

STUDIES IN THE DECLINING BIRTH-RATE, THE MIDLANDS AND LONDON

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IN the previous section of this inquiry attention was given to the trend of the birth-rate over the past three-quarters of a century in Wales and the southern counties of England (*J. Hygiene*, **36**, 402-37). In the present section the corresponding vital statistics are set out and discussed for the Midland counties of England and for London. The same methods have been applied as in the earlier section. As before, the actual birth-rate experienced in each area has been measured by the number of births per 1000 married women aged 15-45. The potential birth-rate of the areas gives the number of births per 1000 married women aged 15-45 obtained by applying Tait's fertility rates, 48.75, 41.25, 30 and 15, to the number of married women in the age groups 15-19, 20-25, 25-35 and 35-45 respectively, the fertility ratio is the ratio of the actual to potential birth-rate. These figures enable one to assess, roughly, how far the changes observed in the actual birth-rate are due to a changing age distribution of the married women in the population concerned.

I. SOUTH MIDLAND COUNTIES

Fertility

These rates are shown in Table I for the eight counties which were included in this division. There was naturally some variation in order when the counties were classified at the different dates according to the actual birth-rate, but, generally, the rates of Oxfordshire and Huntingdonshire were the highest throughout the nine triennial periods and the rates of Middlesex the lowest. The differences between the rates of the eight counties were, however, at no point of time very remarkable. The minimum difference in any single triennium was 14 births per 1000 married women in 1870-2 and the largest was only 27 births in 1930-2. The maximum recorded rate was attained by each county in 1870-2, with the exception of Middlesex where the peak was not reached until the next decade.

The trend of the potential birth-rate in this county differs somewhat from that of the other counties, showing a slight increase up to 1880-2 whereas in the latter counties the figure of 1850-2 was never exceeded later and tends to show a decline from that date up to the years of the present century. Turning

Table I. *South Midlands. Legitimate births per 1000 married women, aged 15-45*

County	1850-2			1860-2			1870-2		
	A.	P.	F.R.	A.	P.	F.R.	A.	P.	F.R.
Middlesex	274	252	109	272	253	108	288	255	113
Hertfordshire	285	255	112	279	251	111	300	253	119
Buckinghamshire	291	257	113	290	256	113	299	256	117
Oxfordshire	293	253	116	295	252	117	296	250	118
Northamptonshire	288	259	111	285	259	110	298	257	116
Huntingdonshire	295	261	113	289	255	113	302	256	118
Bedfordshire	295	261	113	280	256	109	296	257	115
Cambridgeshire	290	259	112	281	254	111	294	259	114

County	1880-2			1890-2			1900-2		
	A.	P.	F.R.	A.	P.	F.R.	A.	P.	F.R.
Middlesex	294	256	115	252	252	100	225	252	89
Hertfordshire	292	249	117	264	243	109	225	245	92
Buckinghamshire	292	250	117	270	249	108	230	246	93
Oxfordshire	295	250	118	271	246	110	228	238	96
Northamptonshire	291	256	114	266	254	105	222	252	88
Huntingdonshire	275	247	111	263	248	106	241	240	100
Bedfordshire	283	251	113	257	248	104	219	246	89
Cambridgeshire	277	251	110	255	249	102	224	248	90

County	1911-13			1920-2			1930-2		
	A.	P.	F.R.	A.	P.	F.R.	A.	P.	F.R.
Middlesex	184	243	76	160	236	68	109	245	44
Hertfordshire	177	239	74	163	235	69	114	241	47
Buckinghamshire	176	238	74	165	237	70	115	244	47
Oxfordshire	189	237	80	178	237	75	124	245	51
Northamptonshire	170	241	71	165	241	68	105	240	44
Huntingdonshire	191	241	79	180	241	75	132	248	53
Bedfordshire	181	244	74	160	240	67	110	242	45
Cambridgeshire	186	241	77	170	241	70	121	246	49

County	1911-13			1920-2			1930-2		
	A.	P.	F.R.	A.	P.	F.R.	A.	P.	F.R.
Middlesex	—	—	—	—	—	—	—	—	—
Hertfordshire	—	—	—	—	—	—	—	—	—
Buckinghamshire	—	—	—	—	—	—	—	—	—
Oxfordshire	172	238	72	158	238	66	122	249	49
Northamptonshire	169	244	69	161	243	66	101	239	42
Huntingdonshire	—	—	—	—	—	—	—	—	—
Bedfordshire	—	—	—	—	—	—	—	—	—
Cambridgeshire	—	—	—	—	—	—	—	—	—

County	1911-13			1920-2			1930-2		
	A.	P.	F.R.	A.	P.	F.R.	A.	P.	F.R.
Middlesex	183	243	75	160	236	68	109	244	45
Hertfordshire	172	239	72	159	235	68	112	242	46
Buckinghamshire	174	241	72	158	237	67	111	246	45
Oxfordshire	184	238	77	184	235	78	121	240	50
Northamptonshire	161	241	67	158	241	66	101	241	42
Huntingdonshire	189	243	78	185	243	76	130	251	52
Bedfordshire	177	245	72	152	239	64	104	241	43
Cambridgeshire	177	240	74	167	240	70	118	245	48

A. = Actual rate; P. = Potential rate; F.R. = Fertility ratio.

Table I (*continued*)

County	Rural districts								
	1911-13			1920-2			1930-2		
	A.	P.	F.R.	A.	P.	F.R.	A.	P.	F.R.
Middlesex	189	242	78	167	233	72	109	246	44
Hertfordshire	187	239	78	172	235	73	119	240	50
Buckinghamshire	177	236	75	170	237	72	118	242	49
Oxfordshire	201	237	85	188	238	79	131	243	54
Northamptonshire	180	238	76	177	238	74	114	239	48
Huntingdonshire	192	240	80	176	240	73	134	245	55
Bedfordshire	187	241	78	175	241	73	120	244	49
Cambridgeshire	194	242	80	172	241	71	125	246	51

A. = Actual rate; P. = Potential rate; F.R. = Fertility ratio.

to these more recent years it will be seen that the potential birth-rates in 1930-2 showed an increase on the values of the two previous triennial periods in nearly every county. In spite of the general advantage in 1930-2 of a younger population of married women, as shown by these figures, the actual birth-rates for 1930-2 showed a decline ranging from 59 to 75 births per 1000 married women on the 1911-13 rates. Over the whole period studied the range of the potential birth-rate in each county has not been very great, lying between 16 births per 1000 married women aged 15-45 in Oxfordshire and 21 in Huntingdonshire and Bedfordshire. Clearly the changes in the actual birth-rates were not the result to any appreciable extent of changes in the age distribution of the married women resident in the counties. It follows that the fertility ratios have shown similar trends to those of the actual birth-rates.

For the last three periods, when the counties were divided into their administrative districts, the actual birth-rate was higher in the rural areas than in the urban areas with only two exceptions, viz. in 1920-2 the birth-rate of the urban districts of Huntingdonshire was in excess of that of the rural areas and in 1930-2 the urban and rural rates of Middlesex were equal. This higher rate of the rural districts was certainly not due to the age constitution of their married women being more favourable to fertility. The potential rates between the two types of districts do not vary appreciably and where they differ by three points or more it is mainly to the advantage of the urban areas. The fertility ratios of the urban districts were only greater than the corresponding values for the rural areas on two occasions out of the twenty-four. The potential birth-rates of the county boroughs were also above, or at least equal to, the rates for the corresponding rural districts but their actual birth-rates were systematically below those of the rural districts.

To illustrate the trend of the birth-rate more clearly the three indices of fertility were expressed as percentages of the 1870-2 rates, and the resulting figures are shown in Table II. The actual birth-rates of 1930-2 had fallen to 64.8 per cent of the 1870-2 values, whilst the potential rate of the last triennia was only from 2.0 to 6.6 per cent lower than that of 60 years earlier. This decline has not been equally spread over the span of years.

Between 1870-2 and 1900-2 the actual birth-rate fell by 20-25 per cent. In the succeeding 30 years it fell by 35-40 per cent or at a rate about 1½ times as great as in the first 30 years.

Table II. *South Midlands. Legitimate birth-rates as percentages of those of 1870-2*

County	1850-2			1860-2			1870-2		
	A.	P.	F.R.	A.	P.	F.R.	A.	P.	F.R.
Middlesex	95.1	98.8	96.5	94.4	99.2	95.6	100	100	100
Hertfordshire	95.0	100.8	94.1	93.0	99.2	93.3	100	100	100
Buckinghamshire	97.3	100.4	96.6	97.0	100.0	96.6	100	100	100
Oxfordshire	99.0	101.2	98.3	99.7	100.8	99.2	100	100	100
Northamptonshire	96.6	100.8	95.7	95.6	100.8	94.8	100	100	100
Huntingdonshire	97.7	102.0	95.8	95.7	99.6	95.8	100	100	100
Bedfordshire	99.7	101.6	98.3	94.6	99.6	94.8	100	100	100
Cambridgeshire	98.6	100.0	98.2	95.6	98.1	97.4	100	100	100

County	1880-2			1890-2			1900-2		
	A.	P.	F.R.	A.	P.	F.R.	A.	P.	F.R.
Middlesex	102.1	100.4	101.8	87.5	98.8	88.5	78.1	98.8	78.8
Hertfordshire	97.3	98.4	98.3	88.0	96.0	91.6	75.0	96.8	77.3
Buckinghamshire	97.7	97.7	100.0	90.3	97.3	92.3	76.9	96.1	79.5
Oxfordshire	99.7	100.0	100.0	91.6	98.4	93.2	77.0	95.2	81.4
Northamptonshire	97.7	99.6	98.3	89.3	98.8	90.5	74.5	98.1	75.9
Huntingdonshire	91.1	96.5	94.1	87.1	96.9	89.8	79.8	93.8	84.7
Bedfordshire	95.6	97.7	98.3	86.8	96.5	90.4	74.0	95.7	77.4
Cambridgeshire	94.2	96.9	96.5	86.7	96.1	89.5	76.2	95.8	78.9

County	1911-13			1920-2			1930-2		
	A.	P.	F.R.	A.	P.	F.R.	A.	P.	F.R.
Middlesex	63.9	95.3	67.3	55.6	92.5	60.2	37.8	96.1	38.9
Hertfordshire	59.0	94.5	62.2	54.3	92.9	58.0	38.0	95.3	39.5
Buckinghamshire	58.9	93.0	63.2	55.2	92.6	59.8	38.5	95.3	40.2
Oxfordshire	63.9	94.8	67.8	60.1	94.8	63.6	41.9	98.0	43.2
Northamptonshire	57.0	93.8	61.2	55.4	93.8	58.6	35.2	93.4	37.9
Huntingdonshire	63.2	94.1	66.9	59.6	94.1	63.6	43.7	96.9	44.9
Bedfordshire	61.1	94.9	64.3	54.1	93.4	58.3	37.2	94.2	39.1
Cambridgeshire	63.3	93.1	67.5	57.8	93.1	61.4	41.2	95.0	43.0

A. = Actual rate; P. = Potential rate; F.R. = Fertility ratio.

Occupations

Agriculture was an important source of employment in each of the counties in this group, excluding Middlesex, throughout the period under review. Both in 1871 and 1921 the counties of Huntingdonshire and Cambridgeshire had the highest proportion of males engaged on the land and Hertfordshire and Northamptonshire had the lowest, i.e. excluding the non-agricultural county of Middlesex. In Northamptonshire the proportion of male agricultural workers in 1921 was only 16.4 per cent but in the other six counties it ranged from 20 to 40 per cent. Market gardening was a predominant feature of agriculture in Hertfordshire and Bedfordshire. Dairy farming was another important branch of agriculture especially in Buckinghamshire.

