the curve of its plastic yield-point in the direction of increasing temperature or pressure.

As to the internal constitutive differences which distinguish the fluid from the liquid state much remains to be learned, but it is regarded as probable that these differences are to a large extent grounded in a difference in molecular complexity; fluid and liquid doubtless bear to one another the same relation as vapor and gas, which usually always differ in molecular weight. Thus, sulphur vapor at 445° C. has the molecular formula S_8; as the temperature of this vapor is raised, the complex molecule S_8 undergoes a disintegration and finally becomes S_2, which is not broken up until the temperature has become very high. At a point which we may call the simple gas-point the complex molecules of the vapor phase give place to the simple molecules of the gas phase. Both boiling-point and simple gas-point vary with the temperature and pressure, and hence both may be represented graphically by curves. The vapor phase or condition will lie between these two curves, and such a phase is common to practically all substances that can be boiled.

Now when a solid is heated under atmospheric pressure it first softens and then melts; and this intermediate stage of softening, when the substance is neither solid nor liquid, is properly the fluid phase or state, comparable to the vapor phase which is intermediate between liquid and gas. It can hardly be doubted that in the solid phase the molecular weight is the largest possible. When the yield-point is attained, these large molecules just begin to break up into smaller units and this process is continued until the melting point is reached and the substance becomes a liquid; in this condition the molecular complexes are very stable, and, like the simple gas molecules, generally require large additions of energy to undergo further change.

OSWIN W. WILLCOX.

SANDY HOOK PROVING GROUND,
FORT HANCOCK, N. J.

WHY DO HERRING GULLS KILL THEIR YOUNG?

EARLY last July I was making for the Public Museum of Milwaukee a photographically recorded study of the actions of a colony of herring gulls covering Gravel Island, a little islet at the upper end of the Door County peninsula of Wisconsin. At the time of my visit the young of the year were mostly about half grown and usually kept by themselves in a flock of several hundred. There were always a few young scattered among the adults on the island, but the great majority were at all times to be found in the flock, which seemed to have taken to itself a definite habitat at one part of the islet.

The island is, I am told, visited with some degree of frequency by pleasure-seekers, though as it is fairly remote from any resort I do not fancy that these visits are very numerous in any one nesting season.

When first visiting the island I rowed out to it with two companions, pitched my tent in the center of the island and disappeared within, after which my companions returned to the boat and rowed away. I have reason to believe that my remaining among the gulls was not suspected by them. From various observations I am convinced that the individualities of the young were so hopelessly lost in the flock that they neither knew nor were known by their parents.

Almost from the beginning of my observations and continuing intermittently all through them I was witness of numerous attacks committed by adults upon the young, in which the latter were so severely wounded that death did or in a short time would ensue. At the time of my arrival this year and also when I visited the same colony a year ago the island was strewn with the bodies of some dozens of these half-grown gulls bearing evidence of having been similarly done to death.

Usually when my attention was attracted to the enactment of one of these tragedies the victim was a bird to which I had paid no previous attention; but there were several instances where the young had been under fairly close observation for some hours previous. In no instance could I see that the young was weak, sickly or in any way abnormal, nor that it had given offense for which it was being punished. Sometimes when the flock of young was on the water near the

island an adult would approach and seize a young on the outskirts of the flock. At other times attacks would be made on young just coming up the beach from the water, while several times those that for some hours had been unmolested near the center of the island were apparently without provocation set upon and left in a dying condition. The main point of attack was the back of the head. To this region a number of severe blows were given with the point of the bill, after which it was grasped between the mandibles of the adult and the bird was pulled about until the skin and flesh were cut through to the skull. Sometimes the young fell on its back with feet convulsively kicking in the air. In this position the carpal joint of the wing and the breast seemed to be the points at which blows were mainly aimed. If the young escaped by running or was left apparently lifeless but subsequently revived and made off during the absence of its persecutor it was at once attacked by any other adult that happened to be near.

I am unable to convince myself that this destruction of their young was due to molestation of the colony, as has been suggested to me, but I have no other explanation to offer, unless it be impatience at the toll of regurgitated fish that the young levy upon the old.

I wish to inquire whether this murderous action on the part of the herring gull or of other birds has been noted in other colonies and whether any plausible explanation of it can be given.

Henry L. Ward.
Public Museum, Milwaukee.

AN UNUSUAL METEOR.

To the Editor of Science: In connection with the sinuous trail left by the meteor described by E. E. Davis in your issue for August 3 and discussed by Professor Abbe in that for September 14, I might remark that a similar phenomenon was seen and sketched in the case of a fine meteor seen in Ontario on July 5, 1898, a full account of which is to be found in the *Transactions* of the Astronomical and Physical Society of Toronto for 1898, page 74.

C. A. Chant.
Toronto, October 16, 1906.

A CORRECTION.

Mr. Bassler, of the U. S. National Museum, has called my attention to a serious error of mine on page 1,209, foot-note, of the Thirtieth Annual Report of the Indiana Department of Geology and Natural Resources. In discussing two species of corals, *Cystelasma rugosum* and *C. quinqueseptatum* Ulrich, figured and named, but without formal descriptions, by Mr. Ulrich in Professional Paper 36 of the United States Geological Survey, the foot-note states: 'These specimens are neither described nor do they have the internal structure shown.' The statement refers to both species instead of *C. rugosum*. It was intended to apply to *C. rugosum* but not to *C. quinqueseptatum*. As it is the statement is untrue, as the internal structure of *C. quinqueseptatum* is clearly and accurately shown in Mr. Ulrich's figures. This is a reflection upon Mr. Ulrich which was not intended and for which I wish to apologize.

The great accuracy with which Mr. Ulrich portrays the characters observed and his unusual powers of discrimination are well known and I would be the last one to question them, especially when I had not examined the specimens figured, as was the case in this instance. Printed slips will be sent to all those receiving copies of the separates of the paper ('Fauna of the Salem Limestone of Southern Indiana') in which the error occurs. Inasmuch as it is impossible to reach all those receiving the bound volumes, it will be a favor if those having them will note the correction in the book.

J. W. Beede.

SPECIAL ARTICLES.

A NEW ARTEMIA AND ITS LIFE CONDITIONS.

The classic observations and experiments of Schmankewitsch thirty years ago on the *Artemias* of certain salt pools near Odessa (Russia) clothe this curious phyllopod genus with a peculiar interest to zoologists and to students of species-forming. This interest has been renewed by the occasional reconsideration of Schmankewitch's data, and more rarely by the actual reexamination of *Artemia*