obvious that the woman who is most likely to develop breast cancer is the woman who is least likely to transmit it; under such circumstances, breast cancer would gradually be eliminated. Such does not seem to be the case.

Finally, let us say that before we make any such radical recommendations as that of urging mothers not to nurse their female children if there is a history of breast cancer in the family, there should be an extensive survey to ascertain facts. An endeavor should be made to trace all women whose mothers died in childbirth or within two hours after, and who can definitely prove that they never were nursed by a wet nurse; and to estimate the percentages, if any, of these who have breast cancer, in order to compare this with those women who have been nursed by their mothers. Due attention must be paid to having comparable age groups in the two classes and to the elimination of those groups in which a possible true heredity of breast cancer from either paternal or maternal side of the family might exist. Should it then be found that women whose mothers so died, and who were not nursed at all, have none or significantly less breast cancer than have women in a comparable group but who were nursed, we may have some data on which to base conclusions. Even then, the late age at which cancer develops will serve as an obstacle in any program of elimination either by not breeding or by not nursing.

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Book Reviews

College mathematics: a general introduction. **Charles H. Sisam. New York: Henry Holt, 1946. Pp. xiii + 561. $3.50.**

This book might well be subtitled *What every student of mathematics should know.* Beginning with a review of algebra, it includes plane and spherical trigonometry; analytic geometry, both plane and solid; college algebra; and an introduction to some ideas of the calculus. The review is not merely a repetition of a high school course but is presented in adult fashion with amplifications and applications which give the subject fresh interest. Teachers who cannot give class time to algebra will be glad to have in the volume they are using for other subjects the things to which their students so often need to be referred.

Both trigonometry and analytic geometry are compact but complete, covering all the usual theory in fewer than the usual number of pages but with plenty of explanation and exercises. The unusual method developed for the reduction of functions of angles greater than 90° is most economical for that purpose and for later use in connection with the addition formulas. It is interesting to find, in the first paragraph of the chapter on conic sections, pictures of the ellipse, parabola, and hyperbola cut from a right circular cone, with a reference to their historical background in Greek geometry, while after individual treatment of the curves is given their single definition in terms of focus, directrix, and eccentricity. This emphasis on the relationship of the conics is most desirable. With a discussion of tangents and normals comes naturally the basic idea of the differential calculus and its simplest geometric application, maxima and minima. To this, by a judicious mixture of definition and intuition, are added simple indefinite integrals, the definite integral, and area under a curve, making it possible for freshmen to get some notion of a subject whose name has often suggested only mystery. The chapters on the graph of an equation offer the student an opportunity to use all his acquired knowledge in the study of algebraic and transcendental curves, both in rectangular and polar coordinates and in parametric form. This might be an interesting conclusion for a course the emphasis of which has been largely geometric.

There is provision, however, for a more inclusive course as well as for one providing more variety of subject matter. Geometry may continue with a glimpse into three dimensions, dealing with the plane, line, and quadric surfaces in standard form. From the field of college algebra there is a selection of topics, interesting in themselves and valuable for a student who will continue mathematics. In connection with his treatment of probability the author distinguishes between mathematical and empirical probability, making it possible for the student to see applications to subjects from which the use of the classical definition alone would exclude it.

The final chapters, on spherical trigonometry, serve to complete all the material which commonly enters into a first-year course in mathematics. The average class would never cover all of it, though individual gifted students might conceivably gain a bird's-eye view of these fields through its use. Teachers will find here abundant choice for the course fitted to their purposes and will like the logical and direct method of presentation.

SUSAN M. RAMBO

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The Cavendish Laboratory. **Alexander Wood. Cambridge, Engl.: At the Univ. Press; New York: Macmillan, 1946. Pp. 59. (Illustrated.) $1.00.**

This is a brief but stimulating history of the famous Physics Laboratory. The list of Cavendish professors

reads like a *Who's who* of physics during the last century—James Clerk Maxwell; Lord Rayleigh, who, it is interesting to learn, gave his Nobel Prize money to the Laboratory; J. J. Thomson; Ernest Rutherford; and the present professor, Sir Lawrence Bragg. The book contains a good portrait of Rayleigh also one of Maxwell.

A further evaluation of importance of the Laboratory may be made on the basis of the men who have worked there. Included among these are C. T. R. Wilson, W. D. Aston, R. T. Glazebrook, W. N. Shaw, and J. Chadwick.

