Introduction à la Mécanique Non-Linéaire. By Nicolas Kryloff and Nicolas Bogoliuboff. (In Russian.) Académie des Sciences de la R. S. S. D'Ukraine, 1937. 364 pp.

In this work the authors present developments essentially their own. Their contributions are of prime importance. Under consideration are nonlinear oscillatory differential systems sufficiently "close" to certain linear systems. The typical systems studied contain a parameter ϵ and for $\epsilon=0$ such systems reduce to linear equations. The investigations are of the analytic-local character for a neighborhood of $\epsilon=0$ and the methods are of asymptotic type. It is emphasized that the methods of the astronomical theory of perturbations cannot be carried over into nonlinear mechanics, and reference is also made to topological methods. The above developments extend into a domain of the theory of nonlinear differential equations in which some very general problems, of somewhat analogous type but in directions distinct from those followed by the authors, have been extensively treated by the present reviewer (see his works in the Transactions of this Society, 1937, pp. 225–322, and in the Mémorial des Sciences Mathématiques, no. 90).

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Grundgedanken der Teiltheorie. By Ernst Foradori. Leipzig, Hirzel, 1937. 79 pp.

Teiltheorie is the theory of domains which admit a transitive and reflexive dyadic relation, that is, partially ordered sets. Such relations are particularly important in the theory of lattices and Boolean rings. Postulating such a domain, this work defines Vereinigung and Durchschnitt so as to make these terms equivalent to least upper and greatest lower bound, respectively.

The principal object of this monograph is the definition and discussion of continuity in dense partially ordered sets. Foradori first defines continuity in a simply ordered set. His definition requires that each subset have a least upper bound and that each element be the greatest lower bound of all its successors. This is equivalent to postulating that the set be dense and that it satisfy Dedekind's postulate of continuity. A partially ordered set is said to be continuous if every simply ordered subset is a subset of a continuous simply ordered subset. The order-preserving image of a continuous partially ordered set is shown to be continuous. Continua which can be formed from a finite number of linear continua by identifying end points are said to be of the first class. Continua which are the direct product of two or more linear continua are of the second or higher class. These types of continua receive special consideration.

The author's definition of partially ordered continua is more complicated than necessary, and for this reason is hard to apply except in simple cases. With slight modification, his definition of continuity for simply ordered sets will apply directly to partially ordered sets without reference to their simply ordered subsets (for instance, see J. von Neumann, *Continuous geometry*, Proceedings of the National Academy of Sciences, vol. 22 (1936), p. 94). By doing this, the treatment of the types of continuous sets with which this monograph is concerned can be greatly simplified.

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