

INDEPENDENT SECTION.

ART. VIII.—THE ACTION OF NATURAL SELECTION
ON MAN.

1. *On the Origin of Species by Means of Natural Selection.* By CHARLES DARWIN, M.A., F.R.S. &c. London: John Murray. 1866.
2. *The Principles of Biology.* 2 vols. By HERBERT SPENCER. London: Williams and Norgate. 1867.
3. *The Principles of Psychology.* By HERBERT SPENCER. 1855.
4. *The Origin of Human Races and the Antiquity of Man, deduced from the Theory of "Natural Selection."* By ALFRED R. WALLACE, Esq., F.Z.S., in the "Journal of the Anthropological Society," vol. ii. 1864.

ETHNOLOGISTS have long differed as to whether man has originated from one or more centres, and the discussion of the subject has often been animated in the extreme. The question, however, between the monogenists and the polygenists requires to be treated anew when regarded in the light of the Darwinian theory. For heretofore both parties have supposed that they should have succeeded in proving or disproving the unity of human origin according as they could show whether the genus "homo" consisted of a single or of several species, each party believing that species were separate and independent creations. But now that we have ceased to believe that the species composing a genus are separate and independent creations, the nature of the question is entirely altered.

According to the Darwinian theory, man, whether he constitutes only a single or several species, must have originated from a *prehuman* species; and as to the mode of origin of the various races, two hypotheses may be entertained. Either there first appeared a *uniform human* species before any of the pre-

sent races existed, of which ancestral species they are the modified descendants; or, on the other hand, the races of man have originated separately and independently from the *prehuman* species. If a single human race was first developed out of the prehuman species, and then by its differentiation gave origin to the existing races, the monogenist theory may be considered established, and that too whether the races are regarded as species or merely as varieties; while, on the other hand, if it should appear that the various races of man have sprung separately and independently from the prehuman species, the verdict will be in favour of the polygenists.

The decision of the question will depend almost entirely on our definition of *man*. As the modification of the parent species which has given rise to man has proceeded gradually and, as it were, insensibly, if this prehuman species now existed with all the intermediate modifications between it and what we now call man, we should be at a loss to draw a line between what was human and what was not, we should be puzzled to say where the animal proper ended and man began; we should in fact have to select arbitrarily some character or combination of characters, the presence of which we should agree to consider entitled the possessor to the name of human, the absence of which we should agree to regard as proof of animality. If, for example, the use of articulate speech were to be selected as the distinguishing sign of humanity, then the question of the unity or multiplicity of human origin would be equivalent to this, Did the use of articulate speech possessed by the various races of men originate in one or in several centres? The answer to the problem therefore would have to be sought from philologists, since it would really be one as to the unity or plurality of origin of human speech.

This part of the action of Natural Selection on man, however, I pass over, as the whole question of his descent, of the origin and nature of the various races, and of the operation of sexual selection in their production, is soon to be discussed by Mr. Darwin himself, when we may expect as exhaustive a treatment of the subject as the materials at present available will admit.

Leaving then the action of Natural Selection on man in the remote past, let us consider its more recent, its present, and its prospective operation.

We supposed above speech selected as the characteristic whose appearance in a species of the primates might be our distinguishing mark of commencing humanity, while we left undecided whether speech appeared at one or more independent points in the area occupied by the prehuman species. The faculty of speech is, however, but the outward and sensible sign of several inward and invisible qualities; and among these may be mentioned a higher grade of intelligence than that

possessed by the lower animals, and certain social feelings to the gratification of which the faculty of speech ministers. With these three characteristics we may imagine our primeval man endowed, speech, intelligence, and social feeling; the latter two of which, while he would have them in common with the pre-human species and the rest of the primates, he would have in a higher degree.

Now my first observation is that the presence of these three faculties, developed to the extent that we supposed them to be in our primeval man, initiates a most profound modification in the action of Natural Selection. In order to explain my meaning it will be necessary to remind the reader of the purport of the Darwinian theory.

