

## DISCUSSION AND REPORTS.

### CONSCIOUSNESS AND EVOLUTION.<sup>1</sup>

MR. PRESIDENT AND GENTLEMEN: This conference between those who look upon many of the same phenomena from two points of view, the biological and the psychological, seems to me significant and promising. I think it is one of several indications that in general the devotees of the different particular sciences are coming more clearly to recognize the community of truth and interest which makes them dependent upon each other; and that this recognition is producing more of the spirit of appreciation and of sympathy among them all. It is to be hoped that the day of the *mere* specialist is waning. It may reasonably be believed that the day is dawning when a broad culture, a genial attitude and a firm grasp upon the unities of nature and of life will characterize the various departments of human knowledge.

The peculiarly close relations between biology and psychology are easily made apparent. I think that biologists are destined to make increasingly intelligent and emphatic the acknowledgment that they cannot understand or explain the phenomena of living animal forms (and, perhaps, not those of living plant forms) without appealing to the science of psychical phenomena. And since all science of psychical phenomena must forever take its rise from and return, after its attempted excursions into the fields of comparative psychology, again to the science of human consciousness, biology must always owe much to human psychology. On the other hand, every progressive student of psychology is entirely ready to recognize a constant and growing obligation on the part of his science to modern biology. Indeed, just now many psychologists are in danger of becoming too timid and—if I may be pardoned the word—even servile in their attitude towards the physical and natural sciences. It would seem that they often prejudice the facts of their own science, and reject the most convenient and satisfactory theoretical explanations of the facts by being more dogmatic

<sup>1</sup> Discussion before the American Psychological Association, Philadelphia, 1895.

about the validity and universal application of so-called 'natural laws' than are the physicists and biologists themselves. Witness the hasty and excessive confidence of many psychologists in the principle of causation, as conceived of after the pattern of physics and carried in again upon the sphere of mental life in discussing the phenomena of will; or the gingerly way in which the facts and laws of consciousness in its relation to brain states are discussed, whenever the shadow of the very dubious principle of the conservation and correlation of energy is thrown over this problem. It has been my experience that, on the whole, psychologists are much more inclined to dogmatism over many alleged physical principles than are the most candid and thoughtful students of physics and biology.

Without criticising or dissenting from Professor James' threefold division of the problem of consciousness and evolution, it seems to me that we may regard this problem from two points of view. If we take one of these points of view we look backward and ask ourselves as to the origin of consciousness, and as to the possibility of explaining it by considerations which the student of biology is able to present and to verify. If we take the other point of view we look from it in the forward direction; and then we ask ourselves as to the part which consciousness itself ever plays—has played and will continue to play—in the evolution of animal organisms. Our first question is: How far does the evolution of organisms, histologically and physiologically considered, enable us to give the history and the explanation of the rise and development of consciousness? Our other question is: How far does consciousness, having once got established, so to speak, influence—quicken, accelerate, retard and mark out into definite lines—the development of organisms?

The first of these two questions we may consider either in the more purely historical and descriptive way, or in the more profoundly philosophical way. And it is difficult, in all thorough discussion of the subject, to separate between the two. But a few words upon each of these ways of consideration, or sets of considerations, may not be out of place here.

It must be admitted with gladness and thanksgiving that the modern doctrine of biological evolution has drawn a most interesting and instructive picture of how the different forms of animal life might have succeeded each other, and of the relations, whether to each other by physical generation or to their total environment, under which they have appeared in succession, been modified, and disappeared, giving place to other forms. But it may well be questioned how far all this

puts us in possession of the descriptive history, not to say the scientific explanation, of the rise and development of consciousness. For, in the first place, we are still almost wholly in the dark as to precisely where, in the series which evolution presents, consciousness in fact had its rise. Was it with those most elementary living forms which expert biologists hesitate to assign either to the animal kingdom or to the field of plant life? And, if so, shall we go on with Fechner to assume 'souls' as belonging to all the plants; or even with Clifford, to distribute our 'soul stuff' as widely and generously as Nature herself seems to have distributed the 'stuff' out of which things are made?

It seems to me that the most significant truth which biology is about to establish in such connection is this: The more careful and patient study of the micro-organisms with the higher powers of the microscope shows that an unexpectedly high development and complex exercise of psychic functions needs to be assumed to account for their behavior. Where, then, and how 'low down' shall be placed the rise of consciousness in the so-called scale of animal life?

