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PART III.—BIRTHS.

INTRODUCTION.

BIRTH statistics are important mainly on account of the influence of the birth-rate upon the increase, and upon the sex and age distribution of the population. Population, marriage, birth, and death statistics are, indeed, so interdependent, that no one of these branches of vital statistics can be efficiently handled without a full acquaintance with the main principles and bearings of them all. Birth statistics, including those of illegitimacy, moreover, possess a social interest apart from their more purely statistical value arising from the relation they bear to population.

Prior to the operation of the Civil Registration Act of 1837, no trustworthy birth statistics existed; indeed, they were not possible, since no machinery for their collection existed. From 1837 we possess, however, fairly complete national birth statistics, which there is good ground for believing to be increasingly accurate year by year. In the earlier years of registration a considerable, but unknown, number of births were not recorded, and Dr. Farr estimated (see p. 89) that this deficiency averaged five per cent. of the births occurring during the 39½ years ending with 1876, on the assumption that the actual mean annual birth-rate during that period was not lower than 36 per 1,000 of the population. The Births and Deaths Registration Act of 1874 first made the registration of births compulsory, and, without taking too sanguine a view of the present condition of birth registration, there is no good reason to doubt that the proportion of unrecorded births is now not only much smaller than the five per cent. estimated by Dr. Farr prior to 1876, but absolutely very small. It is probable that the births which now remain unregistered are for the most part illegitimate. The recent steady decline in the proportion of registered births out of wedlock is, however, probably, due to other causes, and should not be attributed to increasing deficiency in the registration of such births, as there are trustworthy grounds for believing that as with legitimate, so with illegitimate births, the proportion unregistered is considerably smaller than was the case in the early days of civil registration.

The birth-rate calculated by the usual method, that is the proportion of registered births to the population at all ages, is a sufficient approximation to a true birth-rate to answer most of the statistical purposes for which a birth-rate is applied. This crude birth-rate is, indeed, sufficiently trustworthy when the object is to compare the rates prevailing during a series of years in the same population. When, however, it is desired to compare the birth-rates in two or more communities, in which the sex and age distribution of the population may present considerable differences, it is necessary to calculate the rates by a method which eliminates the disturbing influence of those differences. This may be effected by calculating the proportion of registered births to the number of

women aged 15 to 45 (the ages at which most children are born) estimated to be living in the community of which it is desired to ascertain the birth-rate. The Census Report for 1881 shows the number of females aged 15 to 45 enumerated in that year in each urban and rural sanitary district as well as in each registration county, district, and sub-district. The age and sex proportion of a population changes very slowly, and, except in those cases where the rate of increase of population by immigration is very abnormal, it may for all practical purposes be assumed that those proportions remain constant during a current intercensal period. On the basis, therefore, of the age and sex proportions prevailing at the last Census the number of females living between the ages of 15 and 45 may be estimated for each year between two enumerations; and upon this number a birth-rate, trustworthy for comparative purposes, may be calculated.

If the birth-rate among married and unmarried women, respectively, be required, it will be necessary to estimate, in a similar manner from the more recent Census information, the numbers of married and unmarried females living at these ages in the population to be dealt with. The proportion of legitimate births to married women, and of illegitimate births to unmarried women, will thus give true legitimate and illegitimate birth-rates. It is obvious, however, that such detailed statistics could not be trusted for comparative purposes unless they related to a population sufficiently large to avoid the inevitable accidental fluctuations incidental to all small numbers. As a matter of fact, moreover, the Census Report does not give the necessary information for estimating the number of married and unmarried women, except for registration counties, and for all urban sanitary districts having at the time of the last Census a population exceeding 50,000 persons.

The number of births to a marriage affords a fairly trustworthy test of the fecundity of a nation or community. It is patent, however, that this test can only be usefully applied when the population to be dealt with is sufficiently large to yield trustworthy results, and when both marriage and birth statistics are available for a fairly long series of years. The law regulating the registration of marriages, moreover, is unfavourable to the collection of accurate marriage statistics for any area of which the boundaries do not correspond with those of registration districts. Practically speaking, therefore, trustworthy statistics of fecundity cannot be calculated for smaller areas of England and Wales than registration counties. This, however, is the less to be regretted, as the main use of fecundity statistics, that is, of the proportion of children to a marriage, is for international comparison, and for detecting any change in the degree of prolificness prevailing in a nation in a long series of years.

In the sub-division of this Part dealing specially with illegitimacy (it was found impossible to exclude all reference to this subject in the sub-division "Birth Registration and Birth-rates"), some valuable extracts will be found dealing with the influence of early marriages, of the proportion of spinsters in the population, and of elementary education, upon the proportion of illegitimate births. Some of these extracts, although necessarily fragmentary, are as valuable for what they suggest as for the information they contain. Extracts bearing upon the mortality of illegitimate children will be found in the section dealing with infant and child mortality.

The last three sub-divisions deal briefly with Sex Proportion at Birth, Defects of the Birth Register, Statistics of First Born, and with Still Births.—(EDITOR).

1.—BIRTH REGISTRATION AND BIRTH-RATES.

Birth Registration, 1837-76.—I propose now to give a brief account of the registered additions to the population since 1st July 1837, when civil registration began; and to determine as nearly as I am able how far the number of children registered falls short of the number of children born alive. The facts prove that the defects were diminishing before the law was enforced by penalties; and now with due vigilance the registration of births as well as of deaths will, I believe, be in England as complete as it is in any other country in Europe.

Looking back from the first complete year of registration to the last, the annual births were 463,787 in 1838 and 837,968 in 1876; and the new births actually recorded from 1st July 1837 on the national registers were 26,129,906. There were in the first year 30·3 births registered to every 1,000 inhabitants, in the last year 36·6; and after allowing for any natural increase of the rate in the interval, or any deficiency of registration in the last year of all, I am inclined to think the actual birth-rate of living children was 36 per 1,000 during the 39½ years of civil registration. At this rate besides the 26,129,906 births registered, 1,441,603 births remained unregistered, or about 5 in 100.

The births were diminished by 17,079,018 deaths, which after subtraction left an excess in the numbers added to the population of 10,492,491; about 1,200,609 more than the increase of the home population determined from the Censuses. The 1,200,609 must have left England by emigration in excess of immigration. There were in *England and Wales* in the middle of 1837 about 15,103,778 people; and at the end of 1876 more by 9,291,882 new comers, making in the aggregate 24,395,660 inhabitants on 31st December 1876.

The emigration from Scotland and Ireland has been in proportion to their population more extensive than the emigration from England; and certain numbers of the population of England are of Scotch or Irish birth or descent. Consequently as the population in Ireland—not the Irish people—decreased, the increase of the population in the UNITED KINGDOM was less than the increase of the population during the same time in England and Wales. The increase of population in the UNITED KINGDOM, exclusive of the islands in the British seas, in the 39·5 years was 7,619,759. I leave out of account here the numbers of the army, navy, and merchant seamen abroad, the English, Scotch, and Irish residing in other countries, as well as the immense number of living emigrants and their descendants in the Colonies and in the United States.

The population of the UNITED KINGDOM increased in the 39 years 1837-1876 at the rate of 29 per cent.; and in the last ten years at the rate of 10 per cent. The increase in the last ten years was at the rate of 0·94 per cent. per annum. It was 0·66 per annum during the whole 39 years.—(39th Annual Report, pp. v-vi.)

