

## DIVISION II.

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### DEMOGRAPHY.

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Tuesday, 11th August 1891.

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The Chair was occupied by  
The President, FRANCIS GALTON, Esq., F.R.S.

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#### Presidential Address.

BY  
FRANCIS GALTON, Esq., F.R.S.

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In the address which it is my honourable duty to deliver at the opening of this Congress, it would be presumptuous to obtrude opinions on any one of the larger parts of the subjects that will engage its attention. I am addressing experts who have practically dealt with the numbers and occupations, with the marriages, births, and deaths of millions of their countrymen; who have investigated on the largest scale the effects of past legislation, and collected new data in which accurate information was from time to time of pressing national importance. I have not had the experience necessary to justify my addressing you on these matters in their more familiar aspects. Instead of doing so, I will ask your attention for a few minutes to certain topics of demographic inquiry which enter into the great problem of the future betterment of the human race.

They are confessedly, at the present time, hardly advanced beyond the stage of academic interest, but thought and action move swiftly now-a-days, and it is by no means impossible that a generation which has witnessed the exclusion of the Chinese race from the customary privileges of settlers in two continents, and the deportation of a Hebrew population in a third, may live to see other acts of any analogous kind performed under sudden socialistic pressure. The questions about to be considered may unexpectedly acquire importance as falling within the sphere of practical politics, and if so, many demographic data that require forethought and time to collect, and a dispassionate and leisurely judgment to discuss, will be hurriedly and sorely needed.

The topics to which I will allude are the relative fertility of different classes and races, and their tendency to supplant one another under various circumstances.

The whole question of fertility under the various conditions of civilised life requires more detailed research than it has yet received. We require further investigations into the truth of the hypothesis of Malthus, that there is really no limit to over-population beside that which is afforded by misery or prudential restraint. Is it true that misery in any justifiable sense of that word, provides the only check which acts automatically, or are other causes in existence, active, though as yet obscure, that assist in restraining the overgrowth of population? It is certain that the productiveness of different marriages differs greatly in consequence of unexplained conditions. The variation in fertility of different kinds of animals that have been captured when wild and kept in menageries is, as Darwin long since pointed out, most notable and apparently capricious. Most of those which thrive in confinement, and enjoy apparently excellent health, are nevertheless absolutely infertile, others, often of closely allied species, may have their productivity increased. One of the many evidences of our great ignorance of the laws that govern fertility, is seen in the behaviour of bees, who have somehow discovered that by merely modifying the diet and the size of the nursery of any female grub, they can at will cause it to develop, either into a naturally sterile worker, or into the potential mother of a huge hive.

Demographers have, undoubtedly, collected and collated a vast amount of information bearing on the fertility of different nations, but they have mainly attacked the problem in the gross and not in detail, so that we possess little more than mean values that are applicable to general populations, and are very valuable in their way, but we remain ignorant of much else, that a moderate amount of judiciously directed research might, perhaps, be able to tell.

As an example of what could be sought with advantage, let us suppose that we take a number sufficient for statistical purposes, of persons occupying different strata or classes, those who are the least efficient in physical, intellectual, and moral grounds, forming our lowest class, and those who are the most efficient forming our highest class. The question to be solved relates to the hereditary permanence of the several classes. What proportion of each class is descended from parents who belong to the same class, and what proportion is descended from parents who belong to each of the other classes? Do those persons who have honourably succeeded in life, and who are presumably, on the whole, the most valuable portion of our human stock, contribute on the aggregate their fair share of posterity to the next generation? If not, do they contribute more or less than their fair share, and in what degree? In other words, is the evolution of man in each particular country, favourably or injuriously affected by its special form of civilisation?

Enough is already known to satisfy us that the productiveness of both the extreme classes, the best and the worst, falls short of the average of the nation as a whole. Therefore, the most prolific class necessarily lies between the two extremes, but at what intermediate point does it lie? Taken altogether, on any reasonable principle, are the natural gifts of the most productive class, bodily, intellectual, and

moral, above or below the line of national mediocrity. If above that line, then the existing conditions are favourable to the improvement of the race. If they are below that line, they must work towards its degradation.

These very brief remarks can only serve to shadow out the problem ; it would require much more time than is at my disposal as well as much discussion, before it could be phrased in a way free from ambiguity, so its solution would clearly instruct us whether the conditions of life at any period in any given race were tending to raise or to depress its natural qualities.

The amount of the effect produced in particular instances by natural selection acting on the human race during a few successive generations, well deserve strict demographic investigation. In our present ignorance we may easily fall into great error by over-estimating its influence, for natural selection may act simultaneously under at least three different conditions that are as yet imperfectly distinguished. So far as the selected individuals are ordinary varieties of the race, in the sense that their qualities are merely blends of those of their ancestors, the average racial qualities will tend to reassert themselves in their descendants, and after the period of selection has come to an end the race will soon regress to its ancient character, like the once familiar pedigree wheat. Or again, the race may be of an essentially stable type, showing that a strong tendency exists in the descendants of those who had widely departed from the central and securest form to regress towards it.

