SHORTER NOTICES.

*Application de la Méthode Vectorielle de Grassmann à la Géo-
métrie Infinitésimale.* Par HENRI FEHR.* Georges Carré
et C. Naud, Éditeurs. Paris, 1899. 94 pp.

THE mathematicians Grassmann and Hamilton who al-
most simultaneously published their first work upon a '' cal-
culus of space'' were undoubtedly geometers, not analysts—
abstract and speculative they may have been—but still
geometers. We have only to regret that they were not
also clear stylists ; for it must be admitted that, with the
exception of the attempts of certain persons to show how
everything may be done by the methods of vector analysis
or quaternions, nothing could be more fatal to the popu-
lar acceptation and use of a space analysis than the form in
which it was presented to the public by the inventors. Suc-
ceeding writers for the most part seem to have erred along
the same lines or to have forgotten the stress originally
laid upon the interpretation of the analysis. It is there-
fore with great pleasure that we read M. Fehr's little book,
which is written with such admirable clearness and selected
with such tasteful care that in the compass of ninety-one
pages there is included, without the slightest suspicion of
crowding, a preface, an introduction on the use of vector
analysis, and a fairly complete treatment of differential
geometry.

M. Fehr originally wrote his book as a thesis to be pre-
sented for the degree of doctor of science at the University
of Geneva. As a thesis, the work contains nothing origi-
nal either in vector analysis or in geometry. All the re-
sults and methods were known well enough before. In-
deed, anyone who has heard such lectures as are given at
our leading universities upon these two branches of mathe-
matics ought to be able to put together the material in this
book with almost no difficulty. But to put it together in
so pleasing a manner is a far harder task. The reviewer,
therefore, must deal with the manner of presentation rather
than with that which is presented.

The votaries of vector analysis will find in M. Fehr's
book little to cheer them. In fact, so meager is the devel-
opment of the subject that one might almost say the entire
analysis consists of three symbols

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