Birth-rates among Married Women, 1851.—The mothers of all the children that are born in the country are between the ages of 15 and 55; and the greater part of them are between the ages of 20 and 40. The English schedule is defective, as it does not show the age of the father and mother at the birth of the child; but it may be inferred from the Swedish returns that not more than 1 in 8 women who bear children is under the age of 20 or above the age of 40.

It appears that in 1851 there were in England and Wales 2,553,894 married women under the age of 55, and that the children born alive in wedlock were 573,865; so that 22 in 100 bore living children. The

number of unmarried women,—spinster and widows inclusive,—of the same age (15–55) was 2,449,669; and as the number of children born out of wedlock was 42,000, it would appear that to 100 of them 1·7 children were born. The proportion of children to 100 married women under the age of 55 ranges between 19·73 in Herefordshire and 25·56 in Durham; the proportion of children to 100 unmarried women (age 15–55) ranges between 1·12 in Devon and 2·83 in Norfolk.

BIRTHS in WEDLOCK, registered in 1851 to 100 Married Women, aged 15–55, in Registration Counties.

Counties in order of their Birth-rates.	Birth-rate to 100 Married Women.	Counties in order of their Birth-rates.	Birth-rate to 100 Married Women.
Herefordshire - - -	19·7	Monmouthshire - - -	22·4
Shropshire - - -	20·0	ENGLAND AND WALES - - -	22·5
London - - -	20·4	Northamptonshire - - -	22·5
Middlesex - - -	20·4	North Riding - - -	22·6
Norfolk - - -	20·7	Buckinghamshire - - -	22·6
Surrey - - -	20·8	Cheshire - - -	22·7
Devonshire - - -	20·9	Hertfordshire - - -	22·7
Gloucestershire - - -	21·0	Kent - - -	22·8
East Riding (with York) - - -	21·0	Dorsetshire - - -	22·8
North Wales - - -	21·1	Warwickshire - - -	22·9
Somersetshire - - -	21·5	South Wales - - -	23·1
Hampshire - - -	21·5	Huntingdonshire - - -	23·2
Nottinghamshire - - -	21·5	Leicestershire - - -	23·5
Berkshire - - -	21·7	Cumberland - - -	23·5
Worcestershire - - -	21·8	Westmorland - - -	23·5
Essex - - -	21·9	Northumberland - - -	23·7
Sussex - - -	21·9	Bedfordshire - - -	23·7
Suffolk - - -	22·0	Cornwall - - -	24·2
Rutland - - -	22·0	Lancashire - - -	24·3
Derbyshire - - -	22·1	West Riding - - -	24·4
Wiltshire - - -	22·1	Staffordshire - - -	25·0
Oxfordshire - - -	22·2	Durham - - -	25·6
Lincolnshire - - -	22·3		
Cambridgeshire - - -	22·4		

The number of women of the age (20–40) in England and Wales at the time of the Census, was 2,856,398; of whom 1,248,182 were unmarried, 1,608,216 were married. And if 11·967 per cent. of the children are deducted, belonging as it may be inferred, to the women under 20 and above 40, it will follow that to every 100 women of the age 20–40 about 18·981 children are born annually, to every 100 unmarried women 2·962, and to every 100 married women 31·413 children.

These facts may well calm the apprehensions of those who entertain any dread of the depopulation of the kingdom; and they present in an encouraging aspect the great resources of the English population for colonization or for war.—(14th Annual Report, p. xiii.)

Birth-rates among Married and Unmarried Women, 1841–57.—In forming an estimate either of the prolificness or of the state of public morals in a country, the number of children born in wedlock must be compared with the number of married women at childbearing ages; and in like manner the number of children *born out of wedlock* must be compared with the number of unmarried women of the same ages.

I have hitherto shown the proportion of births in and out of wedlock to the population of the several counties; and the birth-rate has been found to differ considerably. But that rate is evidently regulated to a large extent, firstly by the proportional number of women in the several counties between the ages of 15 and 55, and secondly by the numbers living in the marriage state at those ages.

In consequence of the arrangements made at the last Census, the ratio of legitimate births to married women, and of illegitimate births to unmarried women, can now be definitely determined for each county, from the returns of thirteen years, including six years before and six years after the Census year.

ANNUAL BIRTHS in WEDLOCK, registered during the 13 Years 1845–57, to 100 Married Women aged 15–55, in Registration Counties.

Counties in order of their Birth-rates.	Birth-rate to 100 Married Women.	Counties in order of their Birth-rates.	Birth-rate to 100 Married Women.
Norfolk - - -	19·6	Leicestershire - - -	21·6
Shropshire - - -	20·0	Cambridgeshire - - -	21·6
Devonshire - - -	20·2	Oxfordshire - - -	21·6
Herefordshire - - -	20·2	Derbyshire - - -	21·9
London - - -	20·4	Worcestershire - - -	21·9
Gloucestershire - - -	20·7	ENGLAND AND WALES - - -	22·0
Middlesex - - -	20·7	Kent - - -	22·1
North Wales - - -	20·8	Northamptonshire - - -	22·1
Suffolk - - -	20·9	Huntingdonshire - - -	22·1
Sussex - - -	20·9	Warwickshire - - -	22·4
East Riding (with York) - - -	20·9	Cumberland - - -	22·5
Berkshire - - -	20·9	Bedfordshire - - -	22·5
Somersetshire - - -	21·0	North Riding - - -	22·6
Surrey - - -	21·0	Monmouthshire - - -	22·6
Hampshire - - -	21·1	Northumberland - - -	22·9
Wiltshire - - -	21·2	Westmorland - - -	22·9
Dorsetshire - - -	21·2	West Riding - - -	23·5
Essex - - -	21·3	South Wales - - -	23·5
Nottinghamshire - - -	21·3	Cornwall - - -	23·8
Rutlandshire - - -	21·3	Lancashire - - -	24·0
Hertfordshire - - -	21·4	Staffordshire - - -	25·2
Cheshire - - -	21·5	Durham - - -	25·2
Buckinghamshire - - -	21·5		
Lincolnshire - - -	21·6		

The proportion of women of the puerperal age differs much in the manufacturing, mining, and agricultural counties; and while the proportion of women living *married* at the age of 20–40, to *ten unmarried*, is *ten in two* counties (Middlesex, *extra-metropolitan*, and Westmorland), and only *eleven* in North Wales, Devon, Surrey, Gloucester, Somerset, Salop, Hereford, Cumberland, the proportion in *four* counties, Monmouth, Durham, Stafford, and Huntingdon, is *nineteen* married women of the age 20–40 to *ten* unmarried women of the same age.

The number of unmarried women of the age of 15 and under the age of 55 may be divided into nearly two equal portions; the one of women of the age of 20 and under 40, the other of women above or below that period; and the Swedish returns show that the mothers of the great majority of children are 20 and under 40 years of age. I have, therefore, to determine the relative birth-rates, compared the births respectively (1) with the number of women of the age of 15–55, and (2) with the

number of women of the age 20-40. The counties, arranged in the two orders, stand in nearly the same relative positions.

Thus in Devonshire *one* child in *eighteen* born alive is illegitimate; while in Norfolk *one* in every *nine* children born alive is illegitimate; and in Devon *eleven unmarried women* out of 1,000 of the age 15-55 bore children annually; while in Norfolk *twenty-five* out of 1,000 unmarried women of the same age bore living children annually. If the illegitimate children had been the children exclusively of women of the age 20-40, then the proportion of such women must have been 21 annually in Devon and 50 in Norfolk out of every 1,000; in nine counties less than 30; in twenty counties 30 and less than 40; in fifteen counties 40 and less than 50 women.

