

Correspondence.

"Audi alteram partem."

MEDICAL DOCTRINES OF HEREDITY.

To the Editors of THE LANCET.

SIRS,—Two remarkable letters under the above heading have appeared in your recent issues. One is by Dr. G. Archdall Reid (July 4th, p. 56) who asserts that evolution is caused by injurious agents eliminating the unfit, and the other is by Dr. J. Wigglesworth (July 18th, p. 186) who denies the arguments and conclusions of Dr. Reid. As both cannot be right one or both must be wrong.

Dr. Reid begins by stating that the theory of the transmission of acquired traits is now generally abandoned, but that a great many still believe (of whom he is not one) that the effects of poisons and privations on the parents affect the future offspring by their effects on the germ cells through the medium of the blood. The argument is used that the germ cells, like other body cells, must be injured by a poison such as lead, for example, and thus since the germ cells are injured the future offspring must be injured in a like manner. Now it must be noted that Dr. Reid does not deny that the germ cells may be injured by a poison or any other injurious agent; what he does assert is that it is difficult to believe that the descendants of such damaged germ cells should still continue to perpetuate the injury done long after the injurious agency has ceased to act; for if this were so in cells other than germ cells then there could be no true recovery from illness, and if it is not so in the body cells then it may be asked, why should the injury done long ago be perpetuated in the descendants of the germ cells? Further, Dr. Reid points out that asexual reproduction results in exact copies of the parent, whereas the offspring of sexual reproduction always differ more or less from the parents and from one another; that is, sexual reproduction, however it brings it about, is the cause of variation, and thus it is that many biologists have concluded that external agencies have little or no influence on offspring subsequently produced. Of course, as Dr. Reid has pointed out elsewhere, variation must in the last analysis be the result of acquired traits, but that is not the question involved here. Again, if acquired traits are transmitted and thus become variations in the second generation from the parents, then certainly all acquired traits are not transmitted—e.g., the wrinkles on the brow of an old man who has become a father or the distorted foot of a Chinese woman. With reference to alcohol and toxins, if injury is caused to the future offspring by the action of these agents on the germ cells, then this degeneracy, variation, or inborn trait is caused by an external agent circulating in the blood, and as variations are transmissible to future generations, and as these variations can either by natural or artificial selection be rendered stable in the race, it is thus that new species are evolved and the unfit individuals are eliminated, for if the offspring are injured through the germ cells by poisons circulating in the parents' blood, and as this would be a variation, and as this variation would accumulate in future generations, it follows that these future generations would become more and more degenerate in the case of alcohol so as at last to lead to extinction. If, however, these injurious agents, whatever their effect may be on the germ cells, do not affect the future offspring, and as they tend to eliminate the unfit—for example, in malaria, phthisis, alcohol, &c.—the result will be that the race will become more and more resistant to them, and this is simply natural selection. Man has undergone evolution, as is evidenced by his size, colour, and hair, but he is still evolving with regard to disease and especially so with regard to alcohol. Samuelson in his "History of Drink" has pointed out that races that have had a prolonged acquaintance with alcohol are the soberest on earth—e.g., Jews, Chinese, South Europeans, West Africans, &c.—and that this sobriety is in exact proportion to the past experience of the alcohol. The same is to be said of disease; each race is resistant to disease in exact proportion to its past sufferings from it—e.g., phthisis in Great Britain, malaria in West Africa, &c. Races that have had no past acquaintance with alcohol or infectious

disease are quickly eliminated when brought into contact with them—e.g., the South Sea Islanders with phthisis and Red Indians with regard to drink. I trust this is a fair presentation of Dr. Reid's arguments—at least I believe it is as fair as could be achieved with the limited space I have allowed myself.

