts. There is reported to have been very little propagandism for the limitation of the family in this area.

In Belford there is no evidence of the circulation of literature dealing with the limitation of the family among the working classes, but it seems likely that they are beginning to consider the question, and among the upper classes the question is probably well ventilated.

In Alnwick 12.6 per cent. of women are engaged as domestic servants, which points, as we have already noted, to a residential element of some importance.

In Glendale agriculture is the chief occupation, though the district is residential to a very small extent. Our correspondent reports that restriction does not take place among the working classes, but does perhaps affect to some extent those in the class above them.

The steadiness of the potential birthrate in face of a drop of between six and seven births in the actual birthrate per 100 married women is, however, strong evidence of restriction, although little propagandism in favour of prevention has been reported to us.

(ii)

*Morpeth* registration district includes the rural district of Morpeth (14,832), the municipal borough of Morpeth (6158) and the urban districts of Ashington (13,956), Bedlingtonshire (18,766) and Newbiggin (2032).

See Plate XVI	1851	1861	1871	1881	1891 *	1901
No. of married women (15-55) .. .. .	2310	3293	4390	4986	5875	8411
No. of births .. .. .	557	805	1126	1327	1450	1868
No. of births per 100 married women (15-55)	24.1	24.4	25.7	26.6	24.7	22.2
Potential birthrate (Tait's) (15-55)* .. ..		21.0	21.3	21.1	21.2	21.9

Regression coefficient (1876-1906), - .236 ± .030 ; (1851-1875), + .444 ± .052.

Percentage of district included in tables of occupations, 69.7.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	31.0	32.5	27.7
Potential birthrate (15-45)	26.0	26.4	26.8

Morpeth is chiefly a mining district with agriculture in the north and west, but the latter industry is diminishing, as during the last fifty years tillage has given way to pasture. The percentage of the males engaged in the mines is 54.8. The percentage of tenements of less than five rooms is the largest in the county and

both the percentages of one and two-roomed tenements and of overcrowding are above the average, but the numbers of paupers, of families to a house, and of general labourers in 1871 are below the average of the county. The extraordinary rise in the birthrate in the first 25 years was due to the mining boom of 1870 when wages were very high. They were highest about the middle of the decade and then both prices and wages began to fall, and this change in the middle of a decade, involving first immigration and then emigration, has doubtless exaggerated the amount of the birthrate fall since 1876. The birthrate in 1901, 22.2 per 100 married women, was still high in comparison with the average for the north and the mean birthrates of our two periods show only a slight fall; from 1851-1875 inclusive the mean birthrate per 100 married women of 15-55 was 25.9 and from 1876 to 1906 it was 24.8. The potential birthrate shows that the married women in 1901 were on an average rather younger than in 1861, and this is what we should expect as agricultural labour gave place to mining labour.

Coal mining has shown a very remarkable development in the eastern part of the district during the last half-century. The largest collieries are at Ashington, the population of which place has increased from 269 in 1851 to 13,956 in 1901; in the latter year 70.1 per cent. of males over 10 were employed in the collieries, while at Bedlingtonshire 57.4 per cent. were so employed. Ashington still has a large birthrate with a very high infantile mortality rate. The miners marry early as they can earn full wages when about 20. There can, however, be no doubt that in this district means are taken to keep down the number of children, and this intentional restriction of the family began within a year or two of the publication of certain pamphlets. The limitation is not practised much by the improvident lowest class or by the mining class where the wages are as a rule good and the standard of living aimed at is not very high, but it is practised, according to our correspondent, to an appalling extent by the comfortable middle class where education is at a high standard and where luxury and pleasure seem too much the chief interest of life. This is said to be more characteristic of the women than of the men; there is in fact a strange attitude of abhorrence towards child-bearing amongst the middle class women. Even among the better working class population this feeling is spreading and the number of families limited to two, one or no children is increasing. The attitude of women of the well-to-do classes to a social equal who has, unfortunately as they think, become pregnant is often one of compassionate contempt.

## (iii)

*Haltwhistle, Bellingham, Alston, Brampton and Longtown* registration districts are combined and include the rural districts of Haltwhistle (8502), Bellingham (6341), Alston (3134), Brampton (8785) and Longtown (6676).

See Plate XVI	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	4703	4628	4239	4071	3693	3947
No. of births .. .. .	1106	1131	1015	921	732	708
No. of births per 100 married women (15-55)	23.5	24.4	23.9	22.6	19.8	17.9
Potential birthrate (Tait's) (15-55)* .. ..		19.4	19.2	19.1	18.3	18.8

Regression coefficient (1876-1906),  $- .224 \pm .010$ ; (1851-1875),  $+ .007 \pm .016$ .

Percentage of district included in tables of occupations, none.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	32.2	34.2	23.9
Potential birthrate (15-45)	24.8	24.3	24.3

Haltwhistle and Bellingham are in Northumberland, and the last three districts are in Cumberland. We have only been able to obtain one correspondent in these districts, and as they are rural districts no occupational data are available. The potential birthrate was low in 1861 and has remained low since. The district is an agricultural one. Kirklington parish, which seems to be in Longtown, is a purely agricultural district, but less ploughing is done than formerly.

The fall of six to seven points in the birthrate per 100 married women, notwithstanding the steadiness of the potential birthrate, is in our opinion definite evidence of the extent to which limitation of the family has become the rule of this district.

## (iv)

*Castle Ward and Hexham* registration districts are combined and include the rural districts of Castle Ward (9297) and Hexham (27,640), and the urban districts of Hexham (7071), Newburn (12,500) and Gosforth (10,605).

See Plate XVII	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	5465	5792	6166	6799	7144	9015
No. of births .. .. .	1256	1304	1458	1549	1547	1813
No. of births per 100 married women (15-55)	23.0	22.5	23.6	22.8	21.7	20.1
Potential birthrate (Tait's) (15-55)* .. ..		19.5	19.7	20.4	19.5	20.1

Regression coefficient (1876-1906),  $- .191 \pm .016$ ; (1851-1875),  $+ .101 \pm .019$ .

Percentage of district included in tables of occupations, 44.0.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	29.7	31.3	25.8
Potential birthrate (15-45)	25.1	25.6	25.2

Castle Ward is an agricultural and mining district, Hexham is almost entirely an agricultural district. In the whole district the percentages of tenements of

less than five rooms, etc. are all below the average of the county. The sub-districts, except Gosforth, are very uniform in housing conditions. The birthrate curve showed a rise in the seventies but this was more marked in Castle Ward than in Hexham and was probably due to the boom in the coal trade. It will be seen that the fall is significant, but relatively slight, the mean birthrates for the first 25 years and the last 31 years differing by only two points; but the average fall between 1878 and 1906 is about five births. The eastern portion of Castle Ward rural district is largely engaged in mining, while the western is almost entirely agricultural. There has been propagandism for the limitation of the family in this district and a case came to the notice of one of our correspondents recently of a man going round with preventive remedies to sell in a large colliery village in this neighbourhood.

In Hexham rural and urban districts the chief labour other than that of any country town is agriculture; the farm hand is well paid, but he is leaving the district to work on the Tyne. About forty years ago a large trade was done in stove making, hat making, pipe making and tanning. Large numbers of girls are now employed in laundries, dye works and in the larger shops. Advertisements or pamphlets with regard to limitation of the family do not seem to be common in this district, and in a long medical experience our correspondent only recalls two cases where he believed women had been trying to procure abortion.

In Newburn the chief occupation is mining, which employs 38.6 per cent. of the males; 6.4 per cent. are engaged in the engineering works and 12.1 per cent. in steel smelting and founding.

Gosforth differs from the other districts in the percentage of tenements of less than five rooms, which is 47.9 as compared with 68.5 for the whole district, and it would seem to be superior in all its housing conditions; the number of domestic servants per hundred separate families is 31.8 which is decidedly larger than in any of the other districts and points to fewer working men in the district and a larger proportion of the well-to-do. The working class portion of the community is chiefly engaged in the mines.

(v)

*Newcastle-upon-Tyne* registration district includes the county borough of Newcastle-upon-Tyne (215,328) and the urban district of Benwell with Fenham (18,316).

Newcastle is in the main a working class district; the percentage of tenements of less than five rooms is 79.2 and the number of families to a house is the highest in the county. The principal occupations are associated with engineering, ship building and collieries. The fall in the birthrate in this district is only slight; the average number of births per 100 married women was 23.8 from 1851 to 1876 and 22.6 from 1876 to 1906; the potential birthrate is practically unchanged, but there is a drop of about five births since 1876.

Newcastle borough is a manufacturing town, but there are no large factories in which many women are employed. The principal works are those connected

with engineering, which employs 15.9 per cent. of the males, and ship building which employs 3.8 per cent. No changes have taken place in the industries during the last 38 years. Our first correspondent knew of no propagandism in this district for the limitation of the family, but this only signified that it had not been forced on his attention.

See Plate XVII	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	13220	16973	19937	22122	29407	35503
No. of births .. .. .	2944	3953	4905	5251	6891	7424
No. of births per 100 married women (15-55)	22.3	23.3	24.6	23.7	23.4	20.9
Potential birthrate (Tait's) (15-55)* .. .. .		21.9	22.2	21.6	21.8	21.6

Regression coefficient (1876-1906),  $- .191 \pm .009$ ; (1851-1875),  $+ .196 \pm .012$ .

Percentage of district included in tables of occupations, all.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	28.9	30.3	25.9
Potential birthrate (15-45)	26.6	26.8	26.2

In Benwell with Fenham the main occupations are engineering, which employs 28.8 per cent. of the males, and mining, which occupies 13.8 per cent.

Recent correspondents in Newcastle inform us that restriction of the family is a constant practice. Information is communicated from one woman to another, and there are also advertisements both in the local papers and in those distributed from London. There is a shop where all kinds of appliances are exhibited, and the proprietor advertises daily in the local papers. Leaflets are distributed from door to door, giving an address where advice as to deferred menstrual periods may be obtained. Abortifacients are in fairly common use and chemists are frequently asked for diachylon plasters and pills. One of our correspondents had not personally met with many cases of lead poisoning, or noticed the lead line or suggestive colour, but another had met with a considerable number. The ordinary "remedies," pennyroyal, iron and aloes, colocynth and ipecacuanha, are certainly used, but it is of course impossible to measure to what extent. On the other hand it is known that certain persons give quite harmless drugs or bread pills. Probably in a number of cases those who profess to supply abortifacients are obtaining money under false pretences †. Women certainly inquire of midwives as to the best preventives. There was diversity of opinion as to the classes who chiefly limit their families, one correspondent believing it to be chiefly in the artisan, another in the middle and professional classes; these beliefs really corresponded with the fields in which they had had chief experience. Both these correspondents are convinced that limitation of the family is not due to any increasing unwillingness of women to face the pain and disabilities of child-bearing, but to the economic conditions of life, which make child-rearing a very heavy burden. The limited family in the professional classes is reported to arise from

† Postal orders sent in answer to advertisements have been known in one or two cases to produce only a few indecent words, no drugs.

a desire for a higher standard of living, and originates quite as often with the husband as with the wife; it is expressed in the phrase: "We could not do our duty, or give a proper upbringing to more children." Among the working people with a decent standard of living, it is considered by one of our correspondents that limitation arises from the impossible amount of work thrown upon the mother of a large working class family. If the babies are still coming when the elder boys at 14 years go to work, the position of a miner's wife with the pits working the three shift system is an extremely difficult one. Further, the standard of dress and general care of the person is much higher than it was, and the children stop longer at school. All this throws increased work on the mothers, and makes limitation of the family largely an act of self-defence on the part of the mother.

Another correspondent, writing both of Newcastle and Gateshead, considers that the fall in both towns is very similar, but within the last few years the decline in Gateshead has possibly been more rapid, although the birthrate has not yet reached as low a value as in Newcastle. Our correspondent holds that abortion is extremely frequent throughout the north of England, and that in Newcastle and Gateshead intentional limitation is widely practised. Women go about selling pills which are made of diachylon and aloes, and he has noticed in patients coming under his care the usual signs of lead poisoning including paralysis of hand and wrist. It is not possible to measure the extent to which preventives are sold, but they are undoubtedly used. The chemists are described as being, on the whole, of a pretty good class, and our correspondent thinks that quinine pessaries are not exhibited in their windows. The Chemists and Druggists' Association has decided not to sell any diachylon in the lump. The decline in the birthrate is viewed as largely intentional and as steadily increasing since 1877.

The views of this latter correspondent on the use of lead abortifacients will be found confirmed in a paper by Sir Thomas Oliver, M.D., which appeared in the *British Medical Journal*, 1913, Vol. I. p. 1199, entitled "Diachylon or Duty: A call to Action." In this paper the well-known Newcastle specialist writes:

"In the course of the last two years I have seen seven or eight cases of acute plumbism in married women who had taken diachylon. Two of them just escaped dying, while two others will probably never be the healthy women they were previous to their illness."

Details are given of five cases, and Sir Thomas Oliver points out that the dangers of the self-administration of diachylon are not only that the woman may have a long and painful illness, but that she may die in an attack of acute plumbism.

Some of Sir Thomas' cases bring out so markedly the social and economic difficulties of the whole problem that they are in part cited here.

(i) A woman, aged 40, pregnant, mother of eleven children, ten of whom are alive, was admitted into the Royal Victoria Infirmary under Sir T. Oliver's care on June 9th, 1911, suffering from severe pains in the abdomen and great weakness of the limbs. Three months before this, believing herself to be pregnant, she took in all 40 diachylon pills. After taking two pills night and morning for ten days she became seriously ill. She had acute abdominal pains and repeated

vomiting; she felt listless and was so weak that she could hardly stand. On her admission the menses had not been re-established; there was a marked blue line on the gums. . . . She recovered and in due course was delivered of a healthy child at term. [It would be desirable to follow up the later history of this child.]

(ii) A married woman, aged 29, with four children, was admitted into the infirmary, July 18, 1911, suffering from severe pains in the abdomen and back. She was in a highly strung and nervous condition. Believing herself pregnant, she had taken "black stick"—a mixture of diachylon and aloes—in the form of pills sold to her by a chemist. She took six pills night and morning for the first week, and half that number for the second week. Severe abdominal pain developed and she miscarried on July 14th, about seventeen days after taking the first pills. . . . This woman was in a very weak state so that she could hardly stand. She recovered and left the infirmary a month later. She had taken 144 pills each of which contained 1 grain oleate and stearate of lead.

To judge by Sir Thomas Oliver's cases, resulting abortion seems to be the rule, and in some instances, as in one reported by Professor Beattie, the woman becomes paralysed in the hands and legs, and complete recovery is doubtful.

"Seeing," writes Sir Thomas, "that for twopence abortion can be procured, and that women in the guise of nurses are secretly preaching the advisability and encouraging the practise of it among the poorer working classes, also that in the full glare of daylight druggists are selling the material, surely the time has come, when we might well ask the question, how long the Government is going to allow this state of things to continue?"

"Disciples of Malthus would probably maintain that there is something to commend in the action, not the means by which the patient (Case (i)) in her twelfth pregnancy with ten children alive, the eldest only 18 years of age, and her husband earning 30s. a week, finding herself pregnant sought to relieve herself of a prospective burden by a remedy so easily obtained as diachylon. It would have been a greater and more disastrous calamity to the husband and the family had this woman died and left 10 children to be brought up, the eldest daughter being only 18 years of age."

We feel strongly that while the case for or against preventives presents many discussable aspects, that against abortifacients can be absolutely established. Abortifacients, as matters stand, can be bought for a few pence and some druggists and many worse than druggists are selling the material in the most public manner. Sir Thomas Oliver urges in his paper that the sale of diachylon or lead pills should be made a criminal offence, an opinion with which we fully concur\*.

\* The reader of these pages will have seen frequent remarks on this subject and it seems desirable in this note to emphasize them by reference to two papers of the last few years which throw light on the prevalence of diachylon abortifacients, and suggest the urgency for action. At the seventeenth International Congress of Medicine, 1913 (*The Lancet*, 1913, Vol. II. p. 492), Dr A. G. Hall of Sheffield read a paper on "Diachylon as an Abortifacient." He referred to the steady growth of the practice. The use of diachylon to procure abortion appears to have originated in the Midlands in the nineties, but soon spread to Sheffield, where cases were recorded from 1901 to



1906. An attempt was made by the British Medical Association to get diachylon placed on the poison schedule, but it failed. Cases had been observed of diachylon poisoning in Leeds, Manchester, London, Bristol, Hull, Newcastle-on-Tyne, Glasgow, Aberdeen and Cardiff, but no recorded cases in Ireland. The greatest severity of the evil is said to coincide with trade depressions. The practice is reported to have been adopted by women anxious not to increase their family for economic reasons, and these women were quite unaware of the dangers to life and health involved. In an earlier paper, "Plumbism from the Ingestion of Diachylon as an Abortifacient" (*British Medical Journal*, 1906, Vol. 1. p. 428), by Dr Arthur Hall and Dr W. B. Ransom, a history of the spread and use of this drug as an abortifacient is given, and valuable suggestions are made as to the methods which might be employed to deal with the evil. In an Appendix, replies to an inquiry made among medical men in the neighbourhood of Sheffield as to the extent of the practice are recorded. Information was obtained from about 200 medical men, residing near Sheffield, and of these 50 had recorded cases of plumbism. From their replies, "one can account for one or two hundred cases in this district during the last two years. One may add to these the large number of women who came to our hospitals suffering from plumbism every month, and even then get a very modest estimate of the extent of the practice." The fear of discovery will prevent some sufferers from going to a medical man and some medical men do not care to answer a circular for fear of making a breach of professional secrecy. "One is warranted in saying that this abuse of diachylon is a grave public scandal; for, apart from the social and moral questions connected with it, there is the added evil of the harmful effects of the drug itself."