Malthus showed that human population is limited in two ways—either of set purpose no more children are born into the world than the parents (or possible parents) think there will be adequate and available sustenance for; or, the surplus population is carried off by premature death. The former method he called the preventive, the latter the positive check; and he showed that in every period of history and in every quarter of the globe, one or other, or both of these checks, have been in action, limiting human population. In the case of plants and the lower animals it is evident that the positive check, premature death, alone can operate; and what Mr. Darwin has shown is, that by the operation of this check have been differentiated all the various species of organisms that now exist, not excepting man himself. In consequence of the law that all organic beings have powers of multiplication far exceeding the means of subsistence, and in consequence of the deadly struggle for existence thence ensuing, the least adapted individuals have been exterminated, the best adapted alone have been preserved. All favourable variations of structure have thus been preserved and accumulated; and changes of form and organization, sufficiently great in the long run to give their possessors a claim to be considered new species, have ever been going on.

When, however, man, such as I have defined him, appears upon the scene—the highest result as it were of Natural Selection—the power of Natural Selection to modify the bodily frame and structure of this, its latest production, gradually becomes less; and this power continues diminishing in proportion as he advances in intelligence and social co-operation. This will perhaps be best understood if stated in the words of Mr. Wallace, the well-known naturalist of the Malayan Archipelago, who, as far as I am aware, first pointed out the fact.

“At length,” he writes,* “there came into existence a being in whom that subtle force we term *mind* became of greater importance

* “Anthropological Review,” May, 1864.

than his mere bodily structure. Though with a naked and unprotected body, this gave him clothing against the varying inclemencies of the seasons. Though unable to compete with the deer in swiftness or with the wild bull in strength, this gave him weapons wherewith to capture and overcome both. Though less capable than most other animals of living on the herbs and the fruits that unaided Nature supplies, this wonderful faculty taught him to govern and direct nature to his own benefit, and make her produce food for him when and where he pleased. From the moment when the first skin was used as a covering, when the first rude spear was formed to assist in the chase, the first seed sown or shoot planted, a grand revolution was effected in Nature, a revolution which in all the previous ages of the world's history had had no parallel, for a being had arisen who was no longer necessarily subject to change with the changing universe,—a being who was in some degree superior to Nature, inasmuch as he knew how to control and regulate her action, and could keep himself in harmony with her, not by a change in body, but by an advance in mind. . . . From the time then, when the social and sympathetic feelings came into active operation, and the intellectual and moral faculties became fairly developed, man would cease to be influenced by Natural Selection in his physical form and structure; as an animal he would remain almost stationary; the changes of the surrounding universe would cease to have upon him that powerful modifying effect which it exercises over other parts of the organic world. But from the moment that his body became stationary, his mind would become subject to those very influences from which his body had escaped; every slight variation in his mental and moral nature which should enable him better to guard against adverse circumstances, and combine for mutual comfort and protection, would be preserved and accumulated; the better and higher specimens of our race would therefore increase and spread, the lower and more brutal would give way, and successively die out, and that rapid advancement of mental organization would occur which has raised the very lowest races of men so far above the brutes (although differing so little from some of them in physical structure), and, in conjunction with scarcely perceptible modifications of form, has developed the wonderful intellect of the Germanic races."

Thus Natural Selection ceases to modify so much the bodily frame, and concentrates its efforts more and more on the brain and mind.

