make thorough field study on these interesting water-weeds.

The study, as far as it has been done now, has given the following suggestions and conclusions, mostly drawn from the literature on the subject and from herbarium material. There seem to be more than one species, probably six or seven. As far as the material on hand shows, the plant with broad and obtuse leaves, originally described as *Elodea canadensis*, seems to be hermaphrodite; the others all diœcious, not polygamous. The plant which is growing in Europe, supposed to have been introduced from America, and described as *Anacharis Alsinastrum* Babington, resembles *E. canadensis* in habit, but only pistillate flowers have been found, and in these the stigmas are entire. In the North American forms with diœcious flowers the staminate sheaths are sessile in the axils of the leaves, and easily overlooked, except in the plant common in the Rocky Mountain region and one specimen from Tennessee, in which the sheaths are peduncled. In the Rocky Mountain plant the staminate flowers are apetalous.

The subject will be more fully discussed in a paper which Dr. Rydberg is preparing to publish in the *Bulletin* of the club, as soon as more material has been consulted and certain questions can be answered with more definiteness.

Both papers were briefly discussed and adjournment was at 5:30 o'clock.

C. STUART GAGER,
Secretary

THE SCIENCE CLUB OF THE UNIVERSITY OF WISCONSIN

THE first regular meeting of the club was held in Science Hall on Tuesday, November 5. Dr. Thos. E. Will, secretary of the American Forestry Association, delivered an address on the general subject of forest preservation, with particular emphasis on the proposed forest reserves in the Appalachian and White Mountains. After pointing out the fact that the timber supply of the United States is disappearing at an alarmingly rapid rate, Dr. Will showed by a series of significant lantern slides the disastrous indirect effects which the removal of the forest-cover produces upon cultivated valleys and slopes, and explained the direct relation between deforestation and the increase in floods. The contrast between western United States, with its large area of forest reserves, and the eastern portion of the country, which has none at all, was clearly brought out by maps thrown on the screen; and the importance of immediately providing such reserves in the eastern mountains for the protection of the streams which rise among them, was made clear to all. At the close of the lecture a resolution was adopted by the club urging congress to enact a law providing the necessary reserves.

ELIOT BLACKWELDER,
Secretary

DISCUSSION AND CORRESPONDENCE

THE EQUATION FOR ONE KILOGRAM OF AIR

TO THE EDITOR OF SCIENCE: It is possible that many teachers of thermodynamics may not have noticed that the characteristic equation for one kilogram of air takes the easily rememberable form $pv = T/10$ when p is measured in standard atmospheres, v in cubic feet, and T in thermodynamic Centigrade degrees, the accuracy of the even integer being fully as great as that of the gas law itself. These units are, of course, a curious mixture of the English and continental systems, but this seldom makes much difference in actual problems, and the convenience of the formula for rough mental computations is sometimes very great.

The data upon which this computation of the gas constant is based are the statements in the third (1905) edition of Landolt and Boernstein that one liter of air under standard conditions weighs 1.2928 grams, and that an American yard is 0.91440 meters, and the value $T_0 = 273.13°$ given by Buckingham in the *Bulletin* of the Bureau of Standards for May, 1907. The value $R = 0.1$ is consistent with these assumptions within less than one fiftieth of one per cent.

The corresponding values of C_p and C_v, reduced from the mean of the results of Regnault (1862), Wiedemann (1876) and

Witkowski (1896), are $C_p = 0.3467$ and $C_v = 0.2467$ cubic-foot atmospheres.

Harvey N. Davis

Cambridge, Mass.

Occurrence of three species of beaked whales of the genus Mesoplodon on the Atlantic coast of the United States

To the Editor of Science: The few specimens of beaked whales of the genus *Mesoplodon* which have hitherto been obtained on the Atlantic coast of the United States have been tacitly assigned to a single species, *M. bidens* (Sowerby). After a detailed study of the material available, I am convinced that three species are represented. These are: (1) *M. bidens,* the species most commonly found in the North Atlantic; (2) *M. europæus,* a species known hitherto only from a single specimen found floating in the English Channel about seventy years ago; and (3) a species which is apparently *M. densirostris,* of which only a few specimens from the Indian Ocean are known.

The name *M. europæus* (Gervais) will probably have to be replaced by *M. gervaisi* (Deslongchamps). The former specific name was originally published in the first edition of Gervais's "Zoologie et Paléontologie françaises" (1846–52) under the genus *Dioplodon.* I have not seen the first edition of this work, but in the second edition (1859) the name is a *nomen nudum.* The species was apparently first described by Deslongchamps in 1866, who renamed it *gervaisi* (*Dioplodon gervaisi*).

An account of the American specimens of this and other genera of ziphioid whales in the National Museum is in preparation, and will probably be published in a few months.

F. W. True

National Museum,
November 5, 1907

Special Articles

Some recent advances in South African paleontology

During the past year a considerable number of new fossil reptiles have been discovered in the Permian and Triassic deposits which are included in the Karroo formation. Three new Therocephalian genera have been discovered in beds which are probably Middle Permian. These are all more or less closely allied to others previously known, and do not reveal much that is new in the general anatomy of the group. In beds which are probably Lower Triassic a new type of Therocephalian has been discovered and named *Arnognathus.* Unfortunately, it is only represented by a dentary bone. The discovery is chiefly interesting from the fact that no Therocephalian has hitherto been got in beds more recent than Upper Permian. It is rather a degenerate form than one leading on to the specialized Cynodonts.

Very much more important than these is the discovery in Lower Triassic beds of the nearly complete skeleton of a small reptile which must be placed in a new suborder. Hitherto we have had no evidence throwing any light on the origin of the Therocephalian reptiles. *Pareiasaurus* and some other of the Cotylosauroid forms seemed to suggest a possible origin among these early types, while one or two points in Mammalian morphology and embryology such as the mammal-like type of the organ of Jacobson in *Sphenodon* seemed rather to favor an affinity with the Rhynchocephalians. The discovery of this new fossil reptile, which is called *Galechirus,* strongly favors the descent of the Therocephalians from an early Rhynchocephaloid ancestor. This new type is about the size of a rat and the following are its most important characters: the dentition is thecodont and homodont, there being no enlarged canine; the lower jaw is very similar to that of the Therocephalians, but there is no enlarged coronoid process; the shoulder girdle is typically Therocephalian, the precoracoid being well developed; the digital formula is 2, 3, 3, 3, 3; the pelvis is plate-like with the ilium directed somewhat backwards; and well-developed abdominal ribs are present. Unfortunately, the temporal region and palate are unknown. The affinities are undoubtedly mainly with the Therocephalians, but in none