

*Presented to  
Thomas Drummond  
under Review by the author*

THE  
EQUILIBRIUM  
OF  
POPULATION  
AND  
SUSTENANCE  
DEMONSTRATED;

SHOWING, ON PHYSIOLOGICAL AND STATISTICAL GROUNDS, THE  
MEANS OF OBVIATING THE FEARS OF THE LATE  
MR. MALTHUS AND HIS FOLLOWERS,

BY  
CHARLES LOUDON, M. D.,

*Late one of the Royal Commissioners for Enquiring into the Employment of Children  
in Factories.*

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“The question on the relations naturally subsisting between Population and Food, is infinitely the most interesting problem in the whole range of Political Economy. It stands foremost in claiming the attention of the philosopher, the legislator, the statesman, and the man of humanity.”—*Principles of Political Economy*, by G. POULETT SCROPE, M. P., p p. 256-7, London, 1833.

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THE  
EQUILIBRIUM  
OF  
POPULATION  
AND  
SUSTENANCE  
DISCUSSED:  
KNOWING ON THE PHYSICAL AND STATISTICAL GROUNDS THE  
MISSES OF THE TOWN OF LONDON  
MR. H. J. ...

CHARLES ... M.D.

... of the ...  
in ...

... the ...  
... of ...  
... in ...

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1838

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EQUILIBRIUM

TO THE

RIGHT HONOURABLE

THE EARL OF SPENCER

THESE PAGES ARE INSCRIBED

BY

HIS VERY OBEDIENT AND OBLIGED SERVANT,

THE AUTHOR.

*Leamington Spa.*

22nd January, 1836.

Houses of the Oireachtas

TO THE

RIGHT HONOURABLE

THE EARL OF SPENCER

THESE PAPERS ARE INSCRIBED

HIS VERY OBLIGED AND DEVOTED SERVANT

THE AUTHOR

LONDON

1830

## EQUILIBRIUM

OF

## POPULATION AND SUSTENANCE.

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THERE is no error in Political Economy so much calculated to retard the progress of civilization and welfare of the poor, as the idea that population is likely by small allotments of land to increase so much, that not only will the surface of the world be covered with a starving population, but the greatest misery will prevail amongst mankind. Many visionaries have gone so far as to fancy, that when the earth is covered over with people, which they consider inevitable, mankind will be compelled to devour one another. Under this idea, and a dread of being unable to provide for offspring, certain doctrines have, of late years, been promulgated, alike disgraceful to those who have suggested them and injurious to the interests of morality. It is proposed, therefore, in these pages, to show, physiologically, a mode by which, if necessary, a check,

both moral and healthful, might be applied to population, founded simply on the laws of nature, which, in this as in all other cases, are so well adapted by Providence, to promote the happiness and welfare of those beings, which, in his wisdom, he has placed on this earth.

The increase of population in this country, is about ten per cent. every census of ten years, or in other words, one per cent. annually; and the period of gestation and lactation together, is somewhere about nineteen months. The period of gestation has been fixed by nature, at nine months, that of lactation is generally arranged by the habits of each particular nation; on an average, ten months is the usual time in this and most European countries.

It is well known as a general rule, that mothers do not become impregnated during lactation. There are, of course, exceptions to this rule; but after making every allowance for these, if the period of lactation be prolonged only a very few months, increasing with the increase of population, and *vice versa*, the problem of the equilibrium of population and sustenance, is solved, and that on grounds which shall be shown immediately, to involve no disadvantage either to mother or child.

At present, on the Continent, the average of children\* to a marriage, is nearly 4.5. Reasoning on the average age of marriage, and the population as given by

\* Medical Statistics, by Dr. F. Bisset Hawkins, p. 224: London, 1829.

the last two census, the number in England is also 4.5. If, by prolonging the time of suckling the average were reduced to four, it is evident that population would remain stationary, because one-half of our numbers\* die between birth and the completion of the twenty-fourth year; and the average age of females marrying, is very near to that period. In France, the average age of marrying,† is twenty-six years; that of men being twenty-nine, and of women twenty-four. In England, the age of marriage cannot be correctly ascertained under our present system of enregistration. We may safely, however, adopt the French numbers for both sexes.

Admitting, then, the period of marriage for females to be twenty-four, and that of child-bearing to terminate at forty-four, the average of time between each child will be fifty-four months, or four years and a half.

The next inquiry which necessarily follows is, what increase of time, beyond the ten months of lactation, would be necessary to keep population in check, as it advances at present in England? The reply is very simple. Admit, in each instance, the nine months of gestation, the ten months of lactation, and one-tenth of the remaining thirty-five months as an equivalent for

\* Official Tables of Revenue, Population, &c., part II.