A speculation of Comte's may here be adduced in illustration of this law. It was one of his favourite generalizations that while in the speculative sphere the mind of the human race had to traverse a protracted theological period before it reached the scientific stage of development, so in the sphere of practical affairs man had to pass through a long military *régime* before he entered upon the industrial phase. He believed, moreover, that the two successive stages in the mode of speculation were parallel and coincident with the two successive phases of practical life, that the military *régime* corresponded and coexisted with the theological stage, and that the industrial and scientific

phases were similarly coincident. This theory of Comte's, like many other of his generalizations, if not the exact truth, was probably an approximation to the truth. While, however, we may allow the antithesis between the theological and the scientific spirit, that between the military and the industrial *régimes* is not so evident. For, if we consider the various modes in which mankind at successive periods of their evolution have obtained the necessaries of life, we shall find that a certain amount of industry has always prevailed. In the first or savage stage, his industry was shown either in hunting or fishing, or in collecting the spontaneous fruits of the earth; in the second or nomad stage his industry was developed into the higher form of rearing and tending his flocks and herds, and performing the other requirements of pastoral life; while in the third or agricultural stage the necessity for his industry is evident. Now, with all these stages the military *régime* is quite compatible, and has been in fact coincident; but what it is not compatible with, and is indeed antagonistic to, is the reign of law. The military *régime* was the reign of physical force:

“ The good old way, the simple plan,
That they should take who have the will,
And they should keep who can;”

and its antithesis is properly the legal *régime*, representing not so much industry, as law and justice.

This empirical generalization of Comte's affords corroboration to the law we have been considering—the law, namely, that as human society progresses Natural Selection loses its power over man's physical form and structure, and concentrates its action more and more on his brain and mind. For in the animal world war and rapine are the very conditions under which Natural Selection works; and if the struggle they indicate ceased, if Nature were no longer “red in tooth and claw with ravin,” the power of Nature to modify the animal frame would cease also. In the same way, as long as social relations are settled by physical force; as long, in short, as the last vestige of the military *régime* of Comte lasts, so long will Natural Selection exercise some power in modifying the bodily frame; but as soon as physical force ceases to be the arbiter of social relations—in other words, as soon as the legal *régime* is fully developed, and the reign of law and justice is undivided and supreme—then will the action of Natural Selection on man's bodily frame cease and determine.

But not only does man take from Nature the power of modifying his own bodily frame, limiting its action to his cerebral organization, we find besides that he has even encroached upon the hitherto undivided sway of Natural Selection over the rest of the organic world; and that both in the vegetable and in the animal kingdoms he tends to supplant this power. For the ma-

jority of the plants that cover the surface of the earth wherever man's power is supreme, and the majority of the animals that feed upon them, now owe their existence to Human, not to Natural Selection. In the words of Mr. Wallace—

“This victory which he has gained for himself gives him a directing influence over other existences. Man has not only escaped ‘Natural Selection’ himself, but he is actually able to take away some of that power from Nature which, before his appearance, she universally exercised. We can anticipate the time when the earth will produce only cultivated plants and domestic animals; when man's selection shall have supplanted ‘Natural Selection;’ and when the ocean will be the only domain in which that power can be exerted which for countless cycles of ages ruled supreme over the earth.”

The action of Natural Selection on man becomes modified in another way as his moral and social feelings are developed. We have seen that in the case of other animals the numbers are limited by premature death through deficiency of food or some equivalent cause; that they are kept down by the “positive” check of Malthus. But as man progresses in civilization, and his sympathetic feelings deepen, he begins to calculate the more remote consequences of his acts, both to himself and to others; he begins therefore to dread the prospect of having children whom he cannot comfortably support and satisfactorily start in life. From foeticide, too, and infanticide he turns away in horror. Gradually therefore he comes to reflect whether he will have the means of supporting children before he undertakes the responsibility of producing them. The preventive check, in short, begins to act as well as the positive; the moral as well as the physical. In one sense, indeed, this is but another aspect of our previous proposition, that Natural Selection tends to lose its power over the *physique*, and to concentrate its action on the *morale*; and it is perhaps not too much to expect that finally moral restraint will entirely supersede the necessity of premature death.