Dr. Wigglesworth, in his letter to you, represents Dr. Reid as asserting that the germ plasm is incapable of receiving permanent injury by the agency of poisons circulating in the blood. For this statement of Dr. Wigglesworth there is not one iota of justification. What Dr. Reid did say was, "Even if the germ cells are injured it does not follow that this injury will be perpetuated in their *very* remote descendants—i.e., in the *body* cells of the child—at a time long after the injurious agency has ceased to act." Dr. Wigglesworth concedes that the main cause of variation is bisexual reproduction but holds that there *may* be other causes. Certainly; other causes have been held, such as the accumulation and transmission of acquired traits. In support of this theory can Dr. Wigglesworth, or any other, advance one indisputable instance of the transmission of an acquired trait? Of course, it must be understood that we are at present dealing with multicellular organisms, for it is possible that in the unicellular world natural selection is by the accumulation and transmission of acquired traits, for example, the conversion of small-pox into vaccinia by passing the virus through the cow. It is not necessary to suppose, as Dr. Wigglesworth seems to think others do, "that the germ plasm is wholly uninfluenced by being placed in an adverse nutritional environment, such as must exist when alcohol or other poisons are circulating in the blood," nor yet that the germ cells "should be exempt from the operation of biological laws" (whatever they are), "and that the nature of the nutrient medium by which they live is of no consequence to them"; nor, again, "that recuperation in damaged germ cells must inevitably occur"; nor that it is a matter of indifference as regards the well-being of the offspring whether these are born of dissolute parents whose tissues are soaked in alcohol or of these same parents whilst living physiologically correct lives. Dr. Wigglesworth comes to closer grips with the question and confines his arguments to the action of alcohol as observed in the individual and in the race. He proceeds to refer to statistics of his own, tending to prove that parental drinking is a cause of filial drinking as well as of filial insanity. In a large number of those who are victims of nervous complaints, such as insanity, he finds a history of drinking in the parents. Exactly so; and in another large number there is no history of parental drinking; in another where the parents have been drunken there is no insanity. Does this prove anything? If alcohol can damage the adult brain—and no one I think will question the statement—is it not as likely to damage the growing brain of the embryo? Here, however, Dr. Wigglesworth does not attempt to distinguish between variation and an acquired character. That the germ cells may be damaged by parental drinking is one thing but it is quite distinct from the damage done to the growing embryo by the habits of a drunken mother during her pregnancy. Unless Dr. Wigglesworth does this his statistics are worthless or at least cannot be relied on. If the injury is done during the growth of the embryo it is certainly not a problem in heredity. If, however, the germ cell is damaged by the alcohol and the offspring developed from these cells are more drunken than they otherwise would have been, or mentally weaker than they otherwise would have been, then it is a variation or inborn trait, and as these tend when transmitted the race would tend to become more and more drunken or more and more insane and thus tend to extinction. No doubt it would be difficult if not absolutely impossible to separate the acquired part of the alcoholic diathesis from the inborn, for the child can have no more recollection of the parent's gratification with alcohol than it can of his gratification with green cheese. If, however, the problem seems insoluble when applied to the individual it is not so when applied to the race. The Chinese, for instance, are one of the most sober races on the face of the earth; 3000 years ago they were one of the most drunken. Evolution has proceeded here in making them more tolerant of the action of alcohol or of avoiding it or both. Certainly it has not tended to make them more drunken nor insane. Races that have had no acquaintance with alcohol until recently are the most drunken on the earth and surely here filial drinking cannot be charged to the parents. Dr. Wigglesworth proceeds, however, to say

that the case of alcohol is not parallel with disease, for in disease, he says, it is the younger units who are wiped out. Is this so with syphilis? He also says that alcohol comparatively seldom destroys the individual until after the procreative faculty has been more or less exercised. This certainly must happen very, very often, but perhaps not so often as Dr. Wiglesworth thinks. Even if the parent escapes, are we so sure that the child will escape also? It is surely notorious that men and women as a rule are disinclined to wed those who have become drunken. Notice must also be taken of the vast numbers of children born of drunken parents—and who, presumably, would have the inborn desire for indulgence in alcohol—who die an early death because of neglect and injury. Here nature is at work eliminating the unfit even if she has missed the parent. Dr. Wiglesworth does not believe that there is sufficient historical evidence to suggest that every member of any community has been so completely saturated with alcohol as to preclude any germ plasms existing untouched by this poison; can he name one race now sober which was not at one time very drunken? Or can he name one which had no acquaintance with alcohol once not now drunken? But what does his question amount to? Unless he can prove that the future offspring derived from germ plasm once damaged by alcohol is also damaged it has no bearing on the question of the evolution against drink. Nevertheless, as man differs immensely in his desire for alcohol there must also have been a difference, however slight, in the beginning, else the whole race would have been extinguished. Similarly, there must have been a difference in the beginning in man's resisting power to malaria, else all would have been exterminated in the regions the haunts of malaria. It is only those who varied favourably who survived and continued the race. This is as true with regard to alcohol as it is to malaria and to every zymotic disease.

One word more. Many are hoping for a time when alcohol may be banished from the face of the earth. That day will never come, for as there is as great a tendency to atavism as there is to evolution there will always be numbers who will drink simply for the pleasure of deep indulgence and of getting drunk. Nature is eliminating the great numbers who have the craving for getting drunk slowly and surely, only leaving those to survive who can drink without the desire to get drunk, such as the Jews of to-day. She could be helped, but the day is not yet.

I am, Sirs, yours faithfully,

July 19th, 1903

C. R. NIVEN.

NOT "THE USUAL BOND."

To the Editors of THE LANCET.

