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CHAPTER II.

Striking testimony relative to the present position of Darwinism is borne by the Strasburg zoologist, Dr. Goette, who has won fame by his invaluable labors as an historian of evolutionary theory. In the "Umschau," No. 5, 1898, he discusses the "Present Status of Darwinism," and the conclusions he arrives at, are identical with mine. At the outset Goette indicates the distinction between Darwinism and the doctrine of Descent, and then points out that the distinguishing features of the former consist not so much in the three facts of Heredity, Variation, and Over-production, but rather in Selection, Survival of the Fittest, and also in that mystical theory of heredity—the doctrine of Pangenesis—which is peculiarly Darwinian. Since this theory of Pangenesis has found no adherents, the question may henceforth be restricted to the doctrine of natural selection. This Goette very well observes.

He points, moreover, to the fact that the misgivings that were entertained concerning the doctrine of natural selection on its first appearance, were, on the whole, precisely the same as they are to-day; only with this difference, that formerly they were disregarded by naturalists whose clearness of vision was obscured by excessive enthusiasm; whereas, today men have again returned to their sober senses and lend their attention more readily to objections.

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Goette recalls the fact that M. Wagner tried to supplement natural selection with his "Law of Migration," and that later on, Romanes and Gulick endeavored to supply the evident deficiencies in Darwin's theory, by invoking other principles; and that even at that time, Askenasy, Braun, and Naegeli—and more recently, the lately deceased Eimer—insisted on the fact of definitely ordered variations, in opposition to the theory of Selection.

Many naturalists recognize the difficulties but do not abandon the theory of Selection, thinking that some supplementary principle would suffice to make it acceptable; many others refuse to decide either for or against Darwinism and maintain towards it an attitude of indifference. The younger investigators, however, are utterly opposed to it. "There can be no doubt that since its first appearance the influence of Darwinism on men's minds has notably diminished, although the theory has not been entirely discarded."—But the very fact that the younger naturalists are hostile to it, makes it evident that Darwinism has a still darker future in store for it: that sooner or later it will come to possess a merely historical interest.

"The present position of Darwinism," says Goette, "is characterized especially by the uncertainty of criticism which is unable to declare definitely in favor of either side." Goette finds the chief cause of this uncertainty in the fact "that men of science (even Darwin himself) have widened the concept of selection as a means of originating new species through the interaction of individuals in the same species, so as to express the mutually antagonistic relations

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existing between several such species." The latter alone is subject to experimental verification, but it can only cause the isolation of existing forms and is not a species-originating selection—with which alone we are here concerned. This kind of selection can enfeeble the existing flora and fauna, but cannot produce a new species. Selection productive of new species "is not actually demonstrable; it is a purely theoretical invention."

Goette next points out that the investigator is everywhere confronted by definitely-directed variation: a fact which does not harmonize with the theory of selection, nor, consequently with Darwinism. If some scientists have not as yet accepted Eimer's presentation of this doctrine, their action is most probably to be attributed to the fear lest "they should have to accept not merely, variation according to definite laws, but likewise a principle of finality and other causes lying beyond the range of scientific investigation." The rejection of the theory of selection often promotes, as Goette rightly observes, a reactionary tendency towards *a priori* explanations of phenomena with which we are but slightly acquainted. "There are naturalists who do not discard the theory of selection simply because it seems to furnish a much-desired mechanical explanation of purposive adaptations" (a momentous admission to which we shall have occasion to revert).

Others have broken entirely with selection and the principle of utility and extend the idea of finality to the general capacity of organisms to persist. Thus adaptation becomes a principle which transcends the limits of natural

