October 3, 1935). Our comparisons of the melting points and mixed melting-points of the four alkaloids and of certain of their salts, and of their optical activities in different solvents in cases where sufficient material was available, leave us in no doubt that the alkaloid obtained in the four different laboratories was the same substance, and that the four names given to it are synonyms. Having reached that conclusion, we are content to leave to the world of science the choice of one of these names, for adoption into scientific literature as the recognized name of the one alkaloid.

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SCIENTIFIC BOOKS

INSECT ENEMIES OF SHADE TREES

Insect Enemies of Shade Trees. By GLENN W. HERRICK. Pages i–viii, 1–417, 350 text illustrations. Comstock Publishing Company, Ithaca, New York. 1935.

THIS latest addition to our knowledge of the insects of shade trees is by one who has added materially to our knowledge of this large group. The book is an attractive, moderate-sized volume containing brief practical accounts of the more injurious insect pests affecting trees and shrubs. It also lists many others which are not deemed of sufficient importance to warrant a paragraph, though for most of these there is no clue as to where information concerning them may be found.

There is first of all a discussion of the value of shade trees and general methods of protection from insect attack, followed by a chapter devoted to a consideration of the materials and apparatus for the control of tree and shrub insects and a third is concerned with suggestions for treatment of weakened trees. This last is important, since it is becoming increasingly evident that the vigorous tree is less likely to suffer from insect pests and in not a few cases it is able to resist attack. This is particularly true of the deadly enemies of the cambium, such as the bronze birch borer, the two-lined chestnut borer, the hickory bark beetle and the hemlock borer. It is the belief of the reviewer that the intimate relation existing between repeated defoliation, poor growing conditions, sudden changes in the supply of moisture, including drought, can not be emphasized and re-emphasized too much since they are fundamental to any system which would keep trees vigorous. This is recognized by the author, though hardly emphasized sufficiently. It is gratifying to note that both in this volume and in large scale control work on shade tree insects by governmental and state agencies, tree sanitation is becoming more generally recognized as an important method of tree conservation. Another matter which might have been brought out is the difficult growing conditions for trees on lawns, due to the fact that there is comparatively little enrichment of the lower soil layers and the reduced humus incident to repeated mowing, both greatly favoring drought extremes.

The larger portion of the volume is devoted to a discussion of the insect enemies of the more important trees, such as the ash, beech, birch, buckeye and horse-chestnut, catalpa, elm, ginkgo, hackberry and so on down the list to the willow. The apple and cherry, both of value as ornamentals as well as for fruit, are conspicuous by their absence. An interesting innovation is a preliminary consideration of the characteristic qualities of each of the shade trees discussed in the various chapters.

There is a separate chapter dealing with the insect enemies of smaller trees and shrubs, another devoted to evergreens other than pines and a final one restricted to miscellaneous enemies of trees and shrubs. It appears to the reviewer that it would have been more logical to have included the accounts in these last three in chapters devoted to the other trees, even if the divisions were relatively short. An informative book of this character is successful in proportion to the accessibility of the information to the average reader. He knows little and usually cares less about taxonomic relationships. This, however, is more or less a matter of opinion.

Greater familiarity on the part of the author with recent literature would have made possible a definite statement as to the wintering habits of the hickory gall aphid, an appreciation of the fact that the elm lace bug rarely attacks valuable trees, since these latter are seldom surrounded by the bushy or woody growth necessary to the hibernation of this insect and there is therefore little real need of suggesting a spray for this insect, that injury by the Pales weevil to the roots of good-sized Scotch pines may greatly outweigh the earlier recognized damage to seedlings and that methods of controlling the two more common hackberry psyllids of the north are already known. We question the need or efficacy of the measures recommended for the control of the pigeon horn-tail. The treatments commonly advised for injurious borers are far from satisfactory, due in large measure to inherent diffi-

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.

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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