

he uses the term *somatogenic* to express those characters which first appear in the body itself, and which follow from the reaction of the *soma* under direct external influences. He includes under this head the effects of mutilation, the changes which follow from increased or diminished performance of function, those directly due to nutrition, and any of the other direct external influences which act upon the body. He further maintains that the somatogenic characters are not capable of transmission from parent to offspring, and he suggests that in future discussions on this subject the term "acquired characters" should be restricted to those which are somatogenic.

Thus, one might say that blastogenic characters arising in the germ would be acquired in the individual by the action of the germ upon the *soma*; so that if we return again to the graphic illustration previously employed, the germ-plasm represented by the small italic letters *abcd* would act upon the *soma* represented by the capital letters A, B, C, D. Somatogenic characters, again, arising in the *soma*, would be acquired by the action of the *soma* A, B, C, D, upon the contained germ-plasm *abcd*. But whether those acquired characters expressed by the term "somatogenic" can or can not be transmitted has been fruitful of discussion.

That the transmission of characters so acquired can take place is the foundation of the theory of Lamarck, who imagined that the gradual transformation of species was due to a change in the structure of a part of an organism under the influence of new conditions of life, and that such modifications could be transmitted to the offspring. It was also regarded as of importance by Charles Darwin, who (pref. 2nd ed. "Descent of Man," 1885, and "Origin of Species," 1st ed.) stated that all the changes of corporeal structure and mental power cannot be exclusively attributed to the natural selection of such variations as are often called spontaneous, but that great value must be given to the inherited effects of use and disuse, some also to the modification in the direct and prolonged action of changed conditions of life, also to occasional reversions of structure. Herbert Spencer believes (see "Factors of Organic Evolution," *Nine Cent.*, 1886) that the natural selection of favorable varieties is not in itself sufficient to account for the whole of organic evolution. He attaches greater importance than Darwin did to the share of use and disuse in the transmission of variations. He believes that the inheritance of functionally produced modifications of structure takes place universally, and that, as the modification of structure by function is a *vera causa* as regards the individual, it is unreasonable to suppose that it leaves no traces in posterity.

On the other hand, there are very eminent authorities who contend that the somatogenic acquired characters are not transmissible from parent to offspring. Mr. Francis Galton, for example, gives a very qualified assent to the possibility of transmission. Prof. His, of Leipzig, doubts its validity. Prof. Weismann says that there is no proof of it. Mr. Alfred Russel Wallace, in his most recent work ("Darwinism," 1889, page 443), considers that the direct action of the environment, even if we admit that the effects on the individual are transmitted by inheritance, are so small in comparison with the amount of spontaneous variation of every part of the organism that they must be quite over-