

Jan. 5, 1882]

STUEDELI'S NOMENCLATURE

ALL working systematic botanists use Stuedel's "Nomenclator botanices seu Synonymia Plantarum universalis" as an indispensable book of reference. It is an alphabetical list arranged under genera of published names of plants, giving their native countries and the authors who published their descriptions. Synonyms are as far as possible given under the species to which they belong. The second volume of Stuedel's work was published in 1847, and it is probably not far wrong to assume that the existing mass of described plants has since doubled.

Mr. Darwin has with equal kindness and generosity expressed the wish to aid in some way the scientific work carried on at the Royal Gardens, Kew. The attempt has been made for many years to keep up in the herbarium there a copy of Stuedel with manuscript additions, for the use of persons engaged in the study of any particular group of flowering plants. By reference to the Kew Stuedel it is possible to ascertain to a large extent what has been done, and so avoid the risk of describing and naming the same material twice over. But the Kew Stuedel has only hitherto been posted up by the aid of funds privately supplied on intermittent occasions, and is so absolutely complete.

Mr. Darwin having had occasion to appreciate the usefulness of such a work in the botanical investigations which have of late years engaged his attention, has determined to supply the funds for preparing a new edition of Stuedel's "Nomenclator," brought up to date. The work will be carried on at Kew, and will be based on the limitations of genera laid down in Bentham and Hooker's "Genera Plantarum," so which it will in fact form a kind of complement. The editorial work has been entrusted to Mr. Daydon Jackson, Secretary of the Linnean Society. Mr. Darwin's manuscript aid does not extend beyond supplying the means for preparing the work. The form and manner of publication will be reserved for consideration on its completion.

The Royal Gardens, Kew, have been very fortunate in from time to time receiving sympathetic aid from the outside world on behalf of the various branches of scientific work carried on in connection with them. The gifts of Mr. Bentham's library and herbarium, of the Jodrell Laboratory, of the North Gallery, and now of the means of preparing a new Stuedel, are conspicuous examples.

*Wm. Darwin Fox*  
1868

DARWIN'S NEW WORK

Laws of Inheritance in the Animal and Vegetable Kingdoms.

THE VARIATION OF ANIMAL AND PLANT FORMS UNDER DOMESTICATION. By Charles Darwin, M. A., F. R. S., etc. A selected edition. In two volumes. 18m. pp. 400, 500. New York: Oxford and Co.

It is gratifying that Mr. Darwin first grappled with the great problem of the origin and variation of organic life during the five years' voyage of the ship *Beagle*, of the British navy, 1831 to 1835; a voyage which made famous in the scientific world by the publication of his classic "Journal of Researches into Geology and Natural History," and since done but more measurably by the gradual steps towards which those researches were the first steps. From the time of his return to England until now Mr. Darwin has steadily pursued the investigation of the subject. Eight years ago he gave to the world an outline of his theoretical conclusions, under the title of "The Origin of Species by means of Natural Selection;" and promised that it should be rapidly followed by a full detail of the facts and processes on which his theories were founded.

The volume before us is the first (and probably the last) of the following series of the greatest naturalists of any age. They have been delayed far beyond "the two or three years" which he thought in any world ought to complete the whole; clearly, in our own time, by the author's ill health. They are, however, as the title indicates, in the relation of students in a domestic state, in the service and under the observation and control of man; and, consequently, less, in the first chapter of "The Origin of Species." The next volume is in truth "The Variation of Organisms in a State of Nature, of the Struggle for Existence, and the Principle of Natural Selection," and to discuss the difficulties which are opposed to the theory; such, for example, as "The Origin of Species," occupied the other chapters of the first volume.

A writer of ordinary powers might have been content to make a collection of facts illustrating the former work, and linked together only by reference to his discussions and explanations. That work may fairly be regarded as an exact science. Hence the appearance of the following, in which the facts and observations of natural history have grouped themselves around it, and their relative importance is fully tested by the closeness of their relation to the theory. Not that naturalists generally are prepared to accept the theory as an absolute truth, but in the great extent to which they would apply it; the majority of them, perhaps, would still prefer to regard natural selection as a cause of variation only within the limits of the several species, and would ascribe to each species of animal and plants a distinct type of structure and an order in itself. But, even if they are altogether right in so severely limiting the application of the principle, no one can say how far truth within certain limits is a higher and a scientific truth, or, second, prepared to accept the "Undulatory Theory of Light," which is a discovery which, to many minds, has first vindicated the right of the student of natural history to a seat in the councils of positive science. It has been said that the great advantage of the book is that it is written in a style which is not only clear and simple, but also so arranged as to be their property, to express a few scientific ideas, a complete, in the so-called "science of classification," and to deny them any place in the great system of natural law which admits the broadest stretch to build.