The mining counties Stafford and Durham, the border counties, Hereford, Salop, and Cumberland, the Danish counties, Norfolk, Suffolk, Nottingham, Derby, Leicester, and the manufacturing counties in a less degree, Bedford, York, Chester, and Lancaster, have an excess of women unmarried, yet prolific; while all the Celtic population occupy an intermediate place; and the population south of the Thames has the smallest proportion of unmarried women bearing children.

ANNUAL BIRTHS out of WEDLOCK, registered during the 13 years 1845-57 to 100 Unmarried Women, aged 15-55, in Registration Counties.

Counties in order of their Birth-rate.	Birth-rate to 100 Unmarried Women.	Counties in order of their Birth-rate.	Birth-rate to 100 Unmarried Women.
London	0.80	Northamptonshire	1.80
Middlesex	1.01	Northumberland	1.82
Devonshire	1.09	Berkshire	1.82
Surrey	1.20	Hertfordshire	1.83
Gloucestershire	1.22	Lancashire	1.88
Cornwall	1.24	Buckinghamshire	1.88
Somersetshire	1.35	Oxford	1.90
Rutlandshire	1.41	Cambridgeshire	1.93
Hampshire	1.45	Westmorland	1.93
Sussex	1.49	Lincolnshire	1.96
Dorsetshire	1.51	Cheshire	1.99
Kent	1.52	West Riding	2.00
Warwickshire	1.56	Durham	2.01
Huntingdonshire	1.60	Bedfordshire	2.01
Monmouthshire	1.61	Derbyshire	2.10
		Leicestershire	2.10
ENGLAND AND WALES	1.64	North Riding	2.14
		Shropshire	2.15
Worcestershire	1.70	Suffolk	2.21
North Wales	1.73	Herefordshire	2.23
Essex	1.73	Staffordshire	2.30
Wiltshire	1.74	Nottinghamshire	2.31
East Riding (with York)	1.75	Cumberland	2.37
South Wales	1.76	Norfolk	2.52

These tables deserve to be studied by persons living in the several localities in connexion with all the circumstances; as there can be no doubt generally of the unhappiness of the children born out of wedlock, any more than there can of the derangements produced in families by profligacy.

Why, it may be inquired, do *twenty-five* in Norfolk, and *eleven* in Devon, bear children annually out of the same number of unmarried women; and what are the consequences to the population of the two counties, distinguished in such different ways.

The proportion of legitimate children borne by women of all ages annually to 1,000 married women living of the ages under 40 is 392 in Cornwall, 321 in Norfolk, which is thus also in another way remarkable.

For all England 1,000 married women of the age 15-55 have 220 children annually; 1,000 unmarried women have 16 children annually, or one in *fourteen* of them is exposed to the same chance of bearing children as married women.—(20th Annual Report, pp. xiv-xvi.)

Birth-rates among married and unmarried Women, 1872.—The recent Census returns confirm previous deductions, and show that counties with a high proportion of married women at the child-bearing ages have the highest birth-rate; thus of every 100 women living at the ages 15-45 in Durham, 59.9 were married, and in Stafford 56.3, while in Devon the proportion was only 45.2, in Dorset 47.0, and in Hereford 47.3. Of every 100 women living in England and Wales, at the ages 15-45, 49.6, nearly half the number, were married.

The Appendix to the Census Report of 1871 contains some interesting results bearing upon this point,* and shows that in the counties containing the agricultural districts the birth-rate is generally low, while in those counties where the great mining industries of the country are carried on the birth-rate is high; thus the proportional number of legitimate births annually in the ten years 1861-70, to every 100 married women aged 15-55, in the counties of Durham and Stafford, was 25.3 and 24.8 respectively, while in the counties of Devon, Dorset, and Hereford, the proportions were only 21.2, 21.7, and 19.7 respectively.

If the ratio of *illegitimate births* to spinsters and widows aged 15-55 be compared in these counties, the results are nearly equally striking; the average annual number of illegitimate births to every 100 unmarried women being 2.2 in Durham and 2.4 in Stafford, while in Devon, Dorset, and Hereford, the proportions were 1.3, 1.5, and 2.0 per cent.—(35th Annual Report, p. xvi.)

2. FECUNDITY OF MARRIAGE.

Births to a marriage, England and Scotland, 1856-60.—The marriages in a calendar year give rise to births which are registered year after year for 20 years. The births to the 167,723 marriages in the year 1859 could only be determined by following the families and counting all the children unto the end. The division of the sum of the children by the marriages would accurately express the fecundity, as it has been called, of marriages. If the annual marriages do not increase or decrease in number through a series of years, the division of the annual births by the annual marriages of the same years expresses the fecundity pretty accurately; but the marriages in England are increasing rapidly; consequently the 740,275 births registered in the year 1864 must be divided by the marriages of some earlier year to get an approximation to the fecundity. As the age of the mothers is unfortunately not recorded, the interval in England is unknown which intervenes between the mean age of marriage and the mean age of the mothers when their children are born; otherwise that interval would indicate the calendar years with which the births of the year 1864 should be compared.

* See Vol. IV. Census of England and Wales, 1871.—General Report, Table 81, p. 65.

But the interval in Sweden between the mean age of mothers at marriage (25·8 years) and their mean age at the births of their children (31·7) is six years; and the interval in England cannot differ much from six years. Hence, if the legitimate births of given years are divided by the marriages of six years earlier date, the quotient will be the proportion of children to a marriage within close limits. In England the births thus determined to a marriage were 4·255, 4·301, 4·304 in the years 1862, 1863, and 1864. In Scotland the births in 1862 to the average marriages of six years earlier date (1855, 1856, and 1857) were 4·694. The number of children to a marriage thus appears to be greater in Scotland than in England, and this is held to be a proof that married women are more prolific in Scotland than in England.

Proceeding upon another basis the annual number of legitimate children registered in England was 626,506 in the five years 1856-60; when the average number of wives of the age 15-55, determined directly from the Census returns of 1851 and 1861, was 2,843,374; consequently 100 wives bore 22·0 children annually. In like manner it is found that 100 unmarried women bore on an average 1·7 illegitimate children; that is 17 children to 1,000 women. 100 women, including the married and the unmarried, bear 12·3 children annually on an average.*

In Scotland, during the same years, the following proportions were found to exist: 100 wives bore 24·8 children annually, 100 spinsters or widows bore 1·9 illegitimate children; and 100 women bore 12·0 children legitimate or illegitimate.

The wives of Scotland, as well as the spinsters, are apparently more prolific than the corresponding classes in England; and yet taken collectively the women of England are more prolific than the women of Scotland. 1,000 English women (age 15-55) bear 123 registered children annually; while 1,000 Scotch women bear 120 children. The difference is slight, but it is in favour of the English women.

This appears, at first sight, to be contradictory and paradoxical. It is explained by the circumstance that the proportion of recognized wives in the population is much lower in proportion in Scotland than it is in England, and as the fecundity of wives is to that of spinsters as 13 to 1, a slight difference in the proportions alters the birth-rates of the two populations. The difference in this respect between England and Scotland is great: in England 52 in 100 women of the age 15-55 are wives, 48 only are spinsters and widows; in Scotland the proportions are reversedly 44 recognized wives to 56 spinsters and widows.

