this was the first bowed instrument in Europe. It had a peculiar bridge, one foot of which was much longer than the other, as the former had to pass through a hole in the belly and rest on the back (inside) of the instrument; the shorter foot rested on the belly. The one string which it boasted rested on the bridge directly over the long foot. The result was that the vibrations of the string caused the short foot of the bridge to beat the belly. Often, to prevent wear, that portion of the belly receiving the beating was inlaid with a plate of bone or metal. The marine trumpet was quite common in Germany, being called marien Trompet, also Nonnengeige, the latter because nuns used it in the trumpet parts of their devotions.

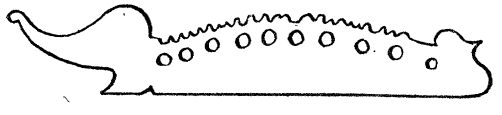

Fig. 3

Fig. 3 represents a nut found on several Hindu stringed instruments, on exhibition in this museum. I believe that they are used in connection with their musical scale, in which the lowest note is that of the elephant, and the highest that of the peacock.

I should like to know if any one has expressed a theory about either the bridge or nut.

E. H. Hawley,
Smithsonian Institution

## THE PICKENS COUNTY METEORITE

The stone-iron meteorite here described was sent to the office of the state geologist about eighteen months ago from Pickens County, Ga., together with a number of minerals and rock specimens, for identification. A rather extensive inquiry through correspondence and even a personal visit to Pickens County has, so far, given no definite information as to the exact locality from which the meteorite was obtained.

When first seen, the specimen, which weighed fourteen ounces, was roughly cubical in shape and had the appearance of being a part of a larger piece. Five of the faces of the irregular cube showed comparatively fresh surfaces, while the sixth side was more or less oxidized and showed a somewhat pitted condition, as if it was an original surface. In color and texture it closely resembles basalt, the dark color being blotched here and there by brownish-red spots, which seem to be due to the oxidation of the contained particles of metallic iron. With the exception of the metallic iron, which occurs in irregular masses a fourth of an inch or less in diameter, and which makes up something like ten per cent. of the entire mass, none of the other minerals can be made out without the use of the lens.

The chemical analysis of a fragment of the meteorite made by Dr. Edgar Everhart, chemist of the Geological Survey of Georgia, is here given, together with the analyses of four other meteorites heretofore described which most closely resemble in chemical composition the Pickens County meteorite:

METEORITE ANALYSES

| | Pickens Co., Georgia | Long Island, Kansas | Bluff, Texas | Shelburne, Ontario | Bjurböle, Finland |
|---|---|---|---|---|---|
| $SiO_2$ | 37.06 | 35.65 | 37.70 | 39.19 | 41.06 |
| $Al_2O_3$ | 5.83 | 3.08 | 2.17 | 2.15 | 2.55 |
| $Fe_2O_3$ | 10.69 | | | | |
| FeO | 9.63 | 22.85 | 23.82 | 15.16 | 13.80 |
| MgO | 24.00 | 22.74 | 25.94 | 26.24 | 25.75 |
| CaO | 0.55 | 1.40 | 2.20 | 1.75 | 1.82 |
| $Na_2O$ | 0.92 | 0.25 | | 0.73 | 1.24 |
| $K_2O$ | 0.02 | 0.03 | | 0.22 | 0.32 |
| $H_2O$ | | 1.52 | | | |
| $TiO_2$ | 0.09 | trace | | | |
| P or $P_2O_5$ | 0.31 | 0.06 | 0.25 | 0.06 | 0.14 |
| S | 1.57 | 1.90 | 1.30 | 1.61 | FeS 5.44 |
| $Cr_2O_3$ | 0.40 | 6.33 | | 0.62 | 0.59 |
| NiO | | 0.77 | 1.59 | | 0.07 |
| CoO | | 0.06 | 0.16 | | |
| MnO | 0.40 | trace | 0.45 | 0.12 | 0.12 |
| Fe | 8.22 | 2.60 | 3.47 | 10.70 | 6.38 |
| Ni | 1.23 | 0.67 | 0.65 | 0.78 | 0.72 |
| Co | 0.11 | 0.04 | 0.09 | 0.04 | 0.04 |
| O for limonite | Cu 0.06 | 0.90 | | | |
| | 101.09 | 100.85 | 99.79 | 99.37 | 100.04 |
| Less O = S | 0.79 | 0.95 | 0.65 | | |
| Less O = P | | 0.10 | | | |
| | 100.30 | 99.80 | 99.14 | 99.37 | 100.04 |

It will be noticed by comparing these several analyses that the Pickens County meteorite is especially noted for the high percentage of titanium oxide.

