pressure. During the night, the pain returned, indicated by howling and restlessness. There were several evacuations of feces and urine. The following morning, there was great prostration with much fever, and continued howling. The limb was slightly emphysematous, greatly swollen, inflamed, and infiltrated with serum.

On the following day, two ounces and a half of water, in which some nux vomica had been boiled, were injected into the crural artery of the opposite limb. The dog expressed no pain; but, at the expiration of ten or twelve minutes, slight convulsive motions became evident, which were gradually converted into violent tetanic spasms. The animal threw himself backwards with his limbs extended, and died, after repeated convulsive attacks, an hour and a half after the last injection.

Post-mortem appearances. On opening the body, *no unusual appearances were observed in the limb* upon which the last experiment had been tried, but the opposite one was tumid and emphysematous, infiltrated with a greyish red frothy serum of a fetid odour. *The small vessels were obstructed by firm clots of blood.* The gall-bladder was greatly distended; and the intestinal canal contained a quantity of yellowish mucus.

(To be continued.)

ON PROCREATIVE POWER.

By C. H. F. ROUTH, M.D.Lond., Physician to the St. Pancras Royal General Dispensary.

THE physiological and mathematical determination of the Procreative Power of Man is a portion of vital statistics, which, I believe, has not hitherto been properly investigated. When we contemplate the very interesting nature of the inquiry, and its importance as applied to individuals and national exigencies, and to emigration societies in particular, the cause of this omission is not very clear. Probably this neglect has, in a great measure, arisen from a natural disinclination in most persons to contend with controverted facts and dismembered statistics, and to perform the heavy arithmetical calculations required. There is, it is true, always more or less difficulty in investigating any new subject; and more especially in applying statistical data, originally drawn out for a totally different object. Moreover, many of the investigations are often, after all, founded on insufficient data; and what is still more embarrassing, frequently this disadvantage is not discovered till a series of heavy calculations, founded upon them, has been made, and a palpably absurd result has been brought out. Herein, therefore, is a source of great delay and annoyance. Further, when a question like the present involves a point in the physiology of man, he who would investigate its real nature, must consult statistical data, not only founded upon the experience of one, but of several nations. In making, however, this comparison, he is met at once by a most embarrassing difficulty. The statistics of no two nations involving questions of population are founded upon the same general plan; and it thus often happens, that a point elicited by the examinations of the vital statistics

of our own country, cannot be confirmed by those of another. Even among ourselves, the plan adopted by the Census of Ireland Commissioners is totally different from that adopted by the Census Commissioners of Great Britain. The arrangement of years is different; and several most important omissions are made. Thus, in the returns of Great Britain, no table of the number of married, unmarried, and widowed persons is given, in which the ages are at the same time distinguished; nor is there any table of fecundity; perhaps, also, conclusions are sometimes made, the truth of which may be questioned. In the following pages, we shall often have to recur to these difficulties, by which, unfortunately, our conclusions are in some degree vitiated. Indeed, so frequently have I been embarrassed in the course of this inquiry, by such obstacles, that I have been more than once induced to abandon it altogether. Assisted, however, by an excellent mathematician, and by the prospect of probably calling attention to a subject of general utility, of disproving, perhaps, a few of the dogmas of the present day on the exigencies of an overcrowded population, and pointing out some foundation upon which something like a scientific superstructure might be raised, I have persevered in my endeavour to accomplish my object. Imperfect, nay, very imperfect, as the attempt must necessarily be in many of its details, it may, nevertheless, not be altogether presumptuous to hope, that the perusal of the succeeding pages may, by calling the attention of the learned to this portion of vital statistics, lead to the collection of such data as may hereafter place this branch of science upon something like a correct foundation.

VARIETIES OF PROCREATIVE POWER.

Procreative Power is that power inherent in every animal, which, when brought into practical operation by the union of the sexes, assures the continuance of the species. Man, in his animal relations, possesses this power in common with all created beings; yet, by the very fact of his being an intelligent creature, his procreative power must be regulated by, and depend upon, several auxiliary influences, all of which must modify or bear upon its general action and exercise in the inhabited globe. Of these, three only will be considered; the others may be incidentally alluded to as we proceed, but they affect the question so little, that they need not be particularly enumerated.

I. A person must have obtained that physical constitution of body which enables him to procreate; in other words, he must have reached the age of puberty. Thus, children generally cannot have this power. Having once obtained the age of puberty, a person will continue to have this power for a number of years; at the end of which time, a new change will come upon the animal organism, and the power of procreation will be lost; in other words, the procreative power has its limit as well as beginning. But between the period of its commencement and termination it is not equally powerful; there is a particular age in which it is most powerful, most effective; in other words, a maximum age of procreative power. For instance,—it is not sufficient to know that a man is within the limits of procreative ages, but the actual age must be known also, as according to that age he will have more or less

procreative power. This procreative power we have denominated as the *Physiological Procreative Power*. Furthermore, it may be convenient to distinguish it as of two kinds. (a) A man of a certain age will have a certain average amount of physiological power when brought in union with *women of all ages*. It will be greatest, it is true, when the wife is at her maximum age of procreative power, and least when she is reaching the limits of its disappearance: but, nevertheless, taking women of all ages, the average physiological procreative power will be expressed by a fixed number. (b) For every different age of the female, with the same age as the male, it will be different, and expressed by a different number. Hence the necessary division into two kinds,—1st., the *average* physiological power, and 2nd., the *united* physiological power. Both of these will necessarily have a certain and fixed relation one to another.

II. It will be likewise affected by the social condition of the person, especially if he be married or not married. The procreative agents of a nation are, if not exclusively, at least eminently, the married persons. Taking our population of this year (1850) as calculated by the Registrar General, it amounts to 29,679,000, with an annual increase of 305,000; of these, 285,000 are exclusively produced by married persons, and yet the difference in numbers between the married and unmarried population is expressed by the numbers, 100 and 293, or nearly 1 to 3. If out of this number we separate the active procreative agents, or at least persons possessing physiological procreative power, from children and old persons who are incapable of procreation, the numbers will be in the proportion of about 260 unmarried or widowed to 100 married. It follows, that about 9,000,000 persons only, or about 4,500,000 of couples out of the 29,000,000, produce, annually, this increase. We have said that the increase is not exclusively produced by married couples; because, although with most unmarried persons the procreative power is dormant, still with some it is active, as in the production of illegitimate children. Thus the increase to the population from this source, will be 20,000 out of the 305,000. This kind of power, dependent upon the social condition of a person, we have contra-distinguished as *Practical Procreative Power*, which may be further subdivided, according as the person is married or unmarried, into *connubial* or *ex-connubial* practical procreative power.

III. Procreative power will also be modified in the unmarried by two other contingent circumstances;—1st, the chance he has of getting married, or becoming possessed of connubial procreative power;—2nd. it depends also on his expectancy of life. Thus, supposing two persons marry at the same time, it is clear that the one who runs the risk of dying soonest, *ceteris paribus*, cannot have the prospect of having as many children as the other. This kind of procreative power we have termed the *Expectant Procreative Power*. Children, in the two last cases, may have their power represented by a certain number, just according as a child has a chance of reaching a marriageable or procreative age; and thus of becoming a practical procreative agent. In this manner, they may be looked upon as having a nominal or prospective amount of procreative power.

To recapitulate: every person's procreative power is made up of—1st, his physiological, 2nd, his practical, and 3rd, his expectant procreative power. This totality may be expressed by the term *Absolute Procreative Power*, which may again be subdivided into two kinds, according as the individual is unmarried or married,—the *Ex-connubial* and *Connubial Absolute Procreative Powers*.

PHYSIOLOGICAL PROCREATIVE POWER.

In fixing the limits of Procreative Power, it should be remembered, (more especially for the practical bearing of the question), that it is not so much the early limit we should insist upon and endeavour to fix accurately, as the late. And this is manifest, because most persons at these later ages are married, and therefore in the position of being active procreative agents. In fixing the limit of the disappearance of procreative power too low, we are therefore materially vitiating the result. In the earlier ages it is not so important, as whatever be the exact age at which the power begins, it is seldom active before sixteen, and the proportion of increase of population by persons of this age is comparatively unimportant.