1856-60.—WIVES and SPINSTERS and WIDOWS, aged 15-55, in ENGLAND and SCOTLAND.

	NUMBER OF MARRIED AND OF UNMARRIED WOMEN.		PROPORTIONAL NUMBER OF MARRIED AND UNMARRIED WOMEN.	
	ENGLAND.	SCOTLAND.	ENGLAND.	SCOTLAND.
Women - - -	5,437,769	867,062	100·00	100·00
Wives - - -	2,813,374	383,271	52·29	44·20
Spinsters and Widows	2,594,395	483,791	47·71	55·80

* The proportions are slightly different in the years 1862 and 1864; but the argument remains unaffected. The same remark applies to the proportions of births to women of age 20-40.

By altering the proportions in Scotland, for instance, by transferring 57,608 women from the ranks of the unmarried to the married women, and by transferring 2,130 children from the ranks of the illegitimate to the legitimate children, the fecundity of women—of the wives and of the spinsters—of Scotland, becomes the same as the fecundity of the corresponding classes in England, namely, wives having children 22·034 per cent., spinsters and widows 1·676; instead of 24·790 and 1·916 per cent.; and when the transfer is made, the proportions remaining still show a less excess of women living in the state of marriage in Scotland than in England. Let us push this inquiry a little further.

COMPARATIVE FECUNDITY OF ENGLISH and SCOTCH WOMEN of the Ages 15-55.

YEARS.	BIRTHS.					
	TO 100 WOMEN.		TO 100 WIVES.		TO 100 SPINSTERS AND WIDOWS.	
	England.	Scotland.	England.	Scotland.	England.	Scotland.
Average in the 5 years 1856-60	12·321	12·027	22·034	24·790	1·676	1·916
1856	12·373	11·851	22·276	24·672	1·670	1·805
1857	12·337	11·982	22·137	24·861	1·671	1·835
1858	12·056	11·997	21·535	24·700	1·669	1·933
1859	12·543	12·232	22·361	25·073	1·711	2·004
1860	12·295	12·072	21·870	24·643	1·658	2·004

“There is an important distinction between the law of Scotland and that of England upon the point of legitimation by marriage, the former *legitimizing all the children of the parties born before the marriage*, the latter legitimizing only those who were born after the marriage. * * *

“It has been an established rule and principle of the law of Scotland for some centuries that *when a man and a woman are once lawfully married all the children born of such parents, whether born before the public celebration or open declaration of such marriage, or after it, are equally to be esteemed their legitimate children.* * * *

“It is generally stated in Scotch authorities to rest on a presumption or fiction, by which it is held that *there was from the beginning of the intercourse of the parties, or at the time when the child was begotten, a consent to matrimonial union interposed, notwithstanding that the contract was not formally completed or avowed to the world [at the Census, for example] until a later period.*”*

The legitimation of children born out of wedlock by subsequent marriage is somewhat different in France; it depends on the decision of

* Shelford, Law of Marriage, pp. 783-4. In a note he adds: “Legitimation *per subsequens matrimonium* is admitted, with different modifications, not only by the law of Scotland, but in France, Spain, Portugal, Germany, and most other countries in Europe. It prevails in the Isle of Man (*Lex Scripta of the Isle of Man, p. 70-75*), Guernsey, and Jersey, Lower Canada, Saint Lucia, Trinidad, Demerara, Berbice, the Cape of Good Hope, Ceylon, and the Mauritius. It is not admitted by the law of England, or of her other possessions in the West Indies and North America, or by the law of Ireland. It prevails in the States of Vermont, Maryland, Virginia, Georgia, Alabama, Mississippi, Louisiana, Kentucky, Missouri, Indiana, and Ohio, but not in the other States of America.—1 Burge on Foreign Law, 101.”

the parents under the Code Napoleon, which nearly expresses the state of the law on the continent of Europe since the time of the Romans.

"Les enfans nés hors mariage autres que ceux nés d'un commerce incestueux ou adultérin pourront être légitimés par le mariage subséquent de leurs père et mère, lorsque ceux-ci les auront légalement reconnus avant leur mariage ou qu'ils les reconnaîtront dans l'acte même de célébration."—Code Civile, livre i. section 331.

England stands almost alone among the civilized nations of Europe in refusing legitimation, even at the wish of the parents, to offspring born out of wedlock: and changes of the law might be demanded not only in kindness but in justice to the children, if there were no great counter-vailing advantages on the side of English law. Such advantages are believed to exist.

Out of 1,000 children whose births are registered in England 65 are illegitimate; out of 1,000 registered in Scotland 89 are illegitimate (1856-60); the proportion of bastards in an equal number of children of the two countries is as 3 in England to 4 in Scotland. Is this to be ascribed to the greater ignorance of Scotch women? By no means. Is it due to differences of religious belief or zeal? No one pretends that in this respect the people of Scotland are at all inferior to the people of England. We are thus driven back for an explanation to differences of the laws.

It is quite certain that many of the children registered as illegitimate in Scotland will be legitimated by the subsequent marriage of their mothers; the number is not always recorded as the mere fact of marriage regular or irregular legitimates offspring; but assume the numbers to be 2,130 out of 9,272 illegitimate births, then it follows that an indefinite number of the women returned at the Census as spinsters in Scotland are living in a state of quasi-marriage described in the books, and fairly expecting if they have children to see those children legitimated by subsequent marriage; they are kept in an uncertain state, hovering between concubinage and marriage, to which there is nothing corresponding in England, and they would nearly all, if they lived under the English law, be explicitly married. If the numbers of these women are taken at 57,608, as has been before explained, and added to the wives of Scotland (age 15-55), the numbers of wives *de presenti* and wives *de futuro* will be 440,879, giving birth to 97,143 children annually, leaving 426,183 spinsters and widows corresponding to the same class in England, and giving birth to the same proportion of illegitimate children.*

* Let the fecundity of wives age 15-55 in England be thus expressed by—

$$\frac{\text{legitimate children in a year}}{\text{wives living in a year}} = f;$$

and that of unmarried women by $\frac{\text{illegitimate children}}{\text{spinsters and widows}} = \phi.$

And for Scotland put l = legitimate births in corresponding year, borne by w wives of age 15-55; also i = illegitimate births by s spinsters and widows of same age.

Then to obtain the proportion (y) of spinsters to be transferred to wives, and of illegitimate births (x) to be transferred to the legitimate, in order to make the fecundity of the corresponding classes equal to those of England, we have these Equations of Condition:

$$(1) \quad \frac{l + xi}{w + ys} = f = .22034$$

$$(2) \text{ and } \frac{i - xi}{s - ys} = \phi = .01676$$

$$\therefore x = \frac{\phi f (s + w) - (\phi l + f i)}{i (\phi - f)}$$

$$y = \frac{f w + \phi s - (l + i)}{s (\phi - f)}$$

As a class these women in the prenuptial stage have comparatively few children, for the fruitful marry, and the unfruitful as a rule remain unmarried.

Other explanations are conceivable, but under this hypothesis it is not necessary to assume that there is any essential difference in the organization, the fecundity, or the virtue of the women living north and south of the Tweed. The laws are different. The result seems to tell in favour of the English marriage law, and against legitimation by subsequent marriage, inasmuch as the benefit to existing illegitimate children is purchased by multiplication of their numbers, uncertain connexions between the sexes, and extensive disorganization of family life.—(27th Annual Report, pp. xx-xxiv.)