The mineral resources of this division are very limited and consequently tend to be localized. Sand, clay and gravel were worked at Leighton Buzzard and Eaton Bray in Bedfordshire, but only 4 per cent of the males of these

districts were so employed in 1921 and the same proportion were engaged in this occupation in Whittlesey in Cambridgeshire. Ironstone was worked in Northamptonshire but the proportion of males engaged in metalliferous mines was small; the urban district of Finedon had the largest percentage (14.8) of males employed in this occupation in 1921. An important change in the geographical distribution of industry has been taking place in recent years through the rise of new industrial areas in the districts surrounding London. This is not due to old-established industries migrating southwards, but to the larger development of the newer industries in the south. These industries, devoted to the production of such articles as motor cars, gramophones, radio and electrical equipment, make use of modern electrical power so that proximity to coal-field is not a necessity and since most of them produce luxury goods the near-by market provided by a large population centre like London is an advantage.

The industries of Middlesex are varied and on the whole there is in the 1921 figures little evidence of specialization. This may be due, in a large measure, to the fact that many of the inhabitants are occupied in London. The very small percentage of males engaged in agriculture in its rural areas indicates that these districts are of a suburban type. The proportion of males engaged in agriculture in Enfield urban district is exceptional (8.1 per cent) and is due to market gardening and glasshouse cultivation in the adjoining areas.

Northamptonshire ranks next to Middlesex as an industrial county. This county was the chief seat of the boot and shoe trade. Over a third of the male population in some districts were engaged in this industry. Iron founding and metal work also occupies an important proportion of the males. In the remaining six counties manufactures are limited and tend to be localized, i.e. paper-makers in the district of Watford, Hemel Hempstead and Rickmansworth in Hertfordshire, wood turnery at High Wycombe in Buckinghamshire and hat-makers in Luton in Bedfordshire. Hertfordshire had a smaller proportion in occupations such as commerce, clerks, etc., pointing to suburban residence of London workers, than most of the other counties immediately surrounding the Metropolis.

Districts within the counties

For the four triennial periods 1860-2 to 1890-2, during which the births were recorded in registration districts, the subdivisions of the counties have been grouped into broad occupational groups. The agricultural districts are those where over 40 per cent of the male population was engaged on the land in 1871. Districts where the proportion of males employed on the land was between 20 and 40 per cent have been termed "agricultural and industrial" districts. The remaining districts have been grouped together under "other districts". The birth-rates for these three occupational groups are given in Table III.

Table III. *South Midland counties. Legitimate birth-rate per 1000 married women, aged 15-45*

Registration county	1860-2	1870-2	1880-2	1890-2
Agricultural districts:				
Middlesex	—	—	—	—
Hertfordshire	289	309	292	265
Buckinghamshire	289	292	288	269
Oxfordshire	294	298	294	275
Northamptonshire	287	294	285	256
Huntingdonshire	289	302	275	263
Bedfordshire	283	304	287	268
Cambridgeshire	283	298	277	259
South Midland counties	288	299	286	265
Agricultural and industrial districts:				
Middlesex	284	292	294	260
Hertfordshire	271	293	292	263
Buckinghamshire	291	306	295	271
Oxfordshire	302	295	304	263
Northamptonshire	287	301	293	270
Huntingdonshire	—	—	—	—
Bedfordshire	277	288	280	249
Cambridgeshire	—	—	—	—
South Midland counties	283	297	291	264
Other districts:				
Middlesex	271	288	294	252
Hertfordshire	—	—	—	—
Buckinghamshire	—	—	—	—
Oxfordshire	294	283	285	258
Northamptonshire	277	294	292	265
Huntingdonshire	—	—	—	—
Bedfordshire	—	—	—	—
Cambridgeshire	266	276	273	239
South Midland counties	273	287	292	253

No pronounced differences are to be seen between the agricultural districts and the agricultural and industrial districts. In 1860-2 the birth-rates of the former were more uniform than those of the latter but in subsequent triennia this difference is less distinct. In both groups the maximum rate was recorded in 1870-2. In the "other" districts the birth-rate did not reach its maximum until the next decade (due to the trend in Middlesex) but this was followed by a very large fall, from 292 to 253 or 13 per cent of the 1880-2 rate in the following period. The result of this rapid and sudden decline was that the "other" districts had a rate as much in defect of the agricultural areas in the last triennial period as in the first. Expressing the rates of 1890-2 as percentages of those either of 1860-2 or 1870-2 shows that in these occupationally grouped districts there has been no difference in the rate of decline in fertility between 1860-2 and 1890-2, each shows a fall of 7-8 per cent, and between 1870-2 and 1890-2 of 11-12 per cent. Judging by these broad divisions the fall was not occupationally differentiated in these years.

The birth-rates for the county boroughs and urban administrative districts in the years 1911-13 to 1930-2 are set out in Table IV. The districts have been divided into four broad occupational groups on the basis of the 1921 census: (1) agricultural districts, where more than 20 per cent of the males

Table IV. *South Midland counties. County boroughs and urban districts*
Legitimate birth-rate per 1000 married women, aged 15-45

Administrative county	1911-13	1920-2	1930-2
Agricultural districts:			
Middlesex	—	—	—
Hertfordshire	181	174	123
Buckinghamshire	165	151	113
Oxfordshire	187	188	124
Northamptonshire	182	158	104
Huntingdonshire	205	204	145
Bedfordshire	197	168	124
Cambridgeshire	183	180	134
South Midland counties	185	180	129
Industrial districts:			
Middlesex	197	174	114
Hertfordshire	170	160	113
Buckinghamshire	173	157	107
Oxfordshire	—	—	—
Northamptonshire	163	159	100
Huntingdonshire	—	—	—
Bedfordshire	189	153	99
Cambridgeshire	—	—	—
South Midland counties	185	167	110
Commercial districts:			
Middlesex	162	140	99
Hertfordshire	—	—	—
Buckinghamshire	—	—	—
Oxfordshire	—	—	—
Northamptonshire	—	—	—
Huntingdonshire	—	—	—
Bedfordshire	—	—	—
Cambridgeshire	—	—	—
South Midland counties	162	140	99
Other districts:			
Middlesex	187	161	114
Hertfordshire	171	154	108
Buckinghamshire	176	161	118
Oxfordshire	173	162	122
Northamptonshire	187	166	130
Huntingdonshire	182	176	125
Bedfordshire	161	149	109
Cambridgeshire	168	158	104
South Midland counties	179	159	113

were engaged on the land; (2) industrial districts, where any two of certain occupational groups, viz. metal workers, makers of textile goods and dresses, workers in wood, or transport workers, employed more than 25 per cent of the males; (3) commercial districts, where more than 25 per cent of the males were engaged in the two groups, commerce and finance, clerks, etc.; (4) other districts, which comprises the remaining districts with no outstanding occupational group.

It will be seen that the rates for the commercial districts (situated in Middlesex only) were considerably in defect of those for the other occupational groups in each of the three triennia (the distinction is still greater if the comparison be made between other districts in Middlesex only). The birth-rates for the "other" districts were below those of the agricultural and industrial

areas. Taking the groups as a whole the rate of decline between 1911-13 and 1930-2 has been much the same in the industrial, the commercial, and the other districts (41, 39 and 37 per cent), but has been rather less in the agricultural areas (30 per cent), and in the most recent years the latter retained a higher fertility than the other areas. This slower decline in the agricultural areas is, however, not to be observed within each county, and in some, e.g. Northamptonshire, these districts have shown a greater fall than the other areas. Detailed consideration of the rates within the counties shows in fact that differences in the fall in fertility within the occupational districts are more conspicuous for their absence than for their presence.

The birth-rates for the rural administration districts of these counties are set out in Table V. Agricultural districts were taken as those districts where

Table V. South Midland counties. Rural districts. Legitimate birth-rate per 1000 married women, aged 15-45

Administrative county	1911-13	1920-2	1930-2
Agricultural districts:			
Middlesex	—	—	—
Hertfordshire	197	179	121
Buckinghamshire	177	177	111
Oxfordshire	201	194	134
Northamptonshire	189	183	124
Huntingdonshire	190	175	127
Bedfordshire	203	181	124
Cambridgeshire	201	173	124
South Midland counties	196	180	125
Agricultural and industrial districts:			
Middlesex	—	—	—
Hertfordshire	190	174	117
Buckinghamshire	165	165	110
Oxfordshire	195	180	123
Northamptonshire	184	181	117
Huntingdonshire	187	175	150
Bedfordshire	186	175	120
Cambridgeshire	187	177	132
South Midland counties	186	176	120
Other districts:			
Middlesex	189	167	109
Hertfordshire	170	158	120
Buckinghamshire	180	169	120
Oxfordshire	213	190	153
Northamptonshire	175	171	109
Huntingdonshire	200	181	134
Bedfordshire	—	—	—
Cambridgeshire	172	152	120
South Midland counties	181	169	116

more than half the male population were employed on the land in 1921. Areas where more than 30 per cent of the males were employed in agriculture and more than 20 per cent in two of the following occupations, metal workers, makers of textile goods, etc., wood workers and transport workers, have been grouped together under agricultural and industrial areas. The remaining districts with no predominant occupation have been placed in "other" districts. For the division as a whole the birth-rates for each of the occupational

groups were in order of the proportion of agricultural workers for each of the three triennial periods. The percentage decline during the 20 years was the same, approximately one-third, for each occupational group, the agricultural districts here showing no slower rate of fall, but retaining a slightly higher rate of fertility in the most recent years. Some variation existed within the counties, however, and the birth-rate of the "other" districts was larger than that of the agricultural districts in 1911-13 and 1930-2 for Oxfordshire and Buckinghamshire and in each of the three triennia for Huntingdonshire.

Population

The outstanding feature of the population of this division was the rapid growth of Middlesex. The increase was greater than in any other county in England. The population at the end of the periods studied expressed as a percentage of the population at the beginning of each period is:

County	Population of 1891 as a percentage of 1861	Population of 1931 as a percentage of 1911
Middlesex	307	145
Hertfordshire	121	129
Buckinghamshire	112	124
Oxfordshire	109	111
Northamptonshire	133	104
Huntingdonshire	85	101
Bedfordshire	118	113
Cambridgeshire	108	110
England and Wales	145	111

In the first period the population of Huntingdonshire declined by migration continuously while in 1881 the population of Cambridgeshire was also less than in the previous decade. In the second period the population of Huntingdonshire was less in 1921 than in 1911 but an increase was recorded in the following decade. The rapid increase in the population of Middlesex in 1911-31 was due to building development, and several administrative districts more than doubled their populations between 1921 and 1931. The largest percentage increase was shown by Kingsbury which had a population of 821 in 1911 and 16,636 in 1931, an increase of 1926 per cent.

Summary

Summarizing broadly the results for this division of the country we may say that no striking differences in fertility are apparent between the counties comprising it; that with the one exception of Middlesex, where the upward trend continued to 1880-2, the peak of the recorded birth-rate was reached in 1870-2 and that since that date the birth-rates have declined by 56-65 per cent whereas the potential birth-rate has fallen by only 2-7 per cent. The larger part of this decline has taken place in the last 30 years. Neither between 1860-2 and 1890-2 nor between 1911-13 and 1930-2 is there any evidence that the rate of decline has varied substantially or uniformly between districts in which different occupations predominated. In the past the highest fertility has been recorded in the rural agricultural districts and these areas still show a somewhat higher rate than the more industrialized sections of the counties.

