culties and the fact that no one has been able to give the problems the study they deserve. There are brief accounts of two western cypress bark beetles and no mention of the closely related eastern bark beetle of our junipers and red cedars. These are all relatively minor points and illustrate the great difficulty of bringing into a completed whole the hosts of facts having a vital bearing on the control of hundreds of insects.

There is a feeling on the part of the reviewer that the author has been over-conservative in some of his statements in regard to control measures. There are some definite recommendations, but in a number of cases these are prefixed by the somewhat over-cautious phrase, "It is said," or words to that effect, a caution hardly necessary in connection with the golden oak scale, a pest successfully controlled with oil sprays for more than a decade. A general consideration of the measures advised leads the reviewer to the conclusion that much work has yet to be done before our knowledge of the insect enemies of shade trees and ornamentals is sufficiently extended and exact to permit definite control recommendations for many of these pests. This last is not a criticism of the volume. It is a recognition of a need which various research agencies engaged in the study of the insect enemies of shade and ornamental trees are endeavoring to meet as rapidly as possible.

The general reader will find the long series of excellent and largely original illustrations exceedingly helpful in identifying the various species. The reviewer was especially attracted by the illustrations of the eggs of a number of species of cankerworms, though he regrets that in the interest of completeness the author did not see fit to include an egg mass of the fall canker-worm, a most important pest in this group. The book is excellent and well adapted to the requirements of superintendents of parks, members of shade tree commissions and others interested in conserving those very important natural resources of the country known as shade and ornamental trees.

E. P. FELT,
Director
BARTLETT TREE RESEARCH LABORATORIES

COLLEGE PHYSICS

College Physics. By MENDENHALL, EVE and KEYS. 592 pages, Boston, D. C. Heath and Company.

IN view of the great loss to physical science in the death of Professor C. E. Mendenhall, this text-book deserves special consideration. It is an elementary book suitable for a thorough first course of university or college grade. The material is presented somewhat in the traditional order and in the general divisions of mechanics (solids and fluids), sound, heat, magnetism and electricity, and light, with three additional chapters on modern physics. The study of dynamics precedes statics, giving the student a chance to get some acquaintance with the subject before he has to tackle the almost universal bugbear of problems on the equilibrium of particles and of rigid bodies. In dynamics absolute c.g.s. units are used along with the similar absolute f.p.s. system in which the poundal is the unit of force, foot-poundal of energy, etc. This treatment is logically satisfying and allows the use of the same equations for the two systems of units. The more familiar English gravitational units (pound weight, foot-pound, horsepower, etc.) are also given and the everyday use of them is stressed in illustrative examples and in the problems. Answers to problems are given in both ways, *i.e.*, poundals and pounds, foot-poundals and foot-pounds, etc. The student of this text must, however, stick to poundals for force in the equation, $f = ma$, and in all relations derived therefrom, and afterwards translate his results to pounds. Whether this procedure is superior to the open use of British engineering units and the total ignoring of the practically never used absolute f.p.s. system is a question always good for almost endless discussion among teachers of elementary physics.

In magnetism and electricity the student gets acquainted, as he should, with both fundamental c.g.s. systems, e.s.u. and e.m.u., and with the practical units, defined in terms of the latter. Certain legal definitions, as such, are also given. Besides the usual elementary classical electricity, two chapters are given over to more recent developments, such as conduction in gases, x-rays, vacuum tubes, radio and television, etc.

Modern physics is discussed at such length as the authors deemed advisable in three final chapters, on photoelectricity, radioactivity and atomic structure. This discussion is up-to-date, accurate, and yet given in sufficiently simple language for the student to grasp it and have his curiosity aroused. Besides this discussion of modern physics, modern concepts are used and modern developments are described throughout the text. In fact, the point of view is not only up-to-date, but at the same time gives the student some idea of how physics grew and how it is growing. This is considerably assisted by including in the first chapter a brief historical summary and by following names of men with dates of birth and death in parentheses.

The writers' style is very clear. They have been at some pains in many instances to anticipate the student's pitfalls, explaining with great care points which usually give trouble. The mathematical knowledge required is such as is usually covered in a freshman course in mathematics. Calculus is not used. The more difficult sections are starred, instead of being put

in the customary fine-print, which usually leads the student to ignore them. There are more than thirty tables scattered through the text and an additional three-page "Table of Reference" at the close of the book.