Births to a marriage, 1864 and 1874.—Assuming that the interval between the mean age of marriage and the mean age of the mothers in England is 6 years, then the legitimate births in 1874 divided by the average number of marriages in the three years 1867-9 will give the average number of births to a marriage—1.57. In the year 1864 the proportional number was 1.30, so to every 100 marriages in England there are now 157 births, whereas ten years ago there were 430, or 27 less. This is no doubt owing to some improvement in the registration of births. The annual number of legitimate births to every 100 married women aged 15 and under 55, in the 10 years 1861-70, was 22.35.—(37th Annual Report, p. xiv.)

Birth-rates and Fecundity in European States.—The births registered in England are, in proportion to the population, one-seventh part more numerous than in France, and one-seventh part less than in Prussia. To 3,525 inhabitants 100 births are annually registered in France, 113 in England, 133 in Prussia, 136 in Austria, 151 in Russia. The small number of births in France is not accounted for by any difference in the proportion of the persons married, who are in fact more numerous in France than in any other country from which I have been able to procure returns. It appears that 100 French wives had 14 children, 100 Prussian wives 21 children yearly; or, in other terms, 717 wives bore annually 100 children in France, 152 children in Prussia. If the births are divided by the annual marriages that took place seven years before, there were 3.33 births (in wedlock) to a marriage in France, 4.05 to a marriage in Prussia, and 4.34 to a marriage in Austria; 4.26 to a marriage in England, and, if a correction be made for first marriages, 4.79 to every two persons married. The total annual births in England, divided by the persons married seven years before, give on an average 5.12 children to every two persons married; and, as many illegitimate children are the offspring of married persons before, during, or after marriage, the number of children to every two persons married in England must be between 4.79 and 5.12, or little short of *five*, about three of which attain the age of marriage to replace the two parents and those who have no offspring; the surplus swelling the number of the existing inhabitants of the island, or flowing off in emigration.—(6th Annual Report, p. xxx.)

Fecundity of married women in European States.—Through the courtesy of the superintendents presiding over the statistical departments of the respective European States, I am enabled to publish for the year 1876 some approximate results, showing the comparative fecundity of married women in the different States.

I pointed out in the 27th Annual Report,* that to ascertain the number of births to a marriage (unless the marriage-rate is stationary) the annual births should be divided by the annual marriages of some previous year. In the following results it has been assumed, in the absence of more precise information, that the interval between the mean age of mothers at marriage, and the mean age at the births of their children, is the same in England and in other countries, as it is in Sweden, viz., about six years. The legitimate births in 1876 have therefore been divided by the marriages of six years earlier date. Thus in Sweden the number of legitimate births in the year 1876, to the *average* annual number of marriages in six years earlier date (1869, 1870, 1871) was 4·84, so the number of children to a marriage in Sweden appears to be nearly the same as the number in England, viz., 4·63.

In Italy the proportional number of births to a marriage was apparently highest, 5·15; but this is probably owing to the fact that all the marriages are not at present registered. Prussia stands next in order of greatest fecundity, and the proportional number was 4·92. In the Netherlands it was 4·83, nearly the same as it was in Sweden. In Belgium it was 4·48, nearly the same as it was in Spain; in Denmark it was low (4·24), and in Austria still lower (3·73), while it was lowest in France, viz., 3·42.

COMPARATIVE FECUNDITY in different EUROPEAN STATES.

YEARS.	European States.	Births to a Marriage.
1876	Italy - -	5·15
"	Prussia - -	4·92
"	Sweden - -	4·84
"	Netherlands - -	4·83
"	England - -	4·63
"	Belgium - -	4·48
1870	Spain - -	4·47
1876	Denmark - -	4·24
"	Austria - -	3·73
"	France - -	3·42

(10th Annual Report, p. xxxvii.)

Fecundity in France.—In France, according to the last returns of 1863–69, the proportion of children born annually to 100 wives of 15–55 was 15.

COUNTRY.	YEARS.	AGES 15–55.		AGES 20–40.	
		Legitimate Births to 100 married Women.	Illegitimate Births to 100 unmarried Women.	Legitimate Births to 100 married Women.	Illegitimate Births to 100 unmarried Women.
ENGLAND AND WALES.	(1861–70)	22·35	1·64	35·87	3·34
FRANCE - -	(1863–69)	15·10	1·62	26·39	3·33

* p. xx.

Thus, at the French rate, the English wives would have borne annually in 1861–70 only 475,948 children, whereas their lawful children actually registered were 704,309.* 475,948 births would not have replaced the 479,450 annual English deaths in the period, so the population, without any emigration, would have declined. In France more women marry than in England, and though they have fewer children to a family, the population is not sensibly declining.

This is a question of numbers which are not much swayed either way by the direct action of the wealthy, the scientific, or the highly cultivated. It involves the sustained systematic policy of two masses of people,—of the Catholic peasant proprietors and of the artisans of France, with few settled colonies, on the one hand; of the Protestant workmen, labourers, miners, artisans, and mariners of England, with vast colonial possessions, on the other. The social policy in both cases may perhaps be considered open to censure, and yet may not be without vindication in the circumstances of the two nations. If the French parent asks how many of his children have a chance of a livelihood on a parcel of the dear land he loves so well, and regulates his family accordingly, he appears to have the sanction of the school of economists founded by an Englishman: while on the English side we contend, with the facts revealed by the Census in our hands, that the English people have instinctively pursued a great and wise policy: they have increased at variable rates; by increasing rapidly since the last century they have exalted England to a height overtopped by no other power; they have peopled colonies; they have planted wide in perpetuity the English race; and they have exercised a great part in the government of the finest regions of the earth. That they have done under great discouragements and at great sacrifices. Malthus told them at the beginning of the century that by the principle of population they were increasing in geometrical progression; that they were thus perpetually pressing upon the means of subsistence, which increased in arithmetical progression; that this was the inevitable cause of misery, of which the only mitigations were destructive diseases cutting down their numbers, or the diminution of marriages and births by prudence.—(Census Report, 1871, Vol. 4, pp. xvi–vii.)

Possible increase of Fecundity and of the Birth-rate.—To 100 married women aged 15–55, 22·47 living children are born annually, and to 100 unmarried women 1·7 living children are annually born. Upon the hypothesis that as many unmarried women must *ceteris paribus*, be living irregularly to every child born out of wedlock as there are wives to *every child* born in wedlock, then 186,920, or 1 in 13 of the unmarried women, must be living so as to contribute as much to the births as an equal number of married women. A certain class of cases countenances the belief that the numbers and proportions are understated—others, that they are overstated—by such a hypothesis. But as the mothers of so many as probably 7 in 8 children are of the second age (20–40) when 100 married women have 31 children annually, it will follow that 42,000 children out of wedlock may be borne by about 136,728 women of that age (20–40), or by about 9 (exactly 9·129) in every 100 of the 1,248,182 unmarried women. Nearly 1 in 11 may be struck off the list of spinsters by this estimate, which appears, on the whole, to be of the two the nearest approximation to the truth; thus leaving, out of 1,248,182 unmarried women 1,111,454 living in celibacy

* The Average Annual *legitimate* births in England 1861–70 were 704,309, whilst at the French birth-rates the English married women aged 15–55 would have borne 475,948 children.

in the prime of life (20-40), against 1,744,944 women, namely 1,608,216 wives and 136,728 women who are not wives, who bear children. Now, some conception of the voluntary control that is exercised over the numbers of the population may be obtained by considering that the births are proportional to the number of married women, who at this age may be raised in the proportion of 2 to 3 by the simple transfer to their ranks of a portion of the 1,111,454 unmarried; and, further, that an increase of the actual births by one third part or by one half would certainly double the rate at which the population has increased for the last half century. For the sake of simplifying the statement, the whole of the births have been here referred to the women of the age of 20-40; but it is well known that in America great numbers of women marry and bear children at the ages under 20, when in Great Britain only 25,607 are wives, and more than a *million young women* are spinsters. (Census Report, 1851; Occupations, vol. 1, p. xlv.)