II. EASTERN COUNTIES

Fertility

The actual birth-rates, potential rates and fertility ratios are given for the three counties that form this division, Essex, Suffolk and Norfolk, in Table VI. In each of these counties fertility reached its maximum in 1880-2. Up till recent years Norfolk showed a uniformly lower birth-rate than the other two counties, these latter not differing appreciably one from another

Table VI. *Eastern counties. Legitimate births per 1000 married women, aged 15-45*

County	1850-2			1860-2			1870-2		
	A.	P.	F.R.	A.	P.	F.R.	A.	P.	F.R.
Essex	279	258	108	274	255	107	294	257	114
Suffolk	283	256	111	273	252	108	290	254	114
Norfolk	269	256	105	261	251	104	273	252	108
County	1880-2			1890-2			1900-2		
	A.	P.	F.R.	A.	P.	F.R.	A.	P.	F.R.
Essex	300	256	117	270	255	106	238	253	94
Suffolk	294	255	115	273	250	109	237	245	97
Norfolk	279	254	110	254	251	101	230	245	94
County	1911-13			1920-2			1930-3		
	A.	P.	F.R.	A.	P.	F.R.	A.	P.	F.R.
Essex	193	242	80	175	241	73	119	243	49
Suffolk	197	241	82	186	240	78	129	241	54
Norfolk	191	241	79	179	240	75	126	243	52
County borough									
County	1911-13			1920-2			1930-2		
	A.	P.	F.R.	A.	P.	F.R.	A.	P.	F.R.
Essex	239	248	96	189	245	77	125	245	51
Suffolk East	195	241	89	177	242	73	125	242	52
Suffolk West	—	—	—	—	—	—	—	—	—
Norfolk	188	244	77	178	241	74	121	244	50
Urban districts									
County	1911-13			1920-2			1930-2		
	A.	P.	F.R.	A.	P.	F.R.	A.	P.	F.R.
Essex	178	240	74	164	238	69	114	242	47
Suffolk East	202	246	82	173	244	71	124	241	51
Suffolk West	175	235	74	185	236	78	117	239	49
Norfolk	180	241	75	161	239	67	122	242	50
Rural districts									
County	1911-13			1920-2			1930-2		
	A.	P.	F.R.	A.	P.	F.R.	A.	P.	F.R.
Essex	188	240	78	173	238	73	124	240	52
Suffolk East	200	240	83	196	239	82	139	241	58
Suffolk West	200	238	84	201	236	85	130	238	55
Norfolk	196	240	82	185	239	77	130	243	53

A. = Actual rate; P. = Potential rate; F.R. = Fertility ratio.

until 1920-2. The potential rates do not differ materially between the counties but in each show a decline from a maximum figure in 1850-2, the change towards a population less favourable to fertility being especially pronounced in the first 10 years of the present century. On the whole the fertility ratio was highest in Suffolk and lowest in Norfolk but the differences were not large.

The county boroughs of Essex, for the last three triennia when division into administrative areas was possible, had an actual birth-rate in excess of the rural districts (quite substantially in excess in 1911-13 and 1920-2) and the lowest rate was that of the urban districts in each period. In the other counties the rural birth-rate was as usual higher than that of either the county boroughs or urban districts, except in 1911-13 when the rural rate in Suffolk East was slightly lower than the urban rate. The potential birth-rate of the county boroughs was above that of the rural districts but not sufficiently to account for their enhanced fertility in Essex in 1911-13 and 1920-2. This interesting exception, of the highest birth-rate being found in the county boroughs, was in fact due entirely to the unusually high birth-rate in West Ham. The actual rates for the county boroughs of East Ham, Southend-on-Sea and West Ham for 1930-2 were 113, 91 and 145 births per 1000 married women aged 15-45 respectively. Judging by the occupations of the inhabitants Southend-on-Sea was the least industrial of the county boroughs and had the largest proportion of the middle-class element in its population. West Ham had the lowest proportion of males engaged in professional or commercial occupations but the largest percentage of general labourers. The shipping industry in this county borough makes casual labour an important element of the population. The fertility ratio was greatest in the rural districts in each period except in Essex where the county boroughs show the highest figures.

The actual birth-rates, potential birth-rates and fertility ratios expressed as a percentage of the rates for 1870-2 are given in Table VII. During the

Table VII. *Eastern counties. Legitimate birth-rates as percentages of those of 1870-2*

County	1850-2			1860-2			1870-2		
	A.	P.	F.R.	A.	P.	F.R.	A.	P.	F.R.
Essex	94.9	100.4	94.7	93.2	99.2	93.9	100	100	100
Suffolk	97.6	100.8	97.4	94.1	99.2	94.7	100	100	100
Norfolk	98.5	101.6	97.2	95.6	99.6	96.3	100	100	100
County	1880-2			1890-2			1900-2		
	A.	P.	F.R.	A.	P.	F.R.	A.	P.	F.R.
Essex	102.0	99.6	102.6	91.8	99.2	93.0	81.0	98.4	82.5
Suffolk	101.4	100.4	100.9	94.1	98.4	95.6	81.7	96.5	85.1
Norfolk	102.2	100.8	101.9	93.0	99.6	93.5	84.2	97.2	87.0
County	1911-13			1920-2			1930-2		
	A.	P.	F.R.	A.	P.	F.R.	A.	P.	F.R.
Essex	65.6	94.2	70.2	59.5	93.8	64.0	40.5	94.6	43.0
Suffolk	67.9	94.9	71.9	64.1	94.5	68.4	44.5	94.9	47.4
Norfolk	70.0	95.6	73.1	65.6	95.2	69.4	46.2	96.4	48.1

A. = Actual rate; P. = Potential rate; F.R. = Fertility ratio.

60 years the actual birth-rate has declined by 53·8–59·5 per cent, whilst the potential rates fell by only 3·6–5·1 per cent. The rate of decline has not been constant throughout the period, for the fall in the actual birth-rate in the last 30 years was fully twice that of the previous 30 years.

Occupations

Agriculture was an important source of employment in this division in 1871, over one-third of the males being thus engaged. In 1921 the proportion of agricultural workers in Suffolk and Norfolk had decreased slightly to 30·4 and 33·4 per cent respectively. Essex, taken as a whole, had, in common with other counties adjacent to London, become urbanized and this process had proceeded so far that in 1921 only 9·4 per cent of males found employment in agriculture although the rural areas were still mainly agricultural. A feature of the agriculture in Essex was the growing of large quantities of vegetables and fruits for the London market. In Suffolk and Norfolk corn and root crops were raised and sheep, pig and poultry rearing were important.

Important fisheries exist but the proportion of the male population following this calling is very small. In Essex only 843 males were returned as fishermen in 1921 and no district had a higher percentage than three. 3651 men were described as fishermen in Suffolk East in 1921; of these 68 per cent were enumerated in Lowestoft where they formed 18·4 per cent of the occupied males. Other districts with considerable numbers were Mutford and Lothingland rural district, 15·8 per cent, and the urban district of Southwold with 13·4 per cent. The number returned as fishermen in Norfolk was 2365 of which almost two-thirds were enumerated at Yarmouth, where they formed 6·1 per cent of the occupied males. The remainder were scattered in various areas and the rural district of East and West Flegg with 15·3 per cent of the occupied males was the only area with a considerable proportion. As is pointed out in the census report, the numbers recorded may give a misleading idea of the importance of the fishing industry, since account is taken only of those who spent the night of the census ashore or arrived in harbour during the following morning. Those at sea throughout this period would therefore escape enumeration.

There were practically no minerals worked in this division. Stone was quarried on a small scale in Norfolk but this occupation only accounted for 2 per cent of the males of the rural district of Forehoe, which had the largest number thus engaged in 1921.

The occupations in the part of Essex adjoining London were varied. Half the population of the county was found in this urbanized area, which is so largely of a suburban character that the occupations of the inhabitants were not determined by local industry. In East and West Ham the numbers returned as seamen, dock labourers, metal workers partly employed in the shipping industry, etc., are evidence that local industry was here an important source

of employment, while water transport workers formed over half the total number of occupied males in Tilbury in 1921.

The manufactures of Norfolk were not very important. Norwich was the centre of the manufacture of textile goods and dresses and 17·6 per cent of the males in 1921 were engaged in this occupation. This high ratio was mainly due to boot making, 4971 men, 13·3 per cent of all occupied males being returned as following this trade. Three-quarters of all the tailoresses in the county were enumerated in Norwich. Engineering was carried on in some of the large towns of Suffolk and metal workers formed an important proportion of the occupied males in Ipswich, Beccles, Leiston-cum-Sizewell, Stowmarket and Bury St Edmunds. With this exception no local industry employed a large proportion of the males.

Districts within the counties

For the four triennia when the counties were divided into registration districts, the occupations have been grouped into broad groups on the basis of the 1871 census. Agricultural districts were those where more than 40 per cent of the males worked on the land. Agricultural and industrial districts had from 20 to 40 per cent agricultural workers. The remaining districts with less than 20 per cent of the males engaged on the land were grouped together under "other" districts. The birth-rates for these occupational groups are shown in Table VIII. With one exception (Suffolk, agricultural and industrial

Table VIII. *Eastern counties. Legitimate birth-rate per 1000 married women, aged 15-45*

Registration county	1860-2	1870-2	1880-2	1890-2
Agricultural districts:				
Essex	277	295	297	267
Suffolk	278	294	296	272
Norfolk	266	278	282	259
Eastern counties	274	288	291	266
Agricultural and industrial districts:				
Essex	282	289	299	285
Suffolk	265	306	295	271
Norfolk	—	—	—	—
Eastern counties	278	293	298	283
Other districts:				
Essex	263	294	304	270
Suffolk	258	280	288	276
Norfolk	248	263	274	247
Eastern counties	255	279	292	265

districts) the highest rate was reached in each of these subdivisions in 1880-2. No very large differences are apparent in their fertility, the order being in general agricultural and industrial districts, agricultural districts, "other" districts.

The birth-rates for the urban administrative districts for the three triennia are given in Table IX. The districts were grouped into: (1) agricultural districts, where more than 20 per cent of the males found employment on the land; (2) metal-working districts, where more than 20 per cent of the males were

Table IX. *Eastern counties. County boroughs and urban districts. Legitimate birth-rate per 1000 married women, aged 15-45*

Administrative county	1911-13	1920-2	1930-2
Agricultural districts:			
Essex	165	161	120
Suffolk East	188	206	125
Suffolk West	207	200	126
Norfolk	182	178	122
Eastern counties	177	174	121
Metal working districts:			
Essex	174	154	114
Suffolk East	196	177	125
Suffolk West	—	—	—
Norfolk	171	183	128
Eastern counties	189	170	121
Other districts:			
Essex	196	177	118
Suffolk East	202	173	124
Suffolk West	172	184	116
Norfolk	186	174	122
Eastern counties	194	176	119

described as metal workers; (3) other districts, where no occupation predominated. The birth-rate in the agricultural districts, for the division as a whole, was, it will be seen, relatively low in 1911-13, but showing a slower rate of decline during the subsequent 20 years it is now on a par with the rates of the other areas.

The birth-rates for the rural districts are given in Table X. It was only

Table X. *Eastern counties. Rural districts. Legitimate birth-rate per 1000 married women, aged 15-45*

Administrative county	1911-13	1920-2	1930-2
Agricultural districts:			
Essex	185	174	128
Suffolk East	201	198	142
Suffolk West	199	200	128
Norfolk	195	187	131
Eastern counties	195	189	132
Other districts:			
Essex	189	172	123
Suffolk East	197	189	125
Suffolk West	209	211	149
Norfolk	196	177	126
Eastern counties	191	175	124

possible to make two broad groups of occupations in these areas, i.e. agricultural districts where over half the rural population was employed on the land and non-agricultural areas which have been termed "other" districts. The agricultural districts had a birth-rate in excess of the "other" districts in each of the three triennia and also showed a slightly slower rate of decline, but the highest birth-rate in each period was that of the "other" districts of Suffolk West.

Population

The populations of both Suffolk and Norfolk show an increase that is considerably below the rate experienced by the whole country, and during the last 30 years the population of Suffolk West has shown a continuous decline. The population at the end of the periods for which occupational districts were discussed expressed as a percentage of the population at the beginning is:

County	Population of 1891 as a percentage of 1861	Population of 1931 as a percentage of 1911
Essex	200	130
Suffolk East	107	{ 106
Suffolk West		{ 91
Norfolk	107	101
England and Wales	145	111

The growth of the population within the county of Essex is interesting. About two-thirds of the total increase was contributed by about one-seventh of the districts. Dagenham with an increase of 81,455 persons (1030 per cent) during the last 20 years showed the largest increase. Of the administrative districts 16 out of 57 showed a decrease during the decade 1921–31.