† Memoire de M. Villot, read at the Academy of Sciences, 1828.

Beitrag zur Medicinischen Statistik and Staatsartzneikunde, Berlin, 1829.

Recherches Statistiques sur la Ville de Paris, par M. Chabrol, 1823.

the present increase of population, and the period will be thirteen months and a half. To this, however, must be added, an allowance of six weeks for the chances of impregnation during the three months and the six weeks, on the supposition, that in every three instances of lactation,\* impregnation takes place once. Thus the entire time will be fifteen months, or, in other words, *one-third longer than the present period*. This extension of lactation must necessarily increase the 4.5 years between each child, approximatively to 5.; and, consequently, reduce the 4.5 children in a family to 4. It has been already seen, that one-half of our numbers die under the age of marriage for females; the result will then be, that there will remain only a representative for father, and a representative for mother, on an average, in every family in the country.

For what particular reason it is, that mothers, in this country, do not usually suckle their children longer than about ten months, it would be difficult, on physiological grounds, to say. Certain it is, that the milk does not diminish particularly at that time, so far as regards the quantity, and from the health of children reared without spoon meat beyond this time, as certainly not from any change in its quality. Children are now and then seen so old before weaning, as to be

\* It is highly probable the chances of impregnation are much smaller than one in three. The number, adopted in the text, is the highest of the returns made on the subject. Perhaps, in nature, the rule is absolute, and the exceptions are the result of accidental causes.



able to ask their mothers for the breast, and those who have noticed this circumstance, have not remarked that the health of mothers thus suckling, has been in any way worse than that of their neighbours. Indeed, taking it all in all, it may be most safely asserted, that a mother is likely to be in better health, and to run less risk of sickness and death, during lactation, than during pregnancy. The weakness which many women believe, or affect to believe, they labour under, during the later months of suckling, often arises, as every practitioner is aware, from some latent moral or physical cause, and is never attributed by parents to lactation in the earlier months of suckling, because then the mother believes she is fulfilling a necessary duty, which the constitution, for so long, is well able to bear. The moment, however, the period of lactation, as established by custom or fashion, has passed over, she imagines she is exceeding the intentions of nature, and the continuance of suckling is at once seized on, as the reason of whatever uncomfortable sensations are felt; upon which, the child is weaned.

It will scarcely be denied either, that, as nature has furnished the mother with the milk for a longer period than custom demands it, she had some good end in view for both mother and child; otherwise she would have stopped the secretion of the milk at a definite time, in like manner as she has made the period of gestation definite. The circumstance of a child being,

in comparison with the young of the lower animals, so long unable to provide for itself, strongly tends to corroborate the proofs already advanced, that nature had in view a more protracted period for lactation, than is now allowed. Some of the older French writers, following, as they believed, the laws of nature, fixed the period of weaning at about fifteen months, at which time they supposed the infant had got its eight incisors and four canine teeth. Desormeaux\* mentions instances of mothers suckling children for three, four, five, and even seven consecutive years.

That the period of lactation has a great influence over the numbers of mankind in various countries, is proved by numerous facts. In China,† where the population is so great, that the inhabitants adopt the inhuman practice of infanticide, “as soon as a child can put its hand to its mouth, it is weaned and taught the use of its right hand.” On the other hand, Hunter‡ mentions, in the memoirs of his captivity amongst the Indians of North America, that whenever their children are sufficiently old and strong, the Indian mothers “wean them and suffer them to run about generally between the age of two and three years.” This circumstance will alone account for the thinness of these tribes in a fertile country, when compared with other barbarous, and

\* Dictionnaire de Medicine tome xii. p. 550.

† Abbe Grosier's Description of China, vol. ii. p. 282.

‡ Memoirs of a Captivity, &c. 2nd. Edition, p. p. 263-4.

even civilised nations. Dr. Lowenfeld has remarked a similar extension of lactation amongst the Carribean tribes, to the south of Berbice, Essequibo, and Demerara. There, also, the population is remarkable for the paucity of numbers in proportion to the fertility of the soil; and what is of more importance, such a number as seven or eight to a family is scarcely known. It is highly probable also, that a like cause exists, for the decrease of the negro population in Jamaica, not only amongst the Maroons, but amongst the imported Africans, which circumstance will more satisfactorily account for the falling off of the negro population, than the alleged cruelty of the Planters brought forward a few years ago, in the House of Commons, by Mr. Fowell Buxton.