3. ILLEGITIMATE BIRTHS.

Registration of Illegitimate Births, 1842.—The Abstracts have been extended, and present Returns of the first marriages, to which I have already adverted, and the annual number of illegitimate children registered,—upon which I proceed to offer a few remarks. The first attempt to ascertain the number of illegitimate children in England was, I believe, made at the Census of 1831, when Mr. Rickman obtained, from the officiating ministers of churches and chapels in England and Wales, Returns of illegitimate children born in their parishes or chapelries during the year 1830. The total number returned was 20,039, of whom 10,147 were males, 9,892 females. Mr. Rickman was of opinion that this return was accurate; but, from want of uniformity in making the Return, many of the officiating ministers merely stating the numbers *baptised* in their churches and chapels, instead of recording, as requested, the number *born* according to the best information they could obtain, I think no great reliance can be placed on the correctness of these Returns. In which opinion I am confirmed, on referring to a Return of illegitimate children whose baptisms were registered by the clergymen in the several parishes of Lancashire, the West Riding of Yorkshire, Norfolk, Surrey, and Herefordshire, during the year 1831, presented to the House of Commons in March 1843. No specific reference is made to illegitimate children in the Registration Act; and, as it is not stated on the face of the Register of Births whether the children registered are or are not born in wedlock, the attempt to determine this point cannot always be successful; but great care has been taken in framing this Abstract, and in every doubtful case the child being classed as legitimate, I am confident that the Abstract now submitted to you cannot in any view be conceived to overstate the number of illegitimate children born in England. In the country districts I see no reason to suppose that illegitimate children escape registration in greater proportion than children born in wedlock; but, when the facilities in populous districts for the concealment of births from the registrars, and the impunity with which a woman may suppose she can assume a name, or give the name of a father, are considered in connexion with the relatively small number of illegitimate children registered in the Metropolis, Liverpool, and some other large cities, I fear that we must set down the number of illegitimate children in the Abstract as an under-statement. The attention of the registrars has been specially directed to these points, and they are required to acquaint every

informant that any false statement wilfully made by her respecting any particular to be recorded in the register, will render her liable to the pains and penalties of perjury; they are also instructed to discourage the entry of the names of putative fathers in the Register Books of Births.

The number of illegitimate children registered in 1842 amounted to 34,796, which is 14,757—or 74 per cent.—more than the numbers in Mr. Rickman's Returns of 1830. The population increased only 17 per cent. in the 12 years. I am disposed to consider Mr. Rickman's Returns as deficient to a much greater extent than they were supposed to be at the period of their publication; but, with a correction for the increase of population, the numbers in the Abstract for 1842 would only have exceeded those in Mr. Rickman's Returns for 1830 by 11,300 instead of 14,757. This difference may, perhaps, among other causes, be ascribed to an actual increase in the proportion of illegitimate children during the operation of that important change in the Poor Law, which threw the charge of maintaining their illegitimate offspring upon the mothers. But to whatever cause the increase may be ascribed, the relative numbers of legitimate and illegitimate births and baptisms returned in 1830 and 1842, show in the latter year a relative as well as an absolute excess of illegitimate children. (6th Annual Report, pp. xxx.-xxx.)

Registration of Illegitimate Births, 1871.—Illegitimate births to the number of 44,775 were registered in 1871, amounting to 5.6 per cent. of the total births registered. Twenty years ago they were close upon 7 per cent. of the total births; in the 10 years 1851-60 they averaged 6.5 per cent.; in the following 10 years 6.1 per cent.; so that from whatever cause there has been a gradual and uninterrupted falling off in these evidences of human frailty. I have no grounds for supposing that the general diminution in the illegitimate birth-rate is caused by any increase in the omissions to register, on the contrary, I think that as in those elements of registration which we have the means of accurately observing, undoubted progress in the direction of greater completeness has taken place, it is fair to assume with respect to the registration of illegitimate births that at any rate no more of them are lost sight of now than in former years. In London little or no variation in the rate of illegitimate birth has taken place in 20 years; it amounts to about 4 per cent. of all the births, which is markedly less than the average for the whole country, partly for reasons, no doubt, which will be sufficiently obvious to all who are familiar with life in great cities, but which do not lie within my province to discuss. (34th Annual Report, p. xvi.)

True measure of Illegitimacy.—In seven counties, exclusive of the metropolitan counties, the proportion of births out of wedlock is less than 6 in 100 births; namely, 5.3 in Monmouth, 5.4 in Devon, 5.5 in Cornwall, 5.7 in Durham, 5.8 in the Extra-metropolitan part of Middlesex, 5.8 in Huntingdon, 5.9 in Warwick; in six counties the proportion of illegitimate births exceeds 9 in 100 births, namely, 9.1 in Westmorland, 9.5 in Nottingham, 9.9 in Shropshire, 10.2 in Herefordshire, 10.5 in Cumberland, and 11.1 in Norfolk; so that in Norfolk 1 in 9 of the children, and in Devon 1 in 19, are born out of wedlock.

These returns show that great differences exist in the manners of different counties; and they undoubtedly imply varieties in the state of the family relations, in the social education of children, and in the morals of the people. But it must not be immediately assumed, as has been sometimes done, in comparing the counties of England and Wales, any more than in comparing the results of our returns with those of other

countries, that the relative morality of the population is expressed by these numbers.

The relative proportions of the unmarried women who gave birth to children in the year 1851 are shown in the annexed Table.

BIRTHS out of WEDLOCK, registered in 1851, to 100 Unmarried Women, aged 15-55, in Registration Counties.

COUNTIES, in order of their Birth-rate.	Birth- rate to 100 un- mar- ried Wo- men.	Percent- age of married women who signed by marks, 1851.	COUNTIES, in order of their Birth-rate.	Birth- rate to 100 un- mar- ried Wo- men.	Percent- age of married women who signed by marks, 1851.
London - - -	0.82	23	Lancashire - -	1.90	63
Devonshire - -	1.12	36	Northumberland -	1.95	38
Middlesex - - -	1.17	30	Essex - - -	1.95	45
Gloucestershire -	1.27	37	Bedfordshire - -	1.97	59
Surrey - - -	1.35	29	Westmorland - -	1.97	29
Cornwall - - -	1.36	52	Cambridgeshire -	2.01	46
Hampshire - - -	1.46	34	Durham - - -	2.02	48
Somersetshire -	1.51	43	Lincolnshire - -	2.04	39
Dorsetshire - -	1.52	38	Buckinghamshire -	2.06	50
Sussex - - -	1.54	29	West Riding - -	2.09	59
Rutlandshire -	1.59	32	North Riding - -	2.09	36
East Riding (with York)	1.62	39	Cheshire - - -	2.12	55
Warwickshire -	1.65	43	Oxfordshire - -	2.13	39
Kent - - -	1.62	34	Derbyshire - - -	2.14	42
Monmouthshire -	1.68	61	Northamptonshire -	2.15	45
England and Wales -	1.72	45	Hertfordshire - -	2.15	51
Worcestershire -	1.79	48	Shropshire - - -	2.17	47
South Wales - -	1.80	67	Herefordshire - -	2.20	41
Berkshire - - -	1.80	35	Leicestershire - -	2.32	43
North Wales - -	1.82	66	Staffordshire - -	2.40	60
Wiltshire - - -	1.85	47	Cumberland - - -	2.44	30
Huntingdonshire -	1.89	47	Suffolk - - -	2.45	46
			Nottinghamshire -	2.46	48
			Norfolk - - -	2.83	44

