SHORTER ARTICLES.

A NEW METEORITE FROM KANSAS.

THE Field Columbian Museum has recently received a meteorite seen to fall in Saline Township, Sheridan Co., Kansas. The chief observer of the fall was Mr. S. A. Sutton, of Hoxie, Kansas, and he was also the finder of the mass. The fall took place November 15, 1898, at about 9:30 P.M., the circumstances being thus described by Mr. Sutton: On the date mentioned he was about to retire for the night when a great light seemed to flash in his house accompanied by a rushing noise. He supposed a large lamp in an adjoining room was exploding, but on hurrying to the room saw instead a great fiery mass passing the window near him. Its path was nearly horizontal and the direction of motion northwesterly. The light given off was white and intense like that of an electric light, and a fiery trail several hundred feet long with sparks of various colors followed in its wake. The whole made a beautiful as well as awe-inspiring spectacle. The light was so intense as to illuminate the entire house and was noticed by other members of the family besides Mr. Sutton.

Whether it was noticed by others in the region has not been positively ascertained as yet, but as the territory is sparsely populated it may be that no other observer will be found.

Mr. Sutton, being a surveyor by profession, at once began to form as accurate estimates as possible of the speed, direction of motion, etc., of the mass, in order to enable him to discover where it would be likely to strike the earth. The speed he estimated at one mile per second, the angle with the horizon as 25° and that with the meridian as 20° west of north. These estimates led him to conclude that the point of fall would be about four miles from his home, but all subsequent searching in that region proved futile. At the end of nearly three years, however, he made a recalculation in which he assigned a greater speed to the meteorite than he had before done. This indicated that the point of fall might have been about eight miles away. Seeking in this locality, his efforts were rewarded in the fall of 1901 by finding the meteorite in the bank of a 'draw.' It had penetrated the soil to an underlying limestone stratum on which it lay. The thickness of soil at the time of excavation was considerable, but this might have undergone considerable change since the fall of the meteorite. Great credit is certainly due Mr. Sutton for the skill and persistence with which he followed up his observations.

The mass as received at the Museum has the form of an irregular, somewhat tabular, polyhedron bounded by eight approximately plane surfaces. Its weight is 68 pounds 10 ounces. It is covered, except where a few small fragments have been broken off, with a thick black crust contrasting in color to the dark gray hue of the interior. The crust is stippled with protruding metallic grains, for the most part coated with a black oxide of iron, but occasionally showing bright, and nickel-white in color. One of these protruding grains reaches a diameter of 5 mm.; the others are smaller. Cracks through the crust give the meteorite a 'baked' appearance. There are numerous characteristic pittings, for the most part oval in shape and having a length of about 2 cm. A slight coating of carbonate of lime occurs in places over the surface, doubtless formed upon the meteorite while it lay in the soil, but aside from this the mass has a remarkably fresh and unoxidized appearance. The texture of the stone is quite firm and compact. Even to the naked eye a chondritic structure is apparent and chondri about 2 mm. in diameter can be broken out.

A brief chemical and microscopical examination shows the chief constituent minerals to be chrysolite, bronzite and nickel-iron, a fuller account of which will be given in a future Museum publication. The specific gravity is 3.62. Having fallen in Saline Township, this will be the name used for designating the meteorite. The region in which it fell is one which has already within an area of 85 by 120 miles yielded five and possibly six distinct finds of meteorites of such character that they must be considered separate falls. Now that an observed fall has taken place in the region, it would seem that

some reason must be sought for the large number other than mere coincidence or the fact that the area is not forested. A further feature of interest in connection with the fall is the fact that it occurred at the time of the Leonid showers. Only two such instances have hitherto occurred within this period, these two being the falls of Werchne Tschirskaja and Trenzano. These are both veined spherical chondrites and the present indications are that Saline Township belongs in the same category.

Oliver C. Farrington.

NOTES ON THE LAFAYETTE AND COLUMBIA FORMATIONS AND SOME OF THEIR BOTANICAL FEATURES.

Having spent considerable time during the past two years in making a critical study of the flora of Georgia in all its aspects, I have been investigating, among other things, the influence of geological conditions on the present distribution of species. The most striking relations between geology and existing flora have been observed in the coastal plain, and I have restricted my explorations chiefly to that part of the state in order to study the interesting problems there presented.

The existing knowledge of the areal geology of the coastal plain is much less complete in Georgia than in the adjacent states, partly because the energies of the State Geological Survey have hitherto been necessarily devoted mostly to the investigation of mineral resources and other questions of more immediate economic importance, and partly because Georgia has for many years been singularly neglected by geologists and other scientific people. This state of affairs has been a source of considerable difficulty in the prosecution of my work, and has led me to undertake some geological investigations on my own account, most of those on which these notes are based having been made during the summer of 1901.

My geological observations have thus far been mostly confined to the Lafayette and Columbia formations, which as they cover almost the entire surface of the coastal plain are the most easily accessible, and at the same time are quite readily recognized even by an amateur like myself. My knowledge of these formations, aside from my work in the field, has been chiefly derived from Mr. W J McGee's monograph in the Twelfth Annual Report of the U. S. Geological Survey, and from consultation and correspondence with Mr. McGee himself; and it was at his suggestion that I undertook to prepare these notes for publication.

In addition to the ordinary way of studying geological formations by their exposures in natural or artificial excavations, I have employed in the case of the Lafayette and Columbia, with very satisfactory results, another method which has perhaps never before been utilized to any considerable extent. This method consists in identifying the formations by means of the plants growing upon them. Early in the course of my investigations I noticed that certain species of herbaceous plants seemed to occur only on the Columbia sands, and that it made considerable difference in the distribution of some other species, especially trees, whether the Lafayette clays were present beneath the Columbia or not. I then used these species as an index in determining the formations when the regular method could not be used for lack of suitable exposures or when traveling by rail. This method should not be depended upon altogether, but when used with due caution it is very helpful.

I will mention here some of the more conspicuous plants which have served thus to indicate the formations, and would suggest that it would be advisable for every geologist who studies the Lafayette and Columbia formations in the southeastern states to familiarize himself with as many of these plants as possible.

The best indicator of the Columbia formation which has come under my observation is *Eriogonum tomentosum*, a plant which when in flower, in late summer, grows three or four feet tall and is conspicuous and unmistakable. It ranges from South Carolina to Florida and Alabama, and is widely distributed in the coastal plain, extending up to its inner margin at altitudes of six hundred feet or more,