In this case the result will be the same as before, in that a long continuance of natural selection will not permanently injure the race. Or, on the other hand, the national type may be unstable, tending to split into sub-types, or else to form what the breeders call "sports," each of which is the possible origin of a variety that may become firmly established in the future. Here the preservation of each valuable and fertile sub-type, through the effects of selection, is a new and firm step towards the improvement of the race as a whole. Think of the gain that has accrued to the musical world through the breed of one gifted individual, the famous Sebastian Bach.

Whatever other countries may or may not have lost, ours has certainly gained on more than one occasion by the infusion of the breed of selected sub-races, especially of that of the Protestant refugees from religious persecution on the continent.

It seems reasonable to look upon the Huguenots as men who, on the whole, had inborn qualities of a distinctive kind from the majority of their countrymen, and who may, therefore, be spoken of as a sub-type, that is to say, capable, when isolated, of continuing their race without its showing any strong tendency to revert to the form of the earlier type from which it was a well defined departure. It proved, also, that the cross breed between them and our ancestors was a singularly successful mixture. Consequently England has been largely indebted to the natural refinement and to the solid worth of the Huguenot breed, as

well as to the culture and technical knowledge that the Huguenots brought with them.

The frequency in history with which one race has supplanted another over wide geographical areas is one of the most striking in the evolution of mankind. The denizens of the world at the present day form a very different human stock to that which inhabited it a dozen generations ago, and to all appearance a no less difference will be found in our successors a dozen of generations hence. Partly it may be that new human varieties have come into permanent or only into temporary existence, like that most remarkable mixed race of the Normans many centuries ago, in whom, to use well known words of Mr. Freeman, the indomitable vigour of the Scandinavians, joined to the buoyant vivacity of the Gaul, produced the conquering and ruling race of Europe. But principally the change of which I spoke is due to great alterations in the proportions of those who belong to the old and well established types. The Negro now born in the United States has much the same natural faculties as his distant cousin who is born in Africa. The effect of his transplantation being ineffective in changing his nature, but very effective in increasing his numbers, in enlarging the range of his distribution, and in destroying native American races. There are now some 8,000,000 of Negroes in lands where not one of them existed 12 generations ago, and probably not one representative of the race which he displaced remains there; on the other hand, there has been no corresponding diminution of numbers in the parent home of the Negro. Precisely the same may be said of the European races who have during the same period swarmed over the temperate regions of the globe, forming the nuclei of many future nations.

It is impossible, even in the vaguest way, in the short time at my disposal, to give a just idea of the magnitude and variety of changes produced in the human stock by the political events of the last few generations, and it would be difficult to do so in any case in a manner that would not be likely to wound the patriotic susceptibilities of many or all of us. The natural temperaments and moral ideals of different races are various, and praise or blame cannot be applied at the discretion of one person without exciting remonstrance from others who take different views with perhaps equal justice. The birds and beasts assembled in conclave may try to pass a unanimous resolution with a large majority in favour of the natural duty of the mother to nurture and protect her offspring, but the cuckoo would musically protest. The Irish Celt may desire the extension of his race and the increase of its influence in the representative governments of England and America, but the wishes of his Anglo-Saxon or Teuton fellow-subjects may lie in the opposite direction, and so on indefinitely. My object now is merely to urge inquiries into the historical fact whether legislation, which has led to the substitution on a large scale of one race for another, has not often been the outcome of conflicting views into which the question of race hardly entered at all, and which were so nearly balanced that if the question of race had been properly introduced into the discussion the result might not have been different. The possibility of such being the

case cannot be doubted, and by itself affords strong reason for justly appraising the influence of race, and of hereafter including it at neither more nor less than its real value, among the considerations by which political action will be determined.

The importance to be attached to race is a question that deserves a far larger measure of exact investigation than it receives. We are exceedingly ignorant of the respective ranges of the natural and acquired faculties in different races, and there is far too great a tendency among writers to dogmatise wildly about them, some grossly magnifying, others as greatly minimising their several provinces. It seems within the power of demography to answer this question unambiguously, difficult as it is.

The recent attempts by many European nations to utilise Africa for their own purposes gives immediate and practical interest to inquiries that bear on the transplantation of races. They compel us to face the question as to what races should be politically aided to become hereafter the chief occupiers of that continent. The varieties of Negroes, Bantus, Arab half-breeds, and others who now inhabit Africa are very numerous, and they differ much from one another in their natural qualities. Some of them must be more suitable than others to thrive under that form of moderate civilisation which Europeans are likely to introduce into Africa by their enforcing justice and order, exciting a desire among the natives for material advantages for what might not be called luxuries, and making steady industry almost a condition of living at all. Such races would spread and displace the others by degrees. Or it may prove that the Negroes, one and all, will fail as much completely under the new conditions as they have failed under the old ones to submit to the needs of a superior civilisation to their own, in which case their races, numerous and prolific as they are, will in course of time be supplanted and replaced by their betters.