Not only does prolonged anaemia frequently follow the use of the drug after it has been stopped but deaths of young healthy mothers and cases of lead insanity are recorded. "When one considers the amount of money and labour expended by local authorities in preventing lead poisoning from the drinking water, or the strict regulations that must be observed in all trades where the possibility of lead poisoning may arise, it seems the more necessary to put an end to this scourge, which I have no hesitation in saying is doing as much, if not more, damage in the places it has reached than either of the two above-mentioned causes have ever done in a similar time."

Dr Hall thinks that though certain of the largely advertised "female pills" undoubtedly contain lead as one ingredient, yet no large proportion of cases of plumbism arises from their use, and the cases are mostly due to the taking of diachylon. The information is probably handed on from woman to woman. Here and there persons acquiring the information that diachylon is a sure abortifacient purchase the necessary quantities of diachylon and aloes and sell "Nurse Somebody's Pills," but they are too poor and too frightened to advertise much in the public press. [Advertisements are, of course, now of daily occurrence, but without analysis of the contents of the pills sold, it is impossible to assert that they contain diachylon.] "The following suggestions have been made as to the best method of dealing with the matter:

1. To compel by act of parliament the publication of its ingredients on the cover of every patent remedy.
2. To prosecute and punish the makers and vendors of diachylon pills.
3. To seek the support of the lay press and invite them to abstain from publishing advertisements of 'Female Irregularity' remedies.
4. To circularise, or otherwise inform, all medical practitioners in the county of the possibility of such a cause in obscure cases of plumbism, so that they may recognise it and warn their patients.
5. Compulsory notification of all cases of abortion.
6. To make lead poisoning in women a notifiable disease.
7. To control or prohibit the sale of diachylon.

There are two ways in which this method might be carried out:

First. The sale of diachylon might be prohibited entirely.

Second. It might be scheduled under the Poisons Act."

A third remedy has been suggested, namely that, unless mixed with a strong emetic, to prevent its ingestion, diachylon should not be sold at all.

Six cases of deaths from plumbism during 1904-5-6 are given in an appendix to the paper.

Dr Ransom gives an addendum to this paper and a bibliography is attached.

(vi)

*Tynemouth* registration district includes the rural district of Tynemouth (20,922), the municipal boroughs of Tynemouth (51,366) and Wallsend (20,918), and the urban districts of Walker (13,336), Whitley with Monkseaton (7705), Blyth (5472), Cowpen (17,879), Willington Quay (7941), Earsdon (9020), Weetslade (5453), Cramlington (6437), and Seghill (2213).

See Plate XVII	1851	1861	1871	1881	1891	1901
No. of married women (15-55) .. .. .	9901	12131	14824	17058	19509	25786
No. of births .. .. .	2445	2942	3680	4177	4821	5950
No. of births per 100 married women (15-55)	24.7	24.3	24.8	24.5	24.7	23.1
Potential birthrate (Tait's) (15-55)* .. .. .		22.0	22.2	21.9	21.6	21.9

Regression coefficient (1876-1906), - .143 ± .014; (1851-1875), + .141 ± .018.

Percentage of district included in tables of occupations, 86.3.

Changes in boundaries of registration district: none.

	1861	1871	1901
* No. of births per 100 married women (15-45)	29.8	30.7	28.4
Potential birthrate (15-45)	26.6	27.0	26.5

Tynemouth is a working class district with percentages of tenements of less than five rooms, of overcrowding, etc. just above the average for the county. The chief occupations are coal mining, which employs 18.6 per cent. of the males, engineering and machine making which occupy 9.2 per cent., and ship and boat building which occupies 12.7 per cent.

The birth curve is very similar to that for Castle Ward and Hexham; it shows a high rate in the seventies due to the boom in coal, but this is much less marked than in Morpeth or in certain districts of Durham, where mining is practically the only occupation. The fall between 1876 and 1906 has been relatively slight and there has been no sensible change in the age distribution of married women. There is practically no industrial employment of women.

Tynemouth is a borough of various occupations; fifty years ago there was a busy local shipping business consisting of the building, fitting out and chartering of small wooden ships, chiefly colliers, which employed a considerable resident seafaring population; there were large subsidiary iron works for the manufacture of chain cables, anchors and windlasses, and workshops for making sails, etc. Through the deepening of the river since 1860 and the development of iron steam colliers, these industries have disappeared although a moderate development of iron ship building has been carried on in the west part of the town. Nearly all shipping business especially during the last 25 years has moved far up the river. A large fishing industry has developed during the last 30 years. In the busy herring season there is an influx of boats from the East Coast and a small army of girls visits the town to help in the curing and despatch of the herrings. Beyond this industrial population, there is a residential element of very moderate means and probably about one-half of these residents live in flats of from four to six rooms each, while a good many of the older streets are let

in tenements of one and two rooms. Other changes that have taken place in the industries are the closing down of a large steam flour mill about 1860 and of three or four old established breweries on their amalgamation with Newcastle breweries. About 1875 the *Fruits of Philosophy* was published, and to some extent methods for the limitation of the family were publicly advocated in this district. Since then these views have spread to a certain extent amongst all classes, but have influenced mostly those whose means do not enable them to bring up a large family in the style they think necessary.

Wallsend has made rapid strides during the last fifty years. The chief occupations are ship building employing 27.7 per cent. of the males, and engineering works employing 19.0 per cent. There is some mining employing 8.5 per cent., and 3.7 per cent. are employed as boatmen, etc. on the sea. Irishmen and Scotchmen are chiefly employed in the dry dock. The limitation of the family is locally attributed to the doctrines of Mr Bradlaugh and Mrs Besant, promulgated by books and lectures. These doctrines have not had so much influence in the labouring as in the middle classes. In Willington Quay the chief occupations are iron ship building which employs 29.7 per cent. of the males, engineering works, etc. which employ 17.7 per cent., and chemical works. There have been no changes in these industries during the last fifty years. No limitation of the family is reported from this district.

Whitley with Monkseaton is a purely residential district, and there are no industries. About fifty years ago there was a coal mine in the district, but this has not been worked for a long time. Most of the inhabitants are engaged in Newcastle as clerks and belong to the lower middle class; there is a small population of working men employed in the ship yards and engineering works of the Tyne. Preventives are used in this district, and the birthrate is lowest amongst the clerks, etc., though it is also declining amongst the working class population. There seems to be no propagandism for the limitation of the family beyond the usual advertisements in papers and magazines.

Of the remaining districts, Cowpen, Cramlington, Earsdon and Weetslade are mainly occupied in coal mining; 38.2 per cent. of the males are employed in the mines in Cowpen, 60.0 per cent. in Cramlington, 65.0 per cent. in Earsdon, and 65.5 per cent. in Weetslade. In Cowpen there is also some ship building, employing 6.9 per cent. of the males, while 4.6 per cent. are employed in engineering works and 2.9 per cent. on the railway.

In Blyth 20.4 per cent. are employed in the mines, 4.1 in engineering works and 4.4 in ship building. Walker is chiefly engaged in ship building, which employs 37.2 per cent. of the males and 12.4 per cent. are employed in engineering works and 10.8 per cent. in mining.

## V. THE FALL IN THE BIRTHRATE AND INDUSTRIAL CONDITIONS.

A. *The Counties as Wholes.*

Our examination of the various counties and registration districts north of the Humber has revealed great differences in the extent of the fall in the birthrate and many irregularities in the birthrate itself within the area treated. We have also found a variety of occupations for men, of types of employment for women, and of housing conditions. It may be of assistance to sum up briefly in tabular form some characteristic features of each county. These are given in Table XXXVII below. It must be remembered that the counties are very heterogeneous in character and, though the regression coefficients for the counties as wholes are

TABLE XXXVII. *General Characteristics of Counties North of the Humber.*

Counties	Regression coefficient (average annual gain or loss of births)		Percentage of overcrowding in tenements of less than 5 rooms	Percentage of one and two-roomed tenements	Percentage of tene- ments of less than 5 rooms	Average no. of families per house	No. of paupers per 1000 of the population	Percentage of women employed		Percentage of men engaged in agriculture
	1876-1906	1851-1875						As do- mestic servants	In textile factories	
Westmorland	- .309	+ .032	5.81	3.65	27.7	1.0137	5.68	14.4	1.8	25.5
North Riding (Yorkshire)	- .271	+ .030	9.23	6.07	42.0	1.0196	4.46	12.2	.2	16.9
Cumberland	- .243	+ .082	13.25	12.21	44.2	1.0178	4.62	11.2	1.7	15.4
West Riding (Yorkshire)	- .241	- .012	11.88	13.76	57.7	1.0073	3.86	7.7	12.8	4.5
Lancashire	- .239	+ .019	8.01	7.08	49.5	1.0346	6.78	8.7	16.6	2.9
Cheshire	- .215	+ .049	5.75	5.13	41.0	1.0260	5.05	12.8	9.3	9.2
East Riding (Yorkshire)	- .187	+ .051	6.31	7.36	47.0	1.0147	5.10	12.5	.5	14.7
Northumberland	- .180	+ .151	29.25	36.18	77.0	1.3409	3.80	10.9	.2	5.9
Durham	- .166	+ .155	26.86	30.42	76.0	1.1983	3.99	7.9	.5	2.6

given, they show nothing of the variability of these coefficients within each county. Thus, for example, in Lancashire five of the districts show a more marked fall than in any other districts north of the Humber\*, but when Lancashire is considered in the aggregate, the rise in the birthrate of Liverpool and the slight fall in the whole Manchester area have counteracted the marked fall in some of the cotton districts, so that the fall in all Lancashire is not so great as in Westmorland, Cumberland or the North and West Ridings of Yorkshire. The chief point to notice in an examination of the regression coefficients is that in every county except in the West Riding of Yorkshire the birthrate rose between 1851 and 1876, although this rise is hardly significant except in Northumberland, Durham and Cumberland; it is quite clear however that, except in isolated districts, the general fall in the birthrate did not begin till the middle or towards the end of the seventies.

Westmorland in the aggregate shows the greatest fall; it is the county with the largest percentage of men employed in agriculture, the largest percentage of

\* Except Guisborough, but the conditions there are rather peculiar.

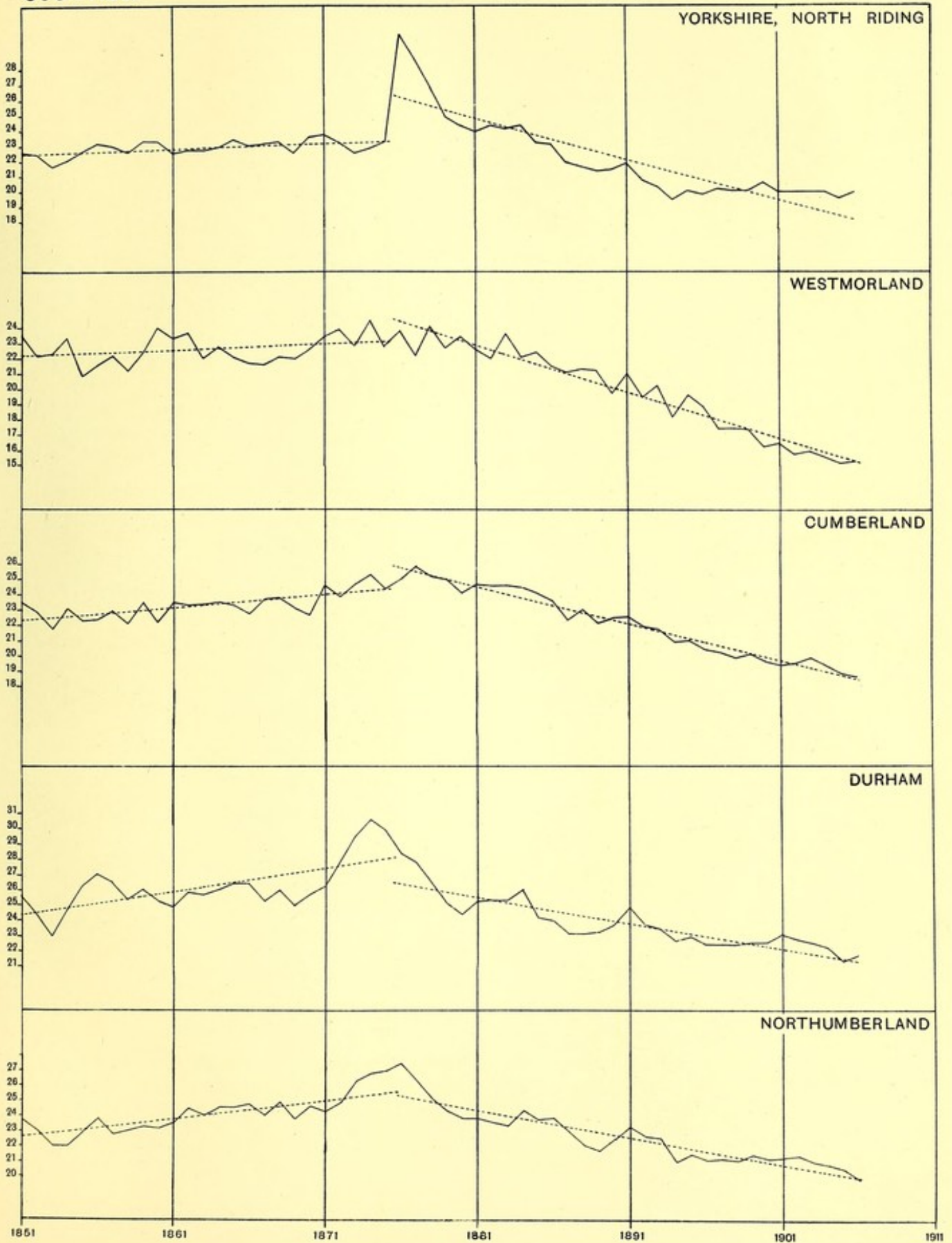
women employed in domestic service, the smallest percentages of tenements of less than five rooms and of one and two-roomed tenements; in the absence of overcrowding Cheshire alone is superior to it and in the average number of families per house only the West Riding of Yorkshire stands lower. Curiously enough the number of paupers per thousand of the population is large compared with the other counties. Westmorland may be described as an agricultural and residential county with a number of tourist resorts. As we have said before it is extremely difficult to obtain an adequate measure of the relative importance of the agricultural and residential elements in districts of this type. An area with many farms may mean a large number of domestic servants. Westmorland has the largest percentage of men engaged in agricultural pursuits, but what does a percentage of 25.5 agriculturalists signify? Westmorland occupies a unique position north of the Humber; all other counties have large numbers of industrial, shipping or mining inhabitants. We can get some idea of what such a percentage of men engaged in agriculture means by comparing it with the East Riding of Yorkshire without Kingston-on-Hull where we find 36.6\* per cent. of the males of 10 years and over are engaged in agriculture. Again if we compare the "rural" districts in Westmorland with those in the East and North Ridings we find that the percentages engaged in agriculture are 39.1, 51.6 and 41.0 respectively, and thus we may assume that Westmorland is not so extensively agricultural as are, for example, Pocklington, Howden, Patrington and Skirlaugh in the East Riding of Yorkshire. It is extremely difficult to measure the residential element, but it is important to compare this element as it exists in Westmorland and in the other counties. We accordingly decided to take the number of men employed as domestic indoor servants and as outdoor servants (coachmen and gardeners) to 100 families and see how Westmorland stood in this respect.

County	Menservants per 100 families	Percentage of families living in 10 and more rooms
Westmorland .. ..	7.5	8.4
North Riding .. ..	3.4	5.3
Cumberland .. ..	2.8	4.8
West Riding .. ..	1.5	2.0
Lancashire .. ..	1.1	2.2
Cheshire .. ..	4.1	4.7
East Riding† .. ..	2.3	3.7
Northumberland .. ..	1.8	2.3
Durham .. ..	1.0	1.3

All these figures are taken from the 1911 census. It will be seen that, except for Cheshire, the number of menservants per 100 families in Westmorland is double or more than in any other county, and if we omit Kingston-on-Hull from the East Riding, the number of menservants per 100 families only rises to 5.9. We have also entered in the table the number of private families living in 10 or more rooms

\* From the 1911 census since the Ridings are not given separately in 1901. In Westmorland in 1911 the percentage engaged in agriculture was 25.4. † Including York.

COUNTIES.





and again Westmorland has decidedly the largest number. These social data lead us to the conclusion that Westmorland is largely a residential district, and the fact may help to account for the marked fall in the birthrate which we do not elsewhere find in purely rural districts. The latter are far from wholly escaping the fall, but in the purely rural districts it is of quite a different order from the fall in Westmorland (see, for example, Pocklington and Howden, Plate XI). This result, as far as it goes, is, of course, evidence of the differential character of the fall, i.e. the fall is greater in the well-to-do middle class\*.

The North Riding of Yorkshire is less agricultural in character than Westmorland and there is a smaller percentage of women engaged in domestic service. If, however, we compare only the rural districts in the North Riding and in Westmorland we find they are very similar in the amount of agricultural labour. The character of the northern part of the North Riding has been completely changed during the last 50 years and iron and engineering works have sprung up; 37·2 per cent. of the total population is now in Middlesbrough. There is practically no industrial employment of women and in the housing conditions this county is very similar to Lancashire, Cheshire and the East Riding, but the percentage of tenements of less than five rooms is decidedly less than in the first two of those counties; the housing conditions throughout the county are generally uniform.