The first thing to be remarked in reference to these limits, is that procreative power will differ according to the sex. Its limits have not been hitherto very distinctly made; and yet there appear to be four ways in which it may be estimated in the female, and three in the male. In the former only, by the first appearance and cessation of the catamenia; and in both sexes,—1st, by the ages at which crimes arising from sexual desires are committed; 2nd, by the fecundity tables, where the age of the parents is given at the birth of their children; and 3rd, though here less decidedly, because fallacious influences more readily vitiate the result, by the ages at which persons marry.

I. (*a*) In the female, the catamenia are usually said, in this country, to begin at fifteen, and to disappear at forty-five. In warm countries, however, they are believed to begin and end earlier. Upon the latter point, however, and in the absence of any statistical data upon which alone any dependence can be laid, I am inclined to be very sceptical. Looking to the limited opportunities for observation of travellers, upon whose statement this opinion is founded, and other causes of error, as noticed by Dr. Churchill, I am inclined to believe that the instances recorded by them are exceptions, precisely similar to those cases recurring amongst ourselves; and that there is, probably, no such great difference in the age of uterine activity in different countries. The annexed table, collected from various sources, will shew how little the opinion before given, touching the earlier appearance of the catamenia in warm countries, is to be depended on, as there appears to be, in reality, very little difference between its commencement in Marseilles, England, and Germany. In the following table, consisting of 4433 cases, in which the first appearance of the catamenia was noted, 4 cases of M. Brierre de Boismont, occurring, respectively, one at 5 years old, one at 7, and two at 8 years old, have been omitted, as they appear to have been rather cases of *lusus naturæ*, and as their insertion would only affect the result in the second place of decimals.

[TABLE,

Table, showing the Age at which the Catamenia occurred in 4,433 Females for the first time.

Age.	Marseilles and Toulon.	Parla. M. Despines.	Göttingen. Oslander.	Lyons. Petrequin and Bouchaincourt.	Brière de Boismont.	London. Dr. Murphy.	Manchester. Mr. Robertson.	London. Dr. Lee.	Dr. Henry Bennet.	London. Dr. Routh.	Total.	Mean Age, 14.91
9	0	1	0	0	10	3	0	11	0	0	25	
10	0	0	0	5	29	0	0	55	5	0	94	
11	6	3	0	14	93	15	10	52	16	2	211	
12	10	14	3	26	105	37	19	86	28	8	336	
13	13	6	8	47	192	57	53	153	35	10	514	
14	9	18	21	50	194	107	85	204	42	19	749	
15	16	14	32	76	190	119	97	201	42	16	803	
16	8	7	24	79	141	110	76	154	26	15	610	
17	4	6	11	58	127	57	57	101	20	18	459	
18	2	5	18	38	90	34	26	78	23	2	316	
19	0	8	10	21	35	9	23	33	10	1	150	
20	0	0	0	9	30	6	4	23	6	2	80	
21	0	3	8	5	8	3	0	6	0	0	33	
22	0	0	0	0	8	2	0	2	0	0	12	
23	0	0	2	1	4	0	0	1	0	0	8	
24	0	0	0	3	0	0	0	0	0	0	3	
Total	68	85	137	432	1196	559	450	1160	253	93	4433	

Touching the disappearance of this function, we have but few statistical data, for which reason, much reliance cannot be placed in the result obtained. There is also in the following tables a great source of fallacy, especially applicable to those cases where the catamenia did not disappear till a very late age; viz., the possibility of uterine diseases existing, an affection by no means rare in old females. It is, therefore, here subjoined, more for reference than as any actual ground of conclusion.

Table, showing the Age at Cessation of the Catamenia.

Age.	Mr. Robertson.	Dr. Routh.	Total.	Age.	Mr. Robertson.	Dr. Routh.	Total.	Mean Age, 48.49
35	1	0	1	50	26	1	27	
38	0	2	2	51	2	1	3	
40	4	1	5	52	7	3	10	
42	2	0	2	53	2	0	2	
43	1	0	1	54	2	0	2	
44	3	3	6	55	0	1	1	
45	4	5	9	57	1	0	1	
46	0	1	1	60	2	0	2	
47	3	3	6	70	1	0	1	
48	10	3	13					
49	7	0	7					
Total	78	24	102					

The fact, moreover, should not be lost sight of (as bearing on the relation between the cessation of menstruation and the cessation of procreative power), that it is not uncommon for females to become pregnant, in whom no menstrual period has occurred between the present and a

former pregnancy. This, I believe, is a point admitted by all accoucheurs. Indeed I have known a few cases, in which this absence of menstruation has persisted through several consecutive pregnancies; and, lastly, although we cannot reduce this statement to numbers, I believe that these examples most frequently occur at the later ages of procreation. In such cases, therefore, the cessation of the catamenia is no index of the cessation of procreative power.

(b) From the Fecundity Tables a more certain result is to be obtained, more especially with reference to the cessation of this physiological power. First, from the Irish Fecundity Table, where the ages of the parents on the wedding-day, as well as the number of children born during a period varying from 1 to 11 years, are given.

Table of the Number of Marriages, and the Issue from such marriages occurring in the Eleven Years ending 1841, for women of the ages under 17, 46-55, and above 55.

Age of Husband.	Age of Wife.	No. of Marriages.	Prop. of Children to 100 marriages	Age of Wife.	No. of Marriages.	Prop. of Child. to 100 Marriages.	Age of Wife.	No. of Marriages.	Prop. to 100 Marriages.
Under 17	Under 17.	661	256	46 to 55	1	0	Above 55	1	0
17-25		9,847	262		35	51		3	0
26-35		4,066	252		145	51		12	0
36-45		313	248		227	39		15	20
46-55		36	205		428	22		52	10
Above 55		18	128		295	10		136	12
Total...		14,947	257		1,131	26		219	12

In the two following tables, we have the proportion of pregnancies of 2509 females, admitted as lying-in patients in the Westminster General Dispensary, under Dr. Bland. There were 36, or 1 in 58, admitted pregnant between the ages of 15 and 19. Thus:

1	between	15	and	16
1	...	16	...	17
2	...	17	...	18
10	...	18	...	19
21	...	19	...	20
<hr/>				
36				

In all there were—

85	between	15	and	20	or	1	in	25
578	...	21	...	25	...	5	...	19
699	...	26	...	30	...	1	...	3
407	...	31	...	35	...	1	...	5
291	...	36	...	40	...	3	...	22
386	...	41	...	45	...	1	...	58
6	...	46	...	49	...	1	...	350
<hr/>								
2509								

The following is a list of 1,527 cases admitted in the St. Pancras Royal General Dispensary, in the practice of Mr. Smith, Dr. Cox, and Mr. Greenhalgh.

Age.	Number of Conceptions.	Age.	Number of Deliveries.	Age.	Number of Deliveries.	Age.	Number of Deliveries.	Mean Age, 30.12
16	1	26	83	36	62	46	2	
17	0	27	80	37	47	47	2	
18	5	28	85	38	48	48	2	
19	16	29	96	39	31	50	2	
20	33	30	139	40	50	52	1	
21	56	31	61	41	7	55	2	
22	56	32	88	42	17	57	1	
23	67	33	59	43	15			
24	77	34	71	44	9			
25	83	35	69	45	4	Total	1,527	

The Fecundity Table for Sweden and Finland, gives about the same limits.

