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*Jⁿ Ireland with the
author's kind regards.*

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ON MARRIAGES OF CONSANGUINITY.

By GILBERT W. CHILD, M.D. OXON, M.R.C.P.

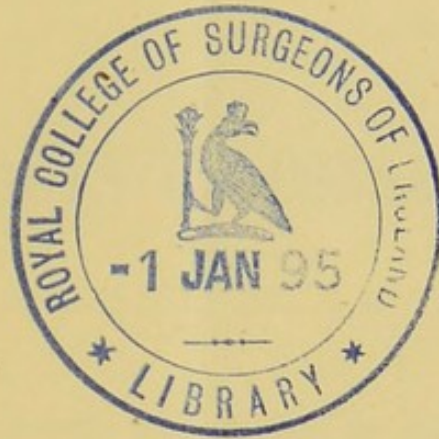
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TO THE WARNEFORD LUNATIC ASYLUM.

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ON THE THEORY OF CONJUGATE FUNCTIONS

BY
SIR WILLIAM BROWNE RUSSELL

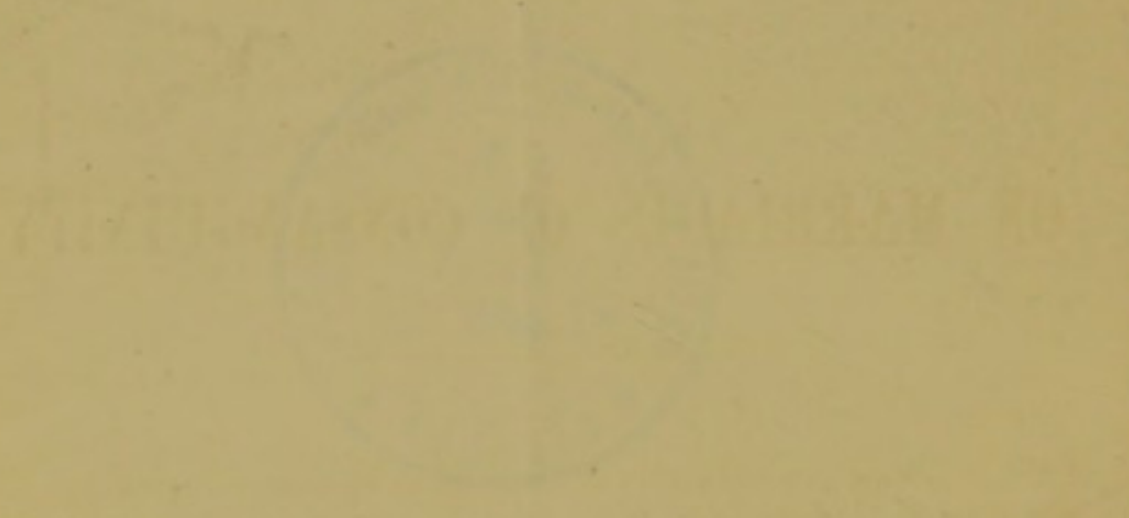
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ON MARRIAGES OF CONSANGUINITY.

It is in a time pre-eminently distinguished for scientific progress, like the present, that we have most need to review the reasoning upon which accepted conclusions are based, lest in using the latter as grounds upon which to advance our knowledge, we should be but misleading ourselves and others. The history of science, and, most of all, of medical and hygienic science, abounds with instances in which progress has been delayed by mistaking hypothesis for fact, and building a theory upon an unwarranted assumption. When something of this kind has been done, when an opinion, however ill-founded, has once become accredited or orthodox, it is wont to form part, as it were, of the very minds of those to whom it has been taught, and a stronghold of prejudice is thus built up which it is most difficult to overthrow, but which must be overthrown before men's minds are in a condition fairly to estimate the evidence in favour of any other view of the subject-matter.

This reflection is forcibly suggested by a consideration of the prevailing opinions upon the subject which gives its title to the present paper, "Marriages of Consanguinity," together with the grounds which appear to have given rise to it.

