PSYCHOLOGY AND COMPARATIVE PSYCHOLOGY.*

It is now more than ten years since I suggested to a few of the students of this Faculty of Comparative Medicine that it might be interesting and profitable to band together for the study of the psychic nature of animals, particularly those animals with which we are brought into daily contact.

In December, 1885, at a meeting called to consider the subject, it was unanimously decided that a society should be formed to study animal intelligence as best it could. Practically all the students and those teachers more immediately connected with the work of this Faculty joined the Association and entered into the new project with enthusiasm. It was early decided that only material obtained either at first hand or from the most reliable sources should be brought before the Association, and that principle, the wisdom of which will not be questioned, has been acted upon throughout.

Whatever the value of the papers and discussions which have engaged our attention it may be fairly claimed that the facts upon which they have been based were beyond question. The first essential in any student of nature is a strong desire to know the truth, and, therefore, a great respect for exact observation at the outset. While theories change, and this is inevitable owing to the imperfection of our grasp of many-sided truth, a fact is always a fact. The patient collection of facts, so well illustrated by the illustrious Darwin, when theorizing without very great regard to them was so tempting in framing explanations of organic nature, is a work that the world long undervalued and the importance of which it is to be feared all psychologists at the present day do not adequately appreciate.

* An address delivered to the Association for the study of Comparative Psychology in Montreal, November 2, 1896.

In this, at all events, our unpretentious Association may claim to have trodden in the safe path. At the end of our first decade of existence it may be profitable to review what has been accomplished. It could scarcely be expected that the members of this Association, being for the most part undergraduates, whose time is largely taken up with professional studies, should be able to make elaborate original researches worthy of publication. From the first, however, our proceedings have been given to the public in condensed form by the local press, and evidence has been abundant on every hand that one of the results has been an altered attitude of mind on the part of many intelligent persons in this city towards the animal world about us, notably our domestic species. This is not a work to be despised, for the welfare of our fellow creatures lower in the scale is largely dependent on the views we entertain of their psychic nature.

It is surely not to be supposed that such studies as have engaged the members of our Association are without a value of a professional kind; for in the handling of sick animals, in diagnosing their exact condition, in appreciating their sensations and generally in understanding their entire nature, the man who observes and reflects on such things must be more competent as a veterinarian, other things being equal, and certainly a more agreeable visitor to both patients and clients.

But it is difficult, in my opinion, to overestimate the good to the individual who in the right spirit studies animals. A frame of mind is established which, even when one exaggerates animal intelligence, is rarely practically harmful—often the reverse—and nearly always begets sympathy and modesty.

Psychology has passed through great changes, during even the last decade. Now almost every college in America of much

importance has its chair of psychology, and many colleges are provided with psychophysical laboratories. In America alone there are two periodicals devoted to this subject; and at last pedagogical institutions are attempting to found the training for teachers on the laws of the mind, *i. e.*, on psychology. In fact no recent educational movement has been more widespread in its influence or more rapid in its development than the modern psychology.

The scope and methods of the science have also changed. While none the less introspective, it has become more objective. The allied science of physiology owes something to psychologists, notably in the direction of a more complete and accurate study of the senses and keen criticism of positions assumed by physiologists in regard to the central nervous system.

The psychologists have borrowed freely from the realm of mental and nervous disease; all of which marks a new departure from which not only psychology, but physiology and practical and scientific medicine, must benefit.

It is usually a hopeful sign when methods of exact estimation begin to be applied to any science. There has been much diversity of opinion as to the extent to which this can be or has been successfully done in psychology. In the opinion of one of the most accomplished workers in this department of the science who occupied the presidential chair at the last meeting of the American Psychological Association, there can be no doubt about the value of such methods and their application. He says: "I venture to maintain that the introduction of experiment and measurement into psychology has added, directly and indirectly new subject-matter and methods, has set a higher standard of accuracy and objectivity, has made some part of the subject an applied science with useful applications, and has enlarged the field and improved the methods of teaching psychology."