I am indebted to Dr. Oliver C. Farrington, curator of geology, Field Museum of Natural History, Chicago, for the following notes on the microscopic study of a section of the meteorite:

The meteorite is not characterized by prevailing chondritic structure. Nevertheless, well-developed chondri are occasionally to be seen in the section. One of these, of circular form with a sharply defined boundary, consists of fibrous enstatite showing the usual fan-shaped arrangement, and has a diameter of 1 mm. Another chondrus of the same mineral has an irregular boundary and is somewhat smaller. The fibers of this chondrus are characterized by unusual breadth, one being .0025 of a millimeter wide. Two sets of fibers at right angles are to be seen, giving an appearance of the well-known grating structure of microcline. The fibers also contain granular inclusions arranged parallel to their long axis. Another enstatite chondrus seen is of oval form with diameters of .4 and .8 of a millimeter; another of porphyritic chrysolite is marked by an irregular contour and a diameter of .6 of a millimeter; another made up of parallel rods of chrysolite and glass is much smaller, showing a diameter of .2 of a millimeter. The preceding illustrate the principal features and sizes of most of the chondri seen. The remainder of the section is made up of an aggregate of siliceous and metallic grains irregular in size and shape. Few of these have well-defined crystal outlines. Where such outlines appear the parallel extinction and high interference colors show the mineral to be chrysolite. Irregular fragments of parallel rods of chrysolite and glass of fibrous enstatite which appear here and there suggest that they once belonged to chondri, yet it is possible that they were formed in place. Grains of nickel-iron of various sizes and shapes are very abundant and are disseminated rather uniformly over the section. One of these of reniform outline is of unusual size, being 2 mm. in length. Inclusions of troilite are to be seen at several points in the body of this nodule. A narrow, dark, opaque border of oxide separates the nodule as a whole from the adjoining silicates. Such individuals were evidently formed previous to the adjacent silicates, but most of the smaller metallic grains occupy interstices between the silicates, and hence originated subsequent to the latter. These smaller nickel-iron grains are very irregular in form. At times the nickel-iron also occurs in narrow, much elongated, irregular forms suggesting short veins. These likewise have a dark opaque border. Troilite is to be seen in but small quantity in comparison with the nickel-iron. Most of the siliceous grains show a considerable amount of fissuring, the fissures being filled with a dark red limonite. In addition, the section as a whole shows a rusty staining irregularly distributed, and there is an impregnation in places of a black, opaque, perhaps carbonaceous substance. There is apparently no crust to be seen upon this section.

S. W. McCALLIE

## SOME CONDITIONS FAVORING NITRIFICATION IN SOILS

KELLERMAN and Robinson[1] have lately reported nitrifying tests of North Carolina soils on which legumes were grown, which tests lead to directly opposite conclusions from those reached by Stevens and Withers,[2] who, working with soils from the same state, found that a large percentage of the soils they tested failed to nitrify. Kellerman and Robinson are further led to believe that "nitrification, nodule formation upon certain species of legumes, and the litmus reaction are correlated."

Results obtained in this laboratory indicate that nitrification is favored by an increase in the basicity when the soil is deficient in lime. Our experiments further indicate that the growth of alfalfa on the soil favors nitrification, or, at least, increases the availability of the soil nitrogen.

Nitrification tests on samples of soil from four limed and four unlimed plats averaged twice as great an increase in nitrates on the limed soil as the result of a ten-day test, and tripled the nitrate production in a three-week test as a result of incorporating lime with the soil in the field. The lime was added four years before the tests were made.

The increased production of nitrates on alfalfa soil as compared with a perennial nonlegume was not so striking, but the favorable

[1] SCIENCE, N. S., XXX., No. 769, p. 413.

[2] SCIENCE, N. S., XXIX., No. 743, p. 506.