

Differentiating with respect to y , we get

$$\frac{1}{p} = (1 - n)^{1/n} \frac{(1 + p^2)^{m/n} dp}{(Ap + B)^{1/n} dy},$$

and consequently

$$(7) \quad y = (1 - n)^{1/n} \int \frac{(1 + p^2)^{m/n} p}{(Ap + B)^{1/n}} dp.$$

Thus (6) and (7) are the parametric equations of the minimizing curves.

WASHINGTON UNIVERSITY,
ST. LOUIS, Mo.,
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SHORTER NOTICES.

Il Problema dei Tre Corpi da Newton ai Nostri Giorni. By R. Marcolongo. (Manuali Hoepli.) Milan, Ulrico Hoepli, 1919. 162 pp.

This little book, in the well known style of the Hoepli manuals, presents, as its title indicates, an account of the problem of three bodies from the time of Newton to the present. The author has limited himself strictly to a descriptive account of what has been accomplished in this interval of time, with full references to original memoirs and papers where the interested reader can find the complete developments.

Professor Marcolongo is well known as an authority in the field of dynamical systems, and this book from his pen will be welcomed by all who are interested in the development of mathematical astronomy. Here will be found references to the works of over 200 authors who have contributed to one or more phases of this celebrated problem, together with a short description of the aim, the method of attack, and the results attained.

The book is divided into six chapters. The title of each sufficiently indicates its content.

- I. The works of the geometers of the eighteenth century.
- II. Reduction of the differential equations to least order.

- III. Problem of n bodies. Particular cases.
 IV. Uniform algebraic integrals in the problem of n bodies.
 V. Approximate solutions by infinite series; by trigonometric series. Researches of Sundman.
 VI. The restricted problem of three bodies. Periodic solutions. List of authors cited.

The American student will be interested to find among the authors mentioned the names of Hill, Newcomb, Longley, Brown, Lovett, Macmillan, Moulton, Birkhoff, Wilczynski; and to feel that his own country has not been behind in contributions to this special field of knowledge, important alike in its theoretical aspects and its practical bearings.

The complex development of modern mathematics calls for more books of this type: mathematical Baedekers, without symbolism, with concise statements of aim, method of attack, and results, and with full references to original sources.

L. W. DOWLING.

Darstellende Geometrie. By Th. Schmid, associate professor of geometry at the technical school of Vienna. Volume I, second edition. (Sammlung Schubert, LXV.) Berlin and Leipzig, Vereinigung wissenschaftlicher Verleger, 1919. 278 pages and 170 figures.

THE first edition of Volume I appeared in 1912, and was reviewed in this BULLETIN (vol. 21 (1914), pp. 204-205.) We are told in the preface to this second edition that the second volume of the first edition has not yet been published. The manuscript is completed, but as the entire edition of the first volume was exhausted, it was decided to publish this second edition of the first volume before proceeding with the second volume.

In the present volume, the exercises appear in smaller type than the text, and are more numerous than in the former edition. At the end of § 12, marked § 35 in the new edition, paragraphs 1 and 2 are interchanged, and four pages of historical and bibliographical matter are added. A similar addition of two pages appears at the end of the volume. Otherwise it is almost a verbatim copy of the first edition.

VIRGIL SNYDER.