Cumberland is similar to the North Riding in the amount of agriculture, in the number of domestic servants, and in the small extent of industrial employment of women; there are iron and engineering works in both; in Cumberland, however, there is the addition of a mining element and an increase in the percentages of one and two-roomed tenements and of overcrowding, and there is greater variability within the county.\*

Yorkshire West Riding shows a sudden decrease in the numbers engaged in agriculture and domestic service; iron and engineering works exist in similar percentages to those in the North Riding and Cumberland, and mining is an important industry, but in this county we find in addition the textile industries and the industrial employment of women; over 50 per cent. of the tenements are of less than five rooms, and in other housing conditions the West Riding resembles Cumberland. Within the county there is a sharp line of division, the regression coefficient which marks the fall in Saddleworth is  $-.257$ ; districts with a more marked fall are almost entirely those in which the woollen industries occur; there is a larger percentage of women industrially employed, a larger percentage of one and two-roomed tenements and more overcrowding than in the districts with less fall. The districts with less fall than in Saddleworth are engaged chiefly in iron and engineering works and in mining, and have no industrial employment of women of importance, while the percentages of one and two-roomed tenements, and of overcrowding are less than in the textile districts.

Lancashire has an even smaller percentage engaged in agriculture, and mining

\* There is always the danger of the census returns in a holiday resort district being swollen by married women visitors at Easter, while the births due to these women will be recorded at their home residences.



is of less importance than in the West Riding, but there is a larger number of both men and women engaged in the textile industries. Housing conditions are superior to those we find in the West Riding, but the average number of families per house is higher and the number of paupers is the highest in any of the counties north of the Humber. Within the county there is some variation in housing conditions and in occupations, but this has been already discussed in the description of the county. One point must be noted here, in which this county differs from the West Riding; in the West Riding textile factories and the employment of women are associated with bad housing conditions, while in Lancashire they are associated with good housing conditions; we shall return to this point later.

Cheshire has a larger percentage of its population engaged in agriculture and in domestic service; there is very little mining and less iron and engineering work; there is also rather less employment in the textile industries, and what exists is of a much lower type. Housing conditions are good.

The East Riding is more agricultural and has much the same percentage of women employed in domestic service as Cheshire; there are practically no textile factories and no industrial employment of women, but the district is not by any means a purely agricultural one, for over 62 per cent. of the whole population is included in Kingston-on-Hull. Housing conditions are very similar to those found in Cheshire.

Northumberland has a decreasing percentage of its population engaged in agriculture and in domestic service, and the chief occupations are mining, iron and engineering works and ship building; women are not industrially employed and the housing conditions are the worst to be found north of the Humber; these housing conditions are nearly uniform throughout the county.

Durham has practically no agriculture and the percentage engaged in domestic service is the lowest in the northern counties, except in the case of the West Riding; mining, engineering and ship building are the chief occupations; women are not industrially employed and the housing conditions are on the whole very similar to those found in Northumberland, but there is much variation in the matter of housing in the different districts of the county.

#### B. *The Individual Registration Districts.*

Before considering the conclusions to be drawn from these remarks it will be well to examine another table which gives certain particulars of occupation for some of the registration districts. We have taken out all the registration districts for which occupational statistics are given for at least 70 per cent. of the population. We have kept absolutely to this division in Table XXXVIII and the correlation coefficients are calculated on these data. This arbitrary division omits some districts which are just on the border-line and might be included and it omits other districts which, though the absolute percentages of persons employed in the different occupations are not given, we know to be similar to

TABLE XXXVIII.

*The Fall in the Birthrate as measured by the Regression Coefficient, the Percentages of Men and Women over ten years engaged in various occupations, and statistics as to Housing Conditions, etc., in Districts in which the Facts are recorded for at least 70 per cent. of the Population (areas in which occupational statistics cover two districts are omitted).*

District	Regression coefficient, 1876-1906	Percentage of women employed in textile factories	Women employed as domestic servants	Total number of women employed	Percentage of men employed in mines	Percentage of men employed in textile factories	Percentage of men employed in iron, etc. works	Percentage of tenements of less than five rooms	Percentage of one and two-roomed tenements	Average number of families to the house	Approximate wages of women
Guisborough ..	-.418	.1	8.8	17.2	34.2*	.0	7.5	36.4	2.1	1.0124	—
Blackburn ..	-.376	44.5	4.2	56.6	2.6	33.1	6.4	52.2	2.0	1.0054	21s. 0d.
Fylde ..	-.361	.3	12.9	34.9	.0	.9	2.2	16.7	1.8	1.0212	—
Lancaster ..	-.356	6.7	8.7	31.0	.0	2.5	4.7	21.8	1.5	1.0072	—
Haslingden ..	-.355	36.7	4.1	48.9	3.0	30.3	10.6	61.5	11.0	1.0052	19s. 7d.
Halifax ..	-.354	25.7	5.1	40.5	.4	19.0	11.8	66.8	26.5	1.0057	17s. 11d.
Burnley ..	-.353	41.2	3.8	52.3	4.2	41.3	4.8	55.8	7.8	1.0052	23s. 10d.
Bury ..	-.353	35.3	4.5	48.9	2.1	28.1	8.7	68.7	4.0	1.0059	19s. 6d.
Ormskirk ..	-.340	.4	16.3	33.7	5.4	.8	11.4	28.8	7.9	1.0666	—
Bradford ..	-.333	26.6	5.8	43.0	1.3	20.5	7.5	66.5	19.2	1.0069	13s. 0d.
Todmorden ..	-.318	27.0	3.2	46.5	.7	6.6	.0	46.5	7.3	1.0061	—
Dewsbury ..	-.312	25.7	4.8	37.9	13.8	4.9	.0	79.6	31.6	1.0051	—
Oldham ..	-.312	31.1	4.5	43.2	1.6	30.8	17.2	73.3	4.7	1.0042	21s. 0d.
Barton ..	-.299	11.5	9.5	34.7	9.2	5.7	6.7	31.8	1.4	1.0125	—
Ashton ..	-.293	29.4	4.8	46.1	4.4	23.7	11.0	67.5	4.0	1.0057	19s. 5d.
Keighley ..	-.284	31.3	4.5	43.9	.1	20.5	20.0	57.4	13.6	1.0041	13s. 11d.
Rochdale ..	-.281	34.4	5.2	47.4	1.4	29.5	10.5	69.2	14.3	1.0013	19s. 6d.
Huddersfield ..	-.278	22.6	6.2	40.0	.5	26.2	6.8	67.8	19.4	1.0023	20s. 1d.
Bolton ..	-.274	28.0	5.1	42.1	10.5	20.4	13.3	58.6	3.8	1.0055	18s. 7d.
Wakefield ..	-.261	7.0	7.3	23.9	24.5	3.3	7.6	67.4	15.6	1.0067	—
Darlington ..	-.258	2.0	9.9	24.4	.0	.0	25.2	57.5	11.4	1.0336	—
Saddleworth ..	-.257	27.0	4.2	39.5	.0	28.9	9.9	56.5	5.5	1.0013	—
Stockport ..	-.254	20.1	7.9	42.7	1.5	14.8	6.5	53.9	6.0	1.0056	—
Scarborough ..	-.249	.1	16.9	34.8	.0	.2	1.3	23.3	5.4	1.0199	—
Barrow ..	-.246	2.6	7.4	20.9	.0	.4	28.9	33.8	3.5	1.2000	—
Preston ..	-.243	35.5	6.0	51.5	.1	21.1	6.9	37.0	1.1	1.0061	18s. 6d.
Stockton ..	-.238	.1	8.7	19.3	.0	.0	23.4	58.7	13.3	1.0691	—
Carlisle ..	-.234	5.8	8.2	34.5	.0	1.9	7.8	56.3	22.4	1.0278	—
Wigan ..	-.219	14.7	5.6	32.3	44.7	2.2	5.9	59.6	9.1	1.0280	—
Middlesbrough ..	-.219	.2	7.1	16.9	.9	.0	28.5	58.5	7.1	1.0275	—
Salford ..	-.217	11.4	8.3	37.9	2.1	7.2	9.0	54.4	9.1	1.0349	—
Leigh ..	-.204	23.1	4.7	35.9	38.4	11.8	5.3	43.6	3.2	1.0230	16s. 6d.
Birkenhead ..	-.199	.1	14.6	28.5	.0	.1	6.6	30.1	8.1	1.0952	—
Warrington ..	-.193	7.0	6.4	26.4	2.1	.9	16.9	41.7	3.4	1.0134	—
Gateshead ..	-.192	.5	6.8	18.5	16.7	.0	16.4	85.5	37.6	1.4327	—
Newcastle ..	-.191	.0	10.8	25.4	1.8	.0	16.9	79.2	35.0	1.6666	—
Prescot ..	-.188	.1	7.0	18.7	13.5	.1	4.9	49.6	4.4	1.0206	—
South Shields ..	-.186	.6	8.1	18.4	7.3	.0	14.4	83.2	41.4	1.6192	—
Rotherham ..	-.183	.1	7.5	15.8	28.9	.0	12.0	55.6	4.1	1.0060	—
York ..	-.179	.2	12.3	28.4	.0	.1	6.5	40.7	10.2	1.0178	—
Tynemouth ..	-.143	.0	8.5	18.2	18.6	.0	9.2	80.9	39.0	1.4183	—
Barnsley ..	-.128	2.2	6.2	19.5	40.4	.5	4.2	63.9	6.9	1.0097	—
Sunderland ..	-.106	.7	9.2	21.0	3.2	.0	13.7	79.0	33.4	1.3865	—

\* Ironstone miners.

those of the portion of the district for which we have data. Further in this table we have omitted the registration districts of Liverpool, Toxteth Park, Manchester, Chorlton, Hull, Sculcoates, Sheffield, Ecclesall-Bierlow, Leeds, Hunslet, Holbeck and Bramley, because the occupation statistics are not given for each registration district separately. Occupation statistics, for example, are given for the city of Liverpool, which includes Liverpool registration district and most of Toxteth Park, but these two registration districts separately may have widely different characteristics.

We have in all 43 districts : 19 from Lancashire, 2 from Cheshire, 10 from the West Riding of Yorkshire, 3 from the North Riding, 1 from the East Riding, 1 from Cumberland, 2 from Northumberland and 5 from Durham. We have tabled the percentages of women of ten years and over employed (1) industrially in textile factories, (2) as domestic servants, etc. and (3) in any occupation ; we have tabled also the percentages of males of ten years and over employed (1) in mines, (2) in textile factories, (3) in iron and engineering works, etc. We have also given the percentage of tenements of less than five rooms, the percentage of one and two-roomed tenements and the average number of families per house. We have, however, worked out no correlation coefficients between these housing conditions and the birthrates for the total 43 districts because we do not consider it legitimate to pool the data for housing conditions in the different counties ; housing, and its relation to the fall in the birthrate, will be discussed later for the counties of Yorkshire and Lancashire. Local custom seems to be of much importance even in housing conditions ; for example, we find in the rural districts of Haltwhistle, Bellingham, Alston, Longtown and Brampton far higher percentages of overcrowding and of one and two-roomed tenements than in the rural districts of Yorkshire. Housing conditions in the mining districts of Yorkshire also differ widely from those of Durham and Northumberland.

We can now ask : In what types of district is the fall in the birthrate most marked ? We have seen that the fall is a marked one in many areas quite apart from changes in the age distribution of married women or in the marriage rate, and we must now try to discover in what types of district the fall is most noticeable. A glance down Table XXXVIII will show that the types with the greatest fall are the textile and the almost entirely residential districts ; and, since purely residential districts are few north of the Humber, the most striking thing in the table seems to be the association between the presence of textile factories with the consequent industrial employment of women and a rapid fall in the birthrate. There are exceptions, but on the whole this result impresses one ; the correlation coefficient between a large proportion of women industrially employed and a marked fall in the birthrate is  $+0.530 \pm 0.074$ . Such a result is certainly significant, and is what we might anticipate from our study of individual districts. We have also worked out the correlation coefficients between the fall in the birthrate and the percentage of men employed in (1) mines, (2) textile factories, and (3) iron and engineering works and we get the following results :

Fall in the birthrate and percentage of men employed in mines, —  $\cdot 235 \pm \cdot 096$ .

Fall in the birthrate and percentage of men employed in textile factories, +  $\cdot 424 \pm \cdot 084$ .

Fall in the birthrate and percentage of men employed in iron and engineering works, etc., —  $\cdot 212 \pm \cdot 098$ .

The second correlation coefficient, namely +  $\cdot 424 \pm \cdot 084$ , between a fall in the birthrate and a large number of men employed in the textile factories is certainly significant, and confirms the influence of the textile factories previously noted. The other two coefficients, namely those between a fall in the birthrate and the percentages of men employed in mining and in iron and engineering works, are both negative, are both possibly significant, and as far as they go both support the evidence we have already brought forward that the fall in the mining and engineering is not so great as in the textile districts. Very few areas are, however, solely devoted to iron and engineering, and the presence of textile works in residential or agricultural areas complicates the problem. It must be remembered also that these 43 districts do not include half the districts which we have been considering, and consequently such data are not very satisfactory.

The clearest point that emerges from our table and from the correlation coefficients is that, apart from districts of an entirely residential character, the fall in the birthrate is greatest in districts engaged in the textile industries. The highest point in the birthrate seems to have been reached about 1877 in Yorkshire and Lancashire, but in the mining and engineering districts the maximum seems to have been reached slightly earlier; in practically all districts the high birthrate was followed by a fall, but in the textile districts this fall generally continues without a check, while in the engineering and mining districts a return to a more normal condition is occasionally seen. To what are we to attribute this increased fall in the birthrate in the textile districts?

We have seen it suggested that increased luxury and more plentiful food in themselves cause a diminished physiological fertility and more frequent sterility, but we have found no data which support this view; even if it were true it seems impossible that the luxury of such towns as Blackburn and Haslingden and Halifax has increased so vastly that the birthrate is halved. In Blackburn more than half the population and in Haslingden and Halifax over 60 per cent. of the population are dwelling in tenements of less than five rooms, and we cannot imagine that they are enjoying a luxury which could lower the birthrate as it has been lowered in these districts. It is true that wages have gone up, according to the Report of the Board of Trade in the cotton trade from an average of about 25s. to about 30s. a week for men and from about 17s. to 20s. for women; and it seems doubtful whether the cost of living has materially changed in the period under review, a point which has already been referred to. Even if it has not increased we cannot think that this additional 8s. a week, if both parents work, can mean such luxury as would account for practically the halving of Blackburn's birthrate. We must, then, face what we believe is now generally acknowledged to be a fact that the fall in the birthrate is due, not to a physiological decrease in fertility, but to a

deliberate limitation of the family, and we must next seek for the cause of this limitation. The fall in the birthrate varies, and we may be able to discover some social or economic factor associated with this variation which has operated more in one district than in another.

Our correspondents refer the fall to increased love of ease, of pleasure and of luxury with which children interfere, to the increase of the knowledge which enables parents to restrict their families and to the fact that children are now a burden until they are at least twelve years old. Of these suggestions the first and second would apply to every district north of the Humber; it is scarcely likely that engineering and machine making hands do not also seek more pleasure and luxury than they did fifty years ago, while the textile factory hand does. It is probable that the woman who works in a factory meets more people and the knowledge gained by one woman reaches a far wider circle than when her acquaintance is limited to the people in the same street or village, and thus in textile districts knowledge as to the possibility of a limitation of the family is more widespread. But it seems to us that the third reason for the falling birthrate, namely the restriction of child labour, may be the most important one; the support of the child until it is twelve or fourteen years old will appear a greater burden to the parents in those districts where it is an unaccustomed one. It may be said that restriction of child labour applies to all classes of industry, but the employment of child labour has never been so extensive in any industry as in the textile; as the accompanying table shows, in 1871 the employment of children was not common in the iron and steel works of Lancashire and Yorkshire, but it was

TABLE XXXIX A		Lancashire		Yorkshire	
		Cotton* Male and female	Iron and steel† Male only	Wool‡ Male and female	Iron and steel† Male only
1851	{ All ages .. ..	319431	25982	195618	38407
	{ Under 15 .. ..	46955	1467	36499	3484
	{ § Percentage under 15	14.7	5.6	18.7	9.1
1871	{ All ages .. ..	398401	73801	201350	82697
	{ Under 15 .. ..	65573	3283	36135	3633
	{ § Percentage under 15	16.5	4.4	17.9	4.4

\* In the 1851 census group XIII, 12; in the 1871 census group XI, 3.

† In the 1851 census group XIV, 14; in the 1871 census groups X, 10 and XV, 14.

‡ In the 1851 census group XII, 6; in the 1871 census group XI, 1.

§ The four corresponding percentages for 1861 are 16.6, 7.1, 15.9 and 7.0 respectively.

still common in the textile industries. It is of course clear that the data in this table do not *prove* that the greater fall in the birthrate in the textile districts was due to the restrictions placed on child labour during the latter half of the nineteenth century, but they show how far more important the question of child labour was in the textile than in the iron and steel districts. Unfortunately for

our present purpose information as to the employment of males and females at different ages has not been tabled uniformly in the census reports with which we are concerned. The percentage of children and young persons under 15 employed at the different census years would have given us some idea as to whether the fall in the percentage of children employed and the fall in the birthrate were closely associated. We need to compare the proportion of persons under 15 employed in successive census years, as this would give us some idea as to the influence of restrictions on child labour, but the comparison cannot be carried out owing to the absence of age groups in the censuses of 1881 and 1891. We can, however, extract the number under 15 years employed from the 1851, 1871, and 1901 census returns, and these are given in the table below. We have taken "cotton manufacture" only and "woollen and worsted manufacture" only for each census year, the percentages in the case of cotton being given for Lancashire only and in the case of wool for the West Riding of Yorkshire only.

