Review
Author(s): R. M. Milne
Review by: R. M. Milne
Source: *The Mathematical Gazette,* Vol. 6, No. 94 (Oct., 1911), p. 163
Published by: Mathematical Association
Stable URL: http://www.jstor.org/stable/3603271
Accessed: 17-12-2015 00:08 UTC

general printing and arrangement of the book are not of the best, the treatment of the subject is commendable. In a great many cases the method of attack and mode of expression are original, and the book should be productive of ideas for the teacher. The private student, too, will receive many practical hints, especially in the work on the Binomial Theorem and on Logarithms from the arithmetical point of view. The exercises have clearly received much care and attention from the author, and are one of the features of the book, whilst many of the worked-out examples in the text have been well chosen from the various Indian University papers. H. G. M.

Elements of Mechanics. By G. W. PARKES. 4s. 6d. 1911. (Longmans, Green and Co.)

It is difficult to understand what useful purpose can be served by publishing a work which is so very much on the old lines. Both parts, Statics and Dynamics, are almost entirely theoretical, and except for an experimental verification of the Parallelogram of Forces there is scarcely an allusion to the experimental work which can be done by the student. It is said of Lord Kelvin that when lecturing on Mechanics he used to tell his students that Levers had been divided into three classes, but that he could not tell them what they were, and if further information was required they would have to refer to textbooks. We have here, in addition to the three classes of Levers, the three systems of Pulleys supplemented by a fourth, and the only machines described are the Common or Roman Steelyard, the Danish Steelyard, the Wheel and Axle, the Differential Wheel and Axle, the Inclined Plane, the Wedge, and the Screw.

The dynamical part of the book would have been greatly improved by a chapter on the Dynamics of Rotation of a Rigid Body. Reference is made to the relativity of Potential Energy, but none to the Relativity of Velocity. No mention is made of the loss of Kinetic Energy on the impact of two Bodies, and there is no allusion, in the treatment of Projectiles, to the important part played in practice by the resistance of the air.

The figures are, as a rule, only diagrammatic, and in some cases the drawing seems defective. In Fig. 78, p. 122, it is difficult to make out whether a perspective sketch or a projection is intended. The figure given corresponds to neither. The projection of a spiral or screw thread on a plane parallel to the axis is of course a sine curve.

The strong feature of the book is the insistence on the use of first principles in working examples. Many good typical examples are worked out in the text.
R. M. MILNE.

(1) **Allgemeine Theorie der Raumkurven und Flächen.** By DR. V. KOMMERELL und PROF. K. KOMMERELL. II. Band. Pp. 188.

(2) **Spezielle Flächen und Theorie der Strahlensysteme.** By the same authors. Pp. 171.

These are respectively Nos. 44 and 62 of Schubert's set of mathematical text books (Leipzig). They form with a preceding number (29) a complete work on Differential Geometry. Apparently No. 44 in the first edition contained matter which is now divided into these two books, Nos. 44 and 62, which have been published as the second edition of Band II. of the original treatise with considerable additions. Notably there are many more examples introduced to illustrate the general theory, and a section on Congruences has been appended.

In No. 44 the line followed is Gauss's method of dealing with a surface in terms of two parameters. All the general properties receive treatment with remarkable completeness considering the size of the book. The argument, of course, is that at parts of a surface where it is approximately flat (as opposed to nodes or discontinuities) the element of arc is expressible as

$$ds^2 = E\, du^2 + 2F\, du\, dv + G\, dv^2,$$

and the asymptotic lines are given by

$$L\, du^2 + 2M\, du\, dv + N\, dv^2 = 0,$$

where E, F, G, L, M, N are functions of u and v, such that the shape and size of the surface is unique if these six functions are given. This is analogous to the theorem that a plane curve is intrinsically given if the curvature is a known function of the arc.