It seems scarcely possible as yet to assure ourselves as to the impossibility of any variety of white men to work, to thrive, and to continue their race in the broad regions of the tropics. We could not do so without better knowledge than we now possess of the different capacities of individuals to withstand their malarious and climatic influences. Much more care is taken to select appropriate varieties of plants and animals for plantation in foreign settlements, than to select appropriate types of men. Discrimination and foresight are shown in the one case, an indifference born of ignorance is shown in the other. One aspect of this question will be discussed in the course of our proceedings, and I await the result with keen interest and have no wish to attempt to forestall it. What I now desire to point out is the importance of a more exact examination and careful record than is now made of the physical qualities and hereditary antecedents of candidates for employment in tropical countries. We desire to judge how far medical forecast is justified by the result, and more especially to find out the conditions in youth that are prevalent among those whose health subsequently endures the change of climatic influence satisfactorily, and

conversely as regards those who fail. It is scarcely possible to properly conduct such an investigation respectively.

In conclusion I wish to emphasize the fact that the improvement of the natural gifts of future generations of the human race is largely, though indirectly, under our control. We may not be able to originate, but we can guide. The processes of evolution are in constant and spontaneous activity, some pushing towards the bad, some towards the good. Our part is to watch for opportunities to intervene by checking the former and giving free play to the latter. I wish to distinguish clearly between our power in this fundamental respect and that which we also possess of ameliorating education and hygiene. It is earnestly to be hoped that demographers will increasingly direct their inquiries into historical facts, with the view of estimating the possible effects of reasonable political action in the future, in gradually raising the present miserably low standard of the human race to one in which the Utopias in the dreamland of philanthropists may become practical possibilities.



### Mortality in relation to Occupation.

BY

WILLIAM OGLE, M.D., F.R.C.P.



Of all the various influences that tend to produce differences of mortality in the different parts of a given country, there is none so potent as the character of the prevailing occupations.

Favourable or unfavourable climatic and geographical conditions, activity or inactivity on the part of the sanitary authorities to provide wholesome water, to remove filth, and to prevent overcrowding, contribute doubtlessly in no small measure to reduce the death-rate in one town or to raise it in another; but all differences, so produced, are insignificant, when compared with the differences shown by the death-rates in different industries.

There are some occupations of so deadly a character, that life insurance companies will have nothing to say to them, refusing to insure the life of a man engaged in them on any terms whatsoever, while, on the other hand, there are professions, or at any rate, there is one profession, in which the chances of longevity are so high, that an insurance company which is lucky enough to number a considerable proportion of those so engaged among its clients, advertises the fact to show the general public upon what a safe basis its business is founded.

The comparative mortality of the persons employed in different industrial occupations is, then, a subject than which none more appropriate could be found for discussion in a Congress of Hygiene and Demography. Nor could any more appropriate place be found for its discussion than the country in which we are now assembled. For in

## DISCUSSION.

**Dr. Singer** (Munich), thought that the variations of mortality of the child in relation to age of mother, as shown by M. Körösi, might be in immediate connexion with the fact shown by Westergaard, that marriages take place at comparatively early age amongst the labouring classes and at a more advanced age amongst those of better social position.

**Dr. Leffingwell** called attention to the curious fact that during the last 50 years in England, the proportion of boys born had slowly decreased. When the first observations were made half a century ago, the proportion of boys to girls was about as 105 to 100; 20 years later it was about 104 to 100, and it now averages less than 104, and seems approaching 103. This phenomenon is coincident to some extent with the fall in the marriage rate; and it would be interesting to know if the same sociological phenomenon is occurring in other parts of Europe.

**The President** was not aware that this interesting question had ever been discussed in England before on an adequate statistical basis, except so far as the work of Dr. Matthews Duncan covered the same ground. That gentleman found that the vitality of the children at a maternity hospital was greater when the mother was of about 24 years of age. It would be desirable if M. Körösi could assure us that there was no great difference in the general social position of those classes in Budapest who made early marriages and of those who made late ones. It seemed to him that a very good way of throwing light upon the subject of the paper would be to investigate carefully the records of stud books whether of highly bred horses, cattle, or dogs. It would be comparatively easy to ascertain in these cases what the effect was of mating animals of different ages. All the necessary facts already exist in print for a conclusive investigation in these cases.

**Dr. G. B. Longstaff** stated that another series of observations were required which should properly precede those of M. Körösi.

In order to work out mathematically the exact direct influence of fluctuations in the marriage rate upon the birth-rate it was essential to know for each country and for the various social classes the normal birth-rate in each successive year after marriage, distinguishing children born alive. The births in each year were due to marriages in many preceding years, and we did not know how many resulted from marriages that had taken place in the immediately preceding year.

He hoped that M. Körösi would continue his most interesting researches.

**Sir R. Rawson** considered that M. Körösi's paper was one of the most valuable and suggestive that had been brought before this Division, and, combined with the proposals of Dr. Longstaff and others, it presented a subject that might be taken up with great advantage by the International Statistical Institute.

**Dr. Körösi** in reply, said:—It has been suggested to include also positive figures, to which I reply that these figures will be found in a table to be annexed to the paper. Then, it has been asked if there is no influence exerted by social position; and if no change in fertility attends difference in the ages of the parents and in relation to the first year of marriage. I can answer these three questions at once, but must first refer to the reform I introduced in the statistics of natality of Budapest. Demography being divided into two parts, natality and mortality, it is