Age.	Annual Average Number of Deliveries.	Proportion to 100 Females living.
15 to 20	3,298	2.48
20 — 25	16,507	12.56
25 — 30	26,329	21.64
30 — 35	25,618	22.82
35 — 40	18,093	18.32
40 — 45	8,518	9.54
45 — 50	1,694	2.28
50 — 55	39	.05

Thus, as far as we can judge from these fecundity tables, it does not appear that women younger than fifteen have borne children. In the St. Pancras Dispensary table, there are three cases only, where females fifty-five and above fifty years old were delivered. In the Irish table, however, a greater number of such cases occur. Thus far it is proved, that it is inaccurate to say too generally, that women cease to procreate at forty-five. It appears that, in ten years in Ireland, out of 427,977 marriages of women of all ages, there were 1,350 marriages of females between forty-six and fifty-five, and above fifty-five, with a mean of fourteen children to 100 marriages.

(c) As I have before stated, the marriage tables afford some degree of information, with regard to the first appearance of procreative power. It is natural to suppose, that in an enlightened age, like the present, parents would prevent marriages of their children if the signs of puberty were absent; and upon this presumption, we might infer the existence of procreative power in all couples marrying early. The marriage tables, however, being for the most part arranged by ternal, quinquennial, and decennial, and not by annual periods, the precise age at which marriage occurred is not given. In the Irish tables, all early marriages are included in the term under seventeen, which may, and most likely does, only include two years: fifteen and sixteen. With females in Ireland, the number of such marriages is stated to have been, in the eleven years preceding 1841, 14,947. The English marriage table includes the marriages under the general terms, between fifteen and under twenty; but, excepting that the mention of the former age justifies the belief that some marriages do take place at fifteen, the division is too

ambiguous to enable us to say distinctly, what is the earliest age at which they occur.

(b) The Criminal Tables give no very good index as to the early period for females. In the three following, that for England and Wales is defective, as it unites the sexes.

Table of Sexual Offences for the United Kingdom.

	England and Wales. 5 years.	Ireland. 1845-7.		Scotland. 1842-1846.		Ireland and Scotland	
	Centesimal proportion of offenders.	To 100,000 population.					
	Persons.	Males.	Females.	Males.	Females.	Males.	Females.
Under 12	—	—	—	—	—	—	—
12 — 16	3.4	1.46	—	4.14	—	5.60	—
16 — 20	18.0	17.73	3.81	16.19	4.62	33.92	8.43
21 — 30	32.8	31.24	7.02	17.80	7.94	49.04	14.96
31 — 40	22.4	16.04	3.26	13.19	4.70	29.23	7.96
41 — 50	12.8	7.16	.29	5.97	.28	13.13	.57
51 — 60	6.9	4.18	.76	4.40	.02	8.58	.78
Above 60	3.7	3.03	—	4.54	—	7.57	—

In the above tables, in the statistics for Ireland and Scotland, the offences only, which may be said to arise from sexual desire, are included. These, in addition to two of an unnatural kind, which need not be specified, are rape and carnal abuses of girls; and, in addition, bigamy, concealment of the birth of infants, and child-dropping. Bigamy, because the motives that induce a man to commit it, are the same as those which induce him to marry; and the two latter, because they invariably occur among persons giving rise to illegitimate children, whose sexual passion may be, therefore, said to have led them into error. It is true, that other motives may sometimes have their influence, but these cannot be now considered. The same objection to defining the age of the first commencement of the sexual desire, offers in this as in the case of marriages. Concerning the limit, however, in females, sexual desire does not appear to exist above sixty. Duly weighing, therefore, all these results, it appears most correct to limit the existence of procreative power in females, between the ages of fifteen and fifty-five.

II. (a) In the case of males, our evidence is of a different kind. In one respect, it cannot be so precise. We labour under the disadvantage of not having a function like that of the catamenia, upon which to found our conclusions. It is usually said, that the approach of puberty in males is marked by "the change of voice, growth of hair on the pubes, and the occurrence and discharge of semen." We are not, however, acquainted with any statistical data in which the age of the first appearance of these signs, either single or conjointly, has been noted. The only tables which appear to give some positive information on this subject, are the Irish Fecundity Tables. Here again, however, we have the two undefined terms of "under seventeen and above fifty-five" occurring, the former of which may include two or three, the latter several years. It is useful, however, as pointing out, approximately, the periods at which procreative power is effective.

Table of the number of marriages, and the issue from such marriages occurring in the eleven years, ending January 1841, for the ages of husbands under 17, 46 to 55, and above 55.

Age of Wife.	Age of Hus- band.	No. of Mar- riages.	No. of Child. to 100 Marrgs.	Age of Hus- band.	No. of Mar- riages.	No. of Child. to 100. Marrgs.	Age of Husband.	No. of Mar- riages.	No. of Child. to 100 Marrgs.
Under 17	Under 17.	661	256	46	36	205	Above	18	128
17—25		757	256		1,516	210		240	169
26—35		92	203		2,469	167		461	119
36—45		4	—		1,335	70		429	43
46—55		1	—		428	22		295	10
Above 55		1	200	55	52	10	55.	137	12

It will be seen by this table, that the number of marriages of males at the earlier ages is less than that of females, still they do occur. In Ireland for instance, out of 428,802 marriages, there were 1516 where the age of the husband was under seventeen.

(b) The English Table for Marriages is still less precise. The early marriages of males are included under the given nominal period from fifteen to twenty, and only seem to justify the inference, that, while at this early period a few take place, their number is small, as compared with females; since, out of 20,437 marriages given, only 537 among the males, and 2711 among the females, occurred, where the parties were respectively between fifteen and twenty years old. As a rule, however, it is believed, that in England, men seldom become active procreative agents before sixteen; and this number appears to receive some confirmation from the marriage tables.

(c) The Criminal Tables before given, give the cypher 5-60, as the amount of sexual offences committed by males between the ages twelve and sixteen, to 100,000 of the population of every age. This number, however, compared with the next period, sixteen and twenty-one, is very insignificant; but in either case, the terms are too vague, and the period too lengthened, to enable us to infer, very accurately, the early age. Moreover, the offences that do occur at these ages, twelve and sixteen, are precisely those where other motives than sexual desires may influence the perpetrators. Duly weighing all these results, it seems, therefore, more correct to fix the age of sixteen as the early limit. But if puberty appears *later* in males than in females, the physiological procreative power certainly *persists longer*. Thus, in the marriage ages from forty-six to fifty-five, their power, in 1 to 11 years after, is represented by the number 144, while that of females, for the same period, is only 26; and for the ages above fifty-five, it is represented by the number 77, that for females for the same period, being only 12. Indeed, a male, from forty-six to fifty-five years old, has almost as much procreative power as a female from thirty-six to forty-five, whose power is represented by the numbers, 1 to 99. It is clear, however, from the table given above, that it persists above fifty-five, but it does not shew how long it continues after this period.

The Criminal Tables will, perhaps, justify a further inference. The sexual offences committed in Scotland and in Ireland, for the period

above sixty, (i.e., from sixty to sixty-six) are represented by the cypher, 7-57, a number almost equal to that of females for the ages thirty-one to forty, and exceeding that for males for the ages sixteen to twenty-one. So far, then, as these tables go, they seem to justify the conclusion, that men have procreative power above sixty.

M. Bernard Hebellén, in a paper published in the *London Statistical Society's Reports*, speaks of sixty as the age in males, from the probable marriage of whom, no issue could be expected. Our own experience, we must say, is not confirmatory of this opinion, as we have known several instances where, with a young wife, men, as late as sixty-eight, have had several children. Here, however, we speak with great diffidence, from the absence of statistical data by which to support our own opinion. The Marriage Tables will, in some measure, however, assist us in fixing this limit. Thus, if we take the number of marriages occurring to 100 of the unmarried population, living between the ages of fifty-five and eighty-five, as given, for instance, in the Irish tables, and take the mean age, we obtain sixty-six as the average age. But here, another objection presents itself, as regards this limit deduced from the Marriage Tables. When persons marry late, they do so, frequently, from motives of convenience, apart from any sexual desire. According to the number of these marriages of convenience, there will necessarily be a tendency to diminish the value of marriages, as a test of sexual desire. In this calculation we labour, therefore, under the disadvantage of including all these exceptions. Yet it is convenient (as it is the end of a quinquennial period), to fix, for practical purposes, the age sixty-six or sixty-five, the former of which is the mean of all marriages occurring after fifty-five, as the limit of the duration of physiological power. It is true, we may thus give rise to more or less error for the last three or four years; but this is inconsiderable, as it affects only the results for the period above fifty-five, and these only in the second place of decimals.