But, even if we could find in biological evolution any answer to the question just raised, and also any answer to the inquiry for a trustworthy descriptive history of the development of conscious life as connected with organisms, all this would not give us a valid explanation of conscious phenomena. For, as is admitted by all when brought face to face with the problem, consciousness is *per se*—if I may so speak—a phenomenon of a totally different order from those phenomena with which histology and physiology deal. It appears, indeed, quite as hopeless a task for our imagination, to ask it to conceive how the simplest and lowest form of consciousness can arise out of the unconscious as to conceive the denial of the scholastic maxim: *Ex nihilo nil fit*. If we had our two parallel sciences complete—comparative anatomy and physiology in one line and comparative psychology in another—we should still exhaust all our wisdom with the sentence: Just at this time, it would appear, the *fiat* went forth: 'Let there be consciousness, and consciousness was.'

I will not attempt to take the question as to the relations between consciousness and the evolution of material forms out into the broader fields of general metaphysical philosophy. It seems to me, however, the history of speculation has sufficiently shown that all theories which make consciousness ultimately dependent upon the evolution of unconscious forms of existence succeed only by smuggling into their explanations everything which the very essentials of the theories require them to leave out. I will only call attention to one important truth in

the theory of knowledge. It is impossible to have any science whatever without basing it upon a system of metaphysical postulates and metaphysical conceptions. But all these conceptions are themselves only products or processes in consciousness; and all the postulates are only the assumptions, the natural or acquired 'faiths' of human consciousness. If, then, whatever may be thought of the chronological position which human consciousness occupies in relation to the development of organisms, you do away with the logical *a priori* and the ontological value of consciousness, as rational thinking, as willing, as knowing, you remove all science. In the macrocosm it would appear that there is no escape from the position; being—so far as being can be known, or thought by us—is dependent for its genesis and evolution on some consciousness.

As to the other most interesting and important problem, namely, the dependence of the evolution of specific animal organisms upon the conscious psychoses of the animals themselves, it seems to me our trustworthy evidence of an experiential sort is much greater. I was not a little delighted at the main position which Professor Cope took in his address. But I believe that biologists will be compelled to go even further than he appears to, at present, in valuing the influence of consciousness upon the evolution of organisms. To speak in popular and figurative phrase, the psychical characteristics and psychical activities of every species of animal is an active and authoritative factor in the excitement and direction of organic changes in the individual. The activities of even the lower forms of animal life are within indefinite but really existing limitations determined by the mental representations, the passions, the conscious wants, desires and volitions of the animal. These forms are not in their individual development, *mere* molecular mechanisms.

I think that most biologists have quite failed sufficiently to reflect upon the significance of much of the terminology which they employ. How much of it is taken from our own conscious life, our psychical experience! Strip it of the more obvious meaning which it seems to have as applied to this life and to this experience, and how difficult it becomes to give it any meaning, whatever, which shall make our theory of evolution much more than a ceaseless, unprogressive repetition of the facts. Some years ago, when discussing this subject with a class of graduate students, a member of the class who had taught for years in a large high school expressed his astonishment as he once beheld an amœba and a fresh-water hydra, after preliminary exhibitions of rage and cunning, come to a pitched battle with each other

which ended in the hydra taking the entire insides out of the amœba. Here was indeed 'a struggle for existence' with a vengeance!

For myself, I do not propose to be deterred by doubtful principles of physics, from the most obvious inference that the animals, including the micro-organisms, have a true psychic existence; and that this psychic existence is a force, and an important force, for the preservation or destruction of the species. Only the settlement by biology of the disputed question as to the limits of heredity can decide how much psychic forces count for in the modification and direction of the physical evolution of species. Without emotion and what we call instinct to act as *veræ causæ* in the evolution of their organisms, the world of animal forms would be a system of pale shadows, moved by toy-like mechanism, compared with the exceedingly interesting and dreadfully earnest thing which it now is.

It is here, of course, however, that comparative psychology and biology came so close to each other; indeed, seem to run together. And comparative psychology—as the very term signifies—cannot be cultivated without knowledge of human psychology. Here, therefore, I am brought around again to the remark with which I started. Such a conference as this is significant of the unity of interest that maintains itself among the sciences; and it is promising of a more warm sympathy and a more helpful intercourse between them.

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The addresses to which we have already listened by Professors James and Cope have raised so many interesting questions, and the various aspects of the general problem have been so clearly formulated, that I shall confine myself to a few remarks upon the positions which these speakers have taken.

Professor Cope's position on the place of consciousness in evolution seems in the main the true one, as far as the question of fact is concerned. I agree with him that no adequate theory of the development of organic nature can be formulated without taking conscious states into account. The fact of adaptation requires on the part of the individual organism something equivalent to what we call consciousness

<sup>1</sup>Discussion (revised) before the Amer. Psychol. Assoc., at Philadelphia, Dec. 28, 1895.