But while a moral and healthful check is here pointed out, with the view of allaying the fears of prospective misery to the human race (which fears, at present, undoubtedly influence many benevolent persons) it is not intended to inculcate the adoption of the principle under the actual circumstances of our country. Those who have considered the relation of population to sustenance, as pourtrayed in Mr. Stuart's travels in America, and by an anonymous writer in a late No.\* of the Quarterly Review, must clearly see that the resources of mankind for the production of food, in the Western world alone, are such as to meet every possible

\* Quarterly Review, vol. xlvii. p. 60.

increase of population, for an indefinite number of ages to come. To what extent the population, even of this country, may reach, without incurring the apprehension of a scarcity of food, it would be a difficult question to decide, as it is impossible to foresee the extent of the improvements which the progress of the arts and sciences will effect in agriculture. With regard to those products which are strictly vegetable, we have only to refer to the beet root, modern cabbages, potatoes, and Swedish turnips, as instances of immense crops, arising from a small surface of ground, and these vegetable esculents were unknown to the ancients. The improvements arising from drainage, spade husbandry, and manures of various kinds, have tended much to increase the quantity of grain, while the late introduction of open and close stall feeding, will immensely contribute to the store of animal food. Added to these, the extensive means of conveying fresh fish inland from the coast, and indeed, every thing necessary for man as well as agriculture, by means of the rail-roads now constructing throughout the country, will, in a very few years, make important changes, even in those districts where improvements were considered as next to impossible.

There are  $76\frac{1}{2}$  millions of acres\* of land in the United Kingdom, of which 30 millions† are said to be in waste,

\* Edinburgh Review, cxxiii. p. 159.

† Emigration, as injurious as unnecessary. In Labourers Friends' Society. No. xix. p. 287.

and of these 30 millions, 15 millions\* are capable of improvement. According to Mr. Mackie and Dr. Anderson,† each arable acre yielding an average crop of potatoes, will produce thirty tons, that is to say, 67,200lbs. of potatoes annually; which, divided by 365 days in the year, will give (allowing 1lb. a meal for four meals) 4lbs. a day, during the whole year, for forty-two persons. It is, therefore, manifest, that  $2\frac{1}{2}$  millions of acres of potatoes will produce, permanently, vegetable food, for upwards of one hundred millions of people, or four times our present population; allowing the remaining 74 millions of acres to produce animal food, grain, and the other commodities of sustenance, exclusive of what we may import from our colonies, and other countries abroad.

It would be foreign to the present subject, to point out the alternations and changes of the various crops, or how far it might be possible even, to bring into cultivation a large portion of the fifteen millions of acres, reported by the Emigration Committee, as incapable of improvement. A slight reference to the Italian‡ and Dutch authors,§ who have written on the subject of sterile fields, and to the historical records connected with the immense populations¶ of Egypt, Palestine, Greece,

\* Report of Emigration Committee, No. 3.

† Dirom on the Corn Laws, p. 244.

Anderson; Investigation as to the Scarcity of Grain, p. 36. London, 1801.

‡ Camillo Tarello di Leonato, Mantua, 1577.

§ Abbe Mann, in vol I. of Communications to the Board of Agriculture.

¶ Wallace on the Numbers of Mankind, p. 50.

and Italy, unacquainted, as the ancients were, with the prodigious strides made of late, in the matter, as well as the manner of agriculture, will give some idea of what can be done with lands of the most unpromising nature. The attention here, is chiefly directed to two facts connected with medicine, one physiological, the other dietetic, both bearing immensely on the happiness and welfare of all classes of society, and so momentous in relation to each other, as to be considered by all writers on the subject, as involving the most interesting problem in the whole range of Political Economy. The first, or physiological principle of lactation, as affecting the increase or decrease of population, has, up to the present moment, never been demonstrated statistically, by any writer on population or physiology. The second has been but little attended to on national grounds, chiefly, perhaps, from a lurking apprehension on the part of legislators, that there were no rational means appointed by nature, of suspending the advance of population or preventing its increasing in a geometrical ratio.

That the principle here laid down is correct, no one can fairly deny. Some fractional changes and approximations in the statistical numbers, may require to be made in proportion as the science of statistics advances. The knowledge, however, we possess at present, is quite sufficient for the deductions drawn in the preceding pages. Much valuable information, corroborative of the points now developed, might be obtained by the

army, navy, and East India Medical Boards. They have already, by means of their organization, been enabled to render important assistance to statistics. It is to be hoped, that the principle now sought to be established, will not escape their attention.

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Houses of the Oireachtas



REPORT

ON

THE PREVENTION

OF

SPASMODIC CHOREA,

BY

HIS EXCELLENCY

THE LORD LIEUTENANT

REPORT,

&c. &c.

GENERAL BOARD OF HEALTH

DUBLIN

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REPORT  
ON THE PREVALENCE  
OF PERIODIC CHOLERA  
IN THE DISTRICT OF  
THE EAST INDIES  
REPORT  
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THE GENERAL BOARD OF HEALTH  
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DEPARTMENT