Summary

In this division the recorded birth-rate reached its peak in 1880–2, 10 years later than the counties comprising the South-Midland division dealt with in the previous section. Between 1870–2 and 1930–2 the birth-rate has declined by rather more than half, while the potential rate has fallen by less than 5 per cent. The decline in the last 30 years has been rather more than twice as great as the decline in the previous 30 years. Since 1911–13 the rural districts have shown a greater fertility than the urbanized areas except in Essex where the high birth-rate of West Ham, with a large element of dock and casual employment, gives the highest birth-rate to the group of county boroughs. In the districts of the administrative counties those mainly devoted to agriculture have shown in the years of this century somewhat higher birth-rates and a slightly slower rate of decline than are apparent in other areas.

III. WEST MIDLANDS

Fertility

The actual birth-rate, potential rate and fertility ratio for each of the seven counties in this division are given in Table XI for the nine triennial periods covered. With one exception the peak of fertility was reached in these counties in 1870–2 and followed by an unbroken fall. The exception is Monmouthshire in which the birth-rate did not start on its downward path till after 1890–2, or some 20 years later, but afterwards made such amends that in the latest triennium its fertility is on a par with the other counties. The later decline shown by the birth-rate in this county is paralleled in several of the Welsh counties. Considerable variation is apparent amongst these counties at each

Table XI. *West Midlands. Legitimate births per 1000 married women, aged 15-45*

County	1850-2			1860-2			1870-2		
	A.	P.	F.R.	A.	P.	F.R.	A.	P.	F.R.
Gloucestershire	272	253	108	279	254	110	286	256	112
Herefordshire	275	242	114	278	249	112	284	248	115
Shropshire	268	245	109	291	251	116	303	248	122
Staffordshire	308	265	116	301	267	113	320	264	121
Worcestershire	282	257	110	287	258	111	296	256	116
Warwickshire	290	262	111	281	261	108	291	259	112
Monmouthshire	277	262	106	288	260	111	304	263	116

County	1880-2			1890-2			1900-2		
	A.	P.	F.R.	A.	P.	F.R.	A.	P.	F.R.
Gloucestershire	282	254	111	259	251	103	225	249	90
Herefordshire	279	242	115	272	243	112	235	238	99
Shropshire	287	243	118	275	243	115	257	242	106
Staffordshire	311	261	119	299	259	115	270	258	105
Worcestershire	288	254	113	268	252	106	239	251	95
Warwickshire	287	258	111	265	257	103	243	258	94
Monmouthshire	299	259	115	305	264	116	283	260	109

County	1911-13			1920-2			1930-2		
	A.	P.	F.R.	A.	P.	F.R.	A.	P.	F.R.
Gloucestershire	184	239	77	183	240	76	123	239	51
Herefordshire	203	233	87	200	240	83	137	239	57
Shropshire	207	235	88	200	239	84	138	241	57
Staffordshire	226	249	91	208	249	84	140	247	57
Worcestershire	197	243	81	182	243	75	129	245	53
Warwickshire	199	247	81	179	244	73	123	245	50
Monmouthshire	241	256	94	206	255	81	133	246	54

County boroughs									
County	1911-13			1920-2			1930-2		
	A.	P.	F.R.	A.	P.	F.R.	A.	P.	F.R.
Gloucestershire	183	241	76	182	241	76	123	239	51
Herefordshire	—	—	—	—	—	—	—	—	—
Shropshire	—	—	—	—	—	—	—	—	—
Staffordshire	223	249	90	210	249	84	139	247	56
Worcestershire	200	247	81	199	247	81	141	246	57
Warwickshire	199	248	80	178	244	73	123	246	50
Monmouthshire	217	249	87	196	249	79	137	244	56

Urban districts									
County	1911-13			1920-2			1930-2		
	A.	P.	F.R.	A.	P.	F.R.	A.	P.	F.R.
Gloucestershire	173	237	73	177	238	74	113	240	47
Herefordshire	191	238	80	193	242	80	123	241	51
Shropshire	198	237	84	196	240	82	132	240	55
Staffordshire	236	251	94	210	250	84	143	247	58
Worcestershire	198	244	81	176	243	72	124	246	50
Warwickshire	188	244	77	170	242	70	118	241	49
Monmouthshire	252	261	97	210	258	81	134	248	54

Rural districts									
County	1911-13			1920-2			1930-2		
	A.	P.	F.R.	A.	P.	F.R.	A.	P.	F.R.
Gloucestershire	191	236	81	186	240	78	126	240	53
Herefordshire	210	230	91	204	239	85	146	238	61
Shropshire	215	234	92	205	238	86	145	241	60
Staffordshire	211	242	87	195	244	80	136	245	56
Worcestershire	195	238	82	177	240	74	129	241	54
Warwickshire	212	244	87	188	245	77	130	245	53
Monmouthshire	210	240	88	186	241	77	120	239	50

A. = Actual rate; P. = Potential rate; F.R. = Fertility ratio.

point of time, the difference between the highest and the lowest fertility rates being 36 in 1870-2, 58 in 1900-2 and 17 in 1930-2. Excluding Monmouthshire with its later decline, the highest fertility is shown uniformly in Staffordshire. At least part of this higher rate is due to the fact that the population of this county was, as the potential rates show, favourably constituted and in its fertility ratios the county is not outstanding, though in conjunction with Shropshire it tends to be high. The potential birth-rate in the division was practically constant for the first five triennial periods and then showed a slight decline, remaining constant for the last three triennia. The potential rates of Staffordshire, Warwickshire and Monmouthshire were generally the highest throughout the 80 years. In the last three triennia the birth-rates of the rural districts of Gloucestershire, Herefordshire, Shropshire and Warwickshire were higher than those of either the urban districts or county boroughs (although the potential rates were lower in most cases in the rural districts). In Monmouthshire on the other hand the rural birth-rates were the lowest, and the county boroughs of Worcestershire had higher rates than either the urban or rural districts of the county. During this 20 years the birth-rate declined rapidly, especially between 1920-2 and 1930-3, the decline being greater in the urban districts than in the rural areas, for the division as a whole. During the years of this century the fall in the birth-rates within the counties ranged from 59 to 84 births per 1000 married women aged 15-45 in the county boroughs, 60 to 118 in the urban districts and 64 to 90 in the rural areas.

The actual birth-rates, potential rates and fertility ratios expressed as a percentage of the 1870-2 values are shown in Table XII. The actual birth-rates had declined during the 60 years 51.8 per cent in Herefordshire where the fall was least, and 57.7 per cent in Warwickshire where it was greatest. Almost half this fall in the actual birth-rate occurred in the last 20 years. Meanwhile the potential rate had fallen only slightly, for where it had declined most, in Gloucestershire, the fall was only 6.6 per cent.

Occupations

The chief branch of agriculture in this division was that of stock keeping, but it was only in Herefordshire and Shropshire that agriculture employed an important proportion of the occupied males, the percentages being respectively 43.8 and 34.5 in 1871 and 43.6 and 29.6 in 1921. Agriculture as a source of employment occupied a subordinate position in the other five counties, and in three of them as few as 5 per cent of the male population were engaged on the land in 1921.

The mineral resources include coal, iron, stone, lead, etc. In only two counties, however, did the numbers engaged in working these resources attain noticeable proportions. They were Monmouthshire with 40.7 per cent and Staffordshire with 15.3 per cent in 1921.

Metal working was a very important industry and Worcestershire, Staffordshire and Warwickshire had 23.2, 25.6 and 29.0 per cent respectively of their

Table XII. *West Midlands. Legitimate birth-rates as percentages of those in 1870-2*

County	1850-2			1860-2			1870-2		
	A.	P.	F.R.	A.	P.	F.R.	A.	P.	F.R.
Gloucestershire	95.1	98.8	96.4	97.6	99.2	98.2	100	100	100
Herefordshire	96.8	97.6	99.1	97.9	100.4	97.4	100	100	100
Shropshire	88.4	98.8	89.3	96.0	101.2	95.1	100	100	100
Staffordshire	96.3	100.4	95.9	94.1	101.1	93.4	100	100	100
Worcestershire	95.3	100.4	94.8	97.0	100.8	95.7	100	100	100
Warwickshire	99.7	101.2	99.1	96.6	100.8	96.4	100	100	100
Monmouthshire	91.1	99.6	91.4	94.7	98.9	95.7	100	100	100

County	1880-2			1890-2			1900-2		
	A.	P.	F.R.	A.	P.	F.R.	A.	P.	F.R.
Gloucestershire	98.6	99.2	99.1	90.6	98.0	92.0	78.7	97.3	80.4
Herefordshire	98.2	97.6	100.0	95.8	98.0	97.4	82.7	96.0	86.1
Shropshire	94.7	98.0	96.7	90.8	98.0	94.3	84.8	97.6	86.9
Staffordshire	97.2	98.9	98.3	93.4	98.1	95.0	84.4	97.7	86.8
Worcestershire	97.3	99.2	97.4	90.5	98.4	91.4	80.7	98.0	81.9
Warwickshire	98.6	99.6	99.1	91.1	99.2	92.0	83.5	99.6	83.9
Monmouthshire	98.4	98.5	99.1	100.3	100.4	100.0	93.1	98.9	94.0

County	1911-13			1920-2			1930-2		
	A.	P.	F.R.	A.	P.	F.R.	A.	P.	F.R.
Gloucestershire	64.3	93.4	68.7	64.0	93.8	67.9	43.0	93.4	45.5
Herefordshire	71.5	94.0	75.7	70.4	96.8	72.2	48.2	96.4	49.6
Shropshire	68.3	94.8	72.1	66.0	96.4	68.9	45.5	97.2	46.7
Staffordshire	70.6	94.3	75.2	65.0	94.3	69.4	43.8	93.6	47.1
Worcestershire	66.6	94.9	69.8	61.5	94.9	64.7	43.6	95.7	45.7
Warwickshire	68.4	95.4	72.3	61.5	94.2	65.2	42.3	94.6	44.6
Monmouthshire	79.3	97.3	81.0	67.8	97.0	69.8	43.8	93.5	46.6

A. = Actual rate; P. = Potential rate; F.R. = Fertility ratio.

occupied males thus engaged. The highly agricultural county of Herefordshire on the other hand had only 4.1 per cent of the male population employed in metal working, while such workers in the remaining three counties formed 10.1-12.2 per cent of the occupied males.

The manufacture of pottery in Staffordshire employs 6 per cent of the males. In this county 80 per cent of the males engaged in this industry were localized in Stoke county borough where they formed almost one-quarter of the occupied males in 1921. Textile workers gave rise to an important local industry in Worcestershire and 27.2 per cent of the males in Kidderminster were engaged in this occupation. During the period under review there has been a large decline in textile workers in Coventry. One-fifth of the males in 1871 were engaged in this occupation, mainly silk and ribbon manufacture, but in 1921 this industry employed less than 2 per cent of the males.