That the excessive numbers of our population in comparison with the demand for labour are the cause of our enormous pauperism is almost a commonplace of economists; while it will be allowed by all that pauperism and poverty are the hot-beds of disease and crime, and that if the former were got rid of, the latter too would to a great extent disappear. If this teaching of the economists be true, it is an evident practical corollary that all our efforts ought to be directed to discouraging, and, if possible, preventing, improvident multiplication; and to inculcating, both by precept and example, reproductive restraint.

But what does one of our most eminent thinkers, Mr. Herbert Spencer, teach on this all-important subject? He points out, and with truth, that in the case both of animals and plants the fertility diminishes in proportion as the rank of the species in the biological scale rises; in other words, that the fertility of

organisms varies inversely as their size and the complexity of their organization. He shows too that this law is itself a result of the action of Natural Selection; which thus determines the actual degree of fertility of any and every species, each possessing whatever amount is most favourable to its continued existence. And he asks, Does not the same law apply to man? Is not his power of reproduction comparatively small in correspondence with his high rank in the animal scale; and, as the complexity of his organization increases (in his case principally shown in increasing complexity of brain), will not the universal law of diminishing fertility with increasing complexity continue?

From this line of argument he seems to conclude that deliberate reproductive restraint is hardly necessary. But is his reasoning conclusive or likely to be acquiesced in?

Doubtless man's small fertility when compared with other animals is in correspondence with his higher rank in the zoological scale; and doubtless this small degree of fertility has, as in other animals, been produced by the action of Natural Selection: but it seems to me that its continued diminution will be effected in a different way from that in which it has hitherto been produced, and it is this consideration that I conceive Mr. Spencer has overlooked. He allows that the law of diminishing fertility is itself a result of the action of Natural Selection; is he then prepared to let this power continue its operation, unmodified, on man? In that case, instead of exercising any reproductive restraint, men and women should go on producing as many children as they can, breeding, in fact, just like other animals, heedless of the consequences that must result to their offspring. After they have given their children some sort of start in life (if, indeed, even to do that should remain possible), they should then leave them entirely to their own resources, not assisting them if they fall into poverty or want, but allowing them mercilessly to starve, according to the law of Natural Selection; nor aiding them in sickness, but permitting them to die at once, and so make room for stronger and healthier specimens. This is the way Natural Selection acts, and it is through this mode of action that the respective degrees of fertility possessed by animal organisms have been established, and this is the mode that Mr. Spencer apparently thinks must gradually diminish the present degree of fertility of the human race. Certainly it would, if it were allowed to act; but men will never suffer Natural Selection thus to operate. They will never permit the poor to die of open starvation, nor the sick to perish without any effort to save them; and in order that they may be able effectually to counteract the cruel action of Natural Selection, an inevitable condition is the exercise of reproductive restraint, deliberately limiting their numbers to such a degree that the struggle for existence will not be so severe as necessarily to entail

premature death to any. It is in this way that the actual rate of human multiplication will diminish as man advances in cerebral development, and not by the direct and immediate diminution of his reproductive powers, as possibly happens in the evolution of other organisms. It may be that his fertility itself will ultimately diminish with progressing civilization, but, if so, this will be a secondary result, it will be due to a diminished exercise of his reproductive glands, which, like other organs, will atrophy in proportion to their lessened use. With regard to man's powers of multiplication, Natural Selection will act in the same way as it acts in reference to other characters of his frame—namely, primarily and chiefly on the mind, and only secondarily, and through this action, on his fertility.

Is our conclusion then admissible that man's moral restraint will ultimately be such that he will voluntarily limit his numbers to such a degree as reason and humanity dictate, thus taking from Natural Selection its universal property of inflicting premature death? Man, we are often told, differs from other animals by the possession of reason; this reason, we have seen, has enabled him to arrest the action of Natural Selection on his physical form and structure, why should it not enable him to arrest its action in bringing untimely death to the majority of his race?

