

Notice sur le Système des six Coordonnées homogènes d'une Droite et sur les Éléments de la Théorie des Complexes linéaires. Par A. SÉFÉRIAN. Lausanne, A. Déneréaz-Spengler et Cie., 1910. 79 pp.

To quote from the preface: "At the end of the introduction to his work *Statique graphique*, Professor Mayor supposes the reader familiar with line coordinates and the theory of the linear line complex. The present work develops this theory and has for aim the preparation of the reader to read profitably Professor Mayor's book."

A point (x, y, z) and the direction cosines (X, Y, Z) of a line through it uniquely fix the latter. The projections (L, M, N) of the moments $L=yZ-zY$, etc., upon the coordinate planes furnish three further equations, from which x, y, z can be replaced by L, M, N . The six larger letters are the coordinates under discussion. Various theorems are now developed regarding relations between vectors and their projections, all results being expressed in terms of the coordinates.

The moment of two vectors is derived; it vanishes when the lines defining the vectors intersect. Linear systems are considered, pencils, bundles, reguli, all of them in vector language and, in part, vector notation. The moment of two linear systems furnishes a natural introduction to the concept of the linear complex. The ideas developed are polarity, conjugate lines, condition for involution, and the invariance of the anharmonic ratio under linear point transformations and duality. Finally, various points of contact with Professor Mayor's book are pointed out. The work does not pretend to be a mathematical contribution, but to contain a mechanical interpretation of well-known ideas, without any of the purely geometric applications.

VIRGIL SNYDER.

Theoretical Mechanics. By PERCEY F. SMITH, and WILLIAM RAYMOND LONGLEY. Boston, Ginn and Company, 1910. 288 pp.

THIS is an attractive volume of 288 pages in a binding similar to the other mathematical texts edited by Professor Smith. The pages have a neat appearance, the size of type and spacing being excellent, and the numerous diagrams throughout the book could scarcely be improved.

From the preface one learns that the text is intended pri-