

DR. A. R. WALLACE ON HEREDITY.

By C. A. PARRY, B.A.

Dr. Alfred Russell Wallace has recently been interviewed on the subject of the inheritability of acquired qualities. The whole of the opinions expressed in this interview are strikingly significant of the great revolution which is being brought about in scientific thought; but to perceive the full extent of this revolution, one would need to be something of a veteran and to have lived through the epoch, now twenty to thirty years old, of the first bloom and triumph of the evolutionary philosophy, when, in the enthusiasm created by Darwin's laborious and far-reaching researches, and the cloudy brilliancy of Spencer's generalisations, it seemed to their disciples the final word of human wisdom. Dr. Wallace was asked:—

"With regard to the subject of heredity, would you explain, taking into consideration your contention that individually-acquired characters are not transmitted, whether the imitative faculty of children may not bring about the same result?"

"That is exactly our point. All that has been imputed to the hereditary influences of acquired character is either the result of imitation, or it is the transmission of inherent idiosyncrasies. It is first necessary to understand clearly what is meant by 'acquired characters'; and the mistake must not be made of taking any peculiarity that a person may exhibit during life to be an 'acquired character.' Such peculiarities are usually inherited from some ancestor. Even those peculiar tricks of motion or habits which are often adduced as proofs of the transmission of an acquired character, are really only the transmission of the innate peculiarities of physical structure and nervous or cerebral co-ordination which led to the habit in question being acquired by the parent or ancestor, and, under similar conditions, by his descendant. Both Weissman and Mr. Francis Galton, through their inquiries into the evidence for the transmission of acquired characters, have found that hardly any real evidence exists, and that in most cases which appeared to prove it, either the facts were not accurately stated or another interpretation could be given them. It is only during the last ten years that this view has been advanced. *The transmission of acquired characters had hitherto been assumed, because it appeared so natural and probable; but in science we require proof.*"

"You believe, then, that there is no direct proof of individually acquired characters being inherited?"

"My conclusion is that no case has yet been made out for this assumption, and that variation and natural selection are fully adequate to account for the various modifications of organisms which occur. The balance of opinion among physiologists now seems to be against the heredity of any qualities acquired after birth notwithstanding Darwin's theory of Palingenesis. The biologists of Europe are now earnestly seeking for crucial tests of the rival theories."

The explanation that seemed complete and certain twenty years ago begins to look as if it needed revision. Dr. Wallace proceeds to argue:—

"If long-continued exercise in one direction leads to increased strength or skill in the parent, as in the case of a blacksmith, a carpenter, or a watchmaker, we ought, supposing that

acquired characters can be transmitted, to see evidence of this in the children of these mechanics, and the younger sons should have more strength and skill in their father's business than the first-born; but, so far as I know, this has never been alleged. So with men of genius whose faculties have been exercised in special directions: if not only the inherent faculty but the increased power derived from its exercise be inherited, then we ought frequently to see these faculties continuously increasing during a series of generations, culminating in a star of the first magnitude. But the very reverse of this is notoriously the case. Not only is it the fact that men of genius do not, as a rule, have adequate successors in their children, but it is a remarkable circumstance that almost all our greatest inventors and scientific discoverers, the men whose originality and mental power have created landmarks in the history of progress, have been self-taught and not derived anything from the training of their ancestors in their several departments. Watt, Brindley, Faraday, Sir William Herschel, and George Stephenson are cases in point; indeed, one might fill a volume with examples to prove—that is, indeed, seldom denied—that genius or super-excellence in any department tends to be sporadic—that is, it appears suddenly, without any proportionate development in the immediate ancestors of the gifted individual.

"But, surely, Dr. Wallace, genius is inherited?"