TABLE XXXIX B	Cotton (Lancashire)		Woollen and worsted (West Riding of Yorkshire)	
	Percentage of persons under 15 employed to all employed	Percentage of persons under 15 employed to all persons between 10 and 15	Percentage of persons under 15 employed to all employed	Percentage of persons under 15 employed to all persons between 10 and 15
1851. Males ..	15.2	18.7	17.6	23.6
Females ..	15.0	20.5	23.0	23.3
Persons ..	15.1	19.6	19.9	23.4
*				
1871. Males ..	17.8	17.6	17.0	15.3
Females ..	16.1	24.3	20.6	20.3
Persons ..	16.8	20.9	19.2	17.8
1901. Males ..	11.4	8.8	12.5	6.9
Females ..	11.1	13.5	10.9	8.4
Persons ..	11.2	11.2	11.5	7.7

\* In 1861 the percentages do not differ markedly from those for 1851 and 1871.

In the first and third columns of figures the percentage of all those employed in the textile industries who were under 15 years is given. If we consider the percentages of persons under 15 we see that restrictions placed on child labour prior to 1871 made practically no difference to the number of children employed; there is a slight decrease in the number employed in Yorkshire and an increase in Lancashire. In 1901, however, there is a decided decrease in the number of young persons employed,—a decrease of over 33 per cent. in the number under 15 employed in the cotton factories and of about 40 per cent. in those under 15 employed in the woollen and worsted factories. The second and fourth columns of figures give the percentages of employed persons under 15 to all persons between 10 and 15 in Lancashire and Yorkshire. In Lancashire there were rather more young persons employed in 1871 than in 1851, but in 1901 the percentage was almost halved.

In Yorkshire the decrease apparently began before 1871 though up to that time the change is small, but in 1901 the number employed is more than halved. The decrease in "half-timers" is not due to a decrease in the number of children available, but to some other factor which signifies either less demand for or less possibility of their employment.

It is unfortunate that we cannot obtain the number of young persons employed for the intermediate censuses of 1881 and 1891; all we can say is that restrictions placed on child labour before 1871 do not seem to have affected materially the numbers employed, but that between 1871 and 1901 a marked decrease in the number of young persons employed took place.

It may be suggested that the regulations as to the employment of women rather than those relating to children are responsible for the fall in the birth-rate, and this cannot be absolutely disproved. But except for the restriction that women were not to return to the factory till four weeks after child-birth, which was of late date (1891), the regulations do not seem to have placed women under great disadvantages; indeed, the work of the men is largely dependent on the work of "women and young persons," and restrictions on their work have also in practice restricted the hours of men's work; it is very probable that mothers at the present time who work in factories restrict the size of their families, but we should attribute the influence of this on the birthrate to a date later than 1877. As far as one can tell restrictions placed on the labour of women have not reduced the percentage of women employed. This is shown in the following table:

*Percentages of women employed to all employed, both men and women.*

	Cotton (Lancashire)	Wool (Yorkshire)
1851	50.0	40.2
1871	58.8	50.4
1901	63.1	58.8

As we have already pointed out improvements in machinery allow women to do the work that formerly required men, and as, on the whole, they receive a lower rate of wage, it is found a saving of expense to increase the number of female employees. Whether the regulations referred to have decreased the relative number of *married* women employed it is impossible to say. The number of employed women, married and widowed, in 1901 can be obtained for the registration districts, but this number includes all such employed and not only those employed in factories. We can obtain from the 1911 census the number of married women employed in textile factories for certain county boroughs and districts with over 50,000 inhabitants, but unfortunately we have not this information for the earlier census years. We give, however, the 1911 figures below in Table XL, as we shall want to refer to them later, and it is of interest to see the proportion of married women still employed. We have put alongside these figures the regression coefficients showing the fall in the birthrate for the registration district in which the borough occurs. The Yorkshire towns are printed in heavy type.

The most noticeable fact in this table is the much larger percentage of married women employed in the Lancashire cotton towns than in the Yorkshire woollen towns. It is unfortunate that the data for some of the Yorkshire towns with a large number of women employed are not given in the census in conjunction with occupations, and we therefore have to omit such districts as Keighley, Saddleworth and Todmorden since they are not county boroughs, and have less than 50,000 inhabitants.

TABLE XL. *Married women employed in various Boroughs.*

Borough	Regression coefficient for registration district, 1876-1906	Women engaged in textile factories			Percentage of married women employed in factories
		All women	Married women	Per cent. married	
Burnley ..	-.353	20195	7396	36.6	34.7
Blackburn ..	-.376	26240	9537	36.3	36.7
Bury .. ..	-.353	8647	2599	30.1	22.7
Preston .. ..	-.243	19267	5777	30.0	26.9
Rochdale ..	-.281	13822	3775	27.3	20.6
Oldham .. ..	-.312	20487	4942	24.1	17.2
Bradford ..	-.333	36457	7509	20.6	13.0
Dewsbury ..	-.312	5352	1082	20.2	10.0
Leeds .. ..	-.244	11532	2331	20.2	2.7
Salford .. ..	-.217	10432	2096	20.1	5.0
Manchester ..	-.158	19887	3542	17.8	2.7
Huddersfield	-.278	10494	1672	15.9	8.0
Halifax .. ..	-.354	11318	1558	13.8	7.8
Bolton .. ..	-.274	22381	2929	13.1	8.7
Wigan .. ..	-.219	6401	533	8.3	3.5

If we correlate the percentage of married women employed in factories with the regression coefficient we find the coefficient is  $+ .628 \pm .106$  which is certainly very significant and accords with the coefficient found between the number of women employed in textile factories and the fall in the birthrate for all districts taken together, i.e.  $+ .530 \pm .074$  (p. 210). On the other hand the correlation between the percentage of women factory workers married and the regression coefficient is  $+ .496 \pm .131$ , which indicates that the percentage of the married women who work in factories is more important than the percentage of factory workers who are married.

The conclusions to which we arrived in this section are then :

(1) That the fall in the birthrate has been most marked where women are industrially employed.

(2) That restrictions placed on female labour have not decreased the number of women employed although there are no data to show the effect on the number of *married* women employed.

(3) That the number of married women now employed in factories is so considerable, that any tendency on their part to restrict motherhood would undoubtedly be a sensible factor in the fall of the birthrate in the textile districts.

(4) That young persons between the ages of 10 and 15 were far less



frequently employed in 1901 than in 1871, but that there was practically no change in the numbers employed between 1851 and 1871.

There is thus definite evidence of the recent loss in economic value of the child in the textile districts, and these districts also are chiefly those in which the women are industrially employed.

#### VI. THE FALL IN THE BIRTHRATE AND SOCIAL CONDITIONS.

Opinions may be divided as to the national danger of a fall in the birth-rate, but those who have any belief in heredity cannot differ in their opinion as to the national danger of a fall which is differential and most marked in the fitter elements of the population. The question we must now discuss is whether there is any evidence that the fall north of the Humber is differential. We have attempted to answer this question in three ways. First we made inquiries in the various districts and obtained from many correspondents, chiefly medical, information as to the size of family in various classes of the community; this detailed information has been given already in the discussion of the individual districts. The consensus of opinion very nearly, if not absolutely, unanimous was that limitation is more widespread in the fitter elements of the population.

Secondly we have attempted to measure the existing social conditions in each registration district by recording (*a*) the percentage of one and two-roomed tenements, (*b*) the amount of overcrowding in tenements of less than five rooms, and (*c*) the number of families or separate occupiers per house. Now we may assume *roughly* that housing conditions can be regarded as a measure of wage earning capacity, and this again as on the average proportional to skill and so to social fitness; hence, if the fall in the birthrate be greatest in those districts where housing conditions are most satisfactory, we have probably obtained some evidence that the fall in the birthrate is differential.

This method, however, when applied to the average conditions of districts which are very heterogeneous in their characteristics cannot be considered entirely satisfactory. The whole problem, indeed, is very complicated and, when we deal with whole districts, it is impossible to assert dogmatically that the association found between two factors, considered apart from local custom, means a really important relationship. We may find, indeed, that the fall has been least in the districts with the worst housing conditions, but we cannot therefore assert definitely that the fall in the birthrate is harmfully differential. The worse housing conditions may occur in districts where the women are not employed, and the less fall in such districts may be associated rather with the non-employment of the women than with the housing conditions, and need not point to a harmful differential fall in the birthrate. If we consider the range within a county we find so many types of district, such diverse occupations, such different housing conditions that we begin to doubt whether any work even on the districts of a single county can be very satisfactory. Probably our third method is really the most suitable one, namely, when possible, to take a single district—as is done by the Medical Officers of Health throughout the country, in the case of newly-born infants—and find the number of children

born to different classes of the community within the district itself\*. It is quite true that such an inquiry does not extend to the professional or upper middle classes, but it includes many grades of workers and enables us to discover directly what types of parents have the largest families.

This method has been employed by us in the case of one district in Yorkshire (Bradford) and we have considered the number of children born to different types of parents and in different types of homes. The same method had been previously used in another memoir issued by this Laboratory, where it was applied to a number of districts, several of which fall within our present area (see p. 224 for reference). The results of the Bradford investigation will be given later, after we have discussed the conclusions to be drawn from our second method, to which we now turn.

The data already given in this paper only allow us to deal with the average conditions of each district as a whole. We have measured the social conditions as we said before by the housing conditions, but there arise at once difficulties. The chief difficulty is in connection with "rural districts"; these, even if there be no mining, are of two kinds: they are purely agricultural, occupied by small farmers and their labourers, or they are agricultural with a considerable residential element. In agricultural districts overcrowding cannot be used as a real measure of poverty or of a low state of education or intelligence, for in a certain sense it is practically non-existent; but in industrial centres it is a measure of social status; from material in our possession and from results both published and unpublished we have found that overcrowding and a small number of rooms per family are associated with low wages and with inferior skill, and the percentage of overcrowding, etc. if correlated with the fall in the birthrate does give a fairly good idea as to how far the fall in the birthrate is harmfully differential. But in forming similar correlations for districts as wholes we should be obliged to omit agricultural districts and the difficulties in the way of doing this are very great. As we said before the registration districts are largely heterogeneous, a few are entirely agricultural and can be at once omitted, but very many contain mining and agricultural elements side by side or industrial and agricultural elements, and it is impossible to decide where to draw the line of exclusion or inclusion. If occupational statistics were obtainable for the whole registration district the matter would be comparatively simple, for corrections could be made for these agricultural districts, but this is impossible as these statistics do not exist. We have therefore decided

\* By the phrase "classes of the community" we are not referring essentially to social distinctions; rather we have in view mental and physical distinctions. These are not always *directly* ascertainable and we must then fall back on occupational distinctions, housing conditions and wage differences, and ascertain whether the smaller families belong to parents with the better types of occupation, the better housing conditions and the higher wages. We find, on the average, that the skilled workman has better habits and better health than the unskilled workman; and, if he has a smaller family, it is a serious matter, not because he belongs to a higher social grade but because generally he is stronger in mind and body and therefore more likely to have mentally and physically fit children, who will what is more be reared in a better environment.

to be content with a comparison of the fall in the birthrate and social conditions in two counties only, Lancashire and the West Riding of Yorkshire. In both there are districts which are substantially agricultural in character, but there are only two such in Lancashire, and though there are more in Yorkshire we consider that the Yorkshire districts must also be discussed as in some particulars they absolutely contradict the conclusions arrived at for Lancashire.

A second difficulty arises from a point already noticed, namely that the percentages of one and two-roomed tenements and of overcrowding, etc. are given for some cities and county boroughs which cover the whole of one and *part* of a second registration district. We know that the housing conditions probably vary in the two registration districts (they vary slightly in the data we give owing to the inclusion of other areas in the second registration district) and that thus the figures given are not accurate, but we must either use them or miss out districts like Liverpool and Manchester. The housing statistics for these districts are more accurate than the occupational statistics for we can include the rural and the small urban districts, but they are not absolutely correct. These remarks do not apply to the statement as to families per house, which is given for the registration district.

With these preliminary warnings we now turn to our second method of discussing the problem of the differential fall in the birthrate. The number of registration districts in Lancashire is 28, so all probable errors are large. In every case we correlated a large fall with a large percentage of the bad housing conditions and we obtained the following correlations :

Fall in the birthrate and percentage of overcrowding ..	- .564 ± .087
Fall in the birthrate and percentage of one and two-roomed tenements .. .. .	- .528 ± .092
Fall in the birthrate and number of families per house ..	- .710 ± .063

It will be seen that all these values are negative and significant, and we can assert that the fall in the birthrate has, in Lancashire, been definitely greatest where the best housing conditions exist\*. We further correlated the fall in the birthrate and the number of paupers in the workhouse and found a coefficient of  $-.777 \pm .051$ , another high negative correlation indicating less fall where the conditions are more unsatisfactory. As we said before this may or may not be an indication of the nature of the differential birthrate; the employment of women may prove a disturbing factor, and the greater fall where housing conditions are good may be associated with the employment of the women rather than with the good housing conditions. To test this point we omitted Lunesdale and Garstang for which no occupational statistics are given, and assumed, although we are quite aware that in some districts this may not be true, that the occupational statistics

\* If we omit Chorlton, Manchester, Toxteth Park, and Liverpool, where the data, owing to the difficulties discussed above, are more hypothetical, we get for the correlation of fall in birthrate and percentage of overcrowding  $-.484 \pm .105$ , and for fall in birthrate and percentage of one and two-roomed tenements  $-.302 \pm .125$ . Both are probably significant, but are not such high values as those given above.

for a portion of any district would be roughly the same as for the whole district did we know them. We then obtained the following correlation coefficients between the housing conditions and the fall in the birthrate for the remaining 26 districts:

Fall in the birthrate and percentage of overcrowding ..	- .568 ± .090
Fall in the birthrate and percentage of one and two-roomed tenements .. .. .	- .535 ± .094
Fall in the birthrate and percentage of women employed in textile factories .. .. .	+ .388 ± .112
Fall in the birthrate and number of families per house ..	- .715 ± .065
Percentages of women employed in textile factories and of overcrowding .. .. .	- .511 ± .098
Percentages of women employed in textile factories and of one and two-roomed tenements .. .. .	- .196 ± .127
Percentages of women employed in textile factories and number of families per house .. .. .	- .453 ± .105

These results are interesting; they show that the fall in the birthrate is positively associated with employment of women in the textile factories in Lancashire just as we found for all districts taken together, and further that the employment of women is associated with little overcrowding, and with few families per house, since the coefficients  $- .511 \pm .098$ , and  $- .453 \pm .105$  are certainly significant. The association between the number of one and two-roomed tenements and the number of women employed is also negative, but not definitely significant. Thus in Lancashire employment of women and good housing conditions are found together. This shows that it is necessary to correct for the employment of women before we can say that the fall in the birthrate in Lancashire is greatest where housing conditions are best. When we make the extent of the employment of women constant the partial correlations are as follows:

Fall in the birthrate and percentage of overcrowding ..	= - .467 ± .103
Fall in the birthrate and percentage of one and two-roomed tenements .. .. .	= - .508 ± .098
Fall in the birthrate and number of families per house ..	= - .656 ± .076

Thus the correction has slightly reduced the values found, but they are still definitely significant, and since we have corrected for the only factor that seems likely to upset our conclusions, namely the employment of the women, we are justified in assuming that in districts in Lancashire where there is a large amount of overcrowding, a large proportion of cases of more than one family to a house or a large proportion of one and two-roomed tenements, there also the fall in the birthrate is less marked. This confirms the deduction from our first method, based on inquiries put to our correspondents, who with only one or two exceptions gave it as their opinion that the fall in the birthrate had been most marked in the middle classes and in the better class working portion of the population. Both

confirm the result reached by Dr Heron in his paper on the "Relation of Fertility to Social Status\*," in which he showed for London that poverty was correlated with a high birthrate. Dr Heron found that the correlation coefficient between overcrowding and a high birthrate was  $\cdot697 \pm \cdot067$ , that between the proportion of males engaged in the lowest type of labour and a high birthrate was  $\cdot517 \pm \cdot095$ , that between the presence of pawnbrokers and allied trades in a district and a high birthrate was  $\cdot618 \pm \cdot080$ , and that between the amount of child employment and a high birthrate was  $\cdot660 \pm \cdot073$ . What Dr Heron has proved for London seems to be true for Lancashire also, but in Lancashire we have correlated signs of poverty with the *fall* in the birthrate and not with the *actual* birthrate in each registration district.

We shall now consider the West Riding of Yorkshire; the housing conditions in the West Riding form in their association with the fall in the birthrate a striking contrast to the like conditions in Lancashire; a casual glance at Table XXXVIII on p. 209 will show that in the West Riding where the fall in the birthrate is greatest the percentage of one and two-roomed tenements is greatest also.

The correlation coefficients between the fall in the birthrate and the various housing conditions bring this out clearly.

Characters correlated	West Riding	Lancashire
Fall in the birthrate and percentage of 1 and 2-roomed tenements	+ $\cdot511 \dagger \pm \cdot100$	- $\cdot528 \pm \cdot082$
"    "    "    "    overcrowding .. ..	+ $\cdot178 \pm \cdot131$	- $\cdot564 \pm \cdot087$
"    "    "    "    paupers .. ..	- $\cdot235 \pm \cdot127$	- $\cdot777 \pm \cdot051$
"    "    "    "    number of families in a house .. ..	- $\cdot569 \pm \cdot091$	- $\cdot710 \pm \cdot063$

† If we omit Hunslet, Leeds, Ecclesall, and Sheffield, where the data are somewhat hypothetical, the coefficients are  $\cdot502 \pm \cdot106$  and  $\cdot144 \pm \cdot139$  instead of  $\cdot511 \pm \cdot100$  and  $\cdot178 \pm \cdot131$ .

