GOURSAT'S COURS D'ANALYSE.

Cours d'Analyse mathématique. By ÉDOUARD GOURSAT, Professeur à la Faculté des Sciences de Paris. Vol. II, *Theory of Analytic Functions; Differential Equations, Total and Partial; Elements of the Calculus of Variations.* Paris, Gauthier-Villars, 1905. 8vo, pp. vi + 640.

THE second and last volume of Professor Goursat's treatise on the elements of analysis is devoted to the theory of functions of one and of several complex variables, pages 1–305, and to differential equations, total and partial, pages 306–589, concluding with a chapter of forty-two pages on the calculus of variations. Like the first volume, the book is characterized by the vital relation of the choice of material and the mode of treatment to the analysis of the present time. It is the product of a man whose contributions to analysis are of value and who wishes to give to his students the tools he has found to be useful. The procedure that is simplest in practice is given the most prominent place in the presentation, and the main theorems of the subject treated are set in a strong light. On the other hand, a wide range of topics is treated, an outline of a whole theory being sometimes given well on in a chapter as an application of the foregoing principles. When this is done, the author shows good judgment in what he expects of his readers. It is reasonable to leave to the student at this stage the details of proofs which follow general well-defined lines, provided that the framework is so constructed that he can see what is required. The tact which the author displays in this regard makes the book a serviceable one for advanced students to read by themselves and to report on to their university teacher.

The volume begins with an introductory chapter of seventy-four pages, Chapter XIII, on analytic functions of a complex variable, in which both single and multiple-valued functions are treated, the elementary functions being defined in a natural manner for complex values of the argument. The evaluation of integrals of the type

$$\int R(x)dx, \quad \int R(\sin x, \cos x)dx,$$

where R is a rational function, is taken up, and the subjects of infinite series and products, conformal mapping both of plane