Most of the chapter is based on the author's own research, but some of the material has been supplied by W. W. Rogosinski, who helped the author in the final writing of this chapter.

Some readers will miss an index, and many more will miss bibliographical references.

D. C. SPENCER

General equilibrium theory in international trade. By Jacob L. Mosak. (Cowles Commission Monograph No. 7.) Bloomington, Ind., Principia Press, 1944. 187 pp. $2.50.

This work can be recommended to mathematicians who are interested in learning what modern economic theory is about or what mathematical methods have been found useful in this field. It is an interesting historical fact that a statistically significant fraction of the great literary or non-mathematical economists began their training as mathematicians. On the other hand, a no less significant proportion of those who have made important contributions to mathematical economics started out with poor early trainings in mathematics. And with a few notable exceptions, the excursions into economics of well-trained creative mathematicians of reputations have not resulted in the most important advances in this field.

Like Willard Gibb's work in classical thermodynamics, but unlike his statistical mechanics, the tools employed in this book are the mathematically elementary ones capable of being taught in advanced calculus and undergraduate algebra classes: maxima of functions of many variables, Jacobians, Hessians, determinants, and so on. However, some of the important aspects of these topics are rarely taught in such courses although there is no good reason why they should not be. Among these is the statement of sufficient secondary conditions for an extremum of a function of many variables subject to a number of constraints; or what is the same thing, the conditions for definiteness of a quadratic form of variables subject to linear constraints, with the implied inequalities of certain bordered Hessians. The Weierstrassian treatment of this problem is not widely available. (Compare, however, Harris Hancock's *Maxima and minima*, now out of print, and Carathéodory's *Partiale Differentialgleichungen erster Ordnung*.) Because Pareto was unfamiliar with this theory, progress was held up for fifteen years until the Russian mathematician Slutsky put the cart back on the tracks.

In connection with asymmetrical determinants which arise in the study of the problem of stability of multiple markets, some less familiar mathematical problems and theorems occur. Typical of these is