Récréations Mathématiques et Problèmes des Temps Anciens et Modernes par W. Rouse Ball. Deuxième edition française traduite d'après la quatrième édition anglaise. Troisième partie avec additions de MM. Margossian, Reinhart, Fitz Patrick, et Aubry. Paris, Hermann, 1927. 2+363 pp. Paper, 21 fr.

The first edition of Ball's *Mathematical Recreations and Problems of Past and Present Times* appeared in 1892, the fourth edition in 1905, and the tenth edition in 1922 with the title *Mathematical Recreations and Essays*. Since the English publisher has nothing to hide, the latest edition always contained the dates of all previous editions. This is in marked contrast to the method of the French publisher who in this case as in the cases of other works recently reprinted seems to attempt to give the impression that the works were first published in 1927. As a matter of fact the three volumes of the second French edition of the *Recreations* were published in 1907, 1908, and 1909 respectively. The volume under review is a facsimile of the one issued in 1909 with the exception that on the title page and front cover "1909" has been changed to "1927," and on the last page, before the back cover, "Saint-Armand, Cher.—Imprimerie Bussière" has been changed to: "Reproduit par les procédés Dorel, 45 Rue de Tocqueville—Paris XVII^e." The defects of such a reproduction are noticeable. No further review of this work is called for. It may be remarked, however, that the three volumes of the original second French edition contained so much new material, they are well worth having in a library along with the English editions. The first French edition, in one volume, appeared in 1898 and was a translation of the third English edition (1896).

There was also an Italian translation by Gambioli, from the fourth English edition, which appeared in 1910.

R. C. Archibald

A Treatise on the Mathematical Theory of Elasticity. By A. E. H. Love. Fourth edition. Cambridge University Press, 1927. xviii+643 pp.

Love's *Elasticity* first appeared 35 years ago in two volumes. The second edition in 1906 was entirely rewritten and put into a single volume. This edition was reviewed in this Bulletin by F. R. Sharpe (vol. 16, p. 90). The third edition appeared in 1920, when, owing to the disturbance in the distribution of scientific literature during the war, a considerable amount of material which had been published was not available for incorporation in that edition. We now have the fourth edition, which like the third, is not really a major change from the second, but does bring the bibliography up to date and includes a considerable amount of new material and some revisions of the old. There is more about problems of the plate (thick and thin), a note on the deduction of the stress-strain relations from molecular theory (lattices), a revision and simplification of the theory of the equilibrium of a sphere (geophysics).

Those of us who are interested in mechanics have cause to be very thankful that Love's *Elasticity* and Lamb's *Hydromechanics* are kept in print and kept up to date. There is not the equivalent of either in any other language. We have also to be thankful that the authors have not yielded to the temptation to expand the volumes out of all proportion; it would have been so easy to have become encyclopedic, to have gone into the engineering applications, to have developed various parts of physics not really germane to the central thought, and even to have descended from the high path of the mathematical theory to the slough of multiplying hypotheses and inadequately justified approximations.

Some fifteen years ago I taught parts of Love's *Elasticity* to a group of graduate students at the Massachusetts Institute of Technology who had had courses on strength of materials, on structures, on applied mechanics, and on advanced calculus. The book was not easy to read with them although they had a good knowledge of the physical phenomena with which it deals; for highly trained mathematical students it might be easier in some respects, but I fear that with the lack of physical and practical insight often found in such students it would be for them not much but mathematics. One does not come instinctively by the feeling for the facts of elasticity as he does for those of particle or rigid mechanics. It would be a real service if the author could collaborate with some leading theoretical engineer to produce a text which should be thoroughly sound, and while serving for ordinary instruction, might lead naturally up to this great classic.

EDWIN B. WILSON

Quadratic and Linear Tables. Lt.-Col. Allan J. C. Cunningham. London, Francis Hodgson, 1927. xii+170 pp.

The first 55 pages of this volume is an extension to the limit 125,683 of the table of quadratic partitions issued in 1904 by the same author. The use of this table has been explained in the previous volume which has been reviewed in this Bulletin.

A small table follows giving the representation of certain numbers by the form x^2+462y^2, and furnishing a partial list of primes between 10,000,873 and 10,099,681. Since 462 is an "idoneal" number these primes are called by the misleading title "idoneal primes." Since we already have tables giving the complete list of primes in this range the value of this and the little table following it by T. B. Sprague is somewhat doubtful.

For the worker in the theory of numbers many of the remaining tables in the book will be welcomed. Thus we have a table giving the last four possible digits of square numbers which will help identify large squares: tables of solutions of quadratic congruences; quadratic residues and non-residues; tables which give the linear forms for a in the congruence $a^2-b^2 \equiv N \pmod{p}$ which are valuable in the application of Fermat's method of factorization by the difference of squares. The table for the congruence $a^2+b^2\equiv N \pmod{p}$ could easily have been derived from this one. These tables have been published recently also by M. Kraitchik. A further table giving solutions of the equation $ax-by=1$ occupies some 22 pages.

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