Another of the main characteristics of the action of Natural Selection on any species, is that it destroys the weak and sickly, and leaves only the strong and healthy to propagate their kind. In the case of man, however, this effect also becomes modified as soon as his social sympathies have been developed; for these feelings will not permit him to let the weak and sickly die without a finger being raised in their behalf, but impel him to do what he can to keep them alive. Thus the weak and sickly are preserved to propagate their kind, and to transmit weak and sickly frames to their offspring. In this the action of Natural Selection is entirely controverted, and evidently to the deterioration of the race. Is any remedy possible, and, if so, what is it?

We have already seen that man has taken from Nature most of her power to modify his own frame, is it too much to expect that the power which he has thus taken from Nature he will himself assume? We have seen that with respect to other organisms he is supplanting Natural Selection by Human Selection; but is it only over other existences that he may exercise this power? Is it only in the case of plants and animals that Natural Selection is to be thus superseded? Shall we by Methodical Selection improve the breeds of our domestic animals and the varieties of our cultivated plants, and shall we not care to avail ourselves of our newly acquired power to maintain, and if possible to increase, the beauty, the health, and the

vigour of the human frame? It seems indeed evident that having arrested the action of Natural Selection, as far as our physical organization is concerned, if we stop at this point and do not replace it by any substitute, the race *must* degenerate, for it is this power that keeps every species of animal healthy and vigorous.

The economists have taught us that poverty and pauperism, with the disease and crime they entail, can only be eradicated by reproductive restraint. But medical men know that this is not enough to eradicate *all* disease. They know that although there are many diseases due to poverty, with its insufficient food and clothing, its overcrowded and ill-ventilated dwellings, its overwork and its hopelessness, there are other diseases that would remain after all these were abolished. There are diseases which no sanitary laws, as usually understood, can reach—diseases ingrained in the constitution itself, inherited for the most part from the parent organism. Gout, for example, and syphilis, cancer, and insanity in all its forms, epilepsy and all other nervous affections, these and numberless other constitutional maladies have no necessary connexion with poverty, and these would still remain. There is something more therefore necessary for the rooting out of disease than the mere limitation of numbers. Need it be said, that from all malformations and congenital defects, and from the endless forms of hereditary and constitutional taint against which the physician so often contends helplessly and hopelessly; that from these humanity can never be delivered unless those that suffer from them religiously abstain from transmitting their tainted or defective constitutions to others?

In a suggestive lecture recently delivered before the Royal Institution, and published in the *Fortnightly Review* for August, 1869, Dr. Bridges, an able disciple of Comte, has discussed both the classes of disease which I have mentioned, without, however, being sufficiently explicit as to the remedy or remedies he proposes. The problem of health, he remarks, "is unquestionably the greatest, or all but the greatest, that can possibly be presented to human thought."

"With animals, and also with savages, the spontaneous play of physical and of vital forces leads to an enormous waste of life in its primal germs, or in its half-developed phases. Of the ova of the fish, one perhaps in a million is born; and of those that are born, one perhaps in ten thousand reaches maturity. But those that do reach maturity are, in the long run, and on the average, the strongest; and these live to propagate a breed stronger than their fathers. This is what happens when things are left to take their natural course; and there were nations in antiquity, as there are tribes at the present day, who did not hesitate to assist that course by deliberate infanticide. How stands it then with nations whose religious faith, whose trained instincts of humanity, lead them to the opposite course of revering and preserving the sickliest and weakest human life? Was not Plato right in his antipathy to physicians? Do we run no danger in our

excessive medical and sanitary care of unhealthy lives, of deteriorating the offspring, of sacrificing the future to the present?" . . . "I believe," he continues, "there can be no doubt whatever that the danger is very real and very great. . . . But to Nature's savage, cruel methods of course we cannot recur. . . . We cannot go back, therefore if we would avoid death we must go forward."

He nowhere, however, states with sufficient distinctness how this "very real and very great" danger is to be avoided; and he concludes thus:—

"There are two modes in which evils like those I have been speaking of ~~to-night~~ are cured. The one is the spontaneous play of physical and animal forces, the fierce competitive struggle for existence, which sweeps the weak and the diseased away; the other is the conscious direction and modification of those forces by the wisdom and the foresight of humanity."