In writings* upon medical and hygienic subjects we constantly find the marriages of blood relations enumerated, as a matter of course, among the causes of degeneration of race, sterility, insanity, scrofula, &c., exactly as if it had been ascertained by the most careful research that they really are so; and the results of breeding in-and-in, as it is called, in the case of domesticated animals, are referred to in proof of this, as if the two cases were really analogous. In the class of writings to which I refer, it is assumed that such marriages are contrary to some "law of nature," and that the evils charged upon them occur in the way of natural consequence; but no attempt has been made, so far as I am aware, to explain what this mysterious law of nature is, what are the limits within which it acts, or what is its *modus operandi*. We are constantly, in letters and articles in medical periodicals, threatened with the grievous consequences of the

* See for instances, *Lancet*, July 7th, 1860; *Medical Times*, April 27th, 1861.

breach of this law, and reminded that it is the duty of physicians to set their faces against such marriages on all occasions, and sometimes edified with some statistics by way of warning from example; but the same fault of loose reasoning runs through all the writing on the subject which has come under my observation.

In the cursory and almost incidental allusions to this matter of which I have hitherto spoken, contained as they are in letters, papers on general hygiene, and other allied subjects in medical periodicals, it is not fair certainly to look for any systematic account of it. Such papers are, however, useful for my present purpose, inasmuch as they serve to show the general state of opinion upon the subject among those under whose notice it comes only in the general course of their professional reading and experience. It is to those who write specially upon it that we must go for a more particular account of the question, and I shall therefore, in the course of this paper, refer especially to an article upon marriages of consanguinity by an American physician, Dr. Bemiss, of Louisville, which was reprinted in the 'Journal of Psychological Medicine' for April, 1857, p. 368.

Before proceeding further, however, it will be well to state clearly what are the objects which I propose in writing the present paper. I desire, then, not so much to give a positive opinion as to the hygienic effects of marriages of consanguinity, as to examine the facts which are known about such marriages, and to endeavour to show clearly what is the value of these facts, how far they can be explained by known laws, and whether when this is done any residue will remain which requires to be accounted for by the assumption of some special law of nature which these marriages transgress; and, finally, whether an impartial examination of facts, such as is now proposed, will be found to justify the unqualified condemnation of such marriages commonly pronounced by medical men.

I. It is worth while, in the first place, before proceeding to other considerations which more immediately concern us, to notice the account given us of some marriages of the kind under discussion in the historical books of the Old Testament, and I may remark that the question here is a purely historical one, and touches in no way upon theological grounds. We find there that Abraham's wife was his half-sister;* that his son Isaac married his first cousin, once removed, and his grandson Jacob again his first cousin. Certainly, if the ordinary opinion of the effects of close intermarriage were correct, the twelve patriarchs, of whom several were the offspring of the third successive generation of such marriages—the first of them far closer than would be possible now—ought to have reached a very considerable degree of degeneracy; yet surely he would be a bold man who should assert his belief that such was really the case, and indeed we have every reason to believe the contrary, for we find them in fourteen generations multiplying into a nation of six hundred thousand fighting men, or, on a fair computation, some ten million persons. Dr. Bemiss, in the paper above referred to, notices these cases as apparently antagonistic to the notion of degeneration of race as resulting from close intermarriage, and proposes two methods of evading the difficulty—viz.,

* See Genesis, ch. xx. v. 12; xxiv. v. 15; xxix.

either by supposing that, "as the Jews were a people chosen for an especial purpose, they existed under abnormal conditions;" or by presuming that the whole organization of man in the patriarchal times was so superior to our own, that the natural law of degeneration was inoperative in their case, or operated only to the extent of gradually diminishing the term of men's lives down to that at which it is now fixed. To such hypotheses as these, the best answer will be found in a remark upon Berkeley's system of idealism, attributed to Hume: "It admits," he said, "of no refutation, and produces no conviction." So it is with these hypotheses. They cannot, indeed, be disproved; but it is surely contrary to all sound philosophy thus to assume an unknown and unaccountable cause of a phenomenon, having already assumed the phenomenon itself in order to afford support to a theory.

