and should give him a grasp of the elements of this subject such as he does not usually have after taking the usual course in Galois' theory of equations. This aspect of the book is highly to be commended.

On the other hand, when the author has departed to this extent from the precedent set by Weber, Serret et al., it is all the more disappointing to find that he includes the classic material on the numerical solution of equations—Sturm's theorem, the theorem of Fourier and Budan, Descartes' rule of signs, upper limits of the roots, Newton's method, "regula falsi," and the methods of approximation due to Bernoulli and Gräffe, although he is wise enough to omit Horner's method. Mathematics of this kind certainly does not belong in the same book with a neat and clear exposition of the divisibility of polynomials in several variables and Galois' theory of equations except in so far as it may be used to illustrate a bit of theory. In fact, such mathematics is not algebra at all, but what one might call "algebraic statistics"—that is, it applies to concrete problems in algebra the methods of statistics rather than the methods of pure algebra.

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Sur la Théorie des Equations aux Dérivées Partielles du Premier Ordre d'une Seule Fonction Inconnue. By N. N. Saltykow. Paris, Gauthier-Villars, 1925. 172 pp.

This book contains the lectures delivered by the author in the four Belgian Universities during 1923–1924. Much of the material represents results of the author's own researches which have not previously been published in detail or which are now presented in simplified form.

The treatment centers about the well known theorem concerning the equivalence of the two problems: (1) to find a complete integral of a given partial differential equation of the first order in one unknown function; (2) to find the general integral of the equations of its characteristics. The author develops a theory which exhibits the relations between these problems and which gives methods of finding a solution of either one when any incomplete set of integrals of the equations of the characteristics is known. He extends his results, moreover, to simultaneous systems by proofs like those for the single equation. In fact, the similarity is such that one wonders why he does not treat the more general case at the outset.

Since the characteristics can be defined by a linear homogeneous system of partial differential equations, there is an introductory chapter on the theory of such systems. In particular, a new form of the equations of the characteristics, fundamental for the subsequent developments, results from this preliminary discussion.

The contributions are both interesting and important. The details of the exposition could perhaps be improved upon. A clear-cut statement of hypothesis and conclusion would help. For example, at the beginning of Chapter II the author announces he is about to prove Jacobi's theorem, but leaves the reader to find out which one. The misprints are numerous but of little consequence.

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