the side farthest away, where the pull is weakest" (p. 436). While literally true, the statement is likely to mislead the student who does not notice the sudden change from "because" in the first part of the sentence, to "where" in the second part. The reason for the existence of two waves is not referred to.

Throughout the volume one sees abundant evidence of the author's extended field experience and untiring industry in collecting illustrations of physiographic features. While the book is, in its present condition, of value to teachers, for general school use the subject-matter will require, possibly in another edition, more carefully considered and systematic treatment.

D. W. Johnson

SCIENTIFIC JOURNALS AND ARTICLES

The Journal of Experimental Zoology, Vol. V., No. 1 (November, 1907), contains the following papers: "Determination of Sex in *Hydatina senta,*" by David Day Whitney. "A New Explanation of the Mechanics of Mitosis," by Arthur B. Lamb. It is suggested that the characteristic configuration of the chromatin substance in dividing cells may be due to a synchronous pulsation or oscillation of the astral centers and it is shown that this explanation presents certain unique advantages as contrasted with previous explanations. "The Reactions of Planarians to Light," by H. E. Walter. The action of light upon planarians is a function of its intensity, which, under certain conditions, is emphasized by the direction of the light. The orientation and phototaxis of planarians is more consistently explained by the theory of tropisms than by the theory of trial and error. The evolution of the photoreceptive apparatus of planarians stands at such a low stage of differentiation that the light environment of these worms is of slight importance to them.

At the recent Chicago meeting of the Association of Economic Entomologists a stock company was organized for the purpose of publishing a *Journal of Economic Entomology.* This bimonthly publication is devoted to economic entomology in its widest aspects. The first number will appear in February. It has a board of editors and advisory board composed of well-known investigators. E. P. Felt, state entomologist, Albany, N. Y., is editor; A. F. Burgess, secretary of the Association of Economic Entomologists, Washington, D. C., associate editor, and E. D. Sanderson, business manager. On the advisory board are Dr. S. A. Forbes, Illinois; Dr. James Fletcher, Canada; Dr. L. O. Howard, Washington; Dr. H. T. Fernald, Massachusetts; Professor Herbert Osborn, and Professor H. A. Morgan, Tennessee.

SOCIETIES AND ACADEMIES

THE TORREY BOTANICAL CLUB

The regular meeting of the club for December 10, 1907, was held at the American Museum of Natural History at 8:30 P.M., with President Rusby in the chair and fourteen persons present. In the absence of the secretary, Mr. Charles L. Pollard was appointed acting secretary. The minutes of the last preceding meeting were read and approved.

The following scientific program was presented:

Dictionaries and their Relation to Biology: Charles Louis Pollard.

The speaker referred to the fact that a large part of the increment in our language in recent years has consisted of scientific terms, including new Latin classificatory names, biological descriptive words and phrases, and vernacular names. In spite of this there is a very general lack of interest among working scientists in the average dictionary, and it is not the indispensable reference book which it should be. The reasons for this are to be sought in the attitude of the publishers toward the style of definitions, the effort to avoid undue technicality often resulting in scientific inaccuracy. Obsolete words and meanings are frequently given too great prominence and are not properly differentiated from those in current usage. There is also a tendency to magnify the importance of so-called popular names, many of which are coined by the writers of manuals and are not used elsewhere.

The general discussion which followed brought out the fact that the dictionary, in spite of its defects, contains much information difficult to obtain from other sources, but that it is very generally at variance with usage among botanists in the matter of pronunciation.

Notes on the Pine Barrens of Long Island: ROLAND M. HARPER.

The flora of the pine barrens of Long Island has received little attention from botanists, chiefly because it consists of comparatively few and widely distributed species. A list of 46 Long Island pine-barren plants was published by Dr. Britton in 1880, and copied by at least three subsequent writers, but even yet the aspects of the vegetation have scarcely been described, or any photographs of it published in botanical literature.

The pine barrens are chiefly confined to the southern half of Suffolk County, and are very well developed in the uninhabited portions of the towns of Babylon and Islip. The area covered by them is very flat, with a soil of coarse sandy loam. The vegetation is of two types, dry pine barrens and swamps, the former being by far the most extensive. In the dry pine barrens the trees are nearly all *Pinus rigida,* and there is a dense undergrowth consisting mostly of *Quercus ilicifolia* and *Q. prinoides,* two to six feet tall. The commonest herbs are *Pteridium aquilinum, Ionactis, Cracca, Baptisia, Dasystoma,* etc. The effects of fire are everywhere visible.

In the swamps the flora is somewhat richer than in the dry pine barrens. *Acer rubrum, Nyssa, Clethra, Alnus, Myrica, Ilex, Osmunda* and *Dulichium* are characteristic. Ericaceæ and allied families are well represented.