Probably in this he alludes, as far as hereditary diseases are concerned, to the very remedy I have stated above, the only remedy that seems to me thoroughly effectual; and I am strengthened in this interpretation of his meaning by the fact that Comte, as far as I remember, distinctly lays it down as a principle which ought to guide the conduct of every good Positivist, that if he unfortunately himself possesses a tainted or anywise defective constitution, it is his bounden duty to refrain from bestowing it upon another.

Another remark of Dr. Bridges is highly illustrative of our present subject. It is this, that "one of the most striking characters that distinguish man from the other vertebrates is his liability to disease." Now, this fact may be partially explained by the obvious consideration that the more complex and intricate an organism is, the more liable must it be to be put out of order; but something more than this is required to account for the multiplicity of diseases to which man is subject. When, however, we reflect that the weak and the sickly at present feel no compunction in breeding just as freely as the strong and the healthy—a circumstance which never happens under nature—we find a complete explanation of the fact, and see indeed that multiform maladies must necessarily follow.

Is it then too Utopian to expect that at some future day the strong and the healthy only will marry and multiply; the deformed, the weak, and the sickly will conscientiously refrain; and that Natural Selection will not only be arrested, but that Rational Restraint will take its place, and that thus health and vigour, both of body and mind, will become greater and greater in each succeeding generation?

If the theory of Mr. Wallace already expounded be correct, it affords us an answer to another problem—a problem that has presented itself to many minds. Reflecting on the many changes in organic form which have taken place since the first dawn of

life upon our globe ; on the succession of animals and plants that the page of geology discloses ; on the disappearance of some species, and the rising of others,

“Till at the last appeared the man,”

many have asked themselves, “But is man the last? Is he not merely the precursor of some higher form? Why should Nature’s evident course be stayed by him?” If the views, however, already stated are accepted, I think it will be allowed that man *is* the last, that Nature’s course *will be* stayed in him ; and that, as far as merely physical life is concerned, he may be said in some measure to reign in Nature’s stead.

But if Natural Selection is to be banished from its dominion over physical life, there is still a large sphere in which it will rule supreme. Over man’s bodily frame it may cease to exercise sway, but over his mental, his moral, and his social nature, it will still be the presiding power ; moulding his institutions, forming his sentiments, and dictating his beliefs.

As the reign of physical force declines, and the reign of moral force advances, the nation that possesses such social institutions as best tend to promote the physical and moral health of its members, to make them strong in body, vigorous in mind, and noble in action, and to exclude from their midst all physical and moral disease, the presence of which even in but a few is incompatible with the complete health of the rest ; that nation will see its institutions slowly adopted by others ; will see them, like a dominant species of organisms, gradually spread over the globe, supplanting and superseding inferior forms. Even already is visible in the different nations this struggle for existence between various constitutions of society—various forms of social organization ; and it cannot be doubted that ultimately the best will be preserved and disseminated, the others will give way and disappear. Instances of such selection under the military *régime* are numerous ; I need only mention one—the subjection of Greece by Rome. The Greeks were equal to the Romans in physical development, and far superior to them in intellectual power, and yet had to yield to the latter the supremacy of the world ; and the reason is obvious. The social system of Rome was one that welded the citizens into a great and harmonious whole, against which the selfish and isolated states of Greece were shattered at the first collision.

In regard to the moral sentiments, too, Natural Selection will continue to be the guiding power ; for that nation in which justice, honour, prudence, self-reliance, and public spirit are the characteristic qualities of the citizens ; that people in whom the “Enthusiasm of Humanity” is most strongly developed ; in whom regard for the common weal not only possesses a merely negative power over the conduct, but is the ruling passion of the

life, a passion to whose service every faculty of mind and body is devoted—that nation will be “the chosen people” of Nature, and will insensibly and unconsciously give laws to the rest of the world. Its influence though silent will be supreme, and its character and spirit will slowly permeate every nook and corner of the earth.

