faces of the fourth order ; 11° geometry of the straight line ; 12° ruled surfaces, complexes, and congruences ; 13° differential geometry ; 14° non-euclidean geometry ; 15° geometry of space of n dimensions ; 16° kinematical geometry ; 17° theory of connexes.

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D'OCAGNE'S DESCRIPTIVE AND INFINITESIMAL GEOMETRY.

Cours de Géométrie descriptive et de Géométrie infinitésimale. Par MAURICE D'OCAGNE, Ingénieur des Ponts et Chaussées, Professeur à l'École des Ponts et Chaussées, Répétiteur à l'École Polytechnique. Paris, Gauthier-Villars et Fils, 1896. 8vo, xi+428 pp.

THIS work is an expansion of the course in pure geometry given by the author at the École des Ponts et Chaussées. It proposes to give an exposition of all the geometrical notions which are of interest to engineers, the material not required in the course appearing in small print. As the title indicates, the construction of the book is unique. The author deems it necessary to separate completely that which has to do with the representation of geometrical bodies from that which treats of their intrinsic properties. Accordingly his course is divided into two parts represented in the work by the two distinct divisions : *Géométrie descriptive* and *Géométrie infinitésimale*. The author believes also that the exposition of general doctrines should precede that of the details of a subject and prefaces each chapter with a body of essential principles before examining any particular case ; thus for example, in the theory of surfaces he presents an ensemble of general properties before studying surfaces of a special nature, such as the *surfaces gauches* ; this is contrary to the custom prevailing in similar courses.

1. The first part (two hundred and forty-six pages) of the work includes the first four chapters. In the first chapter, *Projections cotées*, we have the usual details relative to the representation of the ordinary relations between right lines and planes, together with certain problems concerning the round bodies, and the theory of topographical surfaces and profiles.