Peter Kapitza, Russia's leading physicist, for whose research the Mond Laboratory was built, was at the Cavendish for 13 years, eventually holding the Messel Professorship. On a visit to Russia in 1934 he was detained by the Government. His equipment was shipped to Russia so that he could continue his researches.

The book is worth any scholar's time.

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The North American clear-wing moths of the family Aegeriidae. **George Paul Engelhardt. (Smithsonian Institution, U. S. National Museum Bull. 190.) Washington, D. C.: Government Printing Office, 1946. Pp. vi + 222. (Illustrated.) $.75.**

For over 40 years George P. Engelhardt devoted his life to the study of natural history, with special emphasis on entomology. In the latter field he was particularly interested in the Aegeriidae, a distinctive family of moths with clear wings. The present monograph, substantially finished as to species and genera when he died in 1942, has been carried to completion and publication under the auspices of the Smithsonian Institution. It reflects Engelhardt's activity as an unusually able field biologist over four decades and embodies his mature observation of this group during that time. He possessed a rare knowledge of the natural history of the various sections of the United States in detail, and in the course of his many field trips he made numerous friends who cooperated actively in supplying material for study. A reflection of some of these contacts is found among new species he described: *clarkei, dammersi, hennei, richardsi.*

The Aegeriidae have a readily recognizable habitus, although their only diagnostic character is a locking system between the forewings and hindwings, first pointed out by A. Busck in 1909. The larvae are all borers and are easily recognized by the special arrangement of their ocelli and crochets. Several of them are of economic importance, notably as fruit pests.

The monograph divides the family on the basis of adult characters with particular reference to antennae, venation, and male genitalia. Nine groups are set up, which in turn are combined in two main divisions of subfamily rank. The larger of these divisions includes seven groups characterized by a club-shaped antenna with the apex ending in a minute hair tuft. The other two groups, *Bembicia* and *Zenodoxus,* form the smaller main division with antenna tapering toward the apex, without a tuft. A key to the genera includes all except *Palmia* Beutenmüller. However, this genus, which contains only a unique female specimen described by Henry Edwards, is retained by the author. Separate keys are provided for the species in a number of individual genera.

New descriptions by the author add 7 genera, 19 species, 4 varieties, 9 races, and 7 forms. With one exception, all the genera shown under Aegeriidae in Dr. McDunnough's *List of the Lepidoptera of Canada and the United States* (Pt. II) are retained. *Parharmonia* Beutenmüller with its two species is merged into *Vespamima* Beutenmüller, thus combining the three North American species confined in host association to coniferous trees.

The principal genus, *Synanthedon* Hübner, is reduced from 69 species to six species and two subordinate forms. The remainder of this genus is mainly distributed among three restored genera, *Carmenta* Hy. Edwards, *Conopia* Hübner, *Thamnosphecia* Spuler, and a new genus, *Ramosia.* Four of the six other new genera have been created to cover single species each, and two for small groups. Of the 19 new species described, *Euhagenia hirsuta* is based on a single male, and *Carmenta austini* is described from a male and a female. Most of the others are based on series of some size.

The author, in his discussion of individual species, has contributed a wealth of biological data of great value that adds immensely to the scope and interest of his study. A special index of food plants lists some 200 host plants with which specific aegeriids are associated.

The Smithsonian has included 16 plates in black and white, containing 25 illustrations of wing venation, including the diagnostic wing lock, and 62 drawings of genitalia. Sixteen additional plates, provided through the generosity of the author's family, portray 100 illustrations of adult moths in color. It is particularly helpful that the color plates contain representations of all the new material described with the exception of three new races and one new form. Drawings for 79 of these illustrations were made for the author by Mrs. Mary F. Benson and for the other 21 by Mrs. William Beutenmüller. Reference to the text suggests that the scale of the illustrations of adult moths is about 2×. The scale for the genitalia is not apparent.

Too often the death of a scientist before publication of his lifelong observations robs him of adequate recognition and deprives science of the full fruits of his knowledge. It is fortunate that the Smithsonian Institution, through the National Museum, has undertaken the task of carrying this manuscript through to publication, in conformance with its high standards. Consideration of the adequacy of the taxonomic concepts may be left to the specialists. The comprehensiveness of the basic data speaks for itself, while the detailed biological treatment, the readability in content and form, and the notable provision for illustrations give the work a distinctive character of its own. The Engelhardt monograph will be the authoritative source on the Aegeriidae of North America for a long time.

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