The book leaves much to be done but this fact only enhances its interest. It should be productive of many extensions along the lines of economic interpretation as well as of mathematical research. In fact the authors suggest a number of directions in which research might profitably be pursued.

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Principles of stellar dynamics. By S. Chandrasekhar. The University of Chicago Press, 1942. 10+251 pp.

The primary field of this book is astronomy and not mathematics, although the latter is used as an essential tool. The readers of this review, professional mathematicians almost exclusively, will have a normal human interest in the major astronomical aspects of the book, but their critical scrutiny is bound to be concentrated on how the astronomical problems are formulated mathematically and what sort of mathematics has been proposed for their solution. For this reason, and partly also in the interest of brevity, this review treats only of the mathematical aspects of the book.

In the first chapter is given a detailed discussion of the kinematical concepts appropriate to the study of stellar systems. Since these systems contain a large number of stars, it becomes necessary to introduce a method similar to that employed in hydrodynamics, where the motion of a fluid is described by a vector field, representing at each point and for each instant of time the velocity of the fluid. In hydrodynamics the velocity of the fluid at a point is conceived as the velocity of the "fluid particle" at the point in question. But this notion of a "particle" at the point in question is difficult to make precise, especially if one assumes the fluid to consist of a large number of small atoms with relatively large empty spaces between them. Nevertheless such a concept (in which the stars play the role of the atoms) is characteristic of stellar dynamics as distinguished from celestial (particle) mechanics, which considers systems containing but a relatively small number of bodies.

The components $U_0(x, y, z, t)$, $V_0(x, y, z, t)$, $W_0(x, y, z, t)$ of the vector field thus introduced do not, of course, necessarily represent the components of velocity of a star which might happen to be at the point (x, y, z), but rather the velocity of the centroid of stars in a "small volume" about the point (x, y, z). The components of velocity of an individual star are written in the form $U = U_0 + u$, $V = V_0 + v$, $W = W_0 + w$, where the vector (u, v, w) is called the *residual* velocity. The statistical consideration of these residual velocities is a characteristic of stellar dynamics and gas theory as distinguished from