Districts within the counties

The birth-rates in broad occupational groups within the counties for the four triennial periods when the returns were made in registration districts are given in Table XIII. The agricultural districts are those areas which, in 1871, had more than 40 per cent of the males engaged on the land. The mining and

Table XIII. *West Midland counties. Legitimate birth-rate per 1000 married women, aged 15-45*

Registration county	1860-2	1870-2	1880-2	1890-2
Agricultural districts:				
Gloucestershire	290	296	288	270
Herefordshire	284	276	282	277
Shropshire	289	299	282	273
Staffordshire	291	295	287	275
Worcestershire	286	292	283	275
Warwickshire	286	288	282	257
Monmouthshire	—	—	—	—
West Midland counties	288	291	284	269
Mining and quarrying districts:				
Gloucestershire	283	314	313	311
Herefordshire	—	—	—	—
Shropshire	302	320	297	291
Staffordshire	306	324	314	303
Worcestershire	324	333	318	312
Warwickshire	—	—	—	—
Monmouthshire	304	313	301	314
West Midland counties	306	323	312	304
Agricultural and mining districts:				
Gloucestershire	—	—	—	—
Herefordshire	—	—	—	—
Shropshire	—	—	—	—
Staffordshire	287	309	306	289
Worcestershire	287	287	287	268
Warwickshire	298	304	306	301
Monmouthshire	272	300	286	280
West Midland counties	286	305	302	287
Agricultural and industrial districts:				
Gloucestershire	292	296	287	262
Herefordshire	267	276	274	265
Shropshire	287	296	286	271
Staffordshire	—	—	—	—
Worcestershire	279	275	270	260
Warwickshire	269	272	277	250
Monmouthshire	285	296	292	276
West Midland counties	279	284	280	262
Other districts:				
Gloucestershire	274	280	278	254
Herefordshire	—	—	—	—
Shropshire	—	—	—	—
Staffordshire	—	—	—	—
Worcestershire	264	286	280	251
Warwickshire	281	295	289	266
Monmouthshire	268	292	301	302
West Midland counties	276	289	285	263

quarrying districts had 40 per cent of the males engaged in this occupation. The agricultural and mining districts are the areas where at least 20 per cent of the males were engaged in each occupation. The agricultural and industrial districts had from 20 to 40 per cent of the males employed on the land. The remaining districts were grouped together as "other" districts. For the division as a whole the highest birth-rate was that of the mining and quarrying districts for each triennium, while the agricultural and mining areas also had in general a high rate. The agricultural and industrial districts show low rates, 27-42 births per 1000 women below the mining and quarrying areas. The maximum

rate in each occupational group, for the whole division, was reached in 1870-2 but in individual counties there were some exceptions where the rate remained more or less stationary or even tended to increase through a later decade. Between 1870-2 and 1890-2 the rate of decline does not differ appreciably between the occupational groups of the division, varying from 6 to 9 per cent only.

The birth-rates for urban administrative districts for the last three triennia, are given in broad occupational groups in Table XIV. The agricultural districts

Table XIV. *West Midland counties. County boroughs and urban districts.*
Legitimate birth-rate per 1000 married women, aged 15-45

Administrative county	1911-13	1920-2	1930-2
Agricultural districts:			
Gloucestershire	206	188	121
Herefordshire	—	—	—
Shropshire	—	—	—
Staffordshire	—	—	—
Worcestershire	190	165	122
Warwickshire	—	—	—
Monmouthshire	—	—	—
West Midland counties	192	168	122
Mining and quarrying districts:			
Gloucestershire	231	191	155
Herefordshire	—	—	—
Shropshire	—	—	—
Staffordshire	239	207	138
Worcestershire	—	—	—
Warwickshire	228	195	133
Monmouthshire	257	212	137
West Midland counties	249	209	137
Metal working districts:			
Gloucestershire	—	—	—
Herefordshire	—	—	—
Shropshire	247	220	140
Staffordshire	231	212	145
Worcestershire	214	199	140
Warwickshire	199	178	124
Monmouthshire	240	201	116
West Midland counties	211	191	132
Other districts:			
Gloucestershire	181	181	121
Herefordshire	191	193	123
Shropshire	194	194	132
Staffordshire	221	210	135
Worcestershire	197	173	122
Warwickshire	168	157	108
Monmouthshire	212	196	135
West Midland counties	198	190	126

are those areas where more than 30 per cent of the males found such employment. Mining and quarrying districts had over 40 per cent of the males engaged in this work and metal-working districts had over 30 per cent of the males so occupied. "Other" districts include the remaining districts with no predominant industry. The mining and quarrying districts had the highest birth-rate in each period and the agricultural districts the lowest. The excess of the former over the latter was considerable in 1911-13 (30 per cent), but has become

much less distinct in later years (24 per cent in 1920-2 and 18 per cent in 1930-2). It follows that the decline in the birth-rate, during the 20 years, for the division as a whole, has been more severe in the mining and quarrying districts (45 per cent) than in the agricultural areas (36 per cent); the decline in the latter was practically the same as in the other two groups (37 and 36 per cent). Considerable variation, however, is shown in the occupational groups of the same counties. For instance, in Monmouthshire, the decline was 51·7 per cent in the metal-working districts, 46·7 in the mining and quarrying districts, and only 36·3 per cent in the "other" districts.

Table XV gives the birth-rates, in occupational districts, for the rural areas

Table XV. *West Midland counties. Rural districts. Legitimate birth-rate per 1000 married women, aged 15-45*

Administrative county	1911-13	1920-2	1930-2
Agricultural districts:			
Gloucestershire	204	199	133
Herefordshire	210	204	146
Shropshire	213	204	146
Staffordshire	202	197	141
Worcestershire	195	177	135
Warwickshire	187	188	138
Monmouthshire	220	195	129
West Midland counties	205	197	140
Mining and quarrying districts:			
Gloucestershire	244	206	131
Herefordshire	—	—	—
Shropshire	—	—	—
Staffordshire	241	203	142
Worcestershire	—	—	—
Warwickshire	232	211	144
Monmouthshire	—	—	—
West Midland counties	236	209	141
Agricultural and metal-working districts:			
Gloucestershire	189	164	118
Herefordshire	—	—	—
Shropshire	216	200	142
Staffordshire	—	—	—
Worcestershire	205	177	112
Warwickshire	198	169	128
Monmouthshire	212	182	115
West Midland counties	204	177	122
Agricultural and mining districts:			
Gloucestershire	187	181	123
Herefordshire	—	—	—
Shropshire	227	210	137
Staffordshire	209	198	134
Worcestershire	—	—	—
Warwickshire	255	210	122
Monmouthshire	190	191	133
West Midland counties	214	199	131
Other districts:			
Gloucestershire	174	176	121
Herefordshire	—	—	—
Shropshire	—	—	—
Staffordshire	210	205	141
Worcestershire	197	175	123
Warwickshire	187	165	115
Monmouthshire	217	184	123
West Midland counties	190	182	125

for the same three periods. The areas where more than half the males were engaged on the land were described as agricultural districts. The mining and quarrying districts had over 40 per cent of the males employed in this industry. The agricultural and metal-working districts were those which had more than 10 per cent in each occupation and which together employed over 40 per cent of the males. A similar criterion was used for agricultural and mining districts. The remaining districts were grouped as "other" districts. As in the urban areas the mining and quarrying districts had higher birth-rates in each of the three periods than any of the other occupational areas. The "other" districts and the agricultural and metal-working districts showed generally low rates. The birth-rate declined rather more slowly during the 20 years in the agricultural districts, 31·7 per cent of the 1911-13 rate, than in the other occupational areas, and these areas together with those largely devoted to mining and quarrying have the highest fertility at the final date. With the exception of the mining and quarrying districts there was a considerable variation in the birth-rates of the counties within an occupational group.

Population

The two agricultural counties of Herefordshire and Shropshire have shown a declining population. The other counties all show increases though the population of Monmouthshire declined between 1921 and 1931. The population at the end of each period studied, expressed as a percentage of the population at the beginning, is as follows:

County	Population of 1891 as a percentage of 1861	Population of 1931 as a percentage of 1911
Gloucestershire	124	107
Herefordshire	94	98
Shropshire	98	99
Staffordshire	143	112
Worcestershire	143	110
Warwickshire	143	123
Monmouthshire	140	110
England and Wales	145	111

In the first period no county had a rate of increase equal to that of England and Wales and in the second period only two counties exceeded the percentage increase for the whole country.

Summary

In the counties of this division the peak of recorded fertility fell in 1870-2 with the exception of Monmouthshire which did not show a falling off in fertility till some 20 years later—a delay also shown by some of the Welsh counties previously dealt with. The county of Staffordshire has shown the highest actual birth-rate but this is partly accounted for by a population of married women favouring fertility. Between 1911-13 and 1930-2 the rate in the rural areas generally exceeded the rate in the urban areas, though Monmouthshire and Worcestershire are exceptions to this rule. The urban areas have shown between these dates the greater rate of decline. The total decline

from 1870-2 to 1930-2 is somewhat over 50 per cent, almost half the fall being confined to the last 20 years. The potential rate has fallen by under 5 per cent. Occupational comparisons show high rates of fertility in the mining and quarrying districts. Between 1870-2 and 1890-2 the relatively small decline in the birth-rate was not occupationally differentiated, but in more recent years the fall has been more severe in the mining and quarrying areas than in other districts, though the former still retain somewhat high birth-rates at the latest date.

IV. NORTH MIDLANDS

Fertility

Table XVI shows the rates for each of the five counties that comprised this division. The maximum value of the actual birth-rate was recorded in 1870-2 for Leicestershire, Lincolnshire and Derbyshire, but not until 1880-2 in Nottinghamshire and Rutlandshire. No very striking or uniform differences are apparent between these counties and the range of the actual birth-rate between them during the nine triennia varied from only 10 to 18 births per 1000 married women. Leicestershire had the characteristic of having both the highest and lowest actual birth-rate during the period under review. The highest potential birth-rates, for each of the nine triennia, were those of Nottinghamshire and Derbyshire and the lowest rate was that of Rutlandshire. In 1850-2 the range of the potential birth-rate was small, only 8, but in the subsequent periods there was a difference of 13-22 between the counties. Rutlandshire had a higher fertility ratio than any other county in this division

Table XVI. *North Midlands. Legitimate births per 1000 married women, aged 15-45*

County	1850-2			1860-2			1870-2		
	A.	P.	F.R.	A.	P.	F.R.	A.	P.	F.R.
Leicestershire	294	257	114	288	255	113	301	259	116
Rutlandshire	283	250	113	292	244	120	296	242	122
Lincolnshire	290	254	114	286	251	114	293	254	115
Nottinghamshire	280	257	109	282	260	108	286	261	109
Derbyshire	288	258	112	283	261	108	297	261	114
County	1880-2			1890-2			1900-2		
	A.	P.	F.R.	A.	P.	F.R.	A.	P.	F.R.
Leicestershire	295	261	113	268	256	105	233	254	92
Rutlandshire	298	245	122	259	240	108	227	235	97
Lincolnshire	284	254	112	255	249	102	229	251	91
Nottinghamshire	288	265	109	261	259	101	243	257	95
Derbyshire	293	263	111	271	259	105	244	256	95
County	1911-13			1920-2			1930-2		
	A.	P.	F.R.	A.	P.	F.R.	A.	P.	F.R.
Leicestershire	184	245	75	172	243	71	117	246	48
Rutlandshire	192	235	82	184	233	79	134	235	57
Lincolnshire	197	248	80	175	245	71	130	247	53
Nottinghamshire	194	251	77	177	247	72	125	248	50
Derbyshire	202	251	80	182	248	73	123	248	50

A. = Actual rate; P. = Potential rate; F.R. = Fertility ratio.

Table XVI (continued)

County	County boroughs								
	1911-13			1920-2			1930-2		
	A.	P.	F.R.	A.	P.	F.R.	A.	P.	F.R.
Leicestershire	173	245	71	164	244	67	113	246	46
Rutlandshire	—	—	—	—	—	—	—	—	—
Lincolnshire	190	253	75	169	248	68	122	244	50
Nottinghamshire	178	250	71	173	245	71	126	247	51
Derbyshire	177	246	72	166	242	69	118	247	48

County	Urban districts								
	1911-13			1920-2			1930-2		
	A.	P.	F.R.	A.	P.	F.R.	A.	P.	F.R.
Leicestershire	194	247	79	181	245	74	119	245	49
Rutlandshire	168	239	70	193	232	83	123	232	53
Lincolnshire	189	248	76	168	246	68	124	248	50
Nottinghamshire	210	255	82	181	249	73	122	249	49
Derbyshire	201	252	80	182	249	73	121	248	49

County	Rural districts								
	1911-13			1920-2			1930-2		
	A.	P.	F.R.	A.	P.	F.R.	A.	P.	F.R.
Leicestershire	196	243	81	179	241	74	121	246	49
Rutlandshire	198	234	85	181	234	77	136	236	58
Lincolnshire	207	244	85	185	243	76	141	247	57
Nottinghamshire	200	246	81	178	244	73	128	249	51
Derbyshire	213	252	85	189	249	76	128	248	51

A. = Actual rate; P. = Potential rate; F.R. = Fertility ratio.

during the last eight triennial periods. The fertility ratios for Nottinghamshire for the first five triennia, and for Leicestershire during the last three periods were low.

