

a hundred miles or more along the Colorado-New Mexican line. The most conspicuous of these craters is Mount Capulin, six miles south of Folsom Station. This, a beautiful cinder cone (altitude 9,000 feet), rises nearly 2,750 feet above the railroad, with a vast crater at its top nearly a mile in diameter, slightly broken down on its western side. From its summit many flows can be traced. To the southward, from six to twenty miles, there are several similar craters, while to the northward there are several smaller ones. Around these craters there are numerous surface flows of vesicular, ropy lava, extending eastward to within sight of the Texas line.

These are the easternmost known craters of the Rocky Mountain region, and their occurrence at the foot of the Raton plateau, near the western edge of the Llano Estacado, is interesting. The cinder cones are clearly of a more recent origin than the adjacent basaltic cap of the Raton plateau, for they are situated in an eroded valley between the main mesa and an outlier—the Sierra Grande—and at a lower altitude than either of them. They are also apparently more recent than the late Tertiary deposits of the Llano Estacado, the original surface of the lava resting upon the latter and not covered by it except in case of the wind-blown débris.

While these are the only craters of the United States which are east of the true Rocky Mountain front, there are other important ones lying east of the Rio Grande which have escaped Mr. Russell's notice, notably the Cerrito lying between Galisteo and the Rio Grande, consisting of several cones rising to nearly 1,000 feet above the plateau. Still to the southward in the great bolson desert, which lies between the Organ and Sacramento ranges of southern New Mexico, there is a comparatively recent volcanic cone from which a stream of mobile lava has flowed for sixty miles to the southward. There are also several other craters just west of the Rio Grande and El Paso, in southern New Mexico, which have escaped Professor Russell's notice.

The Folsom craters, east of the true Rocky Mountain front, are the ones which upset deductions which would otherwise be tenable con-

cerning the occurrence of volcanic cones approximately along oceanic shore lines. A bulletin for the United States Geological Survey is being prepared upon the Folsom locality by Mr. S. Prentiss Baldwin, of Cleveland, Ohio, who, at my request, some years ago undertook a thorough exploration of that most interesting region.

In addition to the true cinder cone craters we have have specified, that portion of New Mexico east of the Coloradoan group of the Rocky Mountains (Snow Range) which ends abruptly near the latitude of Sante Fé, is unusually rich in older volcanic phenomena, such as superficial lava flows and old volcanic necks or stocks of the type of Mount Taylor or the Spanish Peak which Russell includes in his map as volcanoes and two of which, near Fort Union, he describes.

Besides the omission of the true craters of New Mexico, the work gives no reference to the old volcanic phenomena of the Texas region, such as occur so abundantly in the Trans-Pecos region, and to the eastward along the interior margin of the Coastal Plain, between Austin and Del Rio.

It would have made matters much clearer to the reader had Professor Russell used a series of symbols upon his map to distinguish the kinds of volcanoes there plotted, such as living craters, extinct craters and volcanic stocks representing the ruins of old craters.

The accompanying sketch of the Texas-New Mexican region giving supplementary data concerning the distribution of volcanic phenomena will be of value to the reader of the work. The black discs are true volcanic craters; the square stocks or necks of former craters, and the crosses, are laccolites.

ROBERT T. HILL.

LITERARY EMBRYOLOGY.

TO THE EDITOR OF SCIENCE: In the *Atlantic* for this month is an article by Mr. Frederic Burk on the 'Training of Teachers.' On p. 553-554 occurs the following paragraph, in which I have ventured to italicize those parts which seem to me absolutely incorrect. It appears singular that in an article on *teaching*, severely criticising prevalent methods, there

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