Excluding London from view, as the returns are probably imperfect, it may be inferred that generally the unmarried women in the counties south of the Thames, comprising the descendants of the old Saxon population, have few illegitimate children: Wales stands next in the scale: the West Midland, the North Western, and the South Midland counties, covering the area of the ancient Mercia, present less favourable results; while in Yorkshire, the Northern counties, the North Midland counties, and particularly the Eastern counties, covering the area of the ancient Danish population, the number of illegitimate children is excessively great.

The women of the counties in which there are fewest illegitimate children appear to be the best mothers and housewives, as, other things being equal, they lose fewer of their children in infancy than the women of counties where many children are born out of wedlock.

With the facts in these tables before them, it will be for the clergy and for other moral inquirers in each county to investigate the causes of the discrepancies which they disclose, and to ascertain how the existing evils can be most efficaciously and successfully treated. To facilitate such

inquiries, which should be elaborate and not be confined to a single class of causes, the counties are arranged in the above Table in the order that the proportion of mothers of illegitimate children of the age 20-40 bear to 100 unmarried women of the same age; commencing with the counties in which the proportion is lowest. A column is added showing the state of elementary education among the women who married, these throwing indirect light on the state of education of the unmarried women in each county. (14th Annual Report, pp. xiii-xiv.)

Illegitimacy and Early Marriage.—The average annual number of children born out of wedlock in the 10 years 1846-55, to every 100 spinsters aged 15 and under 45, was 1.89. In the 10 years 1866-75 the proportional number fell to 1.79, showing a decrease of 5.3 per cent.

The increasing number of early marriages does not appear to account for the decreasing rate of illegitimacy in England.

As an illustration in confirmation of this, take the four counties of Cumberland, Norfolk, Salop, and Westmorland, which had the highest proportions per cent. of children born out of wedlock in the 10 years 1865-74; the mean annual rate of illegitimacy in these four counties was 9.6, and the mean proportional number who married under age to 100 marriages in 1865-74 was 5.7 for men, and 17.5 for women; whereas in the counties or parts of counties of Middlesex (extra-metropolitan), Surrey (extra-metropolitan), London, and Monmouth, where the proportion per cent. of children born out of wedlock was lowest—4.1 per cent., the proportional number who married under age to 100 marriages in 1865-74 was 5.0 for men, and 18.2 for women. (38th Annual Report, p. xxvii.)

Proportion of Illegitimate Births and of Spinsters to Females aged 20-40.—The relation between the illegitimate births and the proportional number of spinsters in different counties is strikingly exhibited if the counties are arranged in groups in the order of the rate of illegitimacy.

GROUPS OF REGISTRATION COUNTIES.	Children born out of Wedlock to every 100 Births.	Proportion of Spinsters aged 20-40 to every 100 Women living at the same Age in 1871.
	1876.	1871.
1st Group of Ten - - -	3.9	36.1
2nd Group of Ten - - -	4.6	37.9
3rd Group of Ten - - -	5.0	39.1
4th Group of Ten - - -	5.9	38.6
5th Group of Six - - -	8.0	41.3

[A useful table in the 39th Report (on page xxv) shows the proportion of illegitimacy in each English county in the ten years 1856-65, in the ten years 1866-75, and in the year 1876, also the decrease per cent. in 1876 compared with the mean proportion in 1866-75; and the proportion of spinsters aged 20-40 to females of the same ages in 1871.] (39th Annual Report, p. xxvi.)

Decrease of Illegitimacy.—A great reduction in the rate of illegitimacy has taken place during the last 16½ years (reckoning from the middle of each of the periods 1855-64 and 1875-7): the reduction per cent. reached 39 in Leicestershire, 35 in Cheshire and Nottinghamshire, 34 in

Derbyshire and the North Riding of York, 33 in Essex and Lancashire, 32 in South Wales and Wiltshire, 31 in Berkshire, and 30 in Durham. Indeed, in the whole of England and Wales the fall in the 16½ years was not less than 27 per cent. (40th Annual Report, p. xxiii.)

4. SEX PROPORTION AT BIRTH.

Sex proportion at Birth, 1841.—I showed in the Fourth Annual Report that the proportion of boys to girls born in England was 10,486 to 10,000. The mathematical questions connected with the proportion of the sexes born have been investigated by Laplace, Poisson, Babbage, and other distinguished philosophers; and one of the results which has attracted most attention and created most speculation is, that the proportion of boys is greatest among legitimate children. In France, for instance, the boys are to the girls born as 106·4 to 100·0; but among illegitimate children the proportion is 104·4 to 100·0. The present Return gives a result exactly the reverse; of the legitimate births the boys are to the girls as 105·4 to 100·0; of illegitimate births the boys are 108· to 100·; and, small as the numbers are, the ratio differs little in the two quarters. It is, I believe, assumed in the French Returns that foundling children are illegitimate. If it be true, as is stated by those acquainted with the matter, that many of the children sent to the foundling hospitals in France are the offspring of married people, who probably abandon a greater proportion of girls than boys, it will follow (1), that the proportion of children born out of wedlock is nearly the same in England as in France; and (2), that the inference from the Returns of Continental States having foundling hospitals as to the relative predominance of females among natural children is fallacious. (5th Annual Report, pp. 10–11.)

Sex Proportion at Birth, 1838–83.—More boys than girls are born every year in England and Wales. In 1877 the boys were in the proportion of 103·6 to every 100 girls. The proportions of the sexes are perhaps regulated by some natural law in operation immediately preceding, or at some early stage of, intra-uterine life; probably several other causes also exert their influence, such as the social status and relative ages of the parents at marriage. The excess in the births of males over those of females is believed to be greater among first-born children than it is among those born afterwards.

To whatever influences the relative proportion of the sexes at birth is due, it is well known that an excess in the number of boys born prevails not only in England but among all European races.

Dr. Bertillon and others have collected facts which throw some light on this interesting subject. In the meantime I wish to draw attention to the remarkable fact that this excess in the proportional number of boys born to girls born in England and Wales is less than it was, as will be seen by the subjoined table.

PROPORTIONAL NUMBER OF MALES BORN TO FEMALES BORN.

Years.	Males born to every 100 Females born.
In the 10 Years 1838–47 -	105·0
” ” 1848–57 -	104·6
” ” 1858–67 -	104·4
” ” 1868–77 -	103·9
” 6 Years 1878–83 -	103·8

(40th Annual Report, p. xxi.)

5.—DEFECTS OF BIRTH REGISTER; STATISTICS OF FIRST BORN.