In the West Riding the fall is greatest where the number of one and two-roomed tenements is greatest, while exactly the opposite is the case in Lancashire; the correlation coefficient found between the fall in the birthrate and the amount of overcrowding, though not really significant, is positive and there is certainly no evidence in the West Riding to show that the fall is greatest where housing conditions are most satisfactory. When we correlate the number of paupers in the workhouse and the fall in the birthrate the sign of the coefficients is the same for both the West Riding and Lancashire, but in the latter the coefficient is higher and the association more unmistakable; indeed in the West Riding it is barely significant. The less number of families to the house is the only social condition which in both counties is definitely associated with a more marked fall in the birthrate. It seemed at first sight strange that in Yorkshire many families to the house should be associated with a less fall in the birthrate while overcrowding was not so associated; accordingly we correlated the number of

\* *Studies in National Deterioration I. Drapers' Research Memoirs.* Dulau and Co.

families to the house with overcrowding and found that in Yorkshire the coefficient was  $\cdot 127 \pm \cdot 132$  which is certainly not significant, while in Lancashire the coefficient was  $\cdot 727 \pm \cdot 057$ , a very high correlation. This illustrates the point we have already referred to, namely how extreme is the variation in housing conditions in different areas owing to local habits; we realise the difficulty therefore of combining areas from the separate counties unless we can allow for such local differences.

We decided that in Lancashire correction must be made for the employment of women before we could determine whether there was any evidence that the fall in the birthrate was greatest where the housing conditions were best. In Yorkshire the fall in the birthrate is most marked where women are employed in textile factories and this may help us to find some explanation of the difference between Lancashire and the West Riding of Yorkshire.

We have occupational statistics for only 19 districts in the West Riding, for we have had to omit those districts for which no information is given and also Wortley and Goole with Thorne, where the statistics were for such a small percentage of the districts that the chance of their being representative seemed to be slight. We then obtained the following correlations between:

Fall in the birthrate and percentage of overcrowding ..	$+ \cdot 252 \pm \cdot 145$
Fall in the birthrate and percentage of one and two-roomed tenements .. .. .	$+ \cdot 608 \pm \cdot 098$
Fall in the birthrate and percentage of women employed in textile factories .. .. .	$+ \cdot 786 \pm \cdot 059$
Fall in the birthrate and number of families to the house ..	$- \cdot 554 \pm \cdot 103$
Percentages of women employed in textile factories and of overcrowding .. .. .	$+ \cdot 231 \pm \cdot 147$
Percentages of women employed in textile factories and of one and two-roomed tenements .. .. .	$+ \cdot 565 \pm \cdot 105$
Percentages of women employed in textile factories and number of families to the house .. .. .	$- \cdot 581 \pm \cdot 103$

These results are strikingly different from those found in Lancashire. First, as noted before, many small tenements and much overcrowding are associated with a marked fall in the birthrate though the value found for the latter is perhaps not definitely significant. Secondly, the association between the employment of women in factories and the fall in the birthrate is very high, and significantly greater than that found in Lancashire. Thirdly, employment of women is associated with a large number of one and two-roomed tenements. In Lancashire good housing conditions and much employment of women went together, but in the West Riding good housing conditions go with little employment of women. The coefficient  $+ \cdot 565 \pm \cdot 105$  between employment of women and small houses is certainly significant, but that between women employed industrially and overcrowding,  $+ \cdot 231 \pm \cdot 147$ , is not definitely significant. We next corrected for the women employed in textile factories and found that when this factor was made constant the partial correlation coefficients were as follows:

Fall in the birthrate and percentage of overcrowding ..	+·117 ± ·153
Fall in the birthrate and percentage of one and two-roomed tenements .. .. .	+·321 ± ·139
Fall in the birthrate and number of families to the house ..	-·194 ± ·149

The first coefficient,  $+·117 \pm ·153$ , is certainly not significant, but it remains positive, and we can only say that even when the employment of women is made constant there is no evidence in the West Riding that the fall in the birthrate is greatest where there is least overcrowding. The coefficient  $+·321 \pm ·139$  is possibly significant; the significant positive value found for the crude coefficient between the fall in the birthrate and bad housing conditions is due largely to the heavy fall when women are industrially employed, but even when this has been allowed for we still have no evidence that the fall is greatest where the number of one and two-roomed tenements is least; in fact the significance as far as it reaches is in the opposite sense. The correlation coefficient between number of families to the house and the fall in the birthrate has been much reduced by allowing for the employment of women but it remains negative though not definitely significant.

The difference existing between the West Riding of Yorkshire and Lancashire is surprising, and, at present, only explicable on the basis of markedly diverse local housing conditions. One difference between Yorkshire and Lancashire is of course the larger mining element in the West Riding, and we accordingly corrected the correlation between the percentage of one and two-roomed tenements and the fall in the birthrate for a constant number of miners employed, but the coefficient was found to be  $+·662 \pm ·087$ , so that the presence of miners in greater numbers is not the cause of the difference found.

The inferior housing conditions in the textile towns of the West Riding as compared with the textile towns of Lancashire are striking. An examination of Table XXXVIII on p. 209 shows that the average percentage of one and two-roomed tenements in seven West Riding textile towns is 17·6, while in twelve Lancashire textile towns it is only 5·5, and it is interesting to notice that the only two districts in the West Riding which are largely textile districts and yet have better housing conditions than the average for the county are Todmorden and Saddleworth; both are on the Lancashire border, and Todmorden is a cotton and not a woollen district. Possibly the explanation of the better housing conditions in Lancashire cotton towns lies in the better wages earned in those towns and in the larger number of married women employed\*. We know definitely from material collected by various medical officers of health that when the income of the family is larger the housing conditions are better. The family income in cotton towns frequently consists of both husband's and wife's earnings, and though this also occurs in Yorkshire woollen towns it is somewhat less common †.

\* On the occasion of any dispute or strike among women workers in the districts round Bradford, we have been informed that the single women migrate to Bradford, because they are fairly certain of employment, and that they then remain there.

† For proportion of married women see p. 215, noting that the Yorkshire woollen towns are in heavier type.

The wife is most frequently employed when the husband's wage is low; for example, spinners' wives are seldom employed, but the wives of "big piecers" or "weavers" generally are employed; these men in Lancashire and Cheshire earn as piecers 18s. 4d. and as weavers 25s. 1d., while the women's wages average 19s. 0d. a week. If one takes the husband's wage at the lower rate of 18s. 4d., when the wife works, a total of 37s. 4d. will be coming into the home, and this wage is capable of providing house room without overcrowding. In the West Riding a smaller percentage of married women are employed, and wages in the cotton and woollen factories are lower than in Lancashire. In the West Riding big piecers in the cotton trade earn only 16s. 4d. a week on an average and weavers 22s. 7d., while the women's wages average 17s.; in the woollen industry, which is of far greater importance, the women earn only 13s. 10d. on an average, while the average wage for all men is 2s. less than that of all men in the cotton industry.

We have now discussed at some length the fall in the birthrate in relation to the housing conditions in Lancashire and in the West Riding of Yorkshire. It is clear that from the data here given we cannot deduce any definite proof that the fall in the birthrate in Yorkshire is a harmful differential fall so long as we deal with registration districts as our units. In Lancashire the fall in the birthrate for such districts is an undesirable differential fall; it is greatest where housing conditions are the best, but this is not so in Yorkshire\*. At the same time it appears clear from other evidence that the fall in the birthrate in Yorkshire is really a differential fall and the proof that this differentiation in the birthrate is harmful has been obtained by our third method not only for Lancashire but for Yorkshire. We have increasing evidence from the material provided by medical officers of health in the north of England that within each district itself it is the less healthy parents, the men and women with the worse habits, and the fathers with the lowest wages who have the largest families; this is true whether we consider all working class families as we have done in Blackburn or an even more restricted class of family, namely the working class families, that have no doctor and only a midwife in attendance at the birth of a child, as we have done in Bradford.

As we have previously stated opinions may differ as to the advantages or disadvantages of a falling birthrate, but no one who has even a feeble belief in the power of heredity can regard a differential fall in the birthrate favouring the unfit as anything but an unmixed evil. The birthrate has fallen, with two exceptions, in every registration district north of the Humber, and data from some of these districts in which the fall has been remarkably heavy show that in the working classes those with good health and good habits are having fewer children than their less desirable neighbours; the selective deathrate is ceasing to operate and there is a really serious problem before the nation.

Data have already been published by the Galton Laboratory which prove that in Blackburn, Preston, and Salford the more desirable members of the working

\* The disturbing factors when we take whole districts as our units of measurement are the heterogeneity of the population inside the district, and the very varied local housing conditions in different parts of Yorkshire. In Lancashire there seems to be far greater homogeneity in both respects.



class population of those towns have a smaller birthrate\*; but so far practically no data from a Yorkshire town have been published in detail. In Yorkshire the evidence of a harmful differential fall in the birthrate cannot be deduced from the data contained in this paper, and it will therefore be of interest to include here a short analysis of the returns on this point obtained from Bradford through the kindness of Dr Evans, the Medical Officer of Health for that city.

All babies born in Bradford and attended only by a midwife are visited by health visitors during the first year of life, and information is then obtained as to the health of the mother, the habits of the parents, the condition of the home, the occupation and wage of the father, the number of pregnancies, the number of living children and the age of the parents. The babies considered below were born during 1910 and during the first eight months of 1911.

We are dealing with families in which there is at least one child so that all sterile marriages are necessarily omitted; and further since we are dealing with incomplete families the age of the parents is of considerable importance. We might find, for instance, that unhealthy parents have more children born than healthy parents, but if the former are really older, their families will be more nearly complete, and therefore relatively larger than they would be if the ages of the two classes of parents were equal.

In Bradford the ages of both parents are given, but since the essential point in relation to the size of a family is the mother's age we shall here consider her age only. The age of the father is highly correlated with the mother's age and correction for his age also can easily be made, but this adds to the already complicated nature of the data and correction for *both* parents' ages makes, as we have shown elsewhere, little difference to the coefficients with which we must deal.

We have information concerning 2931 families, so that we are dealing with a reasonable number of cases and the probable errors of the coefficients of correlation found will be small.

It must be noted here that certain bad social conditions may themselves be due to a large family and do not necessarily indicate a differential birthrate; overcrowding is a case in point, for where the majority of available houses are of one size the actual house occupied is determined rather by the possible houses and by the money to be spent on rent than by the number of people who will occupy that house; overcrowding may thus only mean a large family, and the existence of a large family in too small a house may not be a sign that greater fertility is associated with overcrowding.

Cleanliness of the home might be considered to fall in the same category, and it might be argued that cleanliness is impossible where the family is large, but though a certain number of women might not have the energy to cope with the mess and untidiness of a large family we think that a woman who is naturally

\* *On the Correlation of Fertility with Social Value.* A Co-operative Study. Eugenics Laboratory Memoirs XVIII. Dulau and Co., 1913.

clean and tidy remains so, and, as will be seen later, there is only a slight increase in the proportion of dirty homes with the age of the mother.

We will first consider only gross families, that is to say, the total number of children born\* in different classes of the community, and by "classes" as already stated we must again state that we do not refer to social distinctions, but to physical and mental classifications.

TABLE XLI. *Bradford. The Differential Birthrate.*

Parental and home characteristics	Average		Correlation coefficients			
	Gross family	Age of mother	Parental or home condition and gross family	Parental or home condition and age of mother	Parental or home condition and gross family for constant age of mother	
Mother's Health	Good ..	3.63	29.54	- .262 ± .012†	- .144 ± .012	- .233 ± .012
	Not good ..	4.86	30.96			
Mother's Habits	Good ..	3.60	29.74	- .253 ± .012	- .072 ± .012	- .295 ± .011
	Not good ..	4.78	30.43			
Father's Habits	Good ..	3.59	29.74	- .222 ± .012	- .057 ± .012	- .266 ± .012
	Not good ..	4.61	30.30			
Mother ..	Not employed	4.57	31.20	+ .324 ± .011	+ .328 ± .011	+ .130 ± .012
	Employed ..	3.09	28.04			
Ventilation ..	Good and Fair	3.84	29.97	- .170 ± .012	- .050 ± .012	- .197 ± .012
	Poor ..	4.71	30.40			
Home ..	Clean ..	3.48	29.40	- .245 ± .012	- .082 ± .012	- .273 ± .012
	Fair ..	4.96	31.18			
	Dirty ..	5.35	30.92			
Type of House	Through ..	4.23	31.21	+ .050 ± .012	+ .122 ± .012	- .061 ± .012
	Back to back	3.95	29.81			
Occupation of Father	{ Skilled ..	3.83	30.53	- .041 ± .012	+ .074 ± .012	- .140 ± .012
	{ Unskilled ..	4.03	29.79			

The correlation between the age of mother and gross family is + .734 ± .057.

† To obtain these coefficients we used the bi-serial correlation method and as the probable error of *r* for this method had not then been worked out, we therefore tabled the probable error obtained by the product moment method, i.e.  $p.e. = \frac{.67449(1-r^2)}{\sqrt{N}}$  as some rough guide to the minimum value.

In this table when a correlation coefficient between a social condition and a large family is positive this means that the larger family comes from the better type of home. Non-employment of the mother is assumed here to mark a better social status.

The first column gives the average number of pregnancies under the different social conditions. The first three seem to us the most important; we know that health is an inherited characteristic, and since intelligence and temperament have been shown to be inherited we may assume that "habits" are probably largely inherited also. At any rate parents with good health and habits are more likely

\* In our Bradford data the "total number of pregnancies" is given and twins are reckoned as "one pregnancy," so that the number of children born is very slightly underestimated.

to have children with good health and habits than are the parents with bad health and habits; but in Bradford it is the more desirable parents who are having the fewer children. The parents with bad health and habits have over a child more than their more desirable neighbours. It is quite true that they are on the whole slightly older but the differences in age are not sufficient to account for the differences in size of family, for from these data we find that an additional year to the mother's age means only an additional .35 to the average number of her children, and we are thus left to face the fact that among the working classes in Bradford, when allowance has been made for the age of the mother, there is a quite significant correlation between bad health of the mother and a large gross family and between bad habits of both parents and a large gross family.

Leaving the question of the employment of the mother undiscussed for a moment we see that when the house is dirty and the ventilation is poor the family is distinctly larger, and in both cases the difference in age of the mother is very slight. Again the skilled workman has rather fewer children than the unskilled, and as he is an older man, his family when completed will be smaller than that of a factory hand or of a general labourer. Thus we see that in almost every case a bad social condition is associated with a large family. There is one exception, and that is in the case of the employment of the mother; if we consider that employment of the mother in some work other than her usual home occupations is "a bad social condition," and this we believe is the customary point of view, then we must note that when the mother is not employed her family is larger even when allowance is made for her age. It may be that a large family prevents employment, or it may be that if a woman wishes to work or is obliged to work in a factory she must curtail her family. The greatest fall in the birthrate was found in registration districts in which the married woman was employed, and now we find that the employment of the mother even within a typical woollen town like Bradford is associated with a smaller family. This is really a very weighty fact and it is true for cotton towns like Blackburn and Preston as well as for Bradford; it is noteworthy because the employment of the mother is associated with just those conditions of social life which are usually accompanied by a high birthrate. The wife of the skilled workman is less often employed than the wife of the general labourer, but the skilled labourer has fewer children than the general labourer and this difference would be still more clearly shown, had we dealt only with the cases where the wives of both were unemployed. The correlation coefficients between the employment of the mother and the various social conditions already dealt with are as follows:

Employment of Mother and her Health	..	..	..	+ .039 ± .021
"    "    "    "    Habits	..	..	..	+ .136 ± .020
"    "    "    "    Father's Habits	..	..	..	+ .212 ± .019
"    "    "    "    Ventilation	..	..	..	+ .196 ± .023
"    "    "    "    Condition of Home (clean and fair)				+ .077 ± .031
"    "    "    "    Condition of Home (fair and dirty)				+ .116 ± .020
"    "    "    "    Type of House	..	..	..	+ .198 ± .026
"    "    "    "    Occupation of Father	..	..	..	+ .256 ± .021

A positive coefficient means that employment of the mother is associated with less desirable parental or social conditions.

These coefficients are interesting in themselves; we see that there is practically no association between the woman's health and her employment and very little between her employment and the condition of her home; occupation of the mother does not mean a large increase in dirty homes. The percentages of mothers employed in the three types of homes are 37·2 in clean homes, 44·4 in fair homes, and 45·6 in dirty homes. If allowance were made for age the differences would be rather greater for there is a slight tendency for the older women to live in dirtier homes and they are not so frequently employed. There is a small but significant correlation between the employment of the mother and her habits and rather more association between her employment and her husband's habits; as we might expect, when the husband's habits are bad the wife more often has to work.

It seems probable therefore that in order to get a true estimate of the weight which should be attached to the influence of home conditions on the birthrate in Bradford we ought also to correct for the employment of the mother; this we have accordingly done, and the correlations given below are for constant Age and Employment of Mother:

Health of Mother and Size of Family	..	..	..	..	..	..	..	-·25 ± ·012
Habits of Mother	..	..	..	..	..	..	..	-·32 ± ·011
Habits of Father	..	..	..	..	..	..	..	-·31 ± ·011
Ventilation	..	..	..	..	..	..	..	-·22 ± ·012
Occupation of Father	..	..	..	..	..	..	..	-·18 ± ·012

It will be seen that the general tendency has been to raise the coefficients slightly and we have here probably a truer measure of the differentiation in the birthrate; we have not applied the double correction in those cases where the social condition may be supposed to flow from the size of the family as in the cleanliness of house. The only environmental condition we have used is that of ventilation, which really seems to be independent of a large family; there appears no reason to suppose that when there is a large family the windows are more often kept shut than when there is a small family, though possibly the presence of a large family might make the house seem stuffy; this possibility would hardly apply at the time of day when the lady inspectors usually pay their visits.

