

ery of the first period on that site. This is the first definite piece of evidence to this effect which has come to hand, and is contrary to what has been the generally accepted opinion. The form of the plano-convex bricks with which the pottery was found dates it conclusively as belonging to a period not later than 3,500 B. C., when this form of brick was still in use in Mesopotamia. Sumerian inscriptions were found with the pottery, and these, therefore, are the earliest hieroglyphic writing known in Mesopotamia up to the present.

ETHER MEASUREMENTS REVEAL PLANETARY MOTIONS

The sun, and the solar system with it, is moving through space with a speed of over a hundred and thirty miles a second, towards a point in the direction of the constellation Draco, the Dragon, which partly encircles the north pole. This is one of the conclusions reached from recent experiments by Prof. Dayton C. Miller, of the Case School of Applied Science in Cleveland, and described by him in a recent radio talk given through station WCAP, under the auspices of Science Service and the National Research Council.

The experiments of Prof. Miller have been made at the Mt. Wilson Observatory in California since March, 1921, and involve the use of a delicate instrument called the interferometer and invented by one of Prof. Miller's predecessors, Dr. A. A. Michelson, now professor of physics at the University of Chicago. When the experiment was first performed by Prof. Michelson in 1887, an effort was made to detect the motion of the earth through the ether, which is supposed to pervade all space, and to be the medium through which light and similar forms of radiation are transmitted. However, though the apparatus was delicate enough to detect the expected motion, only a negligible drift was found, and one of the ultimate results of the effort to explain this anomaly was the Einstein theory of relativity.

In 1905, Prof. Miller, and the late Prof. Edward W. Morley, who collaborated in the original set of experiments, repeated them on a hill 200 feet high near Cleveland, and found a slight effect, but nothing further was done until 1921 when the present series was started at Mt. Wilson, more than a mile above sea level. These have resulted in what is interpreted as a marked drift of the ether and the explanation offered has been that under conditions such as those in Cleveland, and at sea level, the ether tends to be dragged along, but on a mountain top, there is nothing to obstruct it, and so it drifts by.

The general direction and amount of the drift has been determined by Prof. Miller by comparing measurements made at different times of the day and year. In the series of experiments which he conducted last year, Prof. Miller stated, over 100,000 readings of the instrument were made. "This required," he said, "that I should walk, in the dark, in a small circle, for a total distance of 100 miles, while making the readings."

The general motion of the earth, and the rest of the solar system, which Prof. Miller finds is in good agreement with measurements made by astronomers of the motion, and is towards a point in the sky having the right ascension, the celestial equivalents of longitude, of 262 degrees, and a declination, which corresponds to latitude, of 68 degrees north. Other determinations of the motion and its direction have been made by measurements of the motions of the stars in the sky, and of the star clusters. "These three determinations of the absolute

motion of the system," said Dr. Miller, "are all in the same general direction and lie within a circle having a radius of 26 degrees. The assumed velocity of a hundred and thirty miles per second is about seven times the velocity of the earth in its orbit, and it is of a reasonable magnitude."

BLUE AND RED FLOWERS COLORED WITH SAME DYE

It makes no difference whether a flower is red or blue, its hue is due to the same fundamental substance. Its redness or blueness depends on the chemical nature of the plant sap. For example, deep red dahlias and blue cornflowers contain the same pigment but the sap of the dahlias is acid and that of the cornflowers is alkaline; and this makes all the difference. Intermediate shades depend on the degrees of acidity or alkalinity.

The name of this versatile plant pigment or dye is "anthocyanin", according to Prof. R. Robinson, well-known English physiological chemist, who told of investigations in this branch of plant physiology before the Royal Institution of Great Britain. This strange-looking word is made up of two simple Greek roots, which translate into "flower-blue", which is exactly descriptive of one of its phases.

There are really many distinct anthocyanins, Prof. Robinson explained, though chemically they are practically identical. By analysis they can all be shown to be derived from three fundamental substances, which are closely related to each other.

There appears also to be a fourth member of this group of basic flower dye-stuffs, which has long been exploited by tropical Indian tribes as material for rouge, which, however, is used among them by gentlemen only.

"The Indians of South America in the vicinity of the Orinoco prepare a red plant pigment called 'carajura' or 'chica'," Prof. Robinson told his hearers. It is so valuable a commodity that it is said of a poorer native, 'he can only paint half of his face!' The chemical examination of carajura by Prof. A. G. Perkin, has resulted in the isolation of a red crystalline constituent called carajurin. The molecules of the salts of carajurin with acids have been proved to contain the characteristic nucleus of the anthocyanidins and apparently carajura proclaims a fourth anthocyanidin. It is unique both as a cosmetic and as an object of scientific research."

ANCIENT BEAR BONE FETISH GAVE MAN ARTISTIC URGE

By George Grant MacCurdy
Professor of Anthropology, Yale University

Discovery of a 100,000 year old lower jaw bone of a cave bear just made by Emil Baechler of St. Gallen throws new light on how man first came to be an artist.

This ancient relic unearthed by Dr. Baechler in the floor debris of a cavern at Wildenmannlisloch, a mile above sea level in the canton of St. Gallen, Switzer-