

cal state should be indicated by a definite combination of expressions has not always been clearly shown. To-day the whole subject is studied from the point of view of anatomy and physiology. No occult force is admitted, the correlative nerve-supply of muscles and the effect of excitation of nerve-centers are rationally investigated.

Aside from the great special value of the work, of what tremendous import to the race are Darwin's deductions! For he has shown us that our every thought and act mold our physical frames, and through them the generations yet unborn, either to beauty and grace, or to uncouth ugliness and deformity. As the struggle for existence filled the rocks with organisms forever extinct, because not for the highest use, so may we, too, fossilize and outgrow habits and desires of ignoble birth, ascending by the "power of leasts," by that wondrous calculus of nature, to purer and nobler existence. Darwin has taught us that the forces which, acting through countless cycles, have brought us up from formless slime, now remain in our hands to use for good or ill—

"That life is not as idle ore,
But iron dug from central gloom,
And heated hot with burning fears,
And dipt in baths of hissing tears,
And battered with the shocks of doom
For shape and use."

A DARWINIAN BIBLIOGRAPHY.

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The complete bibliography of Darwinism should contain, not alone the works which emanated from the busy brain and ready pen of Darwin himself, but the many other productions which these called into life. The acquiescences of friends, the objections of critics, the censures of foes, should all be enrolled in their proper places as representing the ripples and counter-ripples in the sea of

thought, produced by the weighty ideas which dropped from the clear mind of the philosopher. It is not to the merits of these, however, that I can call your attention, but only to a few facts relative to the books of Darwin himself.

I would not have you suppose, if, indeed, one could, after the lucid remarks to which you have listened, that the faulty—and, I fear, almost indiscernible—list of published works, which I have attempted to exhibit before you, reveals more than a moiety of Darwin's writings.* A large number of comprehensive papers, pregnant notes, and incisive queries are contained in those store-houses of precise knowledge, the journals of science, and the publications of learned societies. During more than half a century, from the beginning of Darwin's career to its very close, scarcely a year passed in which a number of articles did not issue from his pen. His first paper, on the Ova of Flustra, and another of similar nature, were read before the Plinian Society, of Edinburgh, in 1825. His last note on the Distribution of Fresh-water Bivalves appeared in *Nature* but a few days before his death.

During the first twenty-five years the articles have mostly a geological and zoological bearing, but later botanical and anthropological subjects come into prominence. They were contributed to many publications, including a few American, German, and French journals. The mass of papers, however, are to be found in the Proceedings and Transactions of the Geological Society of London, the Philosophical Transactions, the Philosophical Magazine, the Annals and Magazine of Natural History, and *Nature*.

It is in these papers that we first find the germs of many of those more elaborate works, to which general attention has been attracted. Thus the works on the Origin of Species, the Fertilization of Plants by Insects, the Action of Earth Worms, and others were foreshadowed at a time considerably antedating their final appearance.

* The speaker referred to two large scrolls hanging on the lecture room walls, upon which were inscribed a list of Darwin's most important publications.

Darwin seemed to prefer to work out and write out his ideas alone. Once at least, however, he shared the toil with his friend, Mr. Wallace, and later, in several instances, with his sons, Francis and George Darwin.

Regarding the separately published works of Darwin, there is much of interest from the bibliographical point of view. The conscientiousness with which the author profited by the criticisms of others, revising, improving, and extending his generalizations, makes each new edition seem like a separate production. Whole chapters were stricken out and new ones inserted; facts of doubtful character were replaced by others of a more positive nature and more recent acquisition.

Time forbids that I should refer to the details of publication of more than one work. The inquiring student will find his wants satisfied in the several lists which have already been published.

I will give the history of but one work, the most important of all, the "Origin of Species by Means of Natural Selection." The first edition of this work received the signature of the author on November 24, 1859, and was published the same year. The second edition, which appeared soon after, "was little more than a reprint of the first." "The third edition was largely corrected and added to, and the fourth and fifth still more largely." The sixth edition, which appeared in 1872, was likewise largely amended, and had reached its twenty thousand in 1878. In the meantime foreign editions and translations began to appear. The American and French editions at first kept pace with the English, the second American being from the second English, and the third French from the third English. The Germans, coming in a little later, published their second edition from the third English, and their third, from the fourth English one. The last editions in all these languages were derived, I believe, from the sixth English one. "The Italian is from the third, the Dutch and three Russian editions from the second English editions, and the Swedish from the fifth English edition."

At least twelve of the more important works have been issued in one or more editions in German and French, and a number in other European languages as well.

The sage of Down was undoubtedly honest in his surprise at the ever-extending circle of his influence. A wider and more intelligent audience could scarcely be desired. The number of books in which his opinions are discussed or alluded to is legion. As the illustrious Asa Gray has remarked, "Dante literature and Shakespeare literature have been the growth of centuries, but Darwinism filled teeming catalogues during the life time of the author."

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