There are a sufficient number of families in Bradford to enable us to divide the mothers into four age groups and compare the number of children in the different classes, and this will illustrate the meaning of the partial correlation coefficients just found.

In the next table we have classed the mothers in fairly small age groups, and we see very clearly that when the ages of the mothers are about the same the parents with undesirable qualities have larger families than the parents with desirable qualities. In the youngest age groups the differences are slight and are possibly due to the younger age at marriage of the improvident, but the differences increase

until in the oldest age group we find a difference of from one to nearly two in the number of children as we pass from the more desirable to the less desirable members of the community. From our point of view it does not much matter whether this change is due to the later age at marriage in certain classes or to longer intervals between the birth of each child; these are matters of interest, but knowledge of them will not change the fact that even in a selected portion of the community, namely in the working classes of Bradford who do not have a doctor in attendance at the birth of a child, the socially desirable members of this sub-community are not having such large families as the less socially desirable members.

TABLE XLII. *Bradford. The Differential Size of Gross Incomplete Families.*

Parental and home characteristics		Average number of pregnancies of mothers of different ages			
		under 25	25—	29—	33—
Mother's Health	Good .. ..	1.61	2.62	3.80	6.25
	Not good ..	1.81	3.09	4.62	7.54
Mother's Habits	Good .. ..	1.60	2.61	3.71	6.07
	Not good ..	1.78	3.07	4.87	7.78
Father's Habits	Good .. ..	1.57	2.57	3.77	6.02
	Not good ..	1.79	3.07	4.58	7.62
Mother ..	Not employed	1.86	2.92	4.27	6.96
	Employed ..	1.50	2.52	3.73	5.92
Ventilation ..	Good and Fair	1.60	2.68	3.95	6.50
	Poor .. ..	1.92	3.17	4.73	7.55
Home .. ..	Clean .. ..	1.58	2.59	3.64	6.06
	Fair .. ..	1.83	3.10	4.89	7.44
	Dirty .. ..	1.94	3.41	5.00	8.34
Type of House	Through ..	1.53	2.31	3.63	7.22
	Back to back	1.66	2.79	4.14	6.61
Occupation of Father	{ Skilled .. ..	1.49	2.57	3.95	6.09
	{ Unskilled ..	1.69	2.79	4.12	6.90

Thus far we have considered only the gross family, and it might well be urged that this difference in numbers will not greatly matter from the purely racial standpoint since the anti-social qualities in the parents will mean a higher death-rate among the children and that thus, in the long run, the selective death-rate will counteract the effects of the selective birth-rate and the net family of the undesirable members of the community will not really be greater than that of the desirable.

It is impossible to decide this point on the data at present available since we do not know what will happen when the lives of the children have been completed;

we should want the full details for two generations. But we can consider the number of living children at the time of the birth of the recorded baby and thus get some idea as to the part played by the selective deathrate in altering the action of the selective birthrate; the heaviest deathrate comes in the first year of life so that our conclusions need not be very wide of the mark. We shall now deal with the net family at the birth of a child, and Table XLIII will give the average net family for the different types of parents and of home conditions with the correlation coefficients between the size of family and the different parental and social conditions for a constant age of the mother.

TABLE XLIII. *Bradford. The Differential Size of Net Incomplete Families.*

Parental and home characteristics		Net family	Age of mother	Correlation coefficient	
				Parental or home condition and net family	Parental or home condition and net family for constant age of mother
Mother's Health	Good .. ..	2.84	29.54	- .034 ± .012	+ .091 ± .012
	Not good ..	3.02	30.96		
Mother's Habits	Good .. ..	2.79	29.74	- .143 ± .012	- .129 ± .012
	Not good ..	3.25	30.43		
Father's Habits	Good .. ..	2.81	29.74	- .108 ± .012	- .094 ± .012
	Not good ..	3.15	30.30		
Mother .. ..	Not employed	2.62	31.20	+ .347 ± .011	+ .177 ± .012
	Employed ..	2.27	28.04		
Ventilation ..	Good and Fair	2.88	29.77	- .093 ± .012	- .081 ± .012
	Poor .. ..	3.22	30.40		
Home .. ..	Clean .. ..	2.67	29.40	- .142 ± .012	- .118 ± .012
	Fair .. ..	3.50	31.18		
	Dirty .. ..	3.49	30.92		
Type of House	Through ..	3.33	31.21	+ .113 ± .012	+ .043 ± .012
	Back to back	2.89	29.81		
Occupation of Father	{ Skilled .. ..	3.01	30.53	+ .028 ± .012	- .031 ± .012
	{ Unskilled ..	2.92	29.79		

The correlation between the age of the mother and the net family is +.688 ± .007; for the correlations between age of mother and the various social conditions see Table XLI, p. 225.

An additional year to the mother's age means on an average an addition of .23 living children to the net family. It is obvious both from the averages and from the correlation coefficients between social condition and net family that the selective deathrate has operated to a certain extent, but except in a few cases it has not been sufficiently severe to alter the state of affairs shown by gross families, and we find generally that the larger net family comes from the less desirable home.

We have already seen that the less healthy mother had the larger gross family, but the deathrate is heavier among her children, and, when allowance is made for age, the net family of the unhealthy mother is smaller in Bradford than the net family of the healthy mother. Nature has proved stronger than man, and through the factor of hereditary healthiness the selective deathrate has diminished the racially evil effect of a differential birthrate.

A higher deathrate among the children of parents with bad habits has done something to reduce the larger gross family, but it has not reversed the undesirable differential birthrate, and there is still a significant correlation between the bad habits in the parent and a large net family. The correlation coefficient between the mother's employment and a small net family is a very little higher than that between her employment and a small gross family. Poor ventilation and dirty homes directly or indirectly mean a slightly higher deathrate among the children, but it is not sufficiently great to compensate for the distinctly higher birthrate and the coefficients between a large net family and poor homes are certainly significant. The coefficients between type of house and occupation of the father and a large net family are not definitely significant.

Again it may be useful to give as an illustration of the genesis of a partial correlation coefficient the average number of children alive for the four maternal age groups used already.

TABLE XLIV. *Bradford. Differential Size of Net Incomplete Families.*

Parental and home characteristics			Average number of living children of mothers of different ages			
			under 25	25—	29—	33—
Mother's Health	Good ..	..	1.32	2.19	3.09	4.66
	Not good ..	..	1.27	2.13	3.17	4.68
Mother's Habits	Good ..	..	1.28	2.14	2.95	4.48
	Not good ..	..	1.34	2.25	3.47	5.01
Father's Habits	Good ..	..	1.31	2.11	3.01	4.49
	Not good ..	..	1.33	2.28	3.28	4.92
Mother ..	Not employed	..	1.52	2.29	3.30	4.91
	Employed ..	..	1.16	2.01	2.78	4.00
Ventilation ..	Good and Fair	..	1.27	2.14	3.05	4.66
	Poor .. ..	..	1.54	2.37	3.44	4.73
Home ..	Clean .. ..	..	1.27	2.09	2.88	4.42
	Fair .. ..	..	1.41	2.39	3.58	5.02
	Dirty .. ..	..	1.57	2.41	3.46	5.06
Type of House	Through ..	..	1.21	1.91	3.06	5.49
	Back to back	..	1.32	2.20	3.12	4.56
Occupation of Father	{ Skilled ..	..	1.27	2.15	3.14	4.63
	{ Unskilled ..	..	1.32	2.17	3.12	4.69

A table of this sort brings out some rather interesting points. We saw from the partial correlation coefficient that when the age was constant the net family was on the whole larger when the mother was healthy, but the first two lines of figures in the above table indicate a slight difference according to the age group of the mother. When the mother is under 29, and the family on an average consists of less than three living children, the healthy mother has the larger net family, but when the mother is over 29 the average family is over three and there is a tendency for the larger net family to be found with the less healthy mother. This suggests that the infantile deathrate has the strongest selective influence, and that if we were able to deal with completed families only we might not find that the selective deathrate reversed the greater fertility of the unhealthy mothers.

At all ages the parents with bad habits have more children alive than the parents with good habits, and all along the line the employed mothers have fewer children than the unemployed mothers. This point has been discussed already: it may indicate the impossibility of a mother being employed when the family is large, or it may mean that mothers who are employed limit their family or it may mean that when there are many living children the older ones starting work relieve the mother of the necessity of outside employment. Well ventilated and clean homes have fewer children in them and these results are remarkably uniform. The type of house shows some differences in the age groups, but it must be remembered that in Bradford there are very few "through" houses and that the averages are therefore not so accurate as in the other groups considered. In the earlier age groups a slightly larger net family is found in "back to back" houses, but after age 33 the "through" house has a distinctly larger average net family; this probably means that, since "through" houses are generally larger than "back to back" houses, the larger net family has sought a "through" house; in Bradford when there are more than five living children one or two at least are likely to be earning and thus the family income admits of better housing accommodation. There are 1995 families in the Bradford data in which the father is earning a regular wage and in 247 of these at least one of the children is also earning, and of the families of six or more living children 63 per cent. have one or more of the children earning; thus the family income runs up rapidly from the time there are five living children.

The occupation of the father has very little association in Bradford with the size of both net and gross families; this want of influence is partly due to the fact that the employment of the mother influences the number of children born. Mothers are more often employed when their husbands are unskilled workers, but employed mothers have smaller families and we should anticipate that, in towns where women are not industrially employed, a much more marked association between unskilled work and a large family would exist than we find in Bradford.

Data similar to these from Bradford for the upper and middle classes in England\* are not at present available, but all the evidence we have points to a differential birthrate within those classes as in the working classes themselves; the

\* Data however exist for France: see Lucien, March: *Statistique générale de la France: Statistique des Familles en 1906, 1912.*



healthy, careful and thrifty are having smaller families than the unhealthy, careless and thriftless, and the selective deathrate except, perhaps, in the case of health no longer weeds out the children of the less fit. It is impossible now, even if we would, to go back to the old days when nature worked unhindered, and a differential birthrate would possibly be racially harmless since its effects would be corrected by a selective deathrate. No community can allow its children to suffer more than can possibly be avoided from the carelessness and indifference of their parents, but by thus interfering with natural processes the community probably lays up racial trouble for the future. We must continue to help the helpless, but can nothing be done to increase the fertility of the racially fit?

#### VII. SUMMARY OF CONCLUSIONS AS TO THE FALL IN THE BIRTHRATE IN THE NORTH OF ENGLAND.

The first point which we think is definitely established in this paper is that there has been an immense fall in the birthrate of England, north of the Humber, and this is true even when that rate is based solely on wives of the fertile ages, and when allowance is made by means of the potential birthrate for the changing age of these wives.

The second point which we have reached is that this fall is not due to any physiological decrease in fertility\*, but to a widespread and nearly universal artificial restriction of the family. There is no evidence whatever to support the hypothesis that higher wages, the pursuit of pleasure and an increased luxury have produced partial sterility; there is on the other hand an immense amount of evidence pointing to the wide sale of many different types of preventives, and to the great demand for abortifacient drugs.

Many of our correspondents have little doubt that the fall in the birthrate is due to the deliberate limitation of the family, that widespread knowledge on the subject has increased with education, and that propagandism for the limitation of the family is extensively carried on through the post and by advertisements in the press. We have seen that in some districts books giving information as well as preventives themselves are openly sold, and the inclusion of such writings under the head of indecent literature has been suggested as desirable in order to restrict the sale. This might be advisable where it can be proved that the sale has directly encouraged (as it has done in certain cities †) promiscuity in the unmarried population. But no legislative action of this kind will suffice to control a population in which restriction has become a habit or is even regarded

\* Of course artificial sterility is likely to be followed by physiological infertility, partly because the non-exercise of function or its restriction by possibly harmful methods is in itself likely to destroy the possibility of function, and partly because, if healthy parenthood be to any degree hereditary, its limitation will destroy the action of reproductive selection, i.e. the survival in larger numbers of the more fertile stocks.

† Police action in such cases would be relatively easy as many of the urban dealers in preventives openly offer for sale a great variety of purely pornographic books, which have clearly no market whatever among the class seeking on moral or economic grounds to limit their family.

as highly moral, and where, indeed, the literature on the subject is able to cite the opinions of Matthew Arnold\* or John Stuart Mill† in favour of limitation. Such legislation would only lead either to a traffic in smuggled goods, or to an increased use of the already far too common and far more dangerous abortifacients. A widespread social custom can only be met (i) by changing the economic conditions from which it has arisen, or (ii) by the inculcation of a new standard of conduct which appeals by the force of its national or religious significance to deeper emotions than those on which the habit itself is based.

While it may not be possible to fix an absolute date for the beginning of the propagandism for the limitation of the family, our diagrams certainly seem to indicate that it began to produce significant results about the year 1877. Some of our correspondents actually attribute the beginning of the present fall in the birthrate to the publication of *The Fruits of Philosophy*, and the trial of Mr Bradlaugh and Mrs Besant in that year. The teaching embodied in that book had been, however, fairly widespread even before the actual publication, but the trial itself no doubt attracted further attention to it, and placed its propagators outside the reach of the law. We doubt, however, whether the spread of the information would have been so rapid, or the teaching so widely adopted, if economic and social conditions had not developed which rendered restriction of the family a desirable aim in the minds of many. The neo-Malthusian teachers showed the possibility separating marriage and parentage, but their views would not have been accepted so quickly had not the desire for children been much diminished owing to some social or economic cause. This cause has been found by some of our correspondents in a greatly increased love of ease and luxury. Without using the words "ease" and "luxury" we may probably admit that higher standards of decency and comfort have grown up in the skilled artisan classes, and these may have helped to some extent the doctrine of limitation; yet we believe that some other factor has more largely influenced opinion in this matter, and it must be a factor, which would more largely affect the workers in the textile districts than the workers in metals or the miners. We think that such a factor coming into operation about 1877 may probably be found in the restrictions placed on child-labour. Such restrictions made apparently no difference to the number of children employed between 1851 and 1871. But between 1871 and 1901 the number of children employed largely diminished. Neo-Malthusian doctrines spread and the child ceased largely to be born, because it was no longer an economic asset. We should therefore expect the birthrate to fall most rapidly where the child was first deprived of its old value, and where the knowledge of how marriage could be disassociated from parentage was most likely to spread quickly. The Compulsory Education Act of 1876, the Factories and Workshops Act of 1878 and the Bradlaugh-Besant trial of 1877 are not unrelated movements; they are connected with the lowered economic value of the child, and with the corresponding desire to do without it.

\* "To bring into the world more children than one can afford to keep is by no means an accomplishment of the Divine Will or a fulfilment of Nature's Laws."

† *Political Economy*, People's Edition, pp. 220, 226.

No one can examine our diagrams carefully without being forced to the conclusion that the turning point in the birthrate centres about 1877. North of the Humber with the two exceptions of Liverpool and Hunsworth (Plates V and X) there has been a decline of greater or less magnitude everywhere. Up to 1877 the birthrate was generally either increasing or steady; in a few districts the fall, perhaps, had definitely begun before 1877, and in some others the regression coefficient shows a minus sign, and seems to indicate a fall before that date, but in some of these the fall can be accounted for by changes in the age distribution of married women. Further, an examination of the diagrams shows that in other cases where there was a fall between 1851 and 1876, it was really due to a high rate in the fifties followed by a low rate in the sixties, which recovered itself in the seventies, and accordingly that had the division of our periods been taken a few years later than 1875, the fall, such as it is, would probably have been found to be non-existent and the birthrate, but for temporary fluctuations, fairly steady. (For example, in Lancaster and Haslingden, Plate I, had the division been taken at 1881 and 1878 respectively; Bury, Ormskirk and Oldham, Plate II, had the division been taken at 1877 instead of at 1875; Rochdale, Bolton and Lunesdale, Plate III, had the division been taken at 1878 in the first two cases and at 1884 in the third, and so on.)

Yet the extraordinary fact remains that in most districts the decline is closely associated with occurrences happening in or round 1877. In a few towns like Leeds and Sunderland and in a few agricultural districts the fall may not have started till the middle of the eighties, but these are the exceptions. An examination of the whole counties as figured on Plates XVII and XVIII shows the universality of the statement: The English birthrate began to decline from events happening in or about 1877. We have seen that but little of the fall can be accounted for by the changes in the ages of married women; we have seen that there is no real evidence to associate it with a decreased physiological fertility of English men or women. The assertion that increased luxury is the source of such physiological decrease in fertility has no real weight behind it; the fall in the birthrate coincides rather with the lean than with the fat years, with the years in which wages tended to fall rather than with the years of their abundance. Indeed the tremendous fall in working class districts where the actual changes in wages are well known precludes the idea that any marked increase in luxury is producing the apparent decrease in fertility.