For the last three periods, when division between urban and rural districts was possible, the actual birth-rate of the rural districts was generally the highest and that of the county boroughs the lowest, but some exceptions will be noted. Very little difference existed in the potential birth-rate between the three types of areas.

The three measures of fertility are expressed as percentages of the values for 1870-2 in Table XVII. The percentage decrease in the actual birth-rate during the 60 years, 1870-2 to 1930-2, ranged from 54.7 to 61.1, while the decrease in the potential birth-rate was only of the order of 3-5 per cent. The decrease in the fertility ratio, over this period, was 53.3-58.6 per cent. The decline in the last 30 years is greater than that of the previous years but in no uniform ratio. The counties which showed most decline in 1870-2 to 1900-2 showed less acceleration in the fall in 1900-2 to 1930-2 than those which had previously fallen but little, e.g. Nottinghamshire and Derbyshire. The latter made full amends for the earlier maintenance of their rates.

Table XVII. *North Midlands. Legitimate birth-rates as percentages of those of 1870-2*

County	1850-2			1860-2			1870-2		
	A.	P.	F.R.	A.	P.	F.R.	A.	P.	F.R.
Leicestershire	97.7	99.2	98.3	95.7	98.5	97.4	100	100	100
Rutlandshire	95.6	103.3	92.6	98.6	100.8	98.4	100	100	100
Lincolnshire	99.0	100.0	99.1	97.6	98.8	99.1	100	100	100
Nottinghamshire	97.9	98.5	100.0	98.6	99.6	99.1	100	100	100
Derbyshire	97.0	98.9	98.2	95.3	100.0	94.7	100	100	100

County	1880-2			1890-2			1900-2		
	A.	P.	F.R.	A.	P.	F.R.	A.	P.	F.R.
Leicestershire	98.0	100.8	97.4	89.0	98.8	90.5	77.4	98.1	79.3
Rutlandshire	100.7	101.2	100.0	87.5	99.2	88.5	76.7	97.1	79.5
Lincolnshire	96.9	100.0	97.4	87.0	98.0	88.7	78.2	98.8	79.1
Nottinghamshire	100.7	101.5	100.0	91.3	99.2	92.7	85.0	98.5	87.2
Derbyshire	98.7	100.8	97.4	91.2	99.2	92.1	82.2	98.1	83.3

County	1911-13			1920-2			1930-2		
	A.	P.	F.R.	A.	P.	F.R.	A.	P.	F.R.
Leicestershire	61.1	94.6	64.7	57.1	93.8	61.2	38.9	95.0	41.4
Rutlandshire	64.9	97.1	67.2	62.2	96.3	64.8	45.3	97.1	46.7
Lincolnshire	67.2	97.6	69.6	59.7	96.5	61.7	44.4	97.2	46.1
Nottinghamshire	67.8	96.2	70.6	61.9	94.6	66.1	43.7	95.0	45.9
Derbyshire	68.0	96.2	70.2	61.3	95.0	64.0	41.4	95.0	43.9

A. = Actual rate; P. = Potential rate; F.R. = Fertility ratio.

Occupations

Rutlandshire and Lincolnshire were in the period of study essentially agricultural counties, with over 40 per cent of the males engaged on the land in 1871 and 42.6 and 29.7 per cent respectively in 1921. Agriculture occupied a subordinate position in the remaining counties, Leicestershire, Nottinghamshire and Derbyshire, where the percentages of occupied males so employed were 10.0, 8.0 and 7.5 in 1921.

In the 1921 census 4803 men were returned as fishermen in the county of Lincoln, 91 per cent of this number belonging to the towns of Grimsby and Cleethorpes, where the percentages were 12.5 and 9.6 respectively of the occupied males.

The minerals worked in this division include coal, iron, granite, slate and lime, etc. The coalfield of Derbyshire stretches into Nottinghamshire and Leicestershire. The proportion of males employed as coal miners in the first two counties in 1921 was only exceeded by the counties of Monmouthshire, Glamorganshire and Durham.

Metal workers form an important occupation in Leicestershire, Nottinghamshire and Derbyshire, where 10.7, 10.0 and 13.6 per cent of the male population were so described in 1921.

Makers of textile goods and dresses formed a proportion of 14.1 per cent of the males in Leicestershire. The most important occupations in this group

were boot and shoe making. The highest proportions engaged in this occupational group were those of Leicester C.B. and the rural district of Hinkley, where 20.4 and 37.3 per cent of the males were so employed.

Although textiles are of importance in Leicestershire, Nottinghamshire and Derbyshire, only a small proportion of the males are engaged in this trade. The percentages are 6.6, 4.9 and 4.0 per cent respectively.

Districts within the counties

The birth-rates, for the four registration periods, in broad occupational groups are given in Table XVIII. The agricultural districts were those districts where more than 40 per cent of the males were engaged on the land. The mining

Table XVIII. *North Midland counties. Legitimate birth-rate per 1000 married women, aged 15-45*

Registration county	1860-2	1870-2	1880-2	1890-2
<i>Agricultural districts:</i>				
Leicestershire	280	282	285	298
Rutlandshire	292	296	298	259
Lincolnshire	289	298	286	260
Nottinghamshire	289	287	284	258
Derbyshire	278	305	289	280
North Midland counties	287	295	286	265
<i>Mining and quarrying districts:</i>				
Leicestershire	307	296	302	308
Rutlandshire	—	—	—	—
Lincolnshire	—	—	—	—
Nottinghamshire	—	—	—	—
Derbyshire	295	310	309	306
North Midland counties	297	307	307	306
<i>Agricultural and mining districts:</i>				
Leicestershire	288	309	304	320
Rutlandshire	—	—	—	—
Lincolnshire	—	—	—	—
Nottinghamshire	289	300	309	310
Derbyshire	278	290	294	263
North Midland counties	285	300	302	297
<i>Agricultural and industrial districts:</i>				
Leicestershire	—	—	—	—
Rutlandshire	—	—	—	—
Lincolnshire	281	285	282	249
Nottinghamshire	—	—	—	—
Derbyshire	—	—	—	—
North Midland counties	281	285	282	249
<i>Other districts:</i>				
Leicestershire	287	303	290	225
Rutlandshire	—	—	—	—
Lincolnshire	—	—	—	—
Nottinghamshire	277	281	284	249
Derbyshire	273	283	273	232
North Midland counties	278	287	283	239

and quarrying districts had over 40 per cent of the males so employed. The agricultural and mining districts had over 20 per cent of the males in each occupation. Districts where 20-40 per cent of the males were engaged in

agriculture have been described as agricultural and industrial districts. The remaining districts have been grouped together as "other" districts. The non-mining districts, for the division as a whole, had their maximum birth-rates in 1870-2, and by 1890-2 these districts had shown a decline of 30-48 births per 1000 married women. The mining and the agricultural and mining districts, on the other hand, did not display this feature, but the birth-rate tended to remain stationary during the period 1870-2 to 1890-2. The birth-rate in the agricultural districts of Leicestershire steadily increased throughout the period in contrast to the agricultural districts in the other counties where the rate fell considerably after 1870-2, though the birth-rate in the agricultural districts of Rutlandshire did not decline until after 1880-2. The trends of the birth-rates in the three occupational groups of Nottinghamshire form an interesting contrast. In the agricultural districts of this county the birth-rate showed a continuous decrease in each of the four triennia, whilst in the agricultural and mining districts the rate showed an increase in each period. The "other" districts showed an increasing birth-rate in the first three triennial periods followed by a heavy fall in the last period. Taking the division as a whole the highest birth-rates are those of districts in which mining and quarrying played an important part.

The birth-rates, in occupational districts, for the three administrative periods, are given, for the urban districts, in Table XIX. Agriculture formed

Table XIX. *North Midland counties. County boroughs and urban districts. Legitimate birth-rate per 1000 married women, aged 15-45*

Administrative county	1911-13	1920-2	1930-2
<i>Agricultural districts:</i>			
Leicestershire	—	—	—
Rutlandshire	—	—	—
Lincolnshire	194	189	140
Nottinghamshire	—	—	—
Derbyshire	—	—	—
North Midland counties	194	189	140
<i>Mining and quarrying districts:</i>			
Leicestershire	216	199	128
Rutlandshire	—	—	—
Lincolnshire	—	—	—
Nottinghamshire	226	189	123
Derbyshire	220	194	127
North Midland counties	223	192	125
<i>Metal-working districts:</i>			
Leicestershire	185	170	118
Rutlandshire	—	—	—
Lincolnshire	187	163	114
Nottinghamshire	—	—	—
Derbyshire	179	165	117
North Midland counties	183	165	116
<i>Other districts:</i>			
Leicestershire	176	166	114
Rutlandshire	168	193	123
Lincolnshire	190	169	129
Nottinghamshire	179	171	124
Derbyshire	185	173	118
North Midland counties	181	170	121

an important occupation in some urban districts of Lincolnshire and the areas where over 30 per cent of the males were so employed have been grouped as agricultural districts. The mining and quarrying districts had over 40 per cent of the male population employed in this industry in 1921. The metal-working districts had over 30 per cent of the males employed as metal workers. The remaining districts with no outstanding employment have been grouped under "other" districts. In the first triennium the birth-rate of the mining districts for the whole division continued to be substantially above the rates of the other occupational districts. But the birth-rate in this occupation showed so great a decline, 43.9 per cent of the 1911-13 rate, during the subsequent 20 years that it was in defect of the rate for the agricultural districts, where the rate had declined only 27.8 per cent in the last triennium. The percentage fall on the 1911-13 birth-rate was 36.6 and 33.1 in the metal-working districts and "other" districts. The small number of married women in Rutlandshire probably accounts for the variation shown by the rates of this county.

The birth-rate for the rural areas are shown in Table XX. The agricultural districts had over half the male population engaged on the land. In the mining and quarrying districts over 40 per cent of the males were employed in this industry. The agricultural and mining districts include those areas where both

Table XX. *North Midland counties. Rural districts. Legitimate birth-rate per 1000 married women, aged 15-45*

Administrative county	1911-13	1920-2	1930-2
Agricultural districts:			
Leicestershire	189	176	137
Rutlandshire	200	194	138
Lincolnshire	204	186	141
Nottinghamshire	189	178	129
Derbyshire	242	210	139
North Midland counties	208	189	138
Mining and quarrying districts:			
Leicestershire	230	203	138
Rutlandshire	—	—	—
Lincolnshire	—	—	—
Nottinghamshire	212	179	127
Derbyshire	235	206	137
North Midland counties	238	198	133
Agricultural and mining districts:			
Leicestershire	—	—	—
Rutlandshire	—	—	—
Lincolnshire	—	—	—
Nottinghamshire	205	200	—
Derbyshire	197	183	123
North Midland counties	197	185	123
Other districts:			
Leicestershire	182	168	114
Rutlandshire	195	161	133
Lincolnshire	220	179	138
Nottinghamshire	198	175	125
Derbyshire	176	158	112
North Midland counties	188	167	117

these occupations were important sources of employment. The remaining areas have been grouped under "other" districts. As in the urban areas the rural mining districts for the whole division had a birth-rate in the first triennium considerably in excess of that of any other districts, but owing to a more rapid rate of decline, 41·7 per cent of the 1911–13 rate, the mining districts had a rate in defect of that of the agricultural districts in the last period. The lowest birth-rate in each period was that of the "other" districts. The percentage decline in this area was 37·8 and in the metal-working districts 37·6. Individual counties showed some differences from the trend of the division as a whole. The agricultural districts of Derbyshire had a larger birth-rate, in each period, than the mining districts of the county.