The arbitrary assumption which underlies the origin of organic life was compiled in fact, before the first steps toward arranging its materials could be taken, and the hypothesis and want of generality in the characteristics which are ascribed to it, are so obvious, that the student of the book, who is not to be misled by the title, should mind trained to demand everywhere principles which could be expressed by exact formulae and rigidly verified by experiment. Men are even yet in their prime, who, as practice, were taught that history and science are one thing, and philosophy and geology are the other, was that aggregate of observed facts, arranged for convenience under arbitrary heads, but not open to reduction to general laws; that they were minor opinions of various observation that of the same species; and that all that they had or ever could have to back was what is related to the laws revealed by the exact sciences, as description is to analysis, or as play to work. How is it that such notions have so rapidly disappeared? How is it that the great number of names beyond the ordinary standards the real nature and value of those "descriptive sciences," in a term already becoming antiquated, better than philosophy which asserted their "hierarchy of the sciences" a short generation ago? The question might be answered more fully by the short of it in fact, that the first has done the world that the forces now at work upon the earth are sufficient to account for all its past changes of which we have any evidence, and has thus first set geology as a science on its feet; and, secondly, that Darwin has first led the way to an intelligent study of the whole system of organic life, and the laws which govern it, and the accumulated results of the older sciences, and with this, man, already justified by important successes, of comprehending all organic life under one scientific conception.

As we believe, he has done with more than that, he has not only given us a new science, but of the final form, of the universal law by which life is evolved, reproduced and varied. Mr. Darwin is not an ordinary writer, and has not been content to express his earlier and more general scientific ideas in a way that is very small object to which he has devoted his time and energy belongs—the brilliant theorist, who are also distinguished as accurate observers. His points of various facts is embraced and illustrated throughout by thought; his principles and

arguments everywhere bear solidly upon observed fact. This detailed attention to the great facts of life, in details which is the aim of the work, and the fact that the author has not only been able to put in his statements of fact—the "original" or best data, as to speak. These have been selected, and are presented with such skill and elegance as to lead the reader's mind, inevitably to the problems in hand, and to furnish him with all the material needed for his own study, at the same time, with each reader of all the opportunities to which the author's own views are open, are expressed as fairly as any advocacy could desire. And to this that Mr. Darwin is familiar with his whole literature of his subject, that in every statement of fact he has not only his own observations but the authority is given, and where any doubt is possible, or where uncertainty exists, the author's means of knowing are given to the reader; and that the style of the work is eminently his own, by which his former books have done more than any other; plain, direct, and devoid of artifice, almost without ornament, but suggesting rather than expressing an enthusiasm for his great purpose, as well as in contrast with his more modernistic of statement.

It is to be regretted by getting into the bearing of the theory, as well as the plain, direct, and immediate upon the origin of species by natural selection. All his love to multiply with extreme rapidity; nature cannot support all the progeny, and "the mean individuals are often forced to die."

Under pressure of an animal or a plant are not all alike; and of those produced to his kind, many often attain the best to survive and continue the species.

ANTICIPATED SELECTION.

"Selection may be looked either methodically or haphazardly, and the latter is more frequently than any other select and preserve each successive variation, with the desired intention, and a prominent idea, and by thus adding up variations, often so slight as to be imperceptible to the eye, the result is a gradual change and improvement." It can also, to clearly observe and save, without any selection or thought of improvement, the result of the work of each successive generation the individual which is preserved, and by destroying the worthless and the inferior, through many, induces great changes in the life.

These facts are sufficient to show that variations may be accumulated by inheritance; and it is anticipated, without to any imaginable extent. The only way in which the observed facts of the life may be regarded in the light of possible progress? But, it will be asked, how on this accumulation take place in a state of nature? Where man selects the fittest to survive, from age to age, fitness will steadily increase; but what takes its place of the inferior selection, where there is no superiority to select it?

MALVARIS UNFOLDING.

Here is the point where the argument of this work based upon natural selection:

"All organic beings, without exception, tend to increase to an infinite ratio, but no district, no island, no whole country, could bear the progeny of a single pair after a certain number of generations. The inevitable result is an ever-recurring struggle for existence. It has truly been said that all nature is at war; the struggle ultimately prevails, and the weaker is destroyed. If the reverse occurred, struggle for existence would determine that those variations, however slight, which are advantageous should be preserved, and those which are unwholesome, should be destroyed." (I, 18, 19.)

Mr. Darwin, in the "Origin of Species," already briefly selected, as worthless, the objection from the inconceivable time required to produce great change by accumulating insignificant variations, for in no infinite time of Nature's disposal. He has of course lost none of his boldness in the interval, during which human history and human progress have been discovered among the remains of extinct mammals, and in graves that have been found for countries of continents, and during which so much has been done by geology to raise its scale of measuring time to the proportions indicated by astronomy for the stellar heavens. In a word, great as is Mr. Darwin's theory, it is not less true in these volumes, that modifications may be accumulated by inheritance, and it certainly follows that his critics theory may be true. There is nothing in the laws of life that prevent its adoption. If the lapse of time required to accomplish the result is to be regarded as long, it may still say that the earth and life may have endured so long, and ask for proof of the contrary. We live on an earth where the oldest coral island has built continents, and look up into a sky where rays of light that have traveled millions of years to tell the world of their journey, and to question any statement Nature may make to us of the length of her days?