Again, the law of Moses, which is on all hands admitted to have provided with special care for the physical well-being of the Jewish people,* contained a provision that all heiresses should marry within the tribe to which they themselves belonged. This was a powerful, though indirect, incentive to the marriage of blood relations; and it is noticeable that in the very case which gave occasion to the enactment of the law,† four heiresses are mentioned as all marrying first cousins. Had such marriages been naturally productive of the ill effects commonly attributed to them, it is hardly conceivable that this law would have been enacted at all.

But to this part of the subject I do not wish to attach much importance.

II. I proceed, in the next place, to examine the supposed analogy between marriages of consanguinity in mankind and the breeding in-and-in of the domesticated animals; and here I believe that I shall be able to show

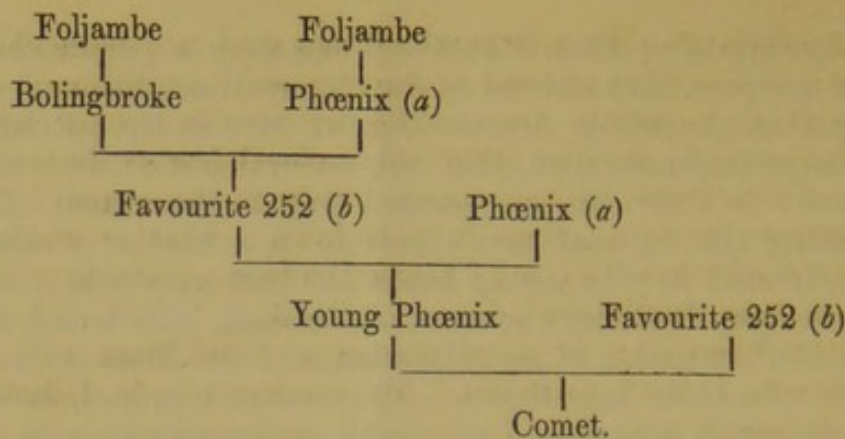
- (1.) That there is no real analogy between the two cases.
- (2.) That the results of in-and-in breeding are not so disastrous as they are commonly supposed to be.
- (3.) That its results are such that we may learn from them in what cases the marriages of blood-relations are likely to produce ill effects, and in what they are not.

Perhaps the best way of illustrating this portion of my subject will be to lay before my readers the pedigrees of some well-known animals, and I will choose short-horned cattle as being, probably (with race-horses, to which I shall also allude), the kind of domesticated animals which have been bred with the greatest care, and whose pedigrees have been most accurately kept. Any one acquainted merely with the current opinion of the day, which takes exception in general terms to close breeding, will, I think, be astonished, as I was, when, by examining the 'Herd-book' for himself, he learns what close breeding really means. I will only give two or three examples; but any one who cares to do so can multiply them almost indefinitely for himself by the help of the above work.‡ "Comet," one of the most celebrated of the earlier bred short-horned bulls, and the progenitor of many of the best existing stock, was bred as follows:

* Numbers, ch. xxxvi. ver. 5.

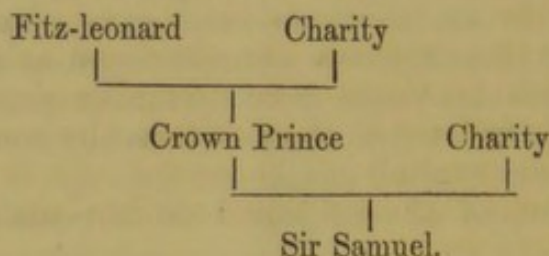
† Ibid., ver. 10.

‡ See Coates's Herd-book, vols. I. ii. iii. (Bulls) p. 25, ed. 1846.



The letters *a* and *b* are appended to show where the same animal recurs.

