

of these are often broken into, to more easily obtain the animal, the large sea-snail being treated in the same manner. The question may be asked as to how the thick, heavy walled shells were broken, as no stone implements were found. By examination of the rough exterior of the conch (*Fulgur canaliculatas*), in it may be found an excellent implement for the purpose. Bones and pottery are also found throughout the mass. The bones are chiefly those of animals taken in the chase, deer, bear, lynx, alligator, dog and fish, of the latter only the vertebrae remains. The greater portion of these bones crumble to pieces on exposure to the air. The pottery is almost entirely fragmentary, no whole vessels being found to my knowledge, however, the restorations which have been made from large fragments would indicate vessels of ten to twelve gallons capacity. The pottery of the lower layers is rude and rough, and without any ornamentation whatever, while that taken from the upper strata is better made and with some efforts at ornamentation.

The size of these aboriginal cooking vessels would seem to prove that the living shell was heated or boiled to more easily obtain the animal. Shells of the quahaug clam (*Venus mercenaria*), abundant in the refuse heap, are now rare on the adjacent coast. Attempts have been made to determine the age of these ancient heaps of rubbish, but such determination in the light of present data, may be quite conjectural. However, from the evidence it is obvious that they are not recent, but must run far back into the dim ages of the past. It is hoped that further investigation may throw more light upon the manners, customs, habits and history of the people through whose instrumentality these immense accumulations were formed.

A NOTE ON ROCK FLEXURE. BY E. M. KINDLE.

The phenomenon of rock flexure is familiar enough, as it occurs in anticlines and synclines in many regions. These natural bendings of rocky strata, however, afford no data for determining the actual values of the factors producing them, the pressure and the time during which it has acted. The time factor required to produce bending without fracture in a solid stone is so large as to have prevented any except accidental experiments in this direction.

Such an experiment I discovered two or three years ago in progress in a country cemetery one-half mile south of the village of Nineveh, Ind. Over one of the graves there has been placed a horizontal marble slab, which was formerly supported by a brick wall eight or ten inches high surrounding the grave. At the time of my first visit this wall had crumbled down along the greater portion of each side of the slab, leaving it supported mainly by the portions which still

remained intact at the ends of the slab. The long continued support of the slab at the extremities alone had caused it to sag to such an extent as to be quite noticeable even to the casual observer.

Recently I revisited the place to determine exactly the amount of flexure which the slab had undergone. I found it had been broken into five or six pieces by vandals. On one of the pieces, which had formed a portion of one side of the slab near the middle, I measured carefully the amount of flexure. This piece measured two feet eight and one-half inches along the original edge of the slab. The flexure along this direction was one-tenth of an inch. The dimensions of the original slab were: Length, six feet one inch; breadth, two feet; and thickness, one and four-fifths inches. The measurement of the fragment will not permit of an exact estimate of the amount of flexure in the original slab, but would seem to indicate a flexure of not less than a quarter of an inch, and possibly more. The slab bears the name of Sarah Mullikin, and gives the year 1847 as the date of her death. I ascertained that the stone had been put in position shortly after this date. The flexure could not have begun, however, until the decay of the middle portion of the supporting wall had made considerable progress. This we may presume to have been not less than ten years after its construction. If we suppose the gradual bending to have been in progress since 1858, about ten years after the stone was put in position, then we have a flexure of about one-fourth of an inch in a slab one and four-fifths inches thick, produced by the stress of the stone's own weight, acting through a period of thirty-seven years.

THE ALTERNATE-CURRENT TRANSFORMER WITH CONDENSER IN ONE OR BOTH CIRCUITS. BY THOMAS GRAY.

ELASTIC FATIGUE OF WIRES. BY C. LEO MEES.

A WARPED SURFACE OF UNIVERSAL ELLIPTIC ECCENTRICITY. BY C. A. WALDO.

ACCURATE MEASUREMENTS OF SURFACE TENSION. BY A. L. FOLEY.

EFFECT OF THE GASEOUS MEDIUM ON THE ELECTROCHEMICAL EQUIVALENT OF METALS. BY C. LEO MEES.