ing curved and nearly triangular. When put into pure water, it invariably showed a slight acidity, reddening blue litmus paper. It can be taken from the deposit in lumps; but they readily fall to powder, the particles or flakes becoming separated by the pressure of one's hand. During a tour through southern Utah in the year 1893 I found another large deposit of the same kind of volcanic product on the east side of the Wasatch Mountains in the vicinity of Monroe village, in Sevier county. I could find no difference between this latter and that which occurs near Stockton. Both give a slight acid reaction, which, I suspect to be due to a sulphur compound.

In the same year, 1893, there was brought to me a good sample of grayish white, stratified mineral substance, said to be kaolinite and to have been taken from an immense deposit of a similar character east of Green River and in northwestern Colorado. This so-called 'kaolinite' proved upon examination to be similar volcanic dust, which had been subjected to the action of water mixed with clay, deposited in layers under the water, and afterwards hardened.

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VOLCANIC DUST IN TEXAS.

UNDER the above title Mr. H. W. Turner contributes an article to SCIENCE of April 26, 1895, briefly describing a specimen from the Llano Estacado region. Some of the previous notices of this or similar material are noted below.

The first specimen of the material which came under my notice was received by the Texas Survey in February, 1890, with other material forwarded by Professor W. F. Cummins. It was collected from the beds to which he gave the name 'Blanco Canyon' from the place of their most characteristic development, and in his first description of them* he calls it chalk. Later, microscopic slides of this material were prepared in the Survey laboratory, by Mr. J. S. Stone, under the direction of Professor R. T. Hill, and these exhibited a large number of very finely preserved diatoms.

These diatoms were partially identified by Mr. C. H. Kain and published by Prof. Cope in his first notice of the probable Pliocene age of the Blanco Canyon beds.†

The diatomaceous character of this material was further noted by Messrs. Lewis Woolman and C. Henry Kain, and list of species given in *The American Naturalist* for 1892, p. 505, under the title 'Fresh-Water Diatomaceous Deposit from Staked Plains, Texas.'

In 1892 an examination of this material by the writer showed the presence of volcanic dust, but the diatoms constituted by far the greater part of the mass examined, and it was therefore classed with other materials of a similar kind from the coast region as diatomaceous earth, and only those siliceous deposits of like character which failed to reveal diatoms were classed as volcanic dust and briefly described in the Transactions of the Texas Academy of Science.‡ Further reference to these siliceous deposits are also made by Kennedy in the Fourth Annual Report Geol. Sur. Texas, pp. 20, etc.

The stratigraphic position of the deposit referred to by Mr. Turner has been accurately determined, as will be seen by reference to the different reports of Professor Cummins on northwest Texas and the Llano Estacado. The hill mentioned, on Duck Creek, in Dickens county, is in the type locality of the Blanco Canyon beds, and sections are given of it in the first three

* First Ann. Rep. Geol. Sur. Texas, p. 190.

† Proc. Amer. Phil. Soc., 1892, p. 123.

‡ Vol. I., Part I., 1892. P. 33. 'Volcanic Dust in Texas.'

annual reports of the survey. The fossils of these beds (one of them, a turtle, from the hill in question) were sent Professor Cope, and are described by him in the fourth annual report of the survey. He says: "Its position is between the Loup Fork and Equus terranes. The fauna is intermediate and peculiar, as not a single species occurs in it which has been found in terranes prior or subsequent to it in time. The horizon is more nearly and strictly Pliocene than any of the lacustrine terranes hitherto found in the interior of the continent." E. T. Dumble.

ON THE CLASSIFICATION OF SKULLS.

To the Editor of Science: I learn from an article by Dr. Harrison Allen (Science April 5, 1895) that, in a paper entitled 'Observations on the Cranial Forms of the American Aborigines,' Proceedings of the Academy of Natural Sciences of Philadelphia, 1866, 232, J. Aitkin Meigs classified various types of crania, using nomenclature which in some part coincides with that proposed by me in my new 'Method of Classification of Skulls.'

I am very glad to learn that Meigs distinguished the various forms of human skulls as early as 1866, as I have done twenty-six years later. When two men, at so great a distance in time and space, have conceived a similar idea it is a strong argument that this idea is not a fantastic one.

I first tested my new method in the summer of 1891, examining a large collection of Malanesian skulls, and published my first memoir in the spring of 1892, which was translated into German (*Die Menschen Varietäten in Malanesian.* Archiv. für Anthropologie, XXI., 1892). In the same year, 1892, I had fortunately the opportunity of examining more than 2,200 skulls of the Mediterranean and Russian races, ancient and modern. I then systematized my classification, which was imperfect, and distinguished varieties and subvarieties of human skulls in a systematic catalogue of ancient Russian skulls.

This method has the approval of many Italian anthropologists, a notable exception being Mantegazza, a strange type of man, and of some German anthropologists, as Ranke and Benedict. The French anthropologists are indifferent, but they find the method useful as an analysis of forms.

The memior of Meigs is not known in Europe. The only work of this author that I possess is the Catalogue of the Specimens contained in the collection of the Academy of Natural Science of Philadelphia, 1857. In view of the notice published by Dr. Allen in Science, I am anxious to read the work referred to, and I should be much obliged if some American friend will procure a copy for me. I shall be glad to refer to the work of Meigs in a special note. G. Sergi.

University of Rome, April 23, 1895.

SCIENTIFIC LITERATURE.

The Geological and Natural History Survey of Minnesota, Volume III., Part I. Palæontology. 4to, 1895, Pp. lxxv., 474. Plates xxxiv.

Considerable activity has been manifested of late in a more careful and systematic study of the invertebrate faunas of the various geological horizons of this country, and several works upon the subject have already been published or are now under preparation. The value of a thorough examination and proper illustration of the faunas of many of our geological divisions will be very great to the stratigraphical geologist, for many problems are now obscure on account of the lack of knowledge of the very criteria most important for correlative purposes.

What is most required in this field is not so much the increase in number of species, although many horizons even in the eastern portion of the country have as yet been but