Again, a celebrated cow, called* "Barmton," has a pedigree in which the same bull, "Favourite," 252, appears as the sire of four successive generations. Finally, to give a more modern instance, a bull, called† "Sir Samuel," bred as lately as 1855, has the following pedigree :—



Such instances might, I think, almost suffice for my purpose, but I have not been satisfied with merely taking them from the published pedigrees in the 'Herd-book,' but have taken advantage of an opportunity which offered itself of discussing the matter personally with one of the most intelligent and successful breeders of short-horned cattle in the kingdom. This gentleman, I should add, is himself strongly opposed to close breeding, his evidence therefore, so far as it tells in its favour, has the more value, as being the admission of an opponent, rather than the *ex-parte* statement of an advocate. He informs me that there is a well-known breeder of the present day who has had only three distinct crosses in the last twenty years, the results of which appear to be as follows :—

- (1.) He still has very finely-formed cattle.
- (2.) His bulls are highly prized as crosses by breeders having a different stock.
- (3.) His herd generally are good grazers and carry flesh well, and the animals are individually healthy, but there appears to be a diminution of fertility, and this seems to be on the side of the males chiefly.

In another case, a breeder had succeeded some years ago, chiefly by means of land affording very luxuriant feed, in rearing one or two animals distinguished especially by their large size. He, too, bred in-and-in, and though the progeny did not appear to deteriorate in other respects, they lost value by becoming less perfect in shape, while still

* *Ibid.*, vols. i. ii. iii. (Cows) p. 36, ed. 1847.

† *Ibid.*, vol. xii. p. 216, 1858.

enormously large. My informant further told me, that in the breeding of stock the degrees of consanguinity which would be the closest possible among mankind, are simply not looked upon as in-and-in breeding at all.* Similar instances of close breeding to the above may be found in the case of race-horses, but it is unnecessary for my present purpose to bring them forward here. I may remark, however, that the celebrated "Flying Childers" was, on the side of his dam, at any rate, very closely bred.

Before proceeding to draw any conclusions from this portion of my subject, I wish to remind my readers of the following considerations :—

(1.) That man is, in the strictest sense of the word, physiologically an animal, and in no part of his nature is he more strictly an animal than in the function of reproduction, and that, consequently, conclusions derived from the study of this function in animals may, due regard being had to difference of circumstances, be properly applied to man.

(2.) That every individual of a species has some peculiarities, and that every individual peculiarity is, so far, a departure from the ideal standard of the race.

(3.) That since like produces like, the closer animals are bred the more will individual peculiarities be strengthened and developed.

(4.) That such individual peculiarities, however harmless in the first instance, will generally, if increased and developed beyond a certain limit, become so great a departure from the original type as to constitute a positive defect.

Now bearing in mind these obvious and generally admitted principles, we may, I think, from the above evidence, draw the following conclusions :—

(1.) That close breeding is not, *per se*, contrary to any "law of nature."

(2.) That, as might be expected *à priori*, it has a tendency to intensify individual peculiarities, and where these are morbidly developed, may then lead to degeneration of race.

(3.) That unless parents are themselves diseased, close breeding does not tend to develop disease in their progeny.

(4.) That where very close and continued through many generations, close breeding has a tendency to diminish fertility, and seems to do so by lessening the generative power of the male sex.

It is, perhaps, worthy of remark, that writers upon the subject who have spoken of close breeding as contrary to nature, have overlooked the fact, that while proof is necessarily wanting of what happens in this matter to animals in the wild state, there is at least a probability that close breeding takes place to some extent in many of the gregarious tribes. In any application of the analogy of breeding in the lower animals to consanguineous marriages among mankind, we must bear in mind—

(a) That the risk of ill consequence in the former, as compared with the latter, is immensely lessened by the power we possess of selecting healthy stock to breed from ; but

* See Observations on Breeding for the Turf, &c., by Nicolas Hanckey Smith. London, 1825 ; also, Stud-book, for pedigrees.

(b) The degree of in-and-in breeding frequently practised in the case of animals, is so much closer than among mankind as to destroy all analogy between the two cases. No breeder of cattle would speak of the offspring of a cow—say with her sire's brother—as closely bred at all.