Nearly all the species in these pine barrens are quite widely distributed in the glaciated region, or on the coastal plain, or both. Many also occur in the mountains, from New Jersey to Georgia. The vegetation is very similar to that of some parts of the pine barrens of New Jersey, from all accounts, but the flora is considerably less diversified.

The paper was illustrated by photographs, and will be published in the January, 1908, number of *Torreya.*

CHARLES LOUIS POLLARD,
Secretary pro tem.

THE ANTHROPOLOGICAL SOCIETY OF WASHINGTON

THE 409th meeting was held December 3, 1907. The president read the program for the coming academic year of the Paris School of Anthropology, and exhibited a photograph by A. Frič of a band of professional Indian-hunters still employed in South Brazil. Several of the men-hunters show wounds, while in their midst is a small group of captured Indian women and children.

Professor W. H. Holmes gave an account of the prehistoric sites in Arizona and New Mexico recently set apart for preservation as public monuments. They are great pueblos in Chaco Canyon, New Mexico; Inscription Rock near Zuñi, New Mexico, bearing autograph inscriptions of early Spanish explorers; and Montezuma Castle on the Rio Verde, Arizona. Professor Holmes was followed by Mr. Edgar L. Hewett, who presented many interesting details regarding Chaco Canyon pueblos and the cliff ruins of the Mesa Verde. Illustrations of these ruins were shown, and a prolonged discussion engaged in by Messrs. Lamb, Kober, Robinson and Hewett.

Dr. Hrdlicka demonstrated the right humerus of an adult orang showing perfect healing after a complete oblique fracture at the middle of the shaft, just below the attachment of the deltoid. The bone was somewhat shortened, but there was little displacement, leaving the animal with a very serviceable limb. The bone is from a wild orang collected in Sumatra for the U. S. National Museum by Dr. W. L. Abbott. In view of the arboreal habits of the orang, the location of the fracture in the right arm, and the time needed for a strong union of the fragments, the healing effected is truly remarkable. The case arouses much speculation as to the behavior of the animal under such conditions, and it seems certain that the injured arm was given a prolonged rest. Discussed by Professor Holmes and Drs. Lamb, Baker and Kober.

Dr. I. M. Casanowicz exhibited specimens

of ancient textiles in the U. S. National Museum. They are from Panopolis and Antinopolis in Egypt, are of linen, cotton, wool, and rarely silk, and date from the third to the seventh century, A.D. They are decorated usually in geometric designs with wool of various colors in tapestry stitch.

AT the meeting of December 17, 1907, native cotton raised by the Hopi of Oraibi, Arizona, was exhibited by the secretary, who said that the seed of this cotton is similar to that found in ancient graves in northeastern Arizona. The Hopi use this cotton for cord and textiles devoted to ceremonial purposes.

The paper of the evening was by Major James Albert Clark, of the Bureau of Immigration, on "The Effects of Immigration on the Ethnic or Race Composition of our Population." Major Clark held that the pessimistic view that the country will be injured by the immigration is baseless; on the contrary, it is made by immigration. Teutonic, said Major Clark, will always be the backbone of the nation, and though 25,318,067 foreigners have come in since 1820, this number has not smothered the basic population. He discussed the various characteristics and prejudices of the racial elements which make up the American nation, and concludes that the alchemy of assimilation is forming the greatest nation the world has ever held. The address was discussed by McGee, Robinson, Hrdlicka and others, and a vote of thanks was tendered Major Clark for his illuminating treatment of his subject.

WALTER HOUGH,
General Secretary

THE AMERICAN CHEMICAL SOCIETY. NORTHEASTERN SECTION

THE eightieth regular meeting of the section was held in the amphitheater of the Chemistry Building of the Harvard Medical School, on December 20, at 8 o'clock P.M., President Frank G. Stantial in the chair. About eighty members and friends were present. The paper of the evening was by Dr. William F. Boos, of the Laboratory of Physiological Chemistry, of the Massachusetts General Hospital, who addressed the section upon "Ptomaïns and Toxins." Two classes of poisonous substances have been distinguished as occurring in the flesh of animals: (*a*) Bodies formed as the result of putrefaction, and (*b*) substances resulting from the invasion of the body by pathogenic bacteria. This distinction is being abandoned because there is really no essential difference between the two classes. Most of the substances isolated from putrid animal matter are harmless, but one, *sepsin,* is very poisonous. The term "ptomaïns" was first applied to many substances in putrefying animal matter, but most of these are non-toxic. On this account the term toxin was introduced for poisonous ptomaïns.