The Bradlaugh-Besant trial and the propagandism which preceded and followed it have too close a chronological relation to the start in the fall of the birthrate to be put on one side as secondary matters. A great industrial boom very fully evidenced in our accounts of the individual registration districts had given all classes of the community not only a higher standard of ordinary living but an acquaintance with "luxuries," which became necessities. When depression followed the problem arose as to which of the least necessary things should be dispensed with. The child, owing to factory and educational legislation, had become more and more a protracted source of expenditure; the moral leaders of the people

had taught that the parents had "no right" to children unless they could support them, and this theory had replaced the old evangelical doctrine that: "It is God who sends children and He will in due course provide for them." The better class workman began to understand that his progress as well as his comfort were handicapped by a large family. No moral restraint was able to dominate an imperious instinct, and many classes saw themselves faced by the dilemma either of returning to a past lower standard, or of accepting the policy of artificial restriction of the family. At such a moment the propagandism of Bradlaugh and Besant for the limitation of the family and their demonstration that marriage and parentage were separable struck fruitful soil. Their teaching would have had little force had it not found a population seeking for economic reasons a divorce between marriage and parentage. Their propagandism might again have made little way had it been purely, as it largely is to-day, a commercial speculation of the vendors of preventives; but Bradlaugh was a man well known throughout England, and whether his views were right or wrong he was honest in his convictions and personally respected. The gravity of the trial, notorious as it was, was far from recognised at the time; it legitimised the teaching of practical methods for the limitation of the family, and within thirty years that teaching has revolutionised the sexual habits of the English people. It has destroyed the pressure which carried an English population as the great colonising force into every quarter of the globe, and it may be that coming centuries will recognise the Bradlaugh trial as the knell of the British colonial empire—and as the real summons to Slavs, Chinese and other fertile races to occupy the spare places of earth.

Economic change and industrial pressure had threatened the family many times before, but practical methods of limitation were untaught and the wave of surplus population was forced outwards either to rule or to populate other continents. Then, when the pressure was over, a new habit which checked expansion had not been learnt. To-day a boom in the mining industry would not be followed, as that of 1871 was, by a rise in the birthrate, but by an immigration of Polish or other foreign workers. The demand for workers, resulting from the recent boom in British Columbia, was largely responded to by Orientals and other foreigners simply because we had no great surplus British population to pour into that state. Thus it comes about that what appears at first a small matter—the judgment as to whether a pamphlet was indecent or otherwise—may be the spark which ultimately produces world-wide disaster, for it has altered the social habits of a whole nation and may lead to a complete change in its position in the world. For we have to remember, that a family of three instead of one of six not only cuts off half the army of workers, but deprives us of half, and, from some aspects, of possibly more than half the *leaders* of that army. There is more than sufficient evidence to show that in the classes where ability and leadership are hereditary there the new view of family life has sooner and more deeply taken root.

There will undoubtedly be those who will, and possibly on the evidence of the present report, associate the decline in the birthrate with the growing emancipation of women. They will point to the undoubted fact that where, as in the

textile and woollen towns, there is much employment of women, there the birthrate has fallen more quickly and markedly than in the metal working or mining districts. We accept this fact, but we do not accept the inference from it. There has always been a very large amount of female labour right back even to the time of home industries in these textile and woollen districts. The reason for the more rapid fall in these districts is, we think, due to two causes. When pressure makes the wage earned by the woman an essential factor in the household economy, a large family not only increases the expenditure, but removes for a greater or less period one source of income, the mother's work. In the engineering or mining districts, where the man earns a higher income than the male textile or woollen worker, pressure makes him feel the increased expenditure caused by a large family, but a new birth does not in itself cut off any source of income. Thus the process of restricting the family would have greater force behind it in the woollen and cotton than in the mining and engineering districts.

There is further a most important factor, which must not be overlooked, namely, the relative ease with which knowledge can be conveyed and a tradition established. We have seen in our detailed account, that knowledge is conveyed largely from mouth to mouth, to some extent by advertisement and occasionally by lecture in the open market-place. In a district where there are no factories general communication in such matters is very slow and the population, especially if largely rural (although the agriculturist is now beginning to be affected: see Malton, Plate XII, or Stokesley and Helmsley, Plate XIII), has not been so early or so deeply stirred as the urban districts. In the mining districts again, the cottages are largely isolated, there is no centre like a factory bringing many women together, and much of the underground work in the case of the men is very isolated; thus, as we might expect, we actually find that the mining districts follow the purely rural, and are those on which relatively small impression has been made by prevention propagandism. Next come the engineering and metal working towns in which the men congregate together but the women do not, and lastly we reach in the textile and woollen towns, with the joint industrial occupation of both men and women, the greatest opportunity for the spread of new knowledge and for the creation of tradition. What is here true of restriction of the family is equally applicable to the spread of any new habit or fashion, or the adoption of any new food or form of amusement; the factory towns are the places where advertisement is most profitable and where information is most rapidly disseminated. We have already brought evidence to show that the question of restriction is openly discussed within the factory gates. Thus on both counts—that of greater economic pressure where the wife is also a wage earner, and that of greater facility for the creation of a tradition—it is not surprising to find the order of decrease in the birthrate to be roughly (i) textile and woollen towns, (ii) engineering and metal working towns, (iii) mining districts and lastly (iv) purely rural districts. If the tendency to restrict the family has now got firm hold of the engineering and metal districts, if it is quite significant in the mining districts and if it has even reached the purely rural populations, it is obvious that little national advantage

would be obtained by excluding all mothers from the factories, even if there were any prospect of raising their husbands' wages all round to 35s. or 40s. a week, so that they might equal those of the engineering or metal-working towns. It is true that in the textile towns the non-employed mothers have more children than the employed mothers, but it is just as reasonable to assert that they have ceased industrial employment because of their large family, as to assert that the children are more numerous because their mothers are unemployed.

Our purpose in this Report has been to give a true picture of the existing state of affairs, a state which appears to us one of the most serious national gravity. It is not only that any fall in the birthrate has endless importance for Great Britain as the mother of greater nations, but as we have endeavoured to indicate both here and elsewhere the present fall is harmfully differential; any such differential fall means racial degeneration. We do not assert that to have checked the propagandism of prevention in 1877 would have been possible, or if possible advisable. There was much force behind it, both economic and semi-moral in character, and no public man in those days grasped fully what an immense national change would be produced within less than forty years. Many of us can see now that if the movement continues unchecked for another forty years, it means national disaster, complete and irremediable, not only for this country but for Britain across four seas.

Legislation might to some extent check the widespread demoralisation which arises from the uncontrolled sale and advertisement of preventives and abortifacients; it is inconceivable that it could modify what has grown already to be a tradition in family life. The tradition has sprung from economic causes, accompanied especially in the middle and higher artisan classes by a justifying morality which argued first that society should not be burdened by more children than the parents could rear to the highest standard of their class, and secondly that the wife should not forfeit her personal health and development under the crushing burden of excessive child-bearing and rearing. In this narrower morality the broader national aspect has been far too often overlooked. To modify effectively the present practice and the now-accepted family morality, economic conditions must be changed. Starting from the harmfully differential birthrate, a reformed morality which includes the idea of increased national efficiency must be taught, and taught in the market-place with a vigour and effectiveness which only a religious movement can have. Have we any illustration in our material of the feasibility of such a state of affairs? Possibly; the one district of any importance in which the birthrate has not fallen is Liverpool, and there is no doubt that it is due to the presence of a large Irish contingent in that city. Has its birthrate been maintained because, notwithstanding the economic pressure of poverty, the Irish have been too ignorant to learn methods of limiting their families, or because their religion looks upon restriction as sinful? Catholicism has not saved France, but are the French really as devout as the Irish? The point is a nice one, and probably cannot be answered till the birthrates in Ireland itself have been duly studied for its several districts. But the suggestion made is that a strongly held religious or moral code

may enforce conduct which disregards economic pressure. On the other hand the relief of economic pressure, followed by a new moral standard, is much more likely to be effective than any moral lesson alone. The essential need is to check the present harmfully differential birthrate and this appears to us only possible if the State again gives economic value, not to every child, but to the well-born child. That principle once accepted, the social duty of fit parents to produce the fit child becomes reasonably easy to inculcate, and capable of being given again a religious significance.

The endowment of racially fit parentage is the great eugenic problem which in this century faces the chief European nations\*. It embraces within its wider scope the endowment of motherhood on which the individual freedom of the married woman so largely depends.

To sum up we find need of one or two smaller things and one great one :

In the first place strong measures on the part of the executive are urgently needed to repress the growing frequency of abortion and the sale by advertisement and otherwise of abortifacients. The licence with which these advertisements appear in the newspapers is intolerable, and whatever may be said of the economic advantages of limitation, nothing can be admitted in defence of a practice which frequently ruins the mother's health, and which, if it does not destroy the young life, may bring a crippled human being into existence. Further, the vendors of these abortifacients are largely concerned not only with the limitation of legitimate births, but also with screening the effects of the present tendency to promiscuity.

In the second place it is clear that the sale of preventives is very far from confined to the married who wish to limit their families ; the chief vendors of them in our large towns appeal not only to single men and women, but are very frequently salesmen of all forms of pornographic literature. Thus they pander like the advertisers of abortifacients to the growing movement towards promiscuity. A great deal might be achieved by increased police vigilance, for it is almost impossible to believe that many of these vendors do not as matters even now stand offend against existing legislation.

But the one great thing we want is a real statesman, a man who will see whither the present movement for the limitation of the family is inevitably leading the nation. We need a man who will grasp clearly the economic source of the whole evil, who is able to awake the nation, and who gaining its support will make the well-born child again an economic asset. We want a leader who will convince the workers both with the head and with the hand that, however costly, the well-born child is now as it was in the past the basis of national greatness and the price of empire, we need above all a statesman who will make this child once more a welcome possibility. He will have a task, such as only those can realise who

\* The problem is of far wider range than Great Britain, or France. Berlin stands next to Paris in the racial inadequacy of its birthrate, and probably before Paris in the prevalence of venereal disease. In no country has the development of preventives reached such a high level of technique as in Germany.

have plumbed even the shallows of this swamp which is threatening to rise and engulf the nation.

Thrones, Powers, Dominions block the view  
 With episodes and underlings.  
 The meek historian deems them true  
 Nor heeds the song that Clio sings—  
 The simple central truth that stings  
 The mob to boo, the priest to ban :  
*Things never yet created things—*  
*Once—in our time—is there a man ?*

## APPENDIX I.

*On the Wages of the Chief Industries in the North of England.*

Reports of the Board of Trade into the Earnings and Hours of Labour of Work-people of the United Kingdom in the Textile Trades and in the Metal, Engineering and Ship-building Trades were issued in 1909 and 1911 respectively\*. They deal with an inquiry undertaken in 1906; the only previous inquiry of a similar kind was undertaken in 1886. In the textile factories over one million persons were engaged and in response to the inquiry returns covering about 44 per cent. of the total were received. In the metal, engineering and ship-building trades returns covering about 50 per cent. of the total employed were received.

"The particulars as to earnings asked for in the schedules were (a) a return of the total number of operatives employed and the amount of wages paid in the last pay-week in each month of 1906, with the aggregate amount of wages paid during that year, and (b) a return of the individual net earnings of work-people, classified by occupation, in one specified week of the same year, distinguishing those who worked full time from those who worked either less or more than full time. Summaries were also prepared showing the earnings of the principal classes of work-people in each of the important centres of the different trades." The earnings of home workers are not included.

Table XLV below gives the average wage of men, women and children in the six branches of the textile industries with which we are chiefly concerned in the present memoir.

TABLE XLV. *Wages in Textile Industries.*

Nature of the textile industry	Average earnings of operatives working full time in the last pay-week of September, 1906			
	Men	Women	Boys	Girls
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
Cotton .. .. .	29 6	18 8	11 6	10 1
Woollen and Worsted ..	26 10	13 10	8 10	8 4
Silk .. .. .	25 8	11 2	8 2	6 4
Other Textile industries ..	25 8	13 7	9 1	7 0
Fustian and Cord cutting ..	24 1	10 10	9 8	8 1
Bleaching, Printing, etc. ..	27 8	12 4	10 8	8 2

For all the textile industries the average advance of wages since 1886 has been about 16 per cent. for men and 18 per cent. for women.

\* Cd. 4545 (1909) and Cd. 5814 (1911).



A. *Cotton Industry.* 83 per cent. of the operatives were employed in the cotton industry in Lancashire and 7 per cent. in Yorkshire. Of all operatives 62 per cent. in 1906 were females, and 2.9 per cent. of the females and 4.1 per cent. of the males were half-timers.

The two broad divisions of cotton manufacture are spinning and weaving. In spinning the chief branches are :

(1) Mixing ; which is done by unskilled men or lads or in some cases by girls ; the earnings of full time workers averaged 21s. 6d., and there was little variation from district to district.

(2) Blowing ; which is done by men commonly known as "scutchers" ; the average wage for all districts was 25s. 7d., but the wage varied from 19s. 3d. in Preston to 28s. 6d. in Oldham ; these men were paid time wages.

(3) (a) Carding ; this work is of a skilled nature and is undertaken by grinders whose average wage was 29s. 3d. ; (b) Drawing, etc. was carried on by women known as frame tenters whose wages averaged 19s. 4d. per week ; most of them were paid piece rates.

(4) Mule spinning ; in general there are a spinner, a big piecer and a little piecer in charge of a pair of mules ; this group contained more than a quarter of the men and nearly half the boys. The earnings of spinners (or "minders") after deducting the piecers' wages from the gross earnings of the mules, averaged 41s. 2d.\* Big piecers, when men, earned 18s. 4d. on an average, when boys 16s. 6d., while little piecers earned on an average 11s. 11d.

(5) Ring spinning ; this is carried on by women and girls ; the majority were paid time wages averaging 15s. for a full week, but one-fifth were on piece rates with an average of 16s. 8d.

In weaving the chief branches are :

(1) Winding ; this is carried on by women ; nearly all reelers and winders were paid piece rates and earned on an average 13s. 8d. and 15s. 3d. respectively ; only a quarter of the doublers were paid piece rates and they earned 13s. 1d. on an average, but in some districts doublers or reelers got the higher wage.

(2) Ball warping ; this is carried on by men who earned 41s. 6d. on piece work.

(3) Beam warping ; this is carried on by women who form a relatively small group ; the average wage was 20s. 9d., and the majority were paid piece rates.

(4) Sizing ; this is carried on by men who were paid time rates in about three cases out of four and who earned 42s. 8d. on an average ; when paid piece rates their wages averaged 45s. 5d. for a full week.

(5) Drawing-in ; this is carried on by men, whose earnings on piece rates were very variable, averaging 30s. 11d. a week, while *twisters-in* averaged 25s. 7d.

(6) Warp dressing ; this is carried on by men only in districts in which striped and coloured goods are woven ; the average wage was 36s. 10d.

These last three processes employ relatively only a small number of hands, about 6.5 per cent. of all males employed.

(7) Weaving employs both men and women ; a competent weaver takes charge of three, four or six looms, but where the looms are wide, one or two looms per weaver is the rule. A weaver frequently has a girl or boy assistant ("tenter") who is paid out of his or her earnings. 42 per cent. of the men and only 10 per cent. of the women were time workers. Rather more than one-third of the total number of work-people were weavers ; practically all were paid on a piece basis and men and women engaged on similar work were paid at the same piece rate, but as wage depends on the number of looms and women generally have charge of the smaller looms men's wages averaged 25s. 3d. and women's 20s. 7d.

The following table, which is taken from the 1911 *Report of the Board of Trade*, p. xxx, is interesting as giving a picture of the economic conditions in a number of the districts dealt with in our memoir.

\* In Blackburn and some other districts the "joiner minding" system is prevalent, and two minders undertake the work of a pair of mules.

TABLE XLVI. *Amount of Wages of Spinners and Weavers in Different Towns.*

Town	Spinners		Weavers				Earnings. All men	Earnings. All women
	Percentage of total number of men	Earnings	Men		Women			
			Percentage of total number of men	Earnings	Percentage of total number of women	Earnings		
		<i>s. d.</i>		<i>s. d.</i>		<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
Leigh .. ..	38	47 6	0	—	45	17 7	34 10	15 11
Manchester .. ..	15	47 0	0	—	35	16 0	32 3	14 9
Bolton .. ..	32	45 9	5	25 0	28	18 9	32 0	16 8
Oldham .. ..	33	41 10	0	—	12	17 11	31 8	18 6
Ashton .. ..	30	41 10	4	21 11	49	18 1	31 3	17 10
Stockport .. ..	23	41 3	13	22 11	41	21 0	29 11	18 8
Burnley .. ..	1	29 2	65	27 7	78	24 11	29 7	23 10
Preston .. ..	13	39 3	29	23 9	70	20 5	28 6	19 8
Accrington* .. ..	19	34 1	36	22 5	77	20 11	28 1	20 3
Rochdale .. ..	10	41 1	29	23 4	55	19 8	27 9	18 10
Blackburn .. ..	9	29 2	53	24 9	67	23 6	27 4	21 9
Bacup* .. ..	7	30 9	47	24 0	62	20 4	26 0	18 11

\* Accrington and Bacup are in Haslingden Registration District.

The higher wage in the first three towns is due to the fact that the cotton spun is finer and the earnings are consequently higher. Where weaving is the chief occupation the men's wages are lower and the women's higher than in the spinning districts.

B. *Woollen and Worsted industry.* 72 per cent. of the operatives employed in this industry worked in 1904 in the West Riding of Yorkshire and 7 per cent. in Lancashire; of all operatives 58 per cent. were females and 3·3 per cent. were half-timers.

The chief branches of this industry are:

(1) Sorting; this is carried on by men of whom more than half are piece workers who earned on the average 31s. 8d.; the time workers earned 29s. 8d. on the average.

(2) Washing, scouring and drying; this is done by men most of whom were paid time wages and the average for all districts was 20s. 3d.

(3) Combing is carried on by men and women, the average earnings for day work were 17s. 6d. for men and 12s. 4d. for women; the average earnings for night work were 23s. 2d.