III. I pass now in my investigation from the case of animals to that of man, but in doing so, it is worth while to try and estimate the relative value of the two methods for the purpose in hand, when I think it will appear that the theory of the matter may be best learned from the consideration of animals, but that the principles so acquired may require to be checked in their application by reference to the experience gained by observations upon mankind. In the case of such animals as are carefully bred, we are able to govern their circumstances much more absolutely than we can those of men; we know the birth, parentage, and constitution of the parents, can avoid all kinds of cachexia, and can correct the defects of the one parent by means of opposite good qualities in the other; indeed, it is the power of arranging these details well which makes the difference between the skilful and unskilful breeder, and which brings success to the one and failure upon the other; and when the offspring is produced, we are able to place it in the circumstances most favourable to its future development and improvement. Moreover, the market value of good animals with pedigrees is such as to induce a large number of intelligent men to employ their time and capital in the business of breeding them. Thus in our breeds of horses and cattle, and in their pedigrees, we have a series of careful experiments carefully recorded, and such, therefore, as ought to give to conclusions legitimately derived from them, a high degree of scientific value; on the other hand, it is hardly possible to exaggerate the difficulties in the way of arriving at any satisfactory results where mankind are the subject of investigation. Isolated instances are utterly valueless, experiment is manifestly impossible, and the only method remaining open to us is that of a careful and laborious collection of statistics. Statistics, however, on such a point as this, are very difficult to collect, and very worthless when collected.

Suppose a man to obtain, as Dr. Bemiss, in the paper above referred to, has done, the particulars of some 53 cases of intermarriage of cousins, and to argue from the condition of the offspring of these; what is the value of his conclusions from such data? To say nothing of the actual smallness of the number of cases, and of the doubtful nature of the ill effects shown to have followed in some of them, of which I shall have to speak again, let us only consider the difficulty or rather the impossibility of arriving at any satisfactory knowledge of the previous history of the parents in all these cases. How many family histories and secrets have to be unravelled which it is the interest or supposed interest of every one concerned to hide and suppress, or which, when related, as they sometimes are, to the medical man, are coloured and garbled intentionally or otherwise by the imperfect memory or keenly interested feelings of the narrator? How often, again, does a taint of syphilis or insanity exist in a family of which many of its members are kept in entire ignorance? These are but a few of the innumer-

able obstacles which stand in the way of any one trying to investigate a matter of this kind by the method of statistics in the case of human beings, for even should we accept the somewhat questionable theory that errors in statistics correct themselves, it could hardly help us out in a case like this, where the inducements to suppression and misrepresentation are such as to leave the errors all on one side. That Dr. Bemiss has not altogether overlooked the difficulties which beset his task, is evident from the following passage, which occurs in the early part of his paper. He says:

“Reference may be found to the unfortunate influence of marriages of consanguinity upon offspring in various medical works of the previous and present century, but *no facts* are adduced to support the conclusions of the authors, nor have any statistics illustrating their effects been presented to the profession, so far as I am aware, except some facts included in Dr. Howe’s valuable reports on idiocy.”* [The italics are my own.]

After this statement, I may fairly take Dr. Bemiss’ paper as an example of the grounds upon which the marriages of which he speaks are to be condemned, and should I be able to show that even this does not represent such marriages as so mischievous in their effects as they are commonly supposed to be, I shall have succeeded, to some extent at least, in the destructive as well as the constructive portion of my argument.

Dr. Bemiss’ statistics may be divided into two sets—viz., those which concern thirty-four marriages the particulars of which were collected by himself, and seventeen others mentioned in Dr. Howe’s report. Of these the results are as follows, looking first at Dr. Bemiss’ cases:

28 between first cousins	7 sterile.
6 between second cousins	27 fruitful.
—	—
34	34†

Total number of children 192, giving an average of 5·6 to each marriage, and of 7·1 to each fertile marriage.

Of 192 children, 58 died in early life, and the remaining 134 reached maturity.

Causes of the early deaths: 15 consumption, 8 spasmodic diseases, 1 hydrocephalus.

Of the 134 adults, 46 are returned as “healthy;” 32 “deteriorated, but without absolute indications of disease;” 9 are unaccounted for; and 47 stated to be diseased.