SIRS,—The attention of the council of the Medical Defence Union has lately been called to a case in which house surgeons and house physicians of a provincial hospital have been required by the board to sign a bond to prevent and to prohibit them from practising in the district in which the hospital is situated at the termination of their resident appointments and at any future time. I am directed by the council to ask you to allow them to warn candidates for such appointments against signing such bonds which cannot be enforced legally but which morally may prevent them from advancing their career in a district in which they might desire later to settle down. The method adopted is contrary to all ethical principles as it makes a condition which may prevent men well qualified from holding the appointments; such appointments should be open to the best candidates. It is impossible to believe that in case of breach of this bond the moneys of the hospital would be spent in obtaining, or attempting to obtain, an injunction and no medical man should bind himself down to a lay authority not to practise in a certain district.

I am, Sirs, yours faithfully,

A. GEORGE BATEMAN,

General Secretary, Medical Defence Union.

Trafalgar-square, W.C., July 21st, 1903.

THE TREATMENT OF GOITRE BY THE USE OF DISTILLED OR RAIN WATER.

To the Editors of THE LANCET.

SIRS,—I am able to add another case of goitre successfully treated by the use of distilled water to the three reported by Dr. C. A. Rayne in THE LANCET of July 18th, p. 185. I

was consulted last September by a young woman, aged 17 years, who was suffering from a medium-sized goitre. The water in the village where she lived was very hard and bearing in mind the prevalence of goitre in districts where such is the case I advised her to give up entirely the local drinking water and to drink only non-aerated Salutaris water, which is, I believe, distilled water. She has done this since and is very greatly improved in health and the goitre has diminished both in size and in firmness—a result that I attribute to the change from a hard to a perfectly pure soft water.

I am, Sirs, yours faithfully,

Lincoln, July 20th, 1903.

W. H. B. BROOK, M.D. Lond.

THE PRELIMINARY SUBJECTS OF MEDICAL EDUCATION.

To the Editors of THE LANCET.

SIRS,—It is obviously impossible to condense into a few lines all the arguments urged and points brought forward in a speech which, *horresco referens*, occupied nearly half an hour. Hence I cannot and do not complain of your report of my remarks at the recent meeting of the General Medical Council. But there is one error to which, in justice to myself and others, I must be allowed to call attention. I did say that the examination in physics at the Conjoint Board was a farce and I also pointed out that the board of management and not the examiners was responsible for the regulations under which the examinations were held. But I certainly did not characterise *this* arrangement as a farce, as your report makes me do, nor, as a matter of fact, were the two observations made in connexion with one another, as the process of compression would make it appear that they were. My point was that the examiners were working under rules laid down for them for which they were not responsible. This may or may not be a good plan; I expressed no opinion of any kind upon that question but merely stated what had been conveyed to me as a fact at the time of the inspection.

As I am writing, may I add that I certainly did not use the phrase, "sit hours to set up a more ideal curriculum," though to some extent it expresses my meaning. I feel that the first year of medical study is by no means in a satisfactory condition and that if we could attack that problem and solve it we should be doing a good piece of work in the interests of medical education. I sincerely hope that some settlement may now be arrived at with the Royal Colleges as the result of this recent meeting and that when that has been accomplished we may seriously devote ourselves to the task of reforming our curriculum, especially as regards the earlier subjects of study.

I am, Sirs, yours faithfully,

Birmingham, July 18th, 1903.

BERTRAM C. A. WINDLE.

OCIMUM VIRIDE AND MALARIA.

To the Editors of THE LANCET.

SIRS,—I have been very much interested in the correspondence which has recently appeared in the press at home concerning the anti-malarial properties of the plant *ocimum viride*. This plant is a native of the west coast of Africa and glowing accounts have appeared as to its presumed anti-malarial properties. Although it does not grow in Hong-Kong it belongs to the same genus as the well-known pot-herb basil which is cultivated here. Professor Groom, formerly lecturer on botany at the Imperial Naval College at Whampoa, China, has written an article recently referring to the anti-malarial properties of the papaw tree. He mentions that during his stay in China he never saw any insect whatever on these trees. This tree is very common here and its well-known digestive properties are much appreciated, but on one of these trees recently two species of fly and one of ant were found. The castor-oil plant has also had its turn as being anti-malarial.

Undoubtedly the eucalyptus possesses anti-malarial properties, due, I take it, partly to the essential oil contained in its leaves but chiefly to the property it possesses of converting swamps (breeding places for mosquitoes) into dry land. If a plant could be found which possesses all the properties ascribed to the *ocimum viride* it would prove a great boon to the long-suffering residents in the tropics whose midnight slumbers are often disturbed by these tiresome pests (mosquitoes), not to mention the flying cockroaches and numberless vermin which infest these