(4) Willeying, scribbling, carding and condensing; the first is carried on by men who are paid time rates and earned on an average 21s. 11d. The last three are done by a composite machine and one woman tends two or three of them while two scribblers or fettlers attend to a group of the machines; the women earned 12s. 8d. and the men 22s. 5d. on an average.

(5) Worsted spinning; this includes drawing, twisting and winding, and is carried on by women and girls; spinners are paid time rates and earned on an average 9s. 5d.

(6) Wool spinning; the spinners are men, the piecers, boys or girls; the men working time rates earned 24s. 7d. and at piece rates earned 32s. 7d.

(7) (a) Reeling, doubling, and winding are the work of women and girls; the majority of reelers were piece workers; doublers and winders, when time workers, earned 10s. 11d., when piece workers, doublers earned 14s. 6d. and winders 13s. 9d.

(b) Warping, etc.; dressers, beamers and twistors-in are men; warpers are men or women. Beamers earned 24s. 6d. on time work and 27s. 1d. on piece work; warpers, when men, earned 23s. 10d. on time work and 28s. 9d. on piece work and when women, they earned 13s. 11d. on

time work and 17s. 3d. on piece work. Twisters-in on piece work earned 30s. 4d. and on time work averaged 5s. a week less.

(8) Weaving; few men weavers are employed except in the Huddersfield district, where they are about equal in number to the women. Nearly all weavers are piece workers; in the Huddersfield district, though employed on the same class of work, men are paid at slightly higher rates. Piece work earnings for men were 25s. 8d. for woollen weavers; women when woollen weavers earned 15s. 9d., and when worsted weavers 14s. 9d.

(9) Dressing, finishing, burling and knotting are carried on by women.

In the woollen and worsted industries there are no such uniform price lists as exist in the cotton industry. On the average Yorkshire wages are higher than those earned in the United Kingdom as a whole.

TABLE XLVII. *Average Wages of Textile Operatives in Yorkshire.*

Town or district	Average earnings of operatives working full time in the last pay-week of September, 1906					
	Men	Women	Lads and boys		Girls	
			Full-timers	Half-timers	Full-timers	Half-timers
	<i>s.</i> <i>d.</i>	<i>s.</i> <i>d.</i>	<i>s.</i> <i>d.</i>	<i>s.</i> <i>d.</i>	<i>s.</i> <i>d.</i>	<i>s.</i> <i>d.</i>
Huddersfield .. .. .	27 4	17 1	11 2	3 2	9 8	3 3
Leeds .. .. .	29 2	13 9	10 5	3 7	9 0	3 8
Dewsbury .. .. .	27 2	15 0	11 1	3 4	9 11	3 0
Halifax .. .. .	26 0	12 4	9 7	3 2	9 0	3 3
Bradford .. .. .	27 2	12 7	9 9	3 9	9 5	3 8
Keighley .. .. .	26 2	13 6	10 3	3 10	10 2	4 1
Rest of West Riding ..	27 0	12 11	9 8	3 5	7 9	3 6
All Yorkshire .. .. .	27 3	13 10	10 3	3 8	9 6	3 8

C. *Silk Industry.* This occupation in 1904 was carried on chiefly by women, only 29 per cent. of all operatives being men, and since 1886 the number of persons employed has declined; apart from the smaller number of half-timers the number of males decreased by 29·3 per cent. while the number of females decreased by 25·4 per cent.

There are three main divisions of the silk manufacture: throwing, spinning and weaving.

(1) Throwing. Winders, cleaners and doublers of thrown silk are women and are chiefly employed in the Congleton, Leek and Macclesfield district; winders earned 8s. 11d., cleaners 8s. 7d. and doublers 10s. 2d.

(2) Spinning. Spun silk is manufactured from waste silk and silk from broken or damaged cocoons. The chief processes are:

(i) Dressing; this is done by men with young men or lads as assistants; in the Congleton, Macclesfield and Leek district the average earnings were 28s. 6d. and in Lancashire and Yorkshire 28s. 4d.

(ii) Preparing, carding, roving and frame spinning are done by women and girls; preparers and carders earned 11s. 3d. on an average.

(3) Weaving. Hand weaving is still carried on in various districts in the weavers' homes and a fair number of hand looms are still worked in this industry. On the average the men earned 25s. 8d. and the women on piece work earned 14s. 10d. in the Congleton, Leek and Macclesfield district and 14s. in Lancashire and Yorkshire.

The average earnings for men and women in the Congleton, Leek and Macclesfield district were 24s. 5d. and 11s. 0d. respectively, and in Lancashire and Yorkshire were 27s. 2d. and 12s. 9d. respectively.

D. *Fustian and Cord Cutting.* The principal centre of this industry is Congleton, but it is also carried on in other parts of Cheshire, in Lancashire, in the West Riding of Yorkshire and in other districts. Women are chiefly employed and of the total number of operatives only 31 per cent. were males. Practically all are employed on piece work; employment is very irregular; for the week for which returns were made nearly 50 per cent. of the men cutters were not fully employed. For those who obtained a full week's work the average earnings were 21s. 9d. for men cutters, 10s. for women cutters and 7s. 10d. for girl cutters.

E. *Bleaching, Printing, Dyeing and Finishing.* The operatives to the extent of 77 per cent. are men and boys. Of those returned 82 per cent. were time workers. In Lancashire and Cheshire the average earnings were 28s. 10d. for men and 14s. 10d. for women, while in Yorkshire they were 28s. 10d. for men and 14s. 1d. for women. In Lancashire and Cheshire the proportion of women and girls employed was greater than in Yorkshire. Of the men, foremen, printers, engravers and hosiery trimmers earned comparatively high wages, over 33s. on an average.

F. *Metal, Engineering and Ship building trades.* In most of the industries dealt with the bulk of the labour employed is that of men of and above 20 years of age; female labour is unimportant and hardly any half-timers were included in the returns received, but in some trades apprentices and lads and boys are employed. In the trades with which we are chiefly concerned the average earnings are given below.

TABLE XLVIII. *Average Wages in Metal Trades.*

Nature of industry	Average earnings of work-people who worked full time in the last pay-week of September, 1906		Average earnings of all work-people in the last pay-week of September, 1906	
	Men	Lads and boys	Men	Lads and boys
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
Pig Iron .. .. .	34 4	12 11	33 1	12 9
Iron and Steel .. .. .	39 1	13 0	35 4	12 6
Engineering and Boiler making .. .. .	32 5	9 7*	31 11	10 1*
Ship and Boat building .. .. .	35 11	11 10	32 10	12 0
Railway Carriage and Wagon building .. .. .	30 9	11 3	29 6	11 10
Light Iron Castings, etc. .. .. .	31 4	10 8	29 0	10 5

\* Including a few half-timers.

G. *Pig Iron Manufacture (Blast Furnaces).* In the majority of cases the work-people are paid by time, but at many works some of them receive a bonus varying with the production of the furnaces; about 10 per cent. of the whole were paid by piece wage. The districts with which we are chiefly concerned are Durham with Cleveland, where 53 per cent. of the work-people returned are employed, and Cumberland with North Lancashire; the average wage for men working full time in the latter districts was 37s. 10d. and in the former districts was 34s. 7d. Great differences existed in the wages in the different occupations, from an average of over 56s. for foremen and keepers in these four districts combined to 27s. 10d. for "weighers" in Durham with Cleveland and 31s. 4d. for weighers in Cumberland with North Lancashire. General labourers, of whom a large number were employed, earned for a full time week 22s. 11d. in Durham with Cleveland and 23s. 3d. in Cumberland with North Lancashire.

H. *Iron and Steel Manufacture.* Rather more than two out of three adult males were employed on time wages. The two areas with which we are concerned are Northumberland and Durham with Cleveland, where the average earnings were 37s. 10d., and Yorkshire (excluding Cleveland), where the average earnings were 35s. 1d. The work is carried out by "groups" of work-people, a few of whom have much responsibility and receive a high wage, while their subordinates receive lower pay.

The different divisions of the industry are :

(1) Iron puddling forges. The puddlers, shinglers, etc. have assistants who in most cases are employed by them ; the earnings of all the adult piece workers amounted to 43*s.* 5*d.* a week and the time workers earned 25*s.* 10*d.*

(2) Steel Making.

(a) The Bessemer process ; with the exception of foremen in general charge, most of the highly skilled operatives from the blower downwards are paid piece wages, while helpers to skilled men and labourers generally take time wages. The average wage of adult piece workers was 42*s.* 7*d.* and that of time workers was 28*s.* 10*d.*

(b) Open hearth process ; workers who take the greatest responsibility usually receive piece wages, the others as a rule being paid time wages ; a very wide range of earnings prevails, but on the average piece workers earned 72*s.* 2*d.* and time workers 33*s.* 2*d.*

(c) Cementation and Crucible processes ; these are carried on almost exclusively at Sheffield ; the majority are paid time wages, but melters, cokers, pullers-out and turners are in many cases paid a fixed rate of wage supplemented by a bonus on output, and these are included under " piece workers," while others, such as potmakers, earn piece wages. Variation in wage is not so great, piece workers earned on the average 38*s.* 11*d.* and time workers 29*s.* 6*d.*

(3) Cogging and Rolling ; these mills are worked by gangs of men of from 4 to 20 or more persons ; in most cases the head man receives a tonnage rate on the output and then usually pays his assistants at time rates, but the principal assistant is often paid piece wages. In other cases all members of the gang are employed directly by the firm and are paid time wages with the exception of the head man, and often his chief assistant, who receive piece wages. The general average of all piece workers was 58*s.* 8*d.* and of time workers was 30*s.* 3*d.*

(4) Forging ; here again the head man of a gang generally employs and pays his helpers at time rates, but the furnace-men are usually paid by piece work, the general average earnings of all piece workers were 48*s.* 3*d.* and of time workers 32*s.* 5*d.*

I. *Engineering and Boiler making.* Of the work-people dealt with in the Report 78.5 per cent. were men, 20.8 per cent. were apprentices or improvers irrespective of age, and lads and boys under 20 years ; 0.5 per cent. were women of and over 18 years and 0.2 per cent. were girls under 18. The average earnings of those who worked full time were 27*s.* 3*d.* Rather less than three out of four of the male operatives were employed on time wages ; the rest received for the most part ordinary piece wages, but between 4 and 5 per cent. were employed at time wages supplemented by a bonus on output. The earnings in the different branches of the industry vary considerably from piece workers in the boiler shops who earned 47*s.* 1*d.* to platers' helpers who earned 25*s.* 11*d.* on piece work. Piece workers earned on the average higher wages than time workers, and those workers on a time wage supplemented with a bonus earned on the average the highest of all.

The average earnings of men of and above 20 years of age who worked full time in the last pay-week of September, 1906, in the different districts are given below.

TABLE XLIX. *Average Wages of Adult Male Engineers and Boiler makers.*

Locality	Wage
	<i>s.</i> <i>d.</i>
The Tyne, the Wear and the Tees ..	35 8
Sheffield .. .. .	33 0
Leeds .. .. .	29 10
Rest of Yorkshire .. .. .	30 4
Manchester .. .. .	33 0
The Mersey and Barrow .. .. .	35 5
Certain large Lancashire towns*	31 8
Rest of Lancashire and Cheshire ..	31 4

\* Bolton, Oldham, Blackburn, Preston, Burnley, Rochdale, Wigan, Bury, Accrington, Lancaster and Darwen.

J. *Ship and Boat Building and Repairing.* Of those given in the Report 81 per cent. were adult males and 18 per cent. were apprentices and lads and boys under 20 years of age. About 66 per cent. of the adult males were employed on time wages. Out of the workmen included in the Report 48.3 per cent. worked the full week and their average wage was 30s. 7d.; the average wage for all taken together (including those who worked less or more than full time) was 28s. 11d. Platers, riveters and caulkers are mostly piece workers and earned on an average for full time 71s. 3d., 55s. 7d. and 54s. 8d. respectively. Shipwrights and ship-joiners working on time wages as a rule earned for full time 36s. 4d. and 37s. 0d. on an average.

The average earnings for full time for men of and above 20 years, on the Tyne, the Wear and the Tees were 40s. 5d., and on the Mersey and in Barrow were 35s. 1d.

K. *Railway Carriage and Wagon Building.* Of the workmen included in the returns 85.5 per cent. were men and 12.9 per cent. apprentices and lads and boys under 20. Of these 44 per cent. worked full time and earned 27s. 3d. on an average, while if those who worked less or more than full time are included, the average earnings were 26s. 11d. Two out of three of all adult males were employed on piece wages. In Yorkshire (excluding Cleveland), Lancashire and Cheshire the average wage for full time was 32s. 7d.; there is great variation in the different branches, from forgers earning 42s. 2d. to smiths' strikers who earned 21s. 2d. when employed at a time wage.

L. *Light Iron Castings, Stoves, etc.* Of the workmen included in the returns 74.9 per cent. were men, 18.9 per cent. were apprentices and lads under 20, 4.0 per cent. were women and 2.2 per cent. were girls. The average earnings for full time were 24s. 7d., and if those (over 48 per cent.) who worked less or more than full time are included the general average earnings were 24s. 3d. Foremen were on time wages, and moulders, who formed more than one-third of all the adult males, were with few exceptions on piece wages, and of the remaining work-people about 3 out of 4 of the men were on time wages. The earnings of moulders vary in the different districts; in Yorkshire, Lancashire and Cheshire the average wage was 35s. 5d. among piece workers. The next most numerous class was that of general labourers who earned 20s. 2d. when working full time in Yorkshire, Lancashire and Cheshire.

The above résumé of the staple industries of England North of the Humber will serve to show how extremely difficult it is to estimate the actual wages of the individual workers in any district or occupation. Except in the case of the most skilled artisans, we can, however, hardly anticipate that the average family income in the metal districts, allowing for part time work, can much exceed 30s., nor in the textile districts, even if the wife works, much exceed 35s. This may be amply sufficient for two persons, but the margin for anything but the barest necessities must certainly be approached when there is a family of five or six all under 12 to 14 years of age. The maintenance of a certain margin of comfort when two persons exist on 30s. to 35s. a week may be a real incentive to prevention of conception, but an analysis of the wages in these industries does not appear to indicate that superabundance of "luxury" to which a physiological infertility lowering the birthrate has been attributed by several writers.

## APPENDIX II.

*Note on certain Medicines sold as Remedies for "Female Irregularities."*

With regard to the largely advertised drugs to cure "Female Irregularities," they may be divided into two classes, those which make some statement as to their contents, and those which do not. Thus apiol and tansy are reputed abortifacients, although they are by no means very powerful or very certain in their action. Their inclusion in the advertisement of a "remedy" would, however, seem to suggest that it had abortifacient value, and this would apply to a remedy asserted to supersede apiol. It is probable that neither apiol nor tansy would have any great effect except in quite exceptional cases.

The full analysis of these "remedies" ought to be made by one of the great medical journals, but owing to the kindness of Professor A. R. Cushny, two sets of pills and one of pessaries asserted to cure "female irregularities" have been specially examined to see if they contained lead, but for this only. These remedies were procured by answering advertisements appearing in local newspapers. Professor Cushny could find no lead in any of the three preparations. One pill contained large amounts of iron, but very little else; except for the excessive price it might be a fair iron pill for anaemic amenorrhoea. "Steel pills" are reported to be used in large quantities with abortifacient aim, and may be described as reputed abortifacients. While iron alone might not produce the desired result there is no doubt that the combination with aloes is often effectual in the early months of pregnancy, especially when taken at the times of the menstrual periods and, as the abortionists advise, several times a day on an empty stomach. Evidence to this effect has been given in several Home Office cases and on such evidence convictions have resulted. The second pill suggested aloes, but these were not demonstrated. All aperients with aloes lie under strong suspicion and should not be used in pregnancy. It cannot be said that the material procured indicated any certain abortifacient action in the two or three "remedies" thus partially examined. If such remedies are being largely purchased, as seems probable, by those seeking to terminate pregnancy, their reputation would appear largely to rest on their having worked cures of anaemic amenorrhoea mistaken for pregnancy. The idea that abortion cannot be relatively easily produced by drugs is probably erroneous. The public are now taking abortifacient drugs to an enormous extent, and the practice is extremely common amongst married women of good position, who do not want to be burdened with another child, as well as among the working classes.

## NOTE

In concluding Part I of this work the writer wishes to thank most heartily the colleagues who have so readily given their help and assistance. Miss H. Gertrude Jones has drawn all the birthrate plates, and the memoir owes immensely to her excellent draughtsmanship. To Mr H. E. Soper the Frontispiece and Diagram II are due, and his aid has been of much value. Dr David Heron has given much assistance in proof reading, and in advice on innumerable points of detail. Professor Karl Pearson, besides giving help and advice during the progress of the work, has assisted in the proof-revision, and, as previously stated, dealt with the local details as to the practise and propagandism of prevention, taking the full responsibility for such as appear in this paper.

JUST ISSUED. Price 21s.

THE LIFE, LETTERS, AND LABOURS OF  
FRANCIS GALTON

VOL. I. With five Pedigree Plates and seventy  
Photographic Plates

BY

KARL PEARSON

GALTON PROFESSOR

"It is not too much to say of this book that it will never cease to be memorable. Never will man hold in his hands a biography more careful, more complete."—*The Times*

"A monumental tribute to one of the most suggestive and inspiring men of modern times."—*Westminster Gazette*

"It was certainly fitting that the life of the great exponent of heredity should be written by his great disciple, and it is gratifying indeed to find that he has made of it, what may without exaggeration be termed a great book."—*Daily Telegraph*

---

AT THE UNIVERSITY PRESS, CAMBRIDGE



Cambridge:  
PRINTED BY JOHN CLAY, M.A.  
AT THE UNIVERSITY PRESS