The following is the classification of the cases of disease: 23 were scrofulous, 4 epileptic, 2 insane, 2 mute, 4 idiotic, 2 blind, 2 deformed, 5 albinos, 6 affected with defective vision, 1 choreic; giving a total of 51; some, therefore, must have suffered from two or more of the above diseases.

* An article in the *Lancet* of Dec. 22nd, 1860, upon the same subject, quotes the facts from Dr. Bemiss’ paper, but adds no others of more recent date. The only paper of any kind I have yet seen written from the same point of view as my own, is a short letter in answer to the above article, published also in the *Lancet* of Feb. 22nd, 1861, by Mr. Anderson Smith.

† The average of births to each marriage in England is, or lately was, about 4·51 to 1. See article Population in the *Encyclopædia Britannica*.

Upon examining these figures, no one can fail to be struck by the fact that while the fertility of the marriages is great, the proportion of deaths occurring in the offspring before "maturity" is below that stated by Dr. West as the average mortality under the age of five years. It is to be noted also that, as shown in the earlier part of this paper, the first, if not the only indication of degeneration as a result of close breeding among animals, is a diminution of fertility.

The number returned as scrofulous or dying from consumption, is certainly large, but is partly accounted for by the fact mentioned by Dr. Bemiss that in three of the families there was reason to believe that a scrofulous taint already existed, and that these alone supply sixteen of the cases. Again, the phrase "deteriorated, but without absolute indications of disease," seems to imply that the writer has dealt out rather hard measure to the objects of his investigation, more especially when considered in relation to the very slight ailments which are enumerated amongst the cases of disease; such as albinism, defective vision, and chorea, which together form nearly one-fourth of the whole number. Albinism is rather a peculiarity than a disease, shortsight is too common and too slight a defect to be reckoned a mark of degeneration, and chorea is in most cases a transient and curable complaint. All three, moreover, are remarkable for their hereditary character; but Dr. Bemiss does not mention the previous condition of the families in these particulars.

A fair consideration of these points, and a consequent re-construction of the statistics, will leave the results pretty much as follows:

Of fair average health	86
Unaccounted for	9
Diseased	39
	<hr style="width: 10%; margin: 0 auto;"/>
	134

Thus giving us a total of 39 diseased persons in 134, or in round numbers, 2 in every 5, and this when there is an admittedly unusual amount of scrofula hereditary in some of the families.

I pass on to Dr. Howe's 17 cases, with which Dr. Bemiss fortifies his opinion; the particulars are as follows:

17 marriages produced 95 children, i.e., 5.58 each.
Of 95 children,
37 were of tolerable health.
1 was deaf.
1 was a dwarf.
12 were scrofulous and puny.
44 were idiots.
—
Total 95

Of these it may be enough to say that they manifestly prove too much. To say that all but half the children of the marriages of cousins are idiotic, is simply to say that the cases from which the statistics were drawn up are not fair cases. Marriages of cousins are not so infrequent, either in this country or elsewhere, that such monstrous results, if they really occur, could escape observation. In this respect, too, the two sets of statistics contrast remarkably with

each other; for while we have in Dr. Bemiss' 192 cases, but 4 idiots, or rather more than 2 per cent., in Dr. Howe's 95 there appear 44 idiots, or more than 46 per cent. If the idiocy in both cases is due to the consanguinity of the parents, why are the results so disproportionate?

I have thus far endeavoured to show that the facts with which we are acquainted bearing upon the subject of the effects of consanguineous marriages are not of a character to afford support to the general opinion that such marriages are in themselves contrary to some law of nature, and calculated to lead to degeneration of race. I will proceed now to explain in what way I conceive that such an opinion may have arisen, and under what circumstances a superficial view of facts may have tended to support it.