Toxins are classified as: (1) Ectotoxins, which are dissolved in the culture fluid, and when injected subcutaneously, produce antitoxins, which render the subject immune. The toxins of diphtheria and tetanus are of this class; (2) endotoxins, which are part of the body-substance of the bacteria, and which do not produce true anti-toxin when injected into the blood, but which yield precipitating and agglutinating agents like the opsonins of Wright. The toxin of tuberculosis illustrates this class.

Meat poisoning cases frequently occur due to toxic substances, which produce symptoms resembling alkaloidal poisoning. Thus, the toxin from infected sausages produces symptoms much like those of atropin poisoning, and has therefore been called "ptomatropin."

The only toxin which has been isolated in the pure state is "sepsin." It has been prepared from putrid yeast and putrid blood. Twenty mgms. of the sulphate killed a large dog in a few hours. The symptoms and effects are very similar to those of arsenic poisoning. By heating to 60° C., for an hour, sepsin is changed to cadaverine and rendered innocuous.

Poisoning from spoiled meat is due to sepsin; but thorough cooking changes sepsin into cadaverine. It has often been noticed in cases of epidemics, that only those who ate the smoked or lightly cooked meats were poisoned. But in ordinary cooking processes, the interior portions of the meat or fish may not reach a

temperature sufficiently high to destroy the poison if present.

As regards low temperatures and cold storage effects, the bacteria may remain alive at zero temperatures and below, and even continue to multiply as long as the medium is liquid. But if meat is stored at temperatures low enough to produce a solidly frozen substratum it will keep indefinitely since there can be no bacterial growth or activity in ice. Fowls have been found perfectly good after four years storage at —10° F. But the public prejudice against cold storage products leads the market men to thaw the birds or meat before placing them on sale. This thawing is done by soaking in cold water, and as fresh water is not used for each piece, the water becomes foul, and well preserved material becomes infected. Unsold birds or meat, after thawing and hanging in the air for longer or shorter time, are frequently returned to cold storage and re-frozen to keep until the market demands them. Such re-refrigerated stock always shows marked deterioration. By purchasing original frozen stock, and allowing it to thaw slowly in the air, the consumer can insure himself perfectly good material at practically no risk of toxic poisons. Soaking frozen stock is always to be condemned.

In the lengthy discussion it was brought out that pure sepsin always shows the same degree of toxicity, no matter how prepared. When combined with albumen, certain animal and vegetable poisons appear to act more quickly than do their pure toxins. This is true particularly of ophiotoxin or snake venom. Meats and fowl should be placed in cold storage at once after killing, to insure long keeping. But for economical reasons, the animal heat is allowed to dissipate before putting the meat in the cold room. Meats that are "high," have already begun to decompose, but their habitual use appears to render the consumer more or less immune to the effect of toxins. In support of this theory successful experiments have been made to immunize animals against sepsin.

Following the discussion, a vote of thanks to the speaker, and to the faculty of the Harvard Medical school for the courtesies extended to the section, was passed. The members were then shown through the laboratories and inspected the equipment of the Chemical Building.

FRANK H. THORP,
Secretary

DISCUSSION AND CORRESPONDENCE

TOWER'S EVOLUTION IN LEPTINOTARSA

IN SCIENCE for July 19, 1907, Professor T. D. A. Cockerell gives a very appreciative review of Tower's investigation of evolution in chrysomelid beetles of the genus *Leptinotarsa,* and incidentally points out some defects. Professor Tower's work is of such scope that it seems desirable to call attention to certain errors and shortcomings which it contains. Above all one misses a clear presentation of the facts upon which the work is built up and which alone can give it standing among scientists. The value of the evolutionary discussion, which makes up the bulk of the work, must rest upon the accurate presentation of data and if these data are weak the deductions can not hold. It is my purpose herewith to point out such statements touching upon the biology and systematic aspect of these beetles as seem to me to call for criticism. Even a slight acquaintance with the literature of the subject would have saved Professor Tower from errors which are surprising in a man who claims to have devoted eleven years to his subject.

On page 1 is a tabulation of genera and species of Chrysomelini, abstracted from the "Biologia Centrali Americana." Although this purports to include the forms found in "America north of the Isthmus of Panama" the species found to the north of the Mexican boundary, with the exception of a few species of *Leptinotarsa,* are omitted. Thus several additional genera, and a large number of species, should be included in such a consideration. It is stated that of the 13 genera enumerated all but *Phædon* are peculiar to America, while in fact *Plagiodera* and *Melasoma* are likewise circumpolar. To these circumpolar genera must be added *Timarcha, Entomoscelis, Prasocuris, Chrysomela, Gastroidea, Gonioctena* and *Phyllodecta.* Professor Tower