Altogether, the authors have produced a text-book of a high grade of excellence which, while it is on the whole conservative in the arrangement and treatment of the material, never loses sight of the aliveness of the subject and gives the student a glimpse of what lies beyond the elementary groundwork. It should prove in all respects a most teachable text.

E. P. T. TYNDALL

STATE UNIVERSITY OF IOWA

REPORTS

THE THIRD ANNUAL TRI-STATES (ILLINOIS, WISCONSIN, IOWA) GEOLOGICAL FIELD CONFERENCE

THE geologists and students of geology in the three states mentioned in the title were invited to the annual Tri-States Field Conference on November 16 and 17, 1935. The conference was held this year in Clinton, Jackson and Dubuque counties in eastern Iowa. It was conducted by A. C. Trowbridge, assisted by A. C. Tester and M. L. Thompson.

There were in attendance 124 persons, who traveled in 34 cars. Eleven colleges and universities, two state geological surveys and one oil company were represented.

The geology of routes and stops was described in a nine-page mimeographed log and a blue-print map, handed to each participant at the beginning of the conference.

Leaving Clinton, Iowa, at 9:00 A.M. on Saturday, the cavalcade arrived at Dubuque, Iowa, at 5:30 P.M., having traveled 123 miles and made 11 stops for the study of geologic features. On this day's trip all stratigraphic horizons from the top of the Ordovician Dubuque dolomite to the top of the Silurian Hopkinton dolomite were seen. The section at Bellevue in Jackson County was of special interest, because of the difficulty of classifying it. The uppermost beds of the Dubuque dolomite are exposed at the base of this section, and beds of Kankakee or Hopkinton age at the top.

Also, Kansan till, the basal portion of almost completely eroded Yarmouth gumbotil, an Illinoian channel of Mississippi River connecting Maquoketa and Wapsipinicon rivers, Peorian loess, and a hill at Fulton, Illinois, cut off from the Iowa bluff by Mississippi River in Wisconsin time, were observed and discussed.

In addition, caves, sinks and natural bridges in Hopkinton dolomite were visited near Maquoketa, Iowa, and the party inspected Crystal Lake Cave that was also once a lead mine, near Dubuque.

The Saturday route crossed an inlier of Maquoketa shale in the Preston anticline in southern Jackson County.

A general meeting was held in Dubuque on Saturday night. No scientific papers were presented, but the geologic problems of the area were freely discussed. By separate vote of members of the three state groups, A. H. Sutton was elected to succeed M. M. Leighton as member of the executive committee for Illinois, F. T. Thwaites to succeed W. H. Twenhofel for Wisconsin, and A. C. Tester to succeed A. C. Trowbridge for Iowa. As the conference will be held in Illinois in 1936, Dr. Sutton is chairman of the executive committee for one year.

On Sunday, November 17, the Ordovician Saint Peter, Platteville, Decorah and Galena formations and their subdivisions were studied at Dubuque, and in a famous section at Spechts Ferry. The party also drove through Couler Valley and visited a good exposure of Nebraskan drift capping a high Mississippi River bluff, at Dubuque.

There is evidence that in pre-Nebraskan time the Mississippi River drained a peneplane and flowed in a wide, shallow valley about 75 miles west of its present course; that it was forced to take its present position along the east border of the Nebraskan glacier; that it was intrenched in this course following regional uplift; that Little Maquoketa River, a tributary to the Mississippi, developed Couler Valley; that in about Kansan time Couler Valley was abandoned by diversion through piracy of Little Maquoketa River to the Mississippi above Dubuque; that by Wisconsin time Mississippi and Little Maquoketa rivers had so deepened their valleys as to leave Couler Valley hanging about 250 feet above the master stream at both ends; that Couler Valley was again occupied by Little Maquoketa River and by a part of the Mississippi River when it carried Wisconsin glacial water and deposited glacio-fluvial material in its own valley and in Couler Valley; that water continued to flow through Couler Valley for a time after the retreat of the Wisconsin glacier while part of the fill was being removed; and that still later the Little Maquoketa was again diverted directly to the Mississippi, and Couler Valley was again left without a stream as it is to-day.

The conference closed at Dubuque at noon on Sunday.

A. C. TROWBRIDGE

UNIVERSITY OF IOWA