It should be remembered, then, that all such marriages as those under discussion were and are strictly prohibited in the Church of Rome. This prohibition was first removed in England by the Marriage Act of 1540 in the reign of Henry VIII. It is natural, therefore, that many people at the time should have looked upon this removal of restrictions as a somewhat questionable concession to human weakness, and upon the marriages made in consequence of it, as merely not illegal, rather than in themselves unobjectionable; just as, should the Marriage Law Amendment Bill pass into law, there can be no doubt that many would now look upon marriage with a sister-in-law as a very questionable proceeding in a social and religious point of view, although they might possibly be unable to impugn its strict legality. Under such circumstances, nothing is more natural, especially in an age when men were much more open to theological than physiological considerations, than that they should attribute any ill effects which might seem to follow from such unions to the special intervention of Providence. Such ill effects would be marked and noticed whenever they occurred, and would soon become proverbial; and when, in a later age, men began to pay more attention to the breeding of animals and found that excessively close breeding seemed in some cases to produce similar results, they would be led to establish a false analogy between the two cases, and to infer the existence of a law of nature which close breeding and consanguineous marriages equally infringed.

Something like this I conceive to be the true history of the common opinion upon this subject; an opinion which, as far as I can discover, rests on no satisfactory record of observed facts.

It remains now only to state what I believe to be the natural results of the marriage of blood relations, and to show under what conditions it is likely to be mischievous, and under what harmless, or even beneficial; and this I shall best do by supposing a case by way of example. Let us suppose a grandfather, A, who is affected with some form of scrofula. The scrofulous diathesis descends to his two sons, B and C. B has two sons, D and E. C has a daughter, F, the latter of course first cousin to D and E. D marries into another family, unconnected in blood, and free from any scrofulous taint; E marries his cousin, F. In this case, clearly, the chance of D's children being healthy is infinitely greater than that of E's; but the reason is, not because E married his cousin, but because he married one in whom the same cachexia was latent, as in

himself, and latent, too, in a constitution, probably, in many respects the counterpart of his own. Here, too, is a case in which the analogy of the lower animals does in its degree apply; for, just as breeders expect and very often succeed, by close interbreeding, in reproducing a great variety of the peculiarities of a single individual, so in the case I have supposed we shall be likely to get, not only the tendency to the same disease, but likewise the same general constitution of mind and body—the same or similar idiosyncrasies.

Let us now suppose, on the other hand, the grandfather and his two sons, and their respective wives, to have been free from any such taint of cachexia, and that we have the two grandsons, D and E, and the granddaughter and cousin, F, all sharing this normal and healthy constitution. Now, if D marry into a scrofulous family, and if E, as before, marry his first cousin, F, there can, I think, be no doubt that the chances of healthy offspring will be almost the reverse of what they were in the former case. There will be every reason to expect the children of the cousins to be healthy, though they will no doubt present family peculiarities strongly developed; while there will be great danger of scrofula appearing in the offspring of D, albeit he has not married a blood relation. Still the risk run by D, in the second case, is much less than that incurred by the cousins in the first.

These two cases, as I have put them, are no doubt strongly marked; and we should hardly expect to meet with the exact counterpart of either of them in actual practice; but to any one familiar with disease, and observant of family resemblances, a variety of modifications of them will at once occur, and cases more or less like them are met with every day. They serve to illustrate the following propositions, with which I conclude my paper.

I. That the marriages of blood relations have no tendency, *per se*, to produce degeneration of race.

II. That they have a tendency to strengthen and develope in the offspring, individual peculiarities of the parents, both mental and physical, whether morbid or otherwise; and therefore in practice they often do induce degeneration.

III. That there are some cases in which it would be actually safer (as far as the chance of healthy offspring is concerned) for a man to marry a blood relation, than a woman not so related with whose family history he was unacquainted.

IV. That by means of a proper regard to known facts relating to hereditary transmission, a physician may predict with great accuracy the probable result, as regards the health of the offspring, of a marriage of blood relations in any particular case, if only he be sufficiently acquainted with the hygienic history of the family.

Hence in those cases in which a physician is consulted on such a matter, it is his duty, not, as some have asserted, to save himself all trouble by denouncing the match, but to discover as far as possible the conditions of the particular case, and to give his opinion according to the results of his inquiry.