should occur a very striking example of inaccurate *learning:*

"Embryology throws some suggestive light upon the radical difference of childhood from maturity. The human fœtus roughly follows the disjointed line of development which marks the evolution of animal life. *Up to four months before birth the organism is essentially an aquatic animal, provided with rudimentary gill slits and the developed nerves of equilibration characteristic of aquatic life. At a later stage it has a coat of hair, and a tail longer than its legs, with the necessary muscles for moving this organ. This class of singular phenomena constantly appear during the embryological period; they are nourished and growing rapidly for a time, as if the whole destiny of the organism were to become some one of the lower forms of animal life.* Then the purpose is more or less suddenly changed. New forms and new organs appear, displacing or absorbing the old, and the organism seems to obtain a new destiny, which in turn may wholly or partly disappear. Some of these forms do not wholly disappear, *and physiologists now enumerate in the adult human organism more than one hundred parts of the body which have no known function*, and whose presence cannot be explained except upon the theory that they are remnants, or rudimentary organs, of some of these broken tendencies through which the organism has passed. Such is the pineal gland, which was declared by Descartes to be the seat of the soul, but is now recognized as the remnant of the organ of vision as still found in lower reptiles. The semi-lunar fold at the internal angle of the eye *is the remnant of the third eyelid of marsupials.* The vermiform appendage, which is such a menace to human life, is the remnant of an enormous organ in herbivora. The ear muscles, which in few people are functional, are recognized as rudiments of muscles of much use to lower animals. In the earlier stages of the human fœtus the brain is made up of three parts, of which the hinder part is by far the longest, as in the case of lower animals. *There is then no trace of the cerebral hemispheres* which constitute so large a part of the adult brain, *just as there is no trace in the lower orders. The mid-brain later shows the same enlargement for the centers of sight and hearing that these portions have in birds and certain fishes.* Still later the proportions are reversed: *the hind-brain dwindles away relatively, to become the slight enlargement of the spinal cord at the base of the brain known as the medulla oblongata; the mid-brain shrivels, to become the small nodules known as the quadrigemina; and the narrow neck connecting the fore-brain and the mid-brain swells, to become the huge cerebral hemispheres. Embryological growth is clearly not a harmonious development. The line of growth is broken, proceeding in one direction for a time, and then suddenly turning off in a new direction, as if the organism were continually making mistakes and correcting them before it is too late.* The path of growth is strewn with the remnants of these abandoned tendencies."

CHARLES S. MINOT.

THE 'ENCHANTED MESA.'

TO THE EDITOR OF SCIENCE: As little as he needs it, so little would I object that what trifling credit may be involved should go to my great teacher and dearest friend. Quite unthinkingly, however, I have mentioned the fact, in type, that I first published the Quéres tradition of the 'Enchanted Mesa;' and as SCIENCE (September 17) refers to the legend as discovered by Bandelier and 'subsequently obtained' by me, the pupil seems to be left in the position of trying to rob his master.

Bandelier's *Final Report*, Part II., p. 313, seems sufficiently conclusive, and accords with his fixed habit of giving credit, even to humble sources.

I first published a skeleton of the legend in 1885. It was years later before I could round out the last detail of the folk-story—when I had become genuinely a friend (by their count and my own) with nearly all the old *principales* of Acoma. One of them, a noble and wise old man, already tottering in his nineties, rode sixty miles horseback to pass three days with me in my own pueblo, in the month of his death. Both of us felt that it was good-bye; for I was already packing for the long South American journey with Bandelier, and the old man knew his own time was short. We talked of many things of the years that had drawn us together, and of Acoma, our common love; and

again he told me in full the folk-tale of the Mesa Encantada. No student of ethnology or of men, looking at that fine old face, listening to that voice, could ever have been so flippant as to suggest that he was telling 'a tall story.' He was repeating, word for word, the scriptures (we would say for a parallel) as he had learned them at his father's knee, and as they had been 'told down' from father to son through centuries. These folk-stories are not told to careless strangers, nor to careful ones either. How difficult it is to get them in full has been amply recorded by Bandelier and Cushing, and is fully understood by all who have genuinely gathered Indian folk-lore.

The matter of precedence is not vital, but since Mr. Hodge's workmanlike achievement the final 'round-up' of the rock of Katzimo seems to be on, and it is well to have all the mavericks duly marked. The Indian tradition is vindicated, and under circumstances that, in any less rigorous court than that of science, would be deemed dramatic.

CHAS. F. LUMMIS.

LOS ANGELES, CAL.

SCIENTIFIC LITERATURE.

Philosophy of Knowledge. An Inquiry into the Nature, Limits and Validity of Human Cognitive Faculty. By GEORGE TRUMBULL LADD, Professor of Philosophy in Yale University. New York, Charles Scribner's Sons. 1897. Pp. xv+614.

Professor Ladd's most widely known work has hitherto been done in the field of psychology. His *Elements of Physiological Psychology*, published ten years ago, was the first systematic account in English of the methods and results of that science. Since that time there have appeared from the pen of the same author, *Outlines of Physiological Psychology; Psychology, Descriptive and Explanatory; Philosophy of Mind* (an essay on the metaphysics of psychology); besides a work entitled *Introduction to Philosophy*. It has all along been evident to readers of Professor Ladd's works that his main interest is n those ultimate problems of theology and philosophy which are concerned with man's nature and destiny, and which demand for their answer some theory of his relation to other beings and to the ground of all reality. The author's procedure, however, as well as numerous explicit statements scattered throughout his writings, make it clear that he has considered it necessary to approach the discussion of these problems after a thorough study of the concrete facts regarding the nature of the human mind and its relation to the bodily organism. Professor Ladd's psychological labors thus furnish the basis for his philosophy. Having laid the foundation, he now proposes to see what structure can be erected upon it; or, as he himself expresses it, to show what is 'implicate' in the fact of human experience. It is the main business of the present volume to discuss the problems of knowledge; ontological questions are, in the main, reserved for future treatment. Nevertheless, as is pointed out, it is not possible to separate entirely ontology and epistemology. "Something as to the nature of the really existent is interwoven inextricably with the conscious life of the cognitive subject" (p. 348). Even in the present work, then, as we shall see later, a theory of reality is foreshadowed.

Before examining any of the doctrines of the book, it seems necessary to say a word regarding its spirit and purpose. The author's interest appears throughout to be practical quite as much as theoretical. "I have striven constantly," he says, "to make epistemology vital, —a thing of moment, because indissolubly and most intimately connected with the ethical and religious life of the age" (p. ix.). And it seems to him of the utmost importance to refute what he considers false and dangerous theories of knowledge. "The agnostic or despairing attitude towards the problem of knowledge itself lies, both logically and in fact, at the base of all other agnosticism, and of manifold forms of despair" (p. 28). If this conviction has sometimes led the author to adopt the language of a moral teacher or preacher, rather than that of an investigator, it has doubtless rendered his presentation more vigorous and his book more interesting, from the standpoint of the general reader, than would otherwise have been the case. It is probable, too, that in the author's consciousness of a mission is to be found the explanation of the remarkable statements in the