

The paper deals more especially with the character of the sugar present which has already been described by two Mexican chemists as a distinct and new kind of sugar. The results given in this paper go to show that this sugar is not different in any way from that of the cane or the beet-root or the maple. That it is a definite chemical compound known as sucrose and that without much doubt the announcement of the Mexicans of the discovery of a new sugar was based upon erroneous observations.

CAMPHORIC ACID. BY W. A. NOYES.

ACTION OF POTASSIUM SULFHYDRATE UPON CERTAIN AROMATIC CHLORIDES.
BY WALTER JONES AND F. C. SCHEUCH.

A NEW PHOSPHATE. BY H. A. HUSTON.

DIP OF THE KEOKUK ROCKS AT BLOOMINGTON, INDIANA. BY E. M. KINDLE.

In the course of some stratigraphical studies in Monroe County it became desirable to ascertain, as accurately as possible, the dip of the Keokuk strata. As is generally the case with Indiana rocks the Keokuk strata are not sufficiently inclined to admit of the use of the clinometer in determining their dip. It was therefore necessary to determine the relative elevations of two points lying in the direction of dip in some stratum, and separated by a known distance. It is essential in this method of estimating dip that a stratum or horizon be selected which can be positively identified at different points.

The contact of the Keokuk with the Knobstone is readily recognized wherever it outcrops in Monroe County, both by the striking paleontological and lithological differences between the two groups. The Keokuk is everywhere at the contact with the Knobstone an impure fossiliferous limestone, while the Knobstone is a massive sandstone entirely without fossils. I therefore selected the contact of the Keokuk with the Knobstone as the most convenient stratum, from which to determine its dip. The ravines north of Bloomington afford numerous exposures of the contact. Two points for the comparison of elevations were selected, one a mile and a half north of Bloomington on the North Pike, the other in a ravine nearly due east of the first. A surveyor's transit was used to

determine the difference in level between the two points. For assistance in this work I am indebted to Mr. C. E. Siebenthal and Mr. George Champ. The distance between the two points was estimated by stadia measurement. A reduction of the data obtained showed the points to be $1\frac{1}{2}$ miles apart, and the dip of strata between them to be at the rate of 63.6 feet to the mile. This result was so much larger than was anticipated that the ground was gone over a second time by Mr. Champ and myself. The second survey, with a "Y" level, confirmed the correctness of the first, thus showing the Keokuk strata to have a dip west of nearly 64 feet to the mile in the neighborhood of Bloomington.

WAVE MARKS ON CINCINNATI LIMESTONE. BY W. P. SHANNON.

In the southwest part of Franklin County, three miles west of Oldenberg, in the bed of Salt Creek, are good examples of wave marks on Cincinnati limestones. These wave marks are nothing new. They have been referred to by different students of the Cincinnati strata, and are characteristic, since they occur at all horizons of the Cincinnati rocks. This does not signify that every stratum or layer is so marked, but that such marks are rarely found in other than the Cincinnati limestones. Another stratigraphic character of the Cincinnati rocks is the alternation of strata of limestone and shale. The strata are thin, each one being usually made of a single layer or ledge.

Within a distance of one-quarter mile up and down the bed of the creek, four wave-marked strata are exposed, and according to the law of the Cincinnati formation, each one is overlaid by a stratum of shale. Of these four wave-marked strata the three uppermost are consecutive, not consecutive strata, but consecutive limestone strata.

In no two strata are the wave marks in the same direction or of the same size. All four of these strata are fine grained, compact limestone, showing that they were made of calcareous sand or mud. A description of two of these wave-marked strata will be sufficient, the two which have the greatest exposure. One forms an uninterrupted floor to the stream for a distance of 100 feet; the width of this floor is 25 feet. The wave marks are transverse to the course of the stream, and if we stand at the lower end of this area and look up stream it is hard to keep from thinking that we are looking at real undulations in water. It requires a conscious effort to keep from identifying the effect with the cause. If we measure these waves, they are about two feet from crest to crest, with a vertical distance of about three inches from crest to hollow. Besides wave marks this ledge shows mud