In determining the speculative opinions of mankind, many will doubt and some will deny, that Natural Selection has the same influence as over their social institutions and their moral sentiments. If, however, we consider how it is that the theological opinions of the past should be slowly dying out before the scientific opinions of the present, we are forced to the conclusion that it is because Nature selects the latter, and confers upon them and their holders all her favours. If it is asked how it was that the fetishism of humanity’s childhood should have been supplanted by the polytheism of its youth; or how it was that the polytheism of its youth should have given way before the monotheism of more recent times; many are satisfied with the reply, that it was because each succeeding phase of belief was nearer to the truth than its predecessor. But truth—absolute truth—is an impossibility and a dream; and the beliefs of the present age are just as certain to be modified in the future, and probably to as great an extent, as have been the theological beliefs of the past.

It is a favourite psychological theory at the present day that all knowledge is due to an accumulation of experiences. This is far from being a new theory; but the additions it has received at the hands of Mr. Spencer constitute a new era in its history. According to this author, the experiences, to the accumulation of which all beliefs are due (disregarding those adopted on the testimony of others), may be either experiences of the individual himself, or of a greater or smaller portion of the whole line of his ancestors—animal and human. Experiences, it is supposed, when sufficiently often repeated generate ineradicable beliefs, and these become organized as it were in the brain; and the modification of cerebral structure thus produced, and representing these beliefs, is inheritable and capable of transmission to others; so that the totality of our beliefs (exclusive of those above mentioned) is due partly to an accumulation of our own individual experiences, and partly to the inheritance of such a constitution of the brain as represents the organized beliefs of our ancestors. The beliefs that we thus inherit, being at first latent, require indeed some stimulus from without to call them into activity, but do not require to be built up by the same laborious accumulation of experiences by which they were originally acquired. The most prominent of these are known as innate or intuitive beliefs.

The experience hypothesis, even with this ingenious extension,

seems still defective; for it may be remarked, that while all beliefs are due to experience, all do not become permanently organized. Most are after a time rejected, and it is only a small residue that are permanently preserved and worked so deeply into the tissue of the brain as to affect the congenital organization of that organ in every succeeding generation. The theory therefore requires to be supplemented by an answer to the further question, How is it that some beliefs are preserved and rendered permanent, while others have only been temporary and are now rejected? And to this question the answer seems to be, that it was under the influence of Natural Selection that the former were preserved and perpetuated, as being uniformly favourable to the welfare of the individual or the community; whilst the others, not being permanently favourable, have been only temporary in their existence, have appeared for a time, but afterwards have died out, and are now, to distinguish them from the others, called *false*.

All that we can legitimately mean when we say that our modern views of the universe are truer than those of antiquity, is that they are such as give us more power over Nature—enable us more to modify her various phenomena; or if those phenomena, like the moon in her sphere, or the earth in its orbit, are beyond our power to modify, they are such at least as enable us better to foresee their action, and to guide our conduct accordingly. As in an animal every variation of structure or instinct selected by Nature is such a variation as brings the organism into greater harmony with the conditions of its existence; so in man every mental modification—every cerebral change—that brings him into greater harmony with the surrounding universe, is similarly selected. To-day, it is the teachings of science that are thus selected; they are preserved by Nature and accumulated; they are the dominant teachings of the age, supplanting and superseding the others. But in coming years they too will undergo modification; variations of opinion will arise hereafter as hitherto; but favourable variations, such only as increase man's power over Nature, or enable him better to adapt his conduct to her course, these alone will be selected and preserved; unfavourable ones will pass away and be forgotten.

Such seems to be the mode in which Natural Selection determines human beliefs; and this process of what we call widening knowledge will probably continue until man himself and the globe he inhabits are again reduced into the elements from whence they sprang.