Population

The populations of the three industrial counties increased at a slightly greater rate than that for the whole country. Rutlandshire, the most agricultural of the counties, showed a continuous decline and the population of Lincolnshire, although continuously increasing during the first period, did so at a rate much below that of the whole country. The populations at the end of each period, for which occupational districts were discussed, expressed as a percentage of the population at the beginning, were as follows:

County	Population of 1891 as a percentage of 1861	Population of 1931 as a percentage of 1911
Leicestershire	156	114
Rutlandshire	94	86
Lincolnshire	116	111
Nottinghamshire	156	118
Derbyshire	147	111
England and Wales	145	111

Summary

The counties of this division reached their peak of fertility at somewhat different times, three of them in 1870–2, two of them in 1880–2. Apart from this fact there has been no very definite difference between their rates. In the last 20 years the fertility of the rural districts has been generally highest and that of the county boroughs generally lowest, but exceptions are apparent. Over the period of 60 years the birth-rate has fallen by 54–61 per cent, while the potential rate has not fallen by as much as 5 per cent. The decline has been greatest in the last 30 years, but the ratio of this fall to that of the previous 30 years is very variable in the county areas. Those that fall slowly at first have since fallen with a greater rapidity. The non-mining areas show their highest fertility in 1870–2 and then a quite heavy decline. The mining areas, on the other hand, are characterized by a nearly constant rate up to as late as 1890–2. From 1860–2 to 1890–2 and again in 1911–13 the highest birth-rate is revealed in the areas in which mining and quarrying is the predominant occupation. Since 1911–13 these areas have shown so pronounced a fall that their rate has become below that of the agricultural districts, which also show a decline but one less precipitous.

V. LONDON

It is not possible to present the birth-rates of the London districts in an unbroken sequence over the 80 years since 1850. At the census of 1851 the number of married women aged 15-45 was not recorded for registration districts in London. Again, although the age distribution of the married women was given in the 1901 census for the individual districts, these districts were coterminous with only twelve of the districts for which births were notified. Accepting these necessary omissions, the actual birth-rate, potential birth-rate and fertility ratios are given in Table XXI for the registration districts and in Table XXII for the Metropolitan boroughs. For London as a whole the actual birth-rate and potential rates was at its maximum in 1880-2. Of the twelve districts that had a birth-rate below the value for the whole of London in 1870-2 only five showed an increase in 1880-2, but eight of the thirteen districts with a rate in excess of the mean London rate in 1870-2 showed an increase in the next decade. This suggests that the decline in the birth-rate appeared sooner in the districts with a low birth-rate than in the areas with a high rate. The following defects in the statistics for London prior to 1911 must be noted when conclusions are attempted. As in all other areas imperfect registration may have played a part during the first years of this period, while in London, *par excellence*, the non-transfer of births to normal place of residence must be an important influence. Thus births occurring in a

Table XXI. *London. Legitimate births per 1000 married women, aged 15-45*

Registration districts	1850-2			1860-2			1870-2		
	A.	P.	F.R.	A.	P.	F.R.	A.	P.	F.R.
Kensington	—	—	—	251	254	99	259	258	100
Chelsea	—	—	—	252	257	98	242	259	93
St George's, Hanover Square	—	—	—	224	253	89	227	255	89
Westminster	—	—	—	224	260	86	219	256	86
Marylebone	—	—	—	233	255	91	245	258	95
Hampstead	—	—	—	252	248	102	258	250	103
Pancras	—	—	—	244	259	94	254	263	97
Islington	—	—	—	268	258	104	278	262	106
Hackney	—	—	—	283	251	113	291	257	113
St Giles	—	—	—	248	259	96	253	263	96
Strand	—	—	—	218	259	84	226	257	88
Holborn	—	—	—	267	263	102	276	267	103
London City	—	—	—	241	255	95	245	253	97
Shoreditch	—	—	—	268	267	100	284	269	106
Bethnal Green	—	—	—	282	264	107	302	272	111
Whitechapel	—	—	—	260	261	100	272	264	103
St George in the East	—	—	—	255	265	96	259	268	97
Stepney	—	—	—	255	262	97	279	264	106
Poplar	—	—	—	274	259	106	287	261	110
St Saviour, Southwark	—	—	—	255	263	97	269	265	102
St Olave, Southwark	—	—	—	268	261	103	290	263	110
Lambeth	—	—	—	265	260	102	281	264	106
Wandsworth	—	—	—	272	250	109	277	255	109
Camberwell	—	—	—	275	253	109	285	258	110
Greenwich and Lewisham	—	—	—	267	262	102	285	259	110
London	251	259	97	257	259	99	270	261	103

A. = Actual rate; P. = Potential rate; F.R. = Fertility ratio.

Table XXI (continued)

Registration districts	1880-2			1890-2			1900-2		
	A.	P.	F.R.	A.	P.	F.R.	A.	P.	F.R.
Kensington	255	257	99	228	254	90	—	—	—
Chelsea	269	262	103	228	255	89	221	250	88
St George's, Hanover Square	222	255	87	201	252	80	—	—	—
Westminster	217	257	84	198	259	76	—	—	—
Marylebone	242	259	93	234	256	91	222	252	88
Hampstead	261	250	104	215	250	86	178	266	72
Pancras	251	262	96	232	261	89	205	258	79
Islington	270	262	103	236	258	91	211	257	82
Hackney	284	260	109	248	256	97	—	—	—
St Giles	266	262	102	239	260	92	—	—	—
Strand	225	256	88	182	256	71	—	—	—
Holborn	279	268	104	275	263	105	—	—	—
London City	222	249	89	208	244	85	—	—	—
Shoreditch	285	273	104	268	264	101	260	262	99
Bethnal Green	308	269	114	295	265	111	280	265	106
Whitechapel	305	264	116	318	274	116	—	—	—
St George in the East	290	271	107	301	272	111	—	—	—
Stepney	291	265	110	284	266	107	—	—	—
Poplar	295	262	113	279	261	107	276	259	107
St Saviour, Southwark	271	267	101	255	264	97	241	255	95
St Olave, Southwark	296	263	113	285	263	108	267	259	103
Lambeth	273	261	105	256	259	99	226	255	89
Wandsworth	281	256	110	243	253	96	—	—	—
Camberwell	284	258	110	254	254	100	226	253	89
Greenwich and Lewisham	284	257	111	252	257	98	—	—	—
London	273	261	105	250	259	97	228	255	89

A. = Actual rate; P. = Potential rate; F.R. = Fertility ratio.

Table XXII. London. Legitimate births per 1000 married women, aged 15-45

Metropolitan boroughs	1911-3			1920-2			1930-2			Percentage decline in actual birth-rate during 1911-32
	A.	P.	F.R.	A.	P.	F.R.	A.	P.	F.R.	
Battersea	193	245	79	183	244	75	121	248	49	37.3
Bermondsey	250	250	100	242	251	96	149	248	60	40.4
Bethnal Green	250	254	98	228	247	92	142	248	57	43.2
Camberwell	201	245	82	190	245	78	118	246	48	41.3
Chelsea	172	241	71	168	241	69	117	243	48	32.0
Deptford	209	247	85	190	246	77	123	249	49	41.1
Finsbury	236	250	94	232	249	93	145	249	58	38.6
Fulham	193	248	78	168	244	69	110	246	45	43.0
Greenwich	209	243	86	188	247	76	122	244	50	41.6
Hackney	198	247	80	185	246	75	117	252	46	40.9
Hammersmith	185	248	75	168	246	68	111	246	45	40.0
Hampstead	142	235	60	138	238	58	93	242	38	34.5
Holborn	146	248	59	134	243	55	79	239	33	45.9
Islington	195	248	79	189	248	76	125	253	49	35.9
Kensington	180	242	74	169	244	69	117	250	47	35.0
Lambeth	184	246	75	174	247	70	114	247	46	38.0
Lewisham	166	238	70	157	236	67	101	237	43	39.2
Paddington	176	245	72	157	246	64	106	248	43	39.8
Poplar	255	251	102	238	251	95	151	250	60	40.8
St Marylebone	164	246	67	146	240	61	99	239	41	39.6
St Pancras	193	251	77	179	249	72	115	248	46	40.4
Shoreditch	257	252	102	250	253	99	156	252	62	39.3
Southwark	229	252	91	215	250	86	135	250	54	41.0
Stepney	245	255	96	221	249	89	156	247	63	36.3
Stoke Newington	178	242	74	162	244	66	111	252	44	37.6
Wandsworth	168	240	70	151	235	64	98	239	41	41.7
Westminster	134	242	55	122	239	51	85	239	36	36.6
Woolwich	176	241	73	170	247	69	108	243	44	38.6
City of London	103	223	46	107	225	48	66	229	29	35.9
London	198	246	80	183	245	75	119	246	48	39.9

A. = Actual rate; P. = Potential rate; F.R. = Fertility ratio.

maternity hospital would be credited to the district in which the hospital was situated and not to the district where the parents lived. Bearing this limitation in mind it may be noted that the variation in fertility both in the old registration districts and the Metropolitan boroughs that succeeded them has been very considerable, tending to increase up till the end of the century. The differences between the highest and lowest birth-rates, in the four triennia when returns were made in registration districts, were 65, 83, 91 and 136 and, excluding the City of London, they were 123, 128 and 77 births per 1000 married women for the three triennia when London was divided into the Metropolitan boroughs.

General hygienic, social and economic conditions

The social conditions of the London districts and their relation to these variations in the birth-rate during the 50 years 1851–1901 were the subject of an investigation by Heron.¹ Among the interesting correlations found by him were the following:

Character correlated with birth-rate	1851 <i>r</i>	1901 <i>r</i>
No. of female domestic servants per 100 females	-0.630 ± 0.069	-0.801 ± 0.046
No. of professional men per 1000 males	-0.529 ± 0.082	-0.783 ± 0.050
No. of general labourers per 1000 males	0.120 ± 0.112	0.518 ± 0.095
No. of pawnbrokers, etc. per 1000 males	0.213 ± 0.109	0.627 ± 0.079
No. of children dying under 1 year per 1000 births	-0.296 ± 0.104	0.506 ± 0.097

These relationships led him to the following conclusion: "As far as the present investigation goes it demonstrates I think conclusively that for the London districts there is a very close relationship between undesirable social status and a high birth-rate. In districts where there is overcrowding, where there is a superabundance of the lowest type of labour, where it is needful to employ many young children in order to earn daily bread for the family, where infantile mortality is greatest, there the wives of reproductive ages have most children; where there is more culture and education as shown by a higher proportion of professional men, where there is more leisure and comfort as shown by a higher percentage of domestic servants, where the traders who appeal to the improvident and thriftless are fewer in number, there the birth-rate is least. Again, where there is more general pauperism, where signs of bad environment like phthisis are prevalent, where pauper lunatics are most plentiful, there the birth-rate is highest." The conditions of life ascribed by Heron to the worker were in the main a result of bad tradition. The industrial worker had a grievance against the conditions imposed on him by the industrial system from the first. This system, as Birne points out in his *Economic History of the British Isles*, "condemned him to live in an insanitary house amid squalid surroundings, forced him to work long hours for low wages and exposed him to unemployment through the progress of machinery which made his

¹ On the relation of fertility in man to social status, and on the changes in this relation that have taken place during the last 50 years. David Heron, *Studies in National Deterioration. Drapers' Company Research Memoirs*, 1906. London.

Since this paper was written, Mitra (*J. Hygiene*, **37**, 108–23) has extended Heron's analysis to 1931. The correlations found by Mitra agree substantially with those found by Heron.

labour redundant, or through industrial depressions which brought the new machinery to a standstill”.