"Certainly it is; but it rarely or never intensifies after its first appearance, which it certainly would if not only the genius itself but the increased mental power due to its exercise were also inherited. If acquired characters are inherited, the *youngest* sons of every artist, musician, or man of science should be the greatest genius. The only prominent example that looks like a progressive increase of faculty for three generations is that of Dr. Erasmus Darwin and his grandson Charles. But in this case the special faculties displayed by the grandson were quite distinct from those of the grandfather and father; while, if we consider the different state of knowledge at the time when Erasmus Darwin lived, his occupation in a laborious profession, and the absence of that stimulus to thought which the five years' voyage round the world gave to his grandson, it is not at all certain that in originality and mental powers, the former was not fully the equal of the latter. . . . If we look through the copious roll of men of genius in science, literature, and art, we shall rarely find even two of the same name and profession rising progressively to loftier heights of genius and fame. Note also that the highest watermark reached by the ancients in art and philosophy has never been surpassed. In art, the Greeks attained to a degree of beauty and harmony never equalled in modern times. In literature the *Iliad* and the writings of Plato will rank with the noblest work of modern authors. *All the accumulated effort of thousands of years has not made us greater men intellectually than the ancients, clearly proving that there has not been a continuously progressive development in the race.*"

"But are not education and good environment, the two things all modern reformers are seeking to give to every boy and girl, of incalculable benefit in human progress? The influence of education and environment on the parent must affect the offspring."

"Yes, in this way, that the inherent faculty of the child is aroused with good results. Environment simply develops the inherent faculties of a child; it does not impart those faculties. Good environment will enable such noble qualities as the child may possess to develop advantageously, so also will education, and conversely with bad environment. But the influence of environment or of education on the parent is not transmitted to the offspring, as is clearly proved by cases where children of criminal and vicious parents become good and admirable characters when wholly removed from the evil parental surroundings. Allowed to remain in those surroundings the children would, almost inevitably, by force of habit, and the faculty of imitation, have been as degraded as their parents. The waifs and strays of Dr. Barnardo's Homes afford continual and striking examples of this. These children, taken away from evil influences, educated, placed in proper environment, become estimable men and women. This is a very cheering fact. *It proves that evil habits are not hereditary.*"

"Does not the argument that acquired characters cannot be transmitted make the outlook for human progress a gloomy one? It seems to bar the way against any improvement of the race by means of education."

"If the theory is a true one, it certainly proves that it is not by the direct road of education, as usually understood, that

humanity has advanced and must advance; although education may, in an indirect manner, be an important factor of progress. If it is thought that this non-inheritance of the results of education and training is prejudicial to human progress, we must remember it also prevents the continuous degradation of humanity by the inheritance of those vicious practices and degrading habits which the deplorable conditions of our modern social system undoubtedly foster in the bulk of mankind. Throughout trade and commerce lying and deceit abound to such an extent that it has come to be considered essential to success. It is surely a blessing if this kind of thing does not produce inherited deterioration in the next generation. We have little to lose in not having the effects of our present social system transmitted. *Education has been so bad for two thousand years that we should be a degraded race altogether, if acquired character were inherited.*"

Mr. Wallace then went on to give some urgent reasons for his conclusion that acquired faculties are not heritable: (1.) The surprising successes accomplished within the last few years by female students, in the face of the fact that during all previous ages women have been entirely discouraged from the higher culture of the intellect. (2.) Until well within the present century, Dissenters of all sorts were debarred from studying at the Universities; and this was a much more real grievance in the past than it would now be, for, owing to the scarcity of books and means of instruction, the importance of the old universities was comparatively much greater. Yet, in the short period that has since elapsed, the Dissenters have shown themselves quite equal to the hereditarily trained Churchmen, and have carried off the highest honours in as great, and perhaps even greater proportion than their comparative numbers in the Universities. (3.) Notwithstanding the fact that music enters much more largely into the education of women, there is no department in which the intellectual disparity of the sexes is more striking than in that of composition. Not only has there never been a single great female composer, but it would be difficult to mention a name worthy to stand in the second or third rank.

And now it is time to pause and reflect on the magnitude of these admissions from a leading exponent of the evolution philosophy. It is consolatory to believe that evil habits are not hereditary, but we must remember that good habits are equally transient and individual in their operation. It would be pleasant to be able to believe, with the materialistic Perfectionists and worshippers of Humanity that men, while forbidden to extend their hopes beyond this polluted earth, are, simply by the process of the struggle for life and the elimination of the unfit, on the high road to become archangels, cherubic in virtue and seraphic in intellect; only, unfortunately, the facts do not point that way. There is no real proof that the level of intellect to-day stands higher than it did with the contemporaries of Cicero or Pericles; nay more, as one examines the relics of pre-historic times, the thought may flash into the mind: May not the prognathous troglodytes, who shaped these flints and incised these designs, have been better specimens of humanity than most of the types that we see to-day?