AVERAGE PHYSIOLOGICAL PROCREATIVE POWER.

In fixing the limits of Procreative Power, it also appears, *à priori*, that the maximum age of fecundity will be that at which most marriages occur, and in which those offences, arising from the desire to gratify sexual passion, are most numerous. How far these suppositions are correct, the following inquiry will, in a great measure, shew.

In relation to the first of these points, it is laid down by Captain T. A. Larcom (*Journal of Statistical Society*, vol. viii, p. 212), that the most marrying race shew the lowest cypher of fecundity; and the authority of Mr. Gregg, in his work on the *Social Statistics of the Netherlands*, is adduced as evidence of this fact. It is not purposed to enter upon this controversy at present. It is presumed, however, that it will not be denied to be rational, *à priori*, to suppose, that with any person whose moral and better feelings are not entirely extinct, the marriage tendency will be greatest when his sexual passions are strongest. The number of marriages, *at all ages*, may not bear a direct proportion to sexual passion, for the reasons before given; but the maxima in both cases will agree.

If, now, sexual passion be looked upon as an index of fecundity, or, in

other words, the most impassioned be allowed to have most procreative strength, then marriage tables, tables of sexual offences, and of fecundity will, in so far as the maxima are concerned, pretty nearly agree. Now, so far as analogy among the brute creation goes, it is favourable to the supposition. An animal, when in heat, is in the condition most favourable to procreation. Indeed, in most, if not in all cases, this preliminary excitement is a *sine quâ non* to conception. Woman, it is true, differs, in this respect, from other animals, in being always capable of procreation, so long as the catamenial function persists; but we are not aware of any data that shew, that when, within procreative ages, the sexual passion is strongest, she is not then most liable to conception. We have already spoken of morbid feelings which may exist without procreative power; but, in default of statistical data to prove this assertion, it behoves us to inquire how far these opinions are carried out by the indirect statistical documents at our command.

(a) At what age do most people marry? Tables are given for several countries, in which the number of marriages that take place annually, at different ages, is set forth. It is right, however, in deducing our conclusions, also to take their ratio to the population of unmarried persons living at every age. Thus, there may be more persons living at one age than at another. In the former age, therefore, more marriages may positively take place, though relatively fewer than in the latter age. Moreover, in making this comparison, the married should be excluded from the population, as these can give no index as to the desire of marriage among the unmarried.¹

¹ This disadvantage exists in a marked manner in our English tables. We have no table of the unmarried population for corresponding periods to make the comparison; therefore, by including the married, our conclusions are necessarily vitiated. The calculation has, however, been made, and the table is given here for reference, to make this source of fallacy more evident by comparison with other tables.

MALES.

FEMALES.

Age.	No. of Weddings.	Weddings to 10000 population.	Reduced to a maximum of 100	Age.	No. of Weddings.	Weddings to 10000 population.	Reduced to a maximum of 100	Maximum ordinate for Males, 160·15 Females, 116·15
15—20	537	5·94*	3·70	15—20	2,711	27·40*	23·79	
20—25	10,383	12·58	7·78	20—25	10,424	107·06	92·97	
25—30	5,103	74·35	46·42	25—30	3,951	50·03	43·44	
30—35	1,900	29·35	18·32	30—35	1,498	21·15	18·36	
35—40	944	18·97	11·84	35—40	739	13·95	12·11	
40—45	603	12·00	7·78	40—45	532	9·94	8·63	
45—50	371	10·59	6·61	45—50	273	7·18	6·23	
50—55	271	7·68	4·79	50—55	161	4·17	3·62	
55—60	147	6·71	4·19	55—60	69	2·04	1·77	
60—65	112	4·60	2·87	60—65	55	1·99	1·72	
65—70	41	2·96	1·84	65—70	17	1·05	·91	
70—75	15	1·24	·76	70—75	5	·35	·30	
75—80	6	·91	·56	75—80	2	·26	·21	
80—85	4	1·19	·67	80—85	...	...	...	

From these results, it appears that most women marry at the age of 22·80, and most men at that of 27·80, or persons in general, at 24·94. In the American table the same error exists, and males and females are not distinguished. The maximum age, however, obtained, differs but little from that of the English table, namely, 25·84.

In the Irish table, in which the number of married and unmarried persons, for corresponding periods, are given for comparison, the result obtained is much higher; the maximum age being, for males, 31·84, and for females, 26·84, or for persons, 28·61. The total number of marriages that took place in the 11 years, from 1830 to 1840, inclusive, are given in the following table; the calculation is made upon the population of 1841. It would have been more correct to use the mean population for all these 11 years; but in the numbers now obtained, positive accuracy is not so much sought after, as results for practical application.

Marriage Table for Ireland, 11 years ending 1841.

MALES.				Maxim. age, 31·84	FEMALES.				Maxim. age, 26·84
Age.	No. of Weddings.	To 10000 population.	To a maxi- mum 100.		No. of Weddings.	To 10000 population	To a maxi- mum 100.		
Under 17	1,516	80·81	·92		14,941	831·11	13·3		
17—25	191,677	3021·23	34·4		305,312	4977·90	79·26		
26—35	193,639	8335·63	94·8		98,195	4981·20	79·32		
36—45	33,830	4115·57	46·7		8,279	701·61	11·1		
46—55	5,836	1128·82	12·7		1,131	101·61	1·5		
Above 55	1,579	167·76	1·6	219	10·63	·16			

Other marriage tables were obtained; but as a comparison could not be made with the unmarried population only, and as, moreover, the population was frequently grouped in periods different from those in which the marriages were arranged, the deductions made were considered insufficient, and accordingly rejected.

(b) The Criminal Tables before given, bring out maxima, which, after all, are not very different from the above. That for England and Wales gives 28·50 as the maximum age for persons; the Irish marriage tables, taken also for persons, give 29·09: two results which come very near one to another.

The United Table of Sexual Offences committed in Ireland and Scotland, gives—

Maximum age for	Males	...	...	...	...	28·00
Ditto for	Females	...	...	...	...	26·66
For Ireland alone—for	Males	...	...	...	...	27·01
Ditto for	Females	...	...	...	...	26·55
For Scotland alone—for	Males	...	...	...	...	28·09
Ditto for	Females	...	...	...	...	26·77

These results, for females, may be said almost entirely to agree with those obtained from the Marriage Tables, though there is some slight difference as regards males. The reality is, perhaps, that for the ages between twenty-seven and thirty-one in males, there is very little difference in the amount of procreative power. The mean of the Marriage and Criminal Tables is 29.

There is another way, in which this apparent discrepancy may be explained. The calculations of the criminal tables are made upon the whole population, married and unmarried. This was purposely done, because bigamy is an offence belonging only to married persons, and to which, therefore, a comparison with the unmarried, exclusively, could not apply; but, it has the disadvantage of affecting, perhaps, the propor-

tion, in relation to the other sexual offences. These, (though, perhaps, occasionally, a married man may be implicated) are chiefly committed by unmarried persons. On the other hand, however, the amount of this error could not be shewn, as there is no table of the unmarried and married persons, for the periods of age here given; and the comparison was, therefore, impossible. Having thus to choose between two evils, we selected the least, though a simple consideration of the above facts would explain, why the criminal tables might give a lower maximum. The nature of the sexual offences committed by women, explains why their maximum cypher is not equally vitiated.

(c) We would naturally expect, however, that the accuracy would be much greater, if we deduced this maximum from Fecundity Tables. Undoubtedly, this would be the case, if these were constructed with more care; and the calculations would be as brief as correct. It would suffice to know the age of the parents at the birth of every child; and that age in which, relatively to the population of active procreative agents, most children were born, would be the age of greatest fecundity. Unfortunately, no such tables are given; and we are, therefore, compelled to make use of tables comparatively defective.