Farr was instrumental in obtaining some picture of how the poorest classes lived in London less than 100 years ago. His enthusiasm for general hygiene caused the Metropolitan registrars to make a return on the sanitary and general conditions in their districts. The replies to the circular were published in the *Fifth Annual Report of the Registrar-General* in 1843. From these replies, which were necessarily of a descriptive character, it appeared that there existed unsavoury areas within practically every London district. The registrar of St Olave's wrote “the inhabitants are living in dirt, stench and a state of wretchedness to be conceived only by those who have witnessed it”. This description could be applied to areas in many other districts. The lowest social class existed in ancient, dilapidated, dark and badly ventilated houses in densely populated courts and alleys. In some instances up to 80 persons per house were recorded and up to three families or 10–12 persons per room. In many areas there was no drainage, in others it was bad, and open drains and completely stagnant sewers ran through the centre of the court. The water supply in most cases was poor and only supplied two or three times a week. The inhabitants suffered considerable privation, low wages, a diet of bread and potatoes and little or no firing in winter. These areas were swept by epidemic diseases. The registrar of Gray's Inn Lane district estimated that the mortality in the poorer districts under his surveillance was twice as great as in the wealthier districts, both areas having a population of about 5000 persons.

The census and registration system during the period 1851–1901 was very defective in data bearing on social conditions. The recent census reports are more detailed and the adoption of the Metropolitan borough as a unit of registration allows more comparisons of social conditions to be made. Table XXIII gives some indices of the general social and hygienic conditions for each borough. The social life of the middle and upper classes has undergone some important modifications during the post-war years. The large house with its staff of domestics has been decreasing in numbers and flats of various types have taken its place. With the smaller accommodation and facilities which make it easier to manage, the flat does not need such a large domestic staff and has given rise to a new class, the non-resident maid. The number of indoor domestic female servants declined by a third during the 20 years 1901 and 1921; at the former date one woman worker in three was engaged in domestic service in London, at the latter the proportion had dropped to one in five. For these reasons it did not seem that the proportion of domestics would be such a satisfactory index of the social standing of a London borough as when Heron wrote his paper. With the introduction of a genuinely occupational tabulation in the census of 1921, Dr Stevenson¹ grouped the nine hundred

¹ *Decennial Supplement of the Registrar-General 1921. Part 2, Occupational Mortality.*

Table XXIII. London. General social, hygienic and economic conditions

Metropolitan boroughs	Proportions per 1000 engaged in various occupations										Index of social class (1920-2)	Standardized death-rate per 1000 persons from all causes (1920-2)	Standardized death-rate per 10,000 persons from tuberculosis (1920-2)	1921		Percentage of unemployed operatives
	Males					Females								Net rate in respect of poor law guardians as a percentage of general rate	Produce of penny county rate in £ as percentage of number of assessments	
	Commerce and finance	Labourers, portiers, etc.	Professional occupations	Domestic servants	Makers of textile goods and dresses	Percentage of population living more than 2 in a room	Index of social class (1920-2)	Standardized death-rate per 1000 persons from all causes (1920-2)	Standardized death-rate per 10,000 persons from tuberculosis (1920-2)	Net rate in respect of poor law guardians as a percentage of general rate						
City of London	109	65	45	258	56	6.6	0.0876	12.67	12.34	3.3	199	9.0				
Battersea	93	99	24	136	128	12.4	-0.0506	12.13	9.63	15.6	15	12.1				
Barnes	52	134	8	74	146	23.2	-0.4155	15.26	12.77	30.4	20	15.8				
Bethnal Green	80	97	6	50	352	27.8	-0.2605	14.84	14.32	29.6*	11	17.8				
Camden Town	105	87	22	135	143	12.8	0.0078	12.03	10.47	25.3	12	11.6				
Chelsea	95	105	55	495	137	13.7	0.0811	10.82	6.23	11.2	31	12.9				
Deptford	86	117	18	130	125	12.8	-0.1448	12.54	10.97	19.0	14	14.5				
Finsbury	113	117	10	88	144	34.0	-0.2554	15.27	14.26	10.7	29	17.2				
Greenwich	111	99	29	177	111	13.1	0.0333	11.67	9.16	14.6	13	12.0				
Fulham	61	138	25	236	81	13.8	-0.1918	11.96	12.12	18.1	17	12.4				
Hackney	117	67	22	126	257	11.5	0.1044	11.91	9.17	18.1	14	13.9				
Hammersmith	101	86	27	160	120	13.8	-0.0003	12.20	9.82	13.0	17	12.7				
Hampstead	179	43	96	501	54	6.5	0.5903	9.80	5.59	11.2	30	9.6				
Holborn	121	78	71	239	88	19.8	0.2495	13.04	8.60	11.1	49	14.4				
Islington	104	82	21	120	166	19.4	-0.0062	12.82	10.13	20.8	16	13.8				
Kensington	124	80	69	514	61	16.7	0.2224	12.66	7.62	9.1	33	12.8				
Lambeth	111	82	27	153	120	12.7	0.0523	12.21	9.91	23.1	15	12.5				
Lewisham	133	61	43	240	89	4.7	0.3452	9.82	7.58	24.0	12	7.8				
Paddington	128	73	51	374	115	15.4	0.1809	11.73	7.41	16.3	30	13.2				
Poplar	53	136	7	80	212	21.2	-0.4097	13.66	11.45	34.0*	16	20.2				
St Marylebone	118	92	65	440	117	17.9	0.1622	12.53	8.79	7.3	47	15.1				
St Pancras	98	84	29	178	143	10.1	0.0096	13.01	10.61	19.8	27	14.9				
Shoreditch	71	119	4	58	230	32.0	-0.3282	15.14	14.16	21.1	21	19.1				
Southwark	85	132	8	100	133	23.5	-0.3141	14.52	13.20	23.9	16	15.8				
Stepney	103	89	11	78	366	29.0	-0.1859	14.35	12.36	26.3	16	16.9				
Stoke Newington	146	46	32	189	203	8.1	0.3160	10.23	6.97	18.2	16	12.5				
Wandsworth	131	61	45	237	86	6.8	0.2876	10.23	7.80	17.7	14	9.7				
City of Westminster	89	63	47	507	82	10.1	0.2077	11.73	7.80	5.9	89	11.7				
Woolwich	60	126	25	177	116	7.8	-0.1458	10.72	11.02	18.3	14	10.3				
London	102	91	29	223	145	16.1	0	12.43	10.01	16.1	25	13.4				

* On estimated full rate.

odd different occupations into five social groups. Class I was a small group of the upper classes. Class III formed the largest and included the skilled workman; Class V contained unskilled labour. Class II was intermediate between I and III, and Class IV was intermediate between III and V. The index of social status given in Table XXIII was derived from this social grouping. The social classes for London, as a whole, were put on a normal scale and the mean of each social class found on this scale. The numbers in the social classes of each borough were multiplied by these mean values summed and divided by the total number of males in the five classes. Since the mean for the whole of London is zero, the positive and negative values obtained denote excess or defect. An illustration of the method used is as follows:

Social class	London		Battersea	
	Occupied males	Mean of group on normal scale	Occupied males	No. in group multiplied by mean of London
I	42,116	2.2630	991	2,242.6330
II	287,765	1.1591	10,636	12,328.1876
III	581,538	0.1378	21,806	3,004.8668
IV	231,179	-0.6543	8,731	- 5,712.6933
V	243,103	-1.4716	9,851	- 14,496.7316
			Total 52,015	- 2,633.7375

Index of social status for Battersea = $-2633.7375/52,015 = -0.0506$. The effect of thus using all the male occupations in estimating the social status of the London boroughs gives a different order to that reached when only one occupation is used. For instance, the proportion of servants per 1000 occupied females in 1921 was highest in Kensington, while the next highest proportion was found in Westminster with Chelsea fourth in order; the order of their social index was sixth, seventh and twelfth respectively. The correlation between the index of social status and the legitimate birth-rate was -0.8798 ± 0.043 (omitting the City). The percentage decline in the birth-rate during the period 1911-13 to 1930-2 correlated with the social status gave $r = -0.2037 \pm 0.181$ which is insignificant.

Since it was found in Wales that the birth-rate over 20 years declined most in the districts where the industrial depression was most severe, it seemed of interest to find the correlation between the percentage unemployed in 1931 and the percentage decline in the birth-rate during 1911-13 to 1930-2. The value obtained was 0.2089 ± 0.181 which is statistically insignificant. But unemployment in London did not exhibit the extremes that existed in Wales.

Any deductions drawn from the value of the rates collected in the London boroughs must be regarded with caution since, particularly about 1921, the domestic affairs of the London boroughs had often a strong political background. This variation in internal administration may mask to a certain extent the

absolute wealth of the various London boroughs but an approximation to the relative wealth can be attempted. The following correlations were found:

	<i>r</i>
Net rate in respect of poor law guardians' expenses as a percentage of the general rate (1921-2) and the birth-rate of 1921	0.6926 ± 0.098
Produce of a penny county rate as a percentage of number of assessments (1921) and the birth-rate of 1921	-0.4963 ± 0.142
Net rate in respect of poor law guardians' expenses as a percentage of the general rate (1921-2) and the percentage decline in the birth-rate 1911-32	0.2966 ± 0.172
Produce of a penny county rate as percentage of number of assessments (1921) and the percentage decline in the birth-rate 1911-32	-0.1864 ± 0.182

The City of London was omitted from all the correlations. These correlations and the others given in the previous paragraphs show, as Heron found for 1851-1901, that the better the social class the lower was the birth-rate during the 20 years 1911-31. The percentage decline in the birth-rate over this period showed insignificant correlations with social conditions.

To illustrate more readily the difference in the birth-rate for varying social and hygienic conditions the birth-rates have been found for three classes of each variable. They are:

Index of social class	1911-13	1920-2	1930-2
0.0524 to 0.5903	168	156	103
-0.1447 to 0.0523	192	181	117
-0.4155 to -0.1448	234	216	139
All causes standardized death-rate per 1000			
11.95 to 9.80	173	159	104
12.81 to 11.96	189	177	116
15.27 to 12.82	226	212	137
Tuberculosis standardized death-rate per 10,000			
9.16 to 5.59	168	154	102
10.60 to 9.17	193	183	118
14.32 to 10.61	227	211	135
Percentage of population living more than two to a room			
12.7 to 4.7	174	163	106
19.7 to 12.8	191	177	117
34.0 to 19.8	233	218	140

The division into the three classes was made so that the populations of married women in each class were roughly equal.

Population

The populations of the registration districts for 1851-1901 cannot be readily compared since there were many alterations in the various boundaries. The population for London has declined during the last 20 years. The values for the Metropolitan boroughs are:

	1931 population as percentage of 1911		1931 population as percentage of 1911
Battersea	95	Lambeth*	99
Bermondsey	89	Lewisham	137
Bethnal Green	84	City of London	56
Camberwell*	96	Paddington	102
Chelsea	89	Poplar*	95
Deptford*	98	St Marylebone	83
Finsbury	79	St Pancras	91
Fulham*	98	Shoreditch	87
Greenwich	105	Southwark	89
Hackney	97	Stepney	80
Hammersmith	112	Stoke Newington*	101
Hampstead	104	Wandsworth	113
Holborn	79	Westminster	81
Islington	98	Woolwich	121
Kensington	105	London	97

* These boroughs had a population in 1921 that was greater than that of 1911 or 1931. In all the other boroughs the population showed a continuous decline or increase.

Summary

The variation in fertility between different sections of the London area has been, and in spite of the decline, still is, considerable. In London as a whole the birth-rate has fallen by 56 per cent since 1870-2, while the potential rate shows a decline of only 6 per cent. The fertility of the boroughs is highly correlated with the index of their social status. A higher birth-rate is recorded in the areas with a large proportion of unskilled or semi-skilled labour, a lower birth-rate in the areas with a high proportion of the professional and more affluent members of society. Other indices of relative poverty and wealth and hygienic conditions give a similar answer. The decline in fertility during the past 20 years is not sensibly related to these indices but appears in its rate to have been broadly equivalent throughout the area.

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