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BANG-YEN CHEN

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Basic theory of algebraic groups and Lie algebras, by Gerhard P. Hochschild, Graduate Texts in Mathematics, vol. 75, Springer-Verlag, New York, Heidelberg, Berlin, 1981, viii + 267 pp., $32.00. ISBN 0-3879-0541-3

Linear algebraic groups, by T. A. Springer, Progress in Mathematics, vol. 9, Birkhauser, Boston; Basel, Stuttgart, 1981, x + 304 pp., $20.00. ISBN 3-7643-2039-5

A unified theory of linear algebraic groups emerged only in the 1940s. Before that time, special classes of algebraic groups such as the orthogonal groups and the general linear groups had been carefully studied, but these were often viewed separately and independently rather than as parts of some greater whole. In his *Théorie des groupes de Lie* [7], Chevalley laid the foundations for this more general theory. He developed the subject in the spirit of classical Lie theory by associating to each group its Lie algebra and by utilizing a formal exponential mapping from the Lie algebra to the group. Unfortunately, this process of linearization only worked well when the base field was of characteristic zero. At least one important result, the Lie-Kolchin theorem, did hold for