The Swedish table, before given, would be one of the most valuable in determining this age for females, if the number of active procreative agents were known, relatively to every age. In the absence of these data, it must be rejected. As, also, Dr. Metcalf's Table for Fecundity, in New York, is arranged in periods of years, for which no corresponding table of the active procreative agents (for similar periods), is given, it must be also set aside. Thus are we reduced, for females, to the Westminster and St. Pancras General Dispensary tables, and to the Irish tables. For the males, the Irish table is the only one upon which we can depend.

It may be well to mention here, in speaking of the Irish tables, one capital defect in them, which, if not insuperable, is at least calculated to give rise to very erroneous results. This table, given at page 487 of the Report of the Census Commissioners for Ireland, includes, in the total, not only the children born of parents, while only they continued within the ages in which they married, but also for a period, varying from 1 to 11 years after, when their fecundity would be the same as that of persons who married at a later period. To make our meaning more plain by an example: 437 females married while under seventeen, in the year 1830, and in 11 years they had 883 children. This number is retained, as measuring the fecundity of the age under seventeen; whereas, in reality, these females, in these eleven years, had passed through the phases and procreative power of the next period, *i.e.*, from seventeen to twenty-five, and necessarily enjoyed the procreative power of that period. The number, therefore, as measuring the fecundity to 100 marriages, for this period, should be divided, at least by 11. If the number of those who married in 1831, be taken, the measure of fecundity is at least 10 times too great for this period, and so on. The effect of this is to raise, unduly, the fecundity of the earlier age, up to the maximum, and to lower that of those below this maximum. In order to obviate this difficulty, we have been satisfied to deduce our table of Average Physiological Power from the two years, 1839 and 1840,

dividing by 2 the number of births in the former years. This, it is true, introduces a small amount of error; but it is very inconsiderable. The advantage thereby obtained, quite makes up for this trifling error, by enabling us to correct the inaccurate numbers obtained from the consideration of a smaller number of marriages and births (especially during the earliest and latest periods), occurring in the single year. We begin first with males.¹

Table of Fecundity for Males for the years 1839 and 1840.

Age.	No. of Children to 600 Marriages.			To 100 married population.	To a maximum of 100.	* Max. ordinate, 51·89
	1840.	1839.	Total.			
Under 17	60	117	177	16·42*	31·59	
17 — 25	197	154	351	29·25	56·46	
26 — 35	157	160	317	26·42	51·00	
36 — 45	158	161	319	26·58	51·00	
46 — 55	92	110	202	16·83	32·49	
Above 55	60	94	159	13·25	25·57	

The maximum for each of these years separately, differing only by 78. That for 1840 being 25·40; that for 1839, 26·22; mean, 25·81.

There can be no doubt, that this maximum is too low; and the reason is obvious. Both the years 1839 and 1840 are defective for husbands under seventeen, as it happened that no marriages took place of males of this age with females from thirty-six and upwards, and only thirty-nine altogethér with females under thirty-five. The cypher of fecundity obtained for this age of males is, therefore, much too high; and as it

¹ As before said, we have three tables from which we may deduce the average Procreative Power for females: the Westminster Dispensary, the St. Pancras Dispensary, and the Irish Fecundity Tables. To deduce from the two former the maximum of fecundity, it is necessary that we should have a table of the number of active procreative agents, *i. e.*, the married, as these form so much the greater part among these. There is no such table for England. If to remedy, however, this error, we assume that the proportion in England and Ireland is about the same, which, after all, may not be very far from the truth, we have the following results.

Age.	Number of Deliveries.					To 100 married population.	To a maximum of 100
	St. Pancras Dispens.	Westminst. Diapens.	Irish Fecundity Tbls.		Total.		
			1840.	1839.			
Under 17	1	2	86	175	264	24·78	8·8
17—25	393	661	11,190	12,319	23,563	228·50	82·0
26—35	831	1,106	3,980	4,898	10,815	45·98	52·4
36—45	290	698	160	245	1,396	64·66	23·2
46—55	11	42	5	5	63	2·91	1·04
Above 55	1	0	0	2	3	·21	·14

But in the above table, the number for the period between 26 and 35 is evidently incorrect. This arises from the accidental circumstance, that the number of deliveries in the Westminster Dispensary for this period is so great. The mean of 64·66 and 228·5 is about 146. If this number be substituted, we have for maximum age, 24·01, and maximum ordinate, 278·60. The two Dispensary Tables, worked separately, give results not very different from that above obtained, where the two are combined.

In applying, however, the proportionate numbers for married persons of all ages to the Dispensary Tables, as the usual number of children born to one marriage is

necessarily enters into the calculation for the maximum, the maximum age comes to be too low.

Such as it stands, however, the analysis of the above table brings out the following fact. The procreative power increases exceedingly quick at first, till it reaches its maximum in about eleven years. For the next ten years it diminishes gradually. For the next twenty it remains in *statu quo*, till in ten years more it comes to equal what it was at the age under seventeen, and then gradually, but slowly, disappears.

In estimating the average physiological power for females, we have also made use only of the Irish tables. The two dispensary tables have been rejected, as the correct proportion to the married population of the respective periods could not be made out. An attempt, however, has been made to rectify this disadvantage; and the results are appended for reference in a note.

The Irish Fecundity Tables, worked for two years only with the same precaution observed as in the case of males, fix the age somewhat higher.

Table of Fecundity for Females, for the years 1839 and 1840.

Age.	No. of deliveries to 600 married.			To 100 population.	To a maximum of 100.
	1840.	1839.	Total.		
Under 17	104	114	218	36.33	44.96
17—25	230	240	470	78.33	96.94
26—35	185	265	450	75.00	90.28
36—45	129	118	247	41.17	50.95
46—55	81	33	114	19.00	23.51
Above 55	0	37	37	6.16	7.06

giving as a maximum age 26.66, and maximum ordinate 80.80. The maximum age for 1840 alone, is 25.13.

This result would seem to fix the maximum of male and female about the same for average physiological power, and, if anything, rather higher

estimated in England at three, the total number of deliveries should be trebled, to give the number of marriages.

Age.	Number of Deliveries.				West-minster.	St. Pancras.
	West-minster.	St. Pancras.	Westmins. to a maximum of 100	St. Pancras to a maximum of 100		
Under 17	2	1	65.32	53.76	Max. age.	Max. age,
17—25	661	393	72.22	70.55	22.29	23.67
26—35	1,106	831	55.93	52.92		
36—45	698	290	52.12	24.10	Max. ord.	Max. ord.
46—55	42	11	34	0.15	73.60	75.48
Above 55	0	1	0	.019		

It may be here remarked, that the mean maximum age of the two Dispensary Tables is 22.98, a result very near that of the maximum age of marriage among English females. It should, however, be borne in mind, that apart from the error of the English Marriage Table before mentioned, the results are not of equal weight with those of the Irish Tables. The English Marriage Table is calculated upon 40,000 marriages, and the fecundity only from 4,196 deliveries. The Irish are made from upwards of 400,000 marriages, and 17,000 deliveries.

for females than males. The single year 1840 alone makes it higher for males. This is manifestly an error, owing to the accident before noticed. Yet, as the deduction of average procreative power from fecundity tables may be useful for reference, it is perhaps convenient to consider the maxima in both males and females to be 26, at the same time, as by reducing to the same unit, the numbers deduced from the marriage tables, other numbers for the ages 21½, 31, and 41, may be annexed in another column for comparison, and this is what has been done in the annexed table for physiological procreative power.

That there is a curve representing the exact inclination of procreative power, cannot be doubted. Its exact determination, however, is impossible, when such distant intervals as ten years are given as ordinates between the ages. The circle would perhaps be the nearest curve that could be selected, but it very much increases the amount of arithmetical labour necessary. Fortunately, for practical purposes, such accuracy, however desirable, is not absolutely needed. If we suppose these several ordinates joined by a straight line, the procreative power of every age may in this manner be calculated, which, if not exactly correct, may yet be very useful in its application. Accordingly, in the following table, the procreative power for every age has been so calculated.