Two grave defects in the registers of the United Kingdom deprive them of much of their utility as pedigrees, and as records of facts for the solution of the great problems of population. Neither the age of mothers at the births of each of their children, nor the order of birth, is recorded; so that the number of children borne by women at different ages, and in the course of their lives, cannot be ascertained. This defect was supplied in the first schedule of the Scotch Act, but the important parts of the schedule were unfortunately discontinued after 1855. Dr. Stark turned some of the precious results of that year's registration to account; and so has Dr. Duncan in his valuable work on Fecundity. Dr. Duncan proves from various sources that the mortality in the first pregnancy is to that in subsequent pregnancies nearly as two to one; and from the data he has collected it may be assumed, until further observations are made, that about 1 wife in 8 or 10 is sterile.

How can we determine the number of firstborn children in England annually? It must evidently bear some relation to the marriages. Now the annual number of legitimate children in the six years 1862–67 was 695,597, and the annual marriages in the six years 1856–61, with which they may be fairly compared, were 162,681, of which 147,804 were marriages of spinsters: so that the births to a marriage are 4·276; the births to each woman married are 4·706. The births to each procreant wife—if only 133,024, or *nine* in *ten* wives, have living children—must be 5·229. Consequently as families consist of one, two, three, four, up to ten or more children, and every family has one first-born child, it is evident that the first-born children in wedlock will be to the total children so born as 133,024 to 695,597; or as 1 to 5·229. We can from these proportions infer that about 19 per cent. of the children in wedlock are first-born, but to get the number of women bearing first children, the mothers of the children born out of wedlock must be brought into account, and some corrections must be made. This being done, it will be found that the 3,600 annual deaths in childbirth during the six years 1862–67 imply about 48 deaths to 10,000 delivered; and if, as is found by other observations, the mortality in first deliveries is proportionally to the mortality in subsequent deliveries as 2 to 1, the mortality among English mothers will be 80 in 10,000 for first children, and 40 for subsequent deliveries, taken in the aggregate.

STATISTICS OF FIRSTBORN.

To get the number of *firstborn* children by *mother* from the total number of children c born in wedlock to w wives: let $0·9$ or any fraction s be the co-efficient of fertility, then it is evident that

$$sw = w' = \text{number of procreant wives out of } w \text{ wives. } \frac{c}{w'} = \frac{c}{sw}$$

$= f = \frac{695,597}{133,024} = \text{average number of children in the family of a fertile mother, made up of families compounded variously of one, two, three ... } n \text{ children; unless the wife has before marriage borne children every family thus constituted has necessarily one } \textit{firstborn} \text{ child to mother: and the number of } \textit{firstborns} \text{ in the legitimate births of a year are thus determinable, as they } = w' = \frac{c}{f}.$

Let d include the mothers either married or single dying in child-birth. Then to complete the estimate of the firstborn the children born out of wedlock must be brought into account; their average numbers in the six years were 46,181. What numbers of children in the aggregate do these mothers bear out of wedlock? Not *two* probably on an average; and if the proportion of the firstborn among the children is taken at *two in three* it will imply that two such women bear on an average three illegitimate children; that two-thirds of the illegitimate are firstborn.

ENGLAND.

Annual marriages in the 6 years 1856-61	-	162,682
Husbands marrying for first time	-	139,930
Widowers	-	22,752
Wives marrying for first time	-	147,805
Widows	-	14,877
Children born annually, 1862-67	-	741,778
In wedlock	-	695,597
Out of wedlock	-	46,181

(d) Annual deaths of mothers by childbearing in the 6 years 1862-67 - - - 3,600

ANNUAL BIRTHS IN ENGLAND IN THE SIX YEARS 1862-67.

	Total Children born.	First-born.	Second-born and others.
	($a + b$)	(a)	(b)
Children born	741,778	163,812	577,966
Legitimate	695,597	133,024	562,573
Illegitimate	46,181	30,788 ?	15,393 ?

To determine from the English returns the mortality from child-birth, on the assumption that the first child-bearing is twice as fatal as those following, we have this equation:

$$2ax + xb = d = \text{deaths by childbirth}$$

$$\therefore x = \frac{d}{2a + b} = \frac{3,600}{905,590}$$

where $2ax$ represents the rate of mortality in the first pregnancy, a represents the number of such childbirths in the given year, and b = the childbirths of all other orders from second to last inclusive.

The above reasoning supplies us with the means of answering this question approximately: What is the proportion of firstborn to mothers in the population? Among the portion of the population born in wedlock nearly 1 in 5, or 19 in 100, are firstborn. This proportion could only be disturbed to any extent by emigration or by a difference between the rate of mortality among the firstborn and the subsequent born children of families. The proportions among the children not born in wedlock would be very different; and there is reason to believe that the casualties of infancy cut down their numbers.

The number of men exceeds the number of women who marry more than once; hence the proportion of firstborn children to total children of fathers is less than the proportion of firstborn children to mothers. Thus the mean annual number of children born in wedlock in England (1862-67) was 695,597; the mean annual number of marriages (1856-61) was 162,682; that is 162,682 men married 162,682 women in those years; now if we divide 695,597 by the annual number of husbands marrying one or more times in their lives, namely, about 139,930, the mean number of legitimate children by one wife or more to each husband is 4.971.

Thus, if the fathers marrying at 28, aged 34 when their children are born, divide their property equally among their legitimate children, and nine in ten fathers have children, the nine fathers will have on an average 5.52 children, and will leave at death, taken at the age of 64, about 3 children, so the property will be divided into 3 parcels on an average. This is exclusive of the sub-divisions of the property of childless fathers.

In France the proportions of children are much lower; to each husband only 3.637 children are born to his one or more marriages; and, taking nine in ten as fertile, the average family will consist of 4.041 children; so, taking the proportions to survive as the same, the property will only be divided into *two* parcels.

The firstborn to fathers in 100 of the population will be 18 in England, 25 in France; *one in five* or *six* in England, *one in four* in France, is a firstborn child.

Second-born children are fewer in number than firstborn: and first-born = last-born children. (30th Annual Report, pp. 222-6.)

6. STILL BIRTHS.

In the case of children born alive—or who breathe—both the birth and death are registered, but still-born children are not registered in England.

Under the provisions of the new Registration Act no still-born children, however, should be buried without a *certificate*, stating that they were still-born, signed either by the registered medical practitioner who was in attendance at the birth, or by one who had examined the body. In the absence of a registered medical practitioner a declaration has to be made by the midwife or some other person qualified to give such information, stating that the child was not born alive.

Still-born children, therefore, are by the new law *certified* as such, although they are not registered. In England the proportion of still-born children to total births is supposed to be about 4 per cent., but this is uncertain.

In France, under the provisions of the Code Napoleon, children who die (either after or before birth) before registration, are recorded as still-born. Dr. Bertillon estimates that 22 in 100 of the children

registered in France as still-born breathed, and such children in England would be registered among the births and deaths.

The number of deaths registered in France in the year 1875, exclusive of so-called still-born, was 845,062, and the death-rate was 23·1 per 1000 of population.

The number of still-born children registered under the provisions of the Code in the same year was 43,834, a deduction of 22 per cent. (9643) from which, represents the corrected number of still-born children in France in 1875, viz., 34,191.

Including the estimated number of live-born children (9643) the deaths in France in 1875 were 854,705, instead of 845,062, and the corrected death-rate, therefore, was 23·4 instead of 23·1 per 1000.

In France in 1875, the corrected proportion of still-born children to every 100 live-born children was 3·6. In Belgium the proportion in the years 1860-65 was 3·7. (38th Annual Report, pp. xxv—vi.)

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