

Professor Nicholson's article of thirty-seven pages in the last of the books under review has a different purpose than the other two, although it too is addressed to the layman. It forms one of a series of lectures delivered at King's College of the University of London on problems of modern science and attempts to present to a general audience an account of present activities in mathematical research with special emphasis on those which are related to other sciences. Any one faced with such a task has a perfect right to make his own selection of topics to be presented, and a reviewer has little right to criticise such selection. The present reviewer has no disposition to do so, beyond observing that other men would doubtless have made other selections. As is natural, the problems in vogue in England receive the greater part of the lecturer's attention. We thus hear of the theory of partitions, and of Waring's problem, and of related topics in the theory of numbers. A strange error has crept into the account of Fermat's theorem, when the founding of the Wolfskehl prize is located at Vienna. Dubious also is the statement (p. 19) that Fermat's theorem is one "towards the solution of which an extensive mathematical training is of little help." The last sixteen pages are devoted to some mathematical considerations connected with the theory of relativity and Planck's quantum theory. The lecture is readable throughout. It may be doubted, however, if a general educated audience would carry away more than a very vague notion of what it was all about, especially concerning the latter part of the lecture. More than that ought probably not to be expected from such a lecture, however, and even so, who would be bold enough to deny that the giving of such lectures and their publication is worth while? If they serve to arouse interest and give their audience even a vague notion of the beauty and significance of scientific progress they have accomplished a noble purpose.

J. W. YOUNG

*Principes et Premiers Développements de Géométrie Générale Synthétique Moderne.* By Emile Bally. Paris, Gauthier-Villars, 1922. VIII + 218 pp.

The preface to this rather ambitious work contains some amusing statements which may be considered as characteristic of the treatise under review. The author says: "This book is dedicated to the friends of geometry. For many among these, simple amateurs as they are, the ingenious geometric deductions are agreeable relishes which they taste without any afterthought and without bothering themselves with the elements of which they may be composed. Others, more distrustful, the *critics*, wish to know what one has put into the relishes; some of these, the *purists*, cannot tolerate certain ingredients, and declare execrable every composition which contains a trace of those ingredients. Although endeavoring to please the first category, (and this book is above all the

work of an amateur addressed to amateurs) we have tried to take account of the reasonable exigencies of the critics and purists without pretending to give them throughout full satisfaction; a purist is never satisfied."

The author thinks that his treatise can be understood by every intelligent person even without any mathematical knowledge. He does not give any references and seems to excuse this lack by the fact that the only books at his command are the works of Darboux (*Classe Remarquable de Courbes et de Surfaces*), of Dumont (*Surfaces Cubiques*), of Duporcq (*Géométrie Moderne*), and the *ENCYCLOPÉDIE DES SCIENCES MATHÉMATIQUES*. He also suspects that here and there a proposition supposed to be new may have been discovered or demonstrated before, but leaves the decision as to priority to those who are better versed in the subject.

In a preliminary chapter, M. Bally treats of ordinal arithmetic, then follows Chapter I on "general notions on geometry", in which he includes the fundamental ideas of higher spaces by introducing some new terms, like *polinarity* for the number of elements necessary to determine geometric forms.

On account of the high cost of printing, Chapters II–XI have not been published in the present volume. It concludes with three chapters XII, XIII, XIV on the hexangle, Pascals hexagramme, and related configurations; an appendix on Chapter XIII, and finally with additions and corrections to the previous work of the author on synthetic geometry on unicursal curves of the third class and the fourth order.

The author shows considerable mathematical ability, but he is seriously hampered by his unfamiliarity with the current literature and the present tendencies of geometric research.

ARNOLD EMCH

*Darstellende Geometrie*, vol. II. By Theodor Schmid. Second edition. Berlin and Leipzig, Walter de Gruyter (Sammlung Schubert, LXVI). 1923. 340 pp.

Although the work of Professor Schmid was to occupy three volumes, three editions of the first and now a second edition of the second volume have appeared before the third volume could be completed. The first edition of volume 2 was published in 1921, and reviewed in this *BULLETIN* (vol. 28 (1922), pp. 68, 69). The present one differs only slightly from it, and the remarks there made still apply. Three articles have been lengthened; one discusses a nodal normal section of a tubular surface, another amplifies the anaxomatic representation of the helix, and the third enlarges on the projections used in geographic maps. A section has been added on graphical tables and nomography, together with a good bibliography on this subject.

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