Table of Average Physiological Power, calculated from the Irish Tables.

Age.	Males.		Fem.	Fec.	Age.	Males.		Fem.	Fec.	Age.	Males.		Fem.	Fec.	Age.	Male. Fem.		Fec. Tab.
	Marr.	Fec.				Marr.	Fec.				Marr.	Fec.						
15	...	...	22	28	82	80	96	41	60	51	51	54	30	5				
16	...	31	44	29	87	70	94	42	...	49	48	55	29	...				
17	...	36	54	30	93	60	92	43	...	47	45	56	28	...				
18	...	40	63	31	100	51	90	44	...	45	42	57	28	...				
19	...	45	73	32	95	51	86	45	...	43	39	58	27	...				
20	...	49	82	33	91	51	82	46	...	41	37	59	26	...				
21	...	54	92	34	87	51	78	47	...	39	34	60	26	...				
22	47	61	97	35	84	51	74	48	...	37	31	61	25	...				
23	53	70	97	36	80	51	70	49	...	35	28	62	19	...				
24	59	80	98	37	76	51	66	50	...	33	26	63	12	...				
25	65	90	99	38	72	51	62	51	...	32	23	64	6	...				
26	70	100	100	39	68	51	58	52	...	31	17	65	...	...				
27	76	90	98	40	64	51	54	53	...	30	11							

ABSOLUTE CONNUBIAL PROCREATIVE POWER.

The above table will not enable us to decide the procreative power of any one couple coming together, whose fixed ages are given; in other words, the United Procreative Power. Herein we are met with one great difficulty. The procreative power, which we have termed the *united* procreative power, is only to be deduced from the Irish Fecundity Tables. It bears a relation to the last table; but, with the data at our command, to determine this relation is impossible. The table for the year 1840, gives the number of children born for one year; and hence, *a priori*, we might hope that the result obtained would be conclusive; such, however, is not the case.

[Table

Table of United Procreative Power (Ireland) for 1840.

Age of Wife.	Age of Husband.						Remarks.
	Und. 17	17—25	26—35	36—45	46—55	Abov. 55	
Under 17	20	15	19*	50*	...	...	* These numbers represent the number of children born to 100 marriages of each age.
17—25	40	44	47	44	35	20	
26—35	...	45	48	42	28	22	
36—45	...	43	23	22	26	15	
46—55	...	50	20	...	3	8	
Above 55	...	...	...	...	...	...	

But very little consideration of the above table will show, that to deduce from it the procreative power of other than the middle ages, would be impossible; because, there being but very few and sometimes no marriages in the extreme periods, for obvious reasons, the cypher of fecundity for these periods cannot be depended upon. It is either much too high, or absent altogether, nor does any method for taking a mean in such cases, promise any very correct result.

On analysing, for instance, more closely, the above table for 1840, the power is found, by calculation, to be greatest at the ages of twenty-nine for males, and twenty-six for females. It would be reasonable to suppose, that the maximum age of united power would be the same as that for average physiological power. This is the truth in the case of females, the age being in both cases twenty-six; but it is not true for males. The reason has already been stated. The Irish Fecundity Table for 1840, is defective for the period under seventeen for males; and the cypher of a man's fecundity for the age under seventeen, enters into the calculation necessary to bring out the average maximum age of procreative power for males; while it is excluded in the calculation required for the maximum age of the united power. This accounts for the remarkably low maximum, obtained in the former case. Again, for the ages between thirty-six and forty-five, there is another defect, as it would appear that a man of that age has more procreative power than one of between twenty-six and thirty-five. This may arise from the table giving too small a number, for the fecundity of husbands of the former period. It is in reality, highly probable, as the subsequent reasoning will show, that the fecundity of these two periods is very nearly the same in both cases. If we attempt to raise the cypher of fecundity for the period between twenty-six and thirty-five, supposing that between thirty-six and forty-five to be correct, it must be raised to more than twice its present value, to make the maximum age of procreative power for males twenty-seven. These sources of fallacy, therefore, so entirely vitiate the result, that it was found impossible to make use of the fecundity table for 1840 singly, and the following plan was therefore adopted.

In the Census Tables of Ireland for 1841, the table given at page 487, was selected. The number of marriages, and children born to such marriages, were here given for the eleven years, from 1830 to 1840 inclusive. The number of children born to each couple was divided by the number of years they had been married; and the quotient in each case was supposed to indicate the number of children born to each couple per

annum. In this way, a series of additional numbers were obtained, for comparison with the numbers for 1840.

Had we been satisfied with taking the mean of the numbers so obtained, this proceeding would have been open to the objection, that fecundity is greater in the middle, than in the earlier or the later ages. The cypher of fecundity for the earlier ages would be too high, as the couples would, in these eleven years, be passing through the phases of greater fecundity pertaining to the middle ages, while that for the later ages would be too low, for precisely the converse reason. To take such a mean would, therefore, have been wrong.

Now it is a mathematical theorem that, in any curve, the mean of any number of ordinates, between two fixed points, is nearly equal to the middle ordinate; and differs from it less and less as the two points approach one another. This is most true, when the curve increases very rapidly, and is accurately true for the straight line. Applying this law to the present case, the mean number of children obtained between any two fixed ages by a large number of persons, will be nearly equal to the number of children obtained by that same number of persons in the middle age between the two. This will become more evident by an example. Supposing 27 be the average number of children born to 100 couples, both under seventeen, in eleven years; 27 may be taken as the measure of the fecundity of a couple aged twenty-one, nearly. As each male and female grow older each year, these results come to be arranged in diagonals in the table.

For the sake of greater accuracy, we have reduced this table to one for every two years, by taking means. Moreover, by comparison, the extraordinary and accidental numbers have been corrected; in an arbitrary manner, it is true, yet yielding necessarily results more to be depended upon, and probably sufficiently correct for all practical purposes. The intermediate years have either been filled up in a similar manner, or proportional parts taken.

There are yet two other sources of error, which, in strict honesty, should be here mentioned. 1. The three last years, 1838-39-40, are unfortunate years; as, whatever may have been the cause, there were proportionally fewer marriages in those years than in the preceding. This accident diminishes the value of our table, for the reasoning would be most correct for the later and least so for the earlier; and, 2. the results from the preceding years are formed from better data. These two errors mutually aid one another in vitiating the results.

No method, however, to obviate this inconvenience could be found; and hence, the results must be considered as unfavourably influenced, though probably not sufficiently to affect their practical utility. (See Table, p. 258.)

It is clear, however, that although the table (p. 259) may be looked upon as expressing the relative fecundity of different ages, among united or married persons of both sexes, abstractedly considered, still, it does not express the totality of procreative power, which we have termed the Connubial Absolute Power. This must depend on two other circumstances, first, the chance a person has of living through the succeeding ages; and secondly, of enjoying, in addition to his actual present fecundity, the fecundity appertaining to these succeeding ages.

Cyphers of Fecundity for 11 years, ending 1840.