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science and pervades the whole domain of life. Goette observes that Darwin spoke of useful, less useful and indifferent organisms, by which he meant those adaptations destined for particular vital functions which tend to make the organs more and more specialized. Since the ability to live is threatened by this specialization it cannot be purposive. This is not wholly true, because the more specialized the individual organ becomes, the more perfect is the whole organism which is composed of these specialized organs. The functions of the individual organ may be restricted, but the power of the entire organism is notably increased, according to the law of the division of labor. Goette therefore has not sufficient grounds for rejecting this expression. He considers that a real and permanent purpose for the individual living forms is out of the question, but that this purpose may be sought for in the development and history of the collective life of nature. Definitely ordered variation, he thinks, a scientific explanation of which is indeed yet forthcoming, will explain adaptation equally as well as does selection. After what has been said this statement of Goette must come as a surprise, for one would think that according to his view definite variation explains adaptations better than selection. Goette sums up his main conclusion in the following words: "The doctrine of Heredity or of Descent, which comes from Lamarck though it was first made widely known by Darwin, has since continually gained a broader and surer foundation. But Darwin's own doctrine re-

garding the causes and process of Descent which alone can be called Darwinism, has on the other hand doubtlessly waned in influence and prestige."

This is exactly what we also maintain: The establishment of the theory of Descent in general, and the continual retrogression of Darwinism in particular. Wigand was entirely right when he said that Darwinism would not live beyond the century.

We may, however, derive from the discussions of Goette something else that is of the highest importance, namely, an admission in which is to be found the real and fundamental explanation of the conduct of the majority of naturalists who still cling to Darwinism. It does not consist in the fact that they are convinced of the truth of Darwinism but in their "reluctance to give up the mechanical explanation of finality proposed by Darwin," or rather in the fear of being driven to the recognition of theistic principles. With commendable candor Goette attacks this method of keeping up a system notwithstanding its recognized deficiencies. Goette furthermore points out especially that this recognition is more widespread than one might be able to gather from occasional discussions on the subject.

From the account which Goette gives of the present status of Darwinism we may safely conclude that Darwinism had entered upon a period of decay; it is in the third stage of a development through which many a scientific doctrine has already passed.

The four stages of this development are the following:

1. The incipient stage: A new doctrine arises, the older representatives of the science oppose it partly because of keener insight and greater experience, partly also from indolence, not wishing to allow themselves to be drawn out of their accustomed equilibrium; among the younger generation there arises a growing sentiment in favor of the new doctrine.

2. The stage of growth: the new doctrine continually gains greater favor among the young generation, finding vent in bursts of enthusiasm; some of the cautious seniors have passed away, others are carried along by the stream of youthful enthusiasm in spite of better knowledge, and the voices of the thoughtful are no longer heard in the general uproar, exultingly proclaiming that to live is bliss.

3. The period of decay: the joyous enthusiasm has vanished; depression succeeds intoxication. Now that the young men have themselves grown older and become more sober, many things appear in a different light. The doubts already expressed by the old and prudent during the stage of growth are now better appreciated and gradually increase in weight. Many become indifferent, the present younger generation becomes perplexed and discards the theory entirely.

4. The final stage: the last adherents of the "new doctrine" are dead or at least old and have ceased to be influential, they sit upon the ruins of a grandeur that even now belongs to the "good old time." The influential and now directing spirits have abandoned this doctrine, once so important and seemingly invincible, for the consideration of

living issues and the younger generation regards it as an interesting episode in the history of science.

With reference to Darwinism we are in the third stage which is characterized especially by the indifference of the present middle-aged generation and by growing opposition on the part of the younger coming generation. This very characteristic feature is brought into prominence by the discussion of Goette. If all signs, however, are not deceptive, this third stage, that of decay, is drawing to an end; soon we shall enter the final stage and with that the tragic-comedy of Darwinism will be brought to a close.

If some one were to ask me how according to the count of years, I should determine the extent of the individual stages of Darwinism, this would be my answer:

1. The incipient stage extends from 1859 (the year during which Darwin's principal work, *The Origin of Species*, appeared) to the end of the sixties.

2. The stage of growth: from that time, for about 20 years, to the end of the eighties.

3. The stage of decay: from that time on to about the year 1900.

4. The final stage: the first decade of the new century.

I am not by choice a prophet, least of all regarding the weather. But I think it may not be doubted that the fine weather, at least, has passed for Darwinism. So having carefully scanned the firmament of science for signs of the weather, I shall for once make a forecast for Dar-

winism, namely: Increasing cloudiness with heavy precipitations, indications of a violent storm, which threatens to cause the props of the structure to totter, and to sweep it from the scene.