ships. The work is only about one-third complete and up to the first of November there were 2,100 marks upon the map, representing between 5,500 and 5,600 remains.

Some interesting facts have been brought to light; that the mounds, earthworks, village sites, etc., generally follow the stream, that, in the Sciota valley there are very few stone monuments, but that, in the Muskingum valley, along the Ohio river and in Brush Creek valley (Adams county), stone monuments predominate over those of earth. Seven counties in the State show a total of 918 monuments. Those in the northern and eastern portion average about five or six mounds and village sites each. It does not appear from this that there is a county in the State in which there are less than 15 or 20 ancient remains, but the observations of these counties are only partially complete. Most of the marks were secured by personal visits, the State having been quite thoroughly traveled by students of the Ohio State University and by the Curator, Mr. Moorehead, on bicycles. Several hundred mounds were secured from the report of the Bureau of Ethnology and the Smithsonian Institution.

The number of recorded monuments will reach probably eight thousand. This is a praiseworthy undertaking and it is to be hoped will be carried to completion.

D. G. Brinton.

University of Pennsylvania.

ASTRONOMICAL NOTES.

In our issue of October 23d we called attention to Dr. See's announcement of his rediscovery of the companion of Sirius at the Lowell Observatory. Observations of this star were subsequently made at the Lick Observatory. The observations of both observatories disagreed with the published ephemeris of Dr. Auwers, and in our issue of November 20th we called attention to this fact. From a recent letter of Prof. Holden we learn that the Lick observations are certainly correct. This would throw upon the Lowell observations an error of 31°, and upon the ephemeris of Dr. Auwers an error of about 13°. No doubt observations with some of the other large telescopes of this country and Europe will soon be published, and thus any doubts as to the correction required by Dr. Auwers's ephemeris will be set at rest.

Prof. Schaeberle, at the Lick Observatory, has also examined Procyon, with the result of finding that this star also has a visible companion. It was possible to make observations in both positions of the telescope, the means obtained being 319° for the position angle and 4″59 for the distance. The magnitude of the companion was estimated as 13, and the seeing was unusually fine.

H. J.

NOTES ON INORGANIC CHEMISTRY.

The discovery of a supposed new element, Lucium, in monazite sand has already been reported in these columns. The discoverer Barrière of Paris has now patented the element! The specifications cover the use of the element alone or in mixtures for incandescent gas lighting, the progress of obtaining the element and the element itself.

The rotation of polarized light in crystals has heretofore been studied exclusively in natural crystals or in such as have been cut in plates. In the last Berichte, Landolt describes an investigation carried out on finely powdered crystals, suspended in a liquid medium of the same refractive power. The object was to see if the rotation remained unchanged, or disappeared when the particles became sufficiently minute. The crystals used were sodium chlorate and the liquid in which they were suspended was a mixture of alcohol and carbon bisulfid. Experiments were made with a powder in which the particles averaged

0.03 mm. in diameter, and another of 0.008 mm. The rotation was found to be unchanged, and the conclusion reached is that particles of sodium chlorate down to 0.004 mm. in diameter possess completely the crystalline structure which is necessary for circular polarization. In solution, however, sodium chlorate is perfectly inactive.

THE late determinations of the atomic weight of tungsten by E. F. Smith have given a number close to 184.9. More recently (J. Prakt. Chem. 53: 288) Schneider has repeated his earlier work which gave the number 184.12 and now finds the atomic weight to be 184.01. Schneider proved his tungsten to be free from molybdenum, but he used the same material as in his former determinations. He attributes the larger figure of Smith and others to the use of too small quantities, thereby involving relatively large errors.

LOBRY DE BRUYN has succeeded in completely dehydrating hydrazin-hydrate by means of barium oxid, a method unsuccessfully used by Curtius, and in the Rev. Trav. Chim. Pays-Bas 15: 174 describes the properties of the free hydrazin, N_2H_4. Hydrazin is a solid, melting at 1.4°C and boiling at 113.5°C at 761.5 mm. It is soluble in alcohols, but only slightly so in other organic solvents. It dissolves many inorganic salts as sodium and potassium chlorids and nitrates. It is a stronger base than ammonia, liberating the latter from its salts. It reacts energetically with chlorin, bromin, iodin, sulfur and phosphorus, and oxidizes slowly in the air. It is noteworthy that the boiling point of free hydrazin, 113°, is very close to that of hydrazin-hydrate, 119°. J. L. H.

SCIENTIFIC NOTES AND NEWS.

INVITATIONS have been sent for the opening of the new halls of ethnology and vertebrate paleontology of the American Museum of Natural History, New York. The reception will be held from two to three o'clock on November 30th.

WE learn from *Nature* that the Royal Society's medals have this year been adjudicated by the President and Council as follows: The Copley medal to Prof. Carl Gegenbaur, For.Mem.R.S., for his researches in comparative anatomy, and especially in the history of the vertebrate skeleton; the Rumford medal to Prof. Philipp Lenard, and also to Prof. Wilhelm Conrad Röntgen, for their investigation of the phenomena produced outside a highly exhausted vacuum tube through which electrical discharge is taking place; a Royal medal to Sir Archibald Geikie, F.R.S., on account of the great value and importance of his many original contributions to geology; a Royal medal to Prof. Charles Vernon Boys, F.R.S., for his invention of quartz fibres and investigation of their properties, his improvement of the radiomicrometer and investigations with it, for developments in the art of instantaneous photography, and for his determination of the value of the constant of attraction; The Davy medal to Prof. Henri Moissan (of Paris), for the isolation of fluorine and the use of the electric furnace in the preparation of refractory metals; the Darwin medal to Prof. Giovanbattista Grassi (of Rome), for his most important discoveries, especially on matters directly related to Darwin's speculations. Her Majesty has signified her approval of the award of the Royal medals.

THE Secretary of the Permanent Committee of the International Zoological Congress announces the subjects for the two prizes, to be awarded at the next Congress. These are: 'A study of the ruminants of Central Asia, from the points of view of zoology and geography' and 'An anatomical and zoological monograph on some groups of marine invertebrates.' The papers, which may be in manuscript or printed since September, 1895, must be presented before May 1, 1898. They must be written in French, which seems to be contrary to the spirit of an international congress. It is in any case doubtful whether many men of science will care to compete for such prizes. We are somewhat vaguely informed that 'Les prix consisteront, au choix des lauréats, soit en