

cies are based on previously known species whose characters are, in part at least, recognizably expressed in the diagnosis of the genus. When they are not, such genera have no basis and must necessarily be considered as non-existent.

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THE HYPOTHESIS OF "PRESENCE AND ABSENCE"  
IN MENDELIAN INHERITANCE

IN our last report we gave reasons for regarding the rose-comb as a comb on which an additional element "roseness" has been superposed, and we suggested that the allelomorphic pair consists in the two states: presence of the factor for rose (R) and absence of that factor (r). The rose-comb is in reality a single comb modified by the presence of a "rose" factor. The same considerations apply to the pea-comb, which is single comb plus a pea-factor.<sup>1</sup>

There are reasons for regarding man as a chimpanzee on which an additional element, "manness," has been superposed. There you have man expressed or explained<sup>2</sup> in terms of his anthropoid ancestor. The characters of a frog are undoubtedly latent in the frog's tadpole. What is to hinder, therefore, expressing or explaining the frog in terms of the tadpole by saying the tadpole carries the characters of the frog? The logic is sound in the statement that the tadpole contains "frog factors" or "frogness." The question is merely as to the helpfulness of sound logic used that way.

This seems like the method of reasoning that, as somewhere remarked by Professor William James, would enable Hegel and his followers to successfully support the hypothesis that men are always naked—under their clothes.

I am not ailing with metaphysico-phobia. Quite the contrary: upon occasion I enjoy

<sup>1</sup> "Experimental Studies in the Physiology of Heredity," by W. Bateson, Miss Saunders and R. C. Punnett in "Reports to the Evolution Committee of the Royal Society," Report IV., 1908.

<sup>2</sup> A few scholastics, more Abelard-like than the generality in keenness of dialectic, point out that there is an important distinction between "expressing" and "explaining" modern phenomena such as these.

and can profit by a half-holiday in some cool, shady dell of the land of metaphysics. I recognize, nevertheless, that as a rule it is a misfortune for metaphysics to get mixed with objective science. I recognize further that however unfortunate the mixture may be at its worst when deliberately made, by far the most unfortunate is such a mixture when made all unconsciously on the part of the mixers.

The opening sentence of Huxley's essay "Scientific and Pseudo-scientific Realism" is this:

Next to undue precipitation in anticipating the results of pending investigations, the intellectual sin which is commonest and most hurtful to those who devote themselves to the increase of knowledge is the omission to profit by the experience of their predecessors recorded in the history of science and philosophy.

Were the distinguished fellow of the Royal Society who wrote these lines living now, and were he a member of that society's evolution committee, he would, suiting action to word, almost certainly have saved his fellow committeemen the labor of discovering that the "allelomorphic pair consists in the two states, presence of the factor for rose (R) and absence of that factor (r)," by referring them to Hegel's "Logic," wherein the "divine principle" of *Negativität* is so fully and clearly set forth that its applicability to such cases as this becomes unmistakable.

Difference implicit or in itself is a difference of the essence, and includes both the *positive* and the *negative*, and in this way: The positive is in the identical connection with self in such a way as not to be the negative, and the negative is the difference by itself so as not to be the positive. Thus either is on its own account, in proportion as it is not the other.<sup>3</sup>

Again:

The foundation of all determinateness is negation (as Spinoza says, *Omnis determinatio est negatio*). Opinion, with its usual want of thought, believes that specific things are positive throughout, and retains them fast under the form of being. Mere being however is not the end of

<sup>3</sup> "The Doctrine of Essence," in "The Logic of Hegel," translated by William Wallace.

the matter—it is, as we have already seen, utter emptiness and instability besides.<sup>4</sup>

Thus supplementing the Report of the Evolution Committee of the Royal Society with Hegel's "Doctrine of Being," it becomes clear at once why biology has so long failed to recognize that rose-comb is single comb plus "roseness." It is because "opinion, with its usual want of thought" has failed to perceive that ordinary comb (an instance of "mere being") is "utter emptiness and instability."

So logic scores again!

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#### SCIENTIFIC BOOKS

##### PAPERS FROM THE TORTUGAS LABORATORY

THE Carnegie Institution supports three laboratories devoted to biological research, the Desert Laboratory in Arizona, the Station for Evolution on Long Island, N. Y., and the Tortugas Station at the mouth of the Gulf of Mexico, all of which are maintained in the most liberal manner. The Tortugas Laboratory is due to the energy of the present director, Dr. A. G. Mayer, who examined many points in our warmer waters in his endeavors to find the best locality for the study of tropical marine life, and at last decided on the Dry Tortugas, not far from Key West. Each summer he has taken a number of investigators with him and has supplied them with every facility for work. These two volumes<sup>1</sup> of 516 pages, 84 plates and numerous cuts are the results of two seasons' work.

A review of such volumes is difficult. Adequately to criticize the separate papers is not the task of any one person, so varied is their scope. All that can be attempted here is a brief summary of their contents. For this purpose the nineteen papers may be grouped under separate headings.

Four articles, all in the second volume, deal with animal behavior and can not easily be

summarized. Dr. R. P. Cowles describes the habits and reactions of the sand crab, *Ocy-poda*, and Dr. Charles R. Stockard has a similar paper on the walking-stick, *Aplopus*. John B. Watson studied the habits of two of the terns, while Frank M. Chapman discusses the habits of the booby and the frigate bird.

In Professor Reighard's paper on the colors and habits of coral-reef fishes, which, as is well known, are frequently conspicuously colored, it is pointed out that the theory of warning colors usually advanced does not account for all the facts observed and a theory of immunity coloration is proposed as a substitute, which is defined as follows:

Coloration, not sexually dimorphic, which renders an organism in its natural environment conspicuous to vertebrates; which has no selective value, since it does not aid the organism in escaping vertebrate enemies by concealment (protective coloration), nor in approaching its accustomed invertebrate prey (aggressive coloration), and when associated with disagreeable qualities is unnecessary as a warning to vertebrate foes of the existence of such qualities (warning coloration); it is conceived to have arisen through internal forces under immunity of the organism from the action of selection on its color characters.

In the first volume Dr. Mayer presents a study of pulsation of medusæ, in which he concludes that the stimulation of pulsation is caused by the formation of sodium oxalate in the marginal sense organs. This reacts on the calcium salts, precipitating calcium oxalate and setting free sulphate and chloride of sodium which act as nerve stimulants. Especially interesting is the way in which a pulsation once started in a ring cut from the medusan tissue may be made to continue in a circular course for days without further stimulation.

Dr. Mayer also returns to his discussion of the Floridan palolo worm, *Eunice fucata*, which at regular dates casts off the hinder sexual part of the body, these amputated portions swarming at the surface in vast numbers. From observations extending over several years, he points out that this occurs commonly within three days of the last quar-

<sup>4</sup>"The Doctrine of Being," *ibid.*

<sup>1</sup>"Papers from the Tortugas Laboratory of the Carnegie Institution of Washington," Volume I, 1908; Volume II., 1908.