But what shall we say of the *status* and prospects of comparative psychology? The works of Romanes were well known prior to the beginning of the last decade. They may be considered as marking about the first serious attempts to treat the subject of comparative psychology in a truly scientific spirit and in a form accessible to the intelligent portion of the general public.

Much later appeared the books of Professor Lloyd Morgan—works which possess the charm of unusual clearness. If Romanes was open to the charge of claiming too much for animals, Morgan is certainly cautious enough to please the most conservative, unless it be those who deny true intelligence to animals entirely.

It is a hopeful sign of the times in psychology that a professor of philosophy, Dr. Carl Groos, of Giessen, has found material for a book of considerable size on the play of animals, a subject which has been treated by him with interest, learning and critical acumen.

Animal intelligence is more and more attracting the attention of the professed psychologist and biologist, and that both realize the difficulties of the subject, while its importance is acknowledged, is of good omen. Comparative psychology is now beyond the stage of neglect and contempt, though there are those who seem to think that before we can judge of the mental processes of animals much greater progress must first be made in the study of the human mind; in other words, they would take their standards, their criteria from human psychology. That we must in the end find the clue to interpretation from ourselves there is no doubt. But is it not the fact that every complicated subject has been advanced by studies on a lower plane and by the process of comparison? Anatomy and mammalian embryology would

scarcely be worthy of the name of sciences to-day but for studies conducted on simpler forms. Do not psychologists sometimes forget, as anatomists long did, that the human is scarcely to be comprehended apart from the study of simpler creatures? Should we not look at psychology as the naturalist now does at zoology, and endeavor to discover the various grades in psychic processes, if such there be, and it is only, so far as I can see, by comparative investigation that their existence or non-existence can be established.

To do such work at its best requires a knowledge of both biology and psychology, and an intimate acquaintance with the ways of animals. Closet lucubrations can not be expected of themselves to advance comparative psychology very much.

Might not human psychology be made more objective still, and is not the amount of wheat garnered much out of proportion to the quantity of sheaves brought to the thresher? Has individual psychology received the attention it deserves? Might not the inductive method be more fully applied to psychology? I have long been convinced that differences for races and for individuals have been insufficiently recognized in physiology, and at last there seems to be a reaction against the former reckless leaps from frog or rabbit to man.

The physiologist cannot, however, afford to ignore the frog or the rabbit even when his goal is man; nor, if I may venture to express an opinion, can the psychologist do so either without some loss,—possibly great loss, to his subject.

I hope to see published in the next few years detailed studies on many individual human beings of both sexes and also on individual animals. We must have more facts for our conclusions. The departures of French psychologists are very welcome, whatever the final outcome may be. It cannot be doubted that the study of hypnotism, double personality and morbid states of various kinds has greatly advanced our knowledge of the normal man, and his fellows lower in the scale; and I should be disposed to say that the investigation of the psychic processes of animals aids in the comprehension of even such abnormal states as those to which reference has been made.

At the recent great Psychological Congress at Munich there was, among others, a department for comparative psychology; and an endowed lectureship on this subject has recently been established at Aberdeen, so that it is clear that in this, as in other directions, the world is moving.

If my view is correct that we are in need of vastly more facts and observations, then is there room for many workers. The experimental has a wide range of application in comparative psychology and as yet but little has been done. In this direction, as I have urged for years on our members, we could do much to advance the subject we have at heart.

It has been my happy privilege to attend every meeting of this Association held since its foundation, and reviewing the work of the past ten years I feel that, although it has been a humble one, the Society for the Study of Comparative Psychology in Montreal has not existed in vain.

Wesley Mills.

McGill University.

PAREIASAURIA SEELEY (COTYLOSAURIA COPE) FROM THE TRIASSIC OF GERMANY.

The first notice on *Triassic Pareiasauria* was published in 1857 by Professor Fischer, of Freiburg in Breisgau, based on notes received from the eminent paleontologist Hermann von Meyer, to whom he had sent the specimen for examination. The title of the paper is: *Über Sclerosaurus armatus* H. v. Meyer, eine neue Saurier-Gattung aus dem Bunten Sandstein bei Warmbach gegenüber Rheinfelden. Hierzu Tafel III