Age of Wives.	Age of Husbands.						Age of Wives.	Age of Husbands.						Year.
	Und. 17	17 to 25	26 to 35	36 to 45	46 to 55	Abov. 55		Und. 17	17 to 25	26 to 35	36 to 45	46 to 55	Abov. 55	
Under 17	20	50	19	50	...	...	36 to 45	...	43	23	22	26	15	1840
	33	30	34	16	...	...		...	22	29	28	23	14	1839
	18	32	28	23	...	...		...	18	23	23	21	9	1838
	36	35	35	37	37	...		...	22	23	21	15	10	1837
	37	36	34	34	30	5		...	18	17	13	12	4	1836
	37	37	36	36	13	22		...	18	17	17	13	11	1835
	33	36	38	39	35	7		...	17	15	12	10	11	1834
	33	36	36	32	26	...		...	18	16	15	10	2	1833
	30	35	36	34	26	44		...	16	17	15	10	4	1832
	29	36	37	37	30	30		...	17	14	14	8	4	1831
	27	25	34	34	24	22		...	13	12	13	9	5	1830
17 to 25	40	44	47	44	35	20	46 to 55	...	50	20	...	3	8	1840
	21	43	45	46	43	42		...	16	6	4	6	...	1839
	35	42	44	43	40	25		...	17	8	8	4	1	1838
	37	41	43	42	37	41		...	...	5	7	4	...	1837
	37	41	42	41	34	30		...	...	15	3	4	...	1836
	43	40	41	39	36	22		...	...	13	1	6	2	1835
	35	39	40	38	35	26		...	58	6	8	4	2	1834
	32	39	40	37	27	22		...	4	5	5	2	...	1833
	33	38	39	37	35	11		...	18	9	5	3	4	1832
	31	38	39	39	30	24		...	4	8	8	2	2	1831
	28	37	38	35	29	27		...	4	6	9	4	1	1830
26 to 35	...	45	48	42	28	22	Above 55	...	...	...	...	...	...	1840
	62	41	45	47	36	32		...	...	...	25	1	6	1839
	22	39	43	40	38	25		...	...	...	...	8	3	1838
	35	38	43	39	33	23		...	...	...	...	...	...	1837
	40	36	42	34	31	26		...	...	...	...	...	...	1836
	22	36	40	34	26	22		...	...	...	...	...	2	1835
	27	35	40	32	27	19		...	...	...	...	...	7	1834
	27	34	40	33	26	19		...	...	...	8	...	2	1833
	23	33	39	30	26	7		...	...	...	...	...	4	1832
	23	32	39	34	24	14		...	...	...	...	3	9	1831
	29	30	38	27	23	13		...	...	...	...	...	...	1830

Both these conditions are regulated by his expectancy of life. The chance of living, should, therefore, also be taken in consideration, which will have the effect of raising, considerably, the numbers expressing physiological procreative power. The difference of this increase, is what we have before termed *Expectant Power*, and must be added to the connubial physiological, to give the connubial absolute power.

In drawing out this table, we have made use of the Carlisle Life Table, both because it is universally known, and because, even in these controversial times, it is very generally admitted to be good. It has the inconvenience of uniting the sexes; but, on the other hand, any inaccuracy hereby introduced, can scarcely much affect the result, and certainly not interfere with its *practical* utility.

It was necessary, however, to assume, in the calculations involved, first, that for so few a number of succeeding ages as ten, the procreative power increases or decreases, uniformly with the average rate between these limits; and secondly, that the same proposition was true, with regard to expectancy of life.

TABLE OF UNITED, OR CONJUGIAL PHYSIOLOGICAL PROCREATIVE POWER.¹

Maximum Age, Males 33-94; Females 26-07; Maximum Ordinate 50.

Age of Wives.		Age of Husbands.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
	16	17	18-19	20-1	22-3	24-5	26-7	28-9	30-1	32-3	34-5	36-7	38-9	40-1	42-3	44-5	46-7	48-9	50-1	52-3	54-5	56-7	58-9	60-1	62-3	64-5	66-7	68-9	70-1	72-3	74-5	76-7	78-9	80-1	82-3	84-5	86-7	88-9	90-1	92-3	94-5	96-7	98-9	00-1	02-3	04-5	06-7																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
16	40	44	48	52	56	57	57	58	59	56	54	51	48	46	40	34	28	22	16	13	11	9	7	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

¹ The numbers represent twice the average number of children born to 100 couples, taking 100 as the maximum.

As regards the first supposition, it is, strictly speaking, not quite correct; but as the data, from which we have deduced the table of connubial or united power, are also imperfect, it is needless to make a more strict supposition in this case, lest we might lay ourselves open to the charge of pretending to accuracy which does not exist: because, as before remarked, two sources of fallacy cooperate to vitiate the result. Secondly, upon looking at the Carlisle table, it is found that the method of the straight line does not differ very much from the truth, for small periods, as exhibited in that table. If the straight line were accurately true, for any period of years, the same number of persons would die in that period every year. On looking at the table, this is found to be pretty nearly the case for periods of 10 years. Indeed, in the Northampton tables, of Mr. Price, this was so remarkably true, that (in 26 Geo. III., chap. 52) they were selected by Act of Parliament for estimating the legacy duty; and these tables were, and are now, almost universally used by the Life Assurance Offices.

In this manner, it was thought, an approximation, sufficiently near the truth, for all practical purposes, would be obtained. Indeed, on examining our data, it is doubtful if any other plan could have been adopted.

ABSOLUTE EXCONNUBIAL PROCREATIVE POWER.

The Absolute Exconnubial Procreative Power of any person, is his chance of bringing his dormant power into action. This may be realized in two ways; first, by the criminal connexion of the sexes, as in the production of illegitimate children; secondly, by the chance of a given person living long enough to marry, and thus begetting children.

The first of these, is the practical power of any unmarried person. To include, however, in the absolute power, this practical power, requires data which we do not possess. Tables should be given of the number of illegitimate children born during each period, as we have in the case of married persons, with the ages of both parents; and then, by drawing the proportion between these number of children, and the number of unmarried and widowed persons within procreative ages, we should obtain a cypher for this fecundity, which, though small as compared with that of married persons (since, for parents of all ages, the legitimate are to the illegitimate, as 16 to 1), might yet be appreciated, and by addition to this expectant exconnubial power, at once give the absolute exconnubial power.

In the absence of the data required, this practical power must be completely overlooked. While, therefore, we retain the term absolute exconnubial power, for convenience, it should be borne in mind, that this expression is incorrect, and that, in the totality given, the practical power having been omitted, the results are smaller than they should be in reality.

The second way in which a person may realize his dormant power, is by marrying in any one of the subsequent years of his life, and thus becoming possessed of connubial absolute power. The chance, therefore, of his obtaining this power, must be the measure of his fecundity. Take the case of a male. As his chance will be different for every year, so we must consider each year separately. In any one of these,

TABLE OF CONJUBIAL ABSOLUTE POWER.
(The totality of Physiological, Expectant, and Practical Procreative Powers.)

Age of Wives.	Age of Husbands.																			
	16	17	18-19	20-1	22-3	24-5	26-7	28-9	30-1	32-3	34-5	36-7	38-9	40-1	42-3	44-5	46-7	48-9	50-1	52-3
16	1664	1658	1652	1646	1640	1635	1628	1621	1614	1607	1600	1594	1587	1580	1573	1566	1559	1552	1545	1538
17	1646	1658	1641	1624	1610	1602	1594	1586	1578	1570	1562	1554	1546	1538	1530	1522	1514	1506	1498	1490
18-19	1428	1538	1639	1550	1552	1577	1602	1628	1489	1245	1150	1054	958	862	806	759	708	650	541	552
20-21	1310	1386	1451	1537	1543	1549	1555	1563	1463	1270	1170	1072	973	874	775	723	614	557	408	314
22-23	1282	1328	1364	1400	1408	1416	1424	1432	1324	1296	1187	1078	969	860	751	687	636	593	550	464
24-25	1084	1133	1198	1252	1312	1384	1303	1272	1209	1130	1028	927	826	725	662	600	544	509	463	398
26-27	965	1041	1090	1139	1188	1210	1233	1129	1125	1121	1012	1004	903	802	701	662	554	509	463	398
28-29	837	917	1008	1036	1064	1075	1087	1109	1071	1033	981	929	878	776	673	618	552	476	421	366
30-31	718	782	846	911	940	954	967	981	995	945	896	848	800	752	650	584	519	453	388	331
32-33	600	654	708	762	816	824	832	840	849	858	810	764	718	672	626	561	496	431	366	301
34-35	482	540	598	656	714	720	729	738	748	757	721	680	640	601	561	500	444	388	331	275
36-37	396	451	471	492	618	619	625	638	641	658	621	584	554	525	496	457	418	359	299	249
38-39	311	366	422	467	612	618	624	630	644	659	621	484	447	439	432	406	368	336	284	228
40-41	225	272	349	366	611	619	628	486	445	460	448	417	396	375	367	338	310	282	254	197
42-43	140	182	225	267	310	320	330	340	350	361	339	337	326	314	303	276	250	224	198	172
44-45	109	116	159	202	246	254	266	278	290	303	276	267	258	248	241	232	204	176	147	118
46-47	77	86	95	139	183	190	198	214	230	245	213	192	186	174	172	167	143	126	107	90
48-49	45	56	67	78	120	127	134	142	164	187	160	154	108	104	100	97	93	80	82	75
50-51	14	24	35	46	57	69	81	98	106	129	117	105	93	81	75	72	70	67	59	68
52-53	5	7	17	28	38	39	47	55	63	71	67	64	60	57	54	52	50	48	46	45
54-55	2	3	5	12	19	22	25	28	31	35	34	32	31	29	28	27	26	25	24	23
56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

The numbers here given, divided by 200, will give the number of children any couple, on the average, may be expected to get.

a male may marry a female of any age; his power, then, depending upon this, may be found by taking the chance of his marrying a wife of any age in a given year, and multiplying by his absolute connubial power, if he did so marry. The sum of these results gives his procreative power, depending on the chance of his marrying that year. Repeating this process for every succeeding year (or period of years) of his life, and taking into account his chance of life, the sum of these results will be his absolute exconnubial power for that year or period of years.

By the Irish Marriage Tables, these may be found for the years 16, 21, 31, 41, 61; and by taking proportional parts for the intervals, the tables may be calculated.

It should be, moreover, borne in mind, that as children have, necessarily, the chance of attaining procreative and marriageable ages, so have they also an amount of exconnubial absolute power. It is small, it is true, but still not to be neglected.

Taking these several circumstances into consideration, the following table was calculated.

Table of Exconnubial Absolute Procreative Power.¹

Age.	Males.	Females.	Age.	Males.	Females.	Age.	Males.	Females.
0—1	498	366	22—23	664	451	44—45	41	6
2—3	611	445	24—25	557	394	46—47	37	5
4—5	660	480	26—27	450	337	48—49	33	3
6—7	700	510	28—29	343	279	50—51	30	2
8—9	710	520	30—31	236	222	52—53	26	.01
10—11	728	530	32—33	129	165	54—55	24	.005
12—13	733	534	34—35	112	134	56—57	22	...
14—15	742	540	36—37	96	102	58—59	21	...
16—17	741	538	38—39	79	71	60—61	19	...
18—19	713	505	40—41	62	39	62—63	18	...
20—21	688	478	42—43	45	8	64—65	9	...
						66	...	...

The preceding investigation would enable us to give an opinion on several most important probabilities connected with our social relations in life. Two only, however, will here be noted. If a party presented himself before us, as being very desirous of offspring, we would be enabled to tell him, in relation to his own age, what ought to be the age of the partner to be selected, which would promise best for the gratification of this wish. In like manner, many other prudential considerations in social life might hereby be more certainly assured. It is to emigration societies, and governments, however, that tables, setting forth the procreative power for the various ages, prove most valuable. To the former, if the benefit and increase of the population in the colony be the chief desire, these tables at once explain at what ages persons should be sent out. To the latter, they designate those agents, who, as most active in the increase of an over-crowded population, should be removed.

If we are not misinformed, the principle adopted by emigration societies, is to send out no parties free of expense above twenty-five years old; and generally, they encourage persons of or about this age to

¹ The numbers here given, divided by 200, will give the number of children each person on the average may be expected to have.

emigrate. This plan may be correct, if the parties be already active procreative agents, or married persons; because they are very near the maximum age of fecundity, and, besides their bodily strength being greatest in and about these ages, these persons are more likely to be useful members in the colony: but if they be unmarried, and due regard be also paid to the future prospects of these persons, and to the increase of population in the colony, the value of such persons is not so great as that of children between two and three years old. This assertion may appear a startling one; yet it is borne out fully by the table of exconnubial absolute power before given.

These tables would, indeed, seem to point out the advantages to be derived in sending out persons upon the principle of a sliding scale; parties between twelve and seventeen being sent out free, and those either below or above these ages being charged at a rate proportional to their procreating value. In like manner, it explains the advantage there would be in sending out married persons at a cheaper rate than the unmarried, etc. The government, in seconding such a movement, would contribute powerfully towards ameliorating the condition of thousands, whose distressed social condition calls for such heavy taxation on the middling and wealthier classes of the community, and who, as the most active procreative agents (for who are more so than the poor?) promise tens of thousands more in equal misery, which the coming generations will have hereafter to support. All these persons, if removed and transferred to the colony, would not only benefit themselves, and assist towards the development of its resources, but likewise do great good to our own country, by consuming many of our useless manufactures, and checking, by their absence, the impetus of population at home.

The discussion, however, of this question, does not immediately concern us at present; though, as illustrative of the importance of the present inquiry, the digression may be excused.

The preceding investigation has necessarily occupied much labour and time. As it will be evident, our chief difficulty has been the imperfect nature of our data; yet is it a question that could, with proper data, be made most easy of solution.

First, as regards public or state documents.

1. If, in the population returns, there were tables, in which the exact age of parties marrying were separately given for every year, these results, when equated, would at once enable us to form another table for the expectancy of marriage for both sexes.

2. If in the registry of births, due note were made of the exact age of the parents, the legitimate being distinguished from the illegitimate children, a table of exconnubial and connubial practical power could be easily made out, and the maximum age of fecundity for both sexes at once determined.

3. The number of married, unmarried, and widowed, for every separate year, should be given.

4. In the Criminal Tables, the offences arising from sexual desire, throughout the country, should be given also for every year. This would also lead to the determination of the age of greatest procreative power.

Secondly, as to the collection of tables from private sources. There

are many of the greatest value, which medical men alone would be competent to provide.

1. The age at which puberty appears in a male. Hitherto no tables showing this have been made.

2. More extended tables of the date of the disappearance of the catamenial function in the female; distinguishing, in those cases where it has persisted late through life, whether the discharge *per vaginam* be or be not connected with uterine disease.

3. In the records of obstetric practice, more especially in hospitals and dispensaries, where patients present themselves for lying-in letters, and births or miscarriages occur, to note not only the age of the mother, as is almost invariably done, but also the age of the father.

These data given, the limits of the procreative ages, and the ages of greatest fecundity, could be very easily deduced.

In the absence of these data, our conclusions are less certain; yet, so far as the results above given go, the following GENERAL CONCLUSIONS may be drawn.

1. The age of greatest fecundity in males is from thirty-one to thirty-three, in females twenty-six.

2. But the procreative value of a person between fifteen and sixteen, is greater than at any preceding or succeeding age.

3. The ages at which most marriages occur, are about the same as the ages of greatest fecundity. Thus in the Irish marriage tables, in which only the proportion to unmarried and widowed could be drawn, the ages were, thirty-two for males, twenty-six for females.

4. There is, very probably, a relation between procreative power, and marriages taking place, at all ages.

5. Sexual desire and fecundity, appear to have also about the same maximum age, and bear a relation generally one to another. The English table gives a mean of twenty-eight for persons. The Irish twenty eight; the Scotch twenty-nine for males—both twenty-six for females. The fecundity for persons, according to the Irish, is also twenty-nine.

6. And lastly. The earliest and latest limits of procreative power are sixteen and sixty-six for males, fifteen and fifty-five for females.

Such are the results which the preceding inquiry has brought out. It should be borne in mind, that perfect accuracy with our data was impossible. We have, therefore, endeavoured only to treat the question in its practical bearings; and in this view we venture to offer it to the profession. Hereafter, if better data be afforded, we may be more fortunate, or others may bring out more correct results. For the present, however, if we have contributed in the least towards the elucidation of this question, we must be satisfied.

19, Dorset Square, January 1850.