TWO BOOKS ON ANALYSIS

Lezioni di Analisi Infinitesimale. By Giulio Vivanti. 2d edition. Torino,
S. Lattes and Co., 1920. vii + 693 pages.

Lezioni di Calcolo Infinitesimale. By Ernesto Pascal. Milano, Ulrico
Hoepli. Part I, 4th edition, 1919, viii + 330 pages. Part II, 4th
edition, 1918, xii + 313 pages. Part III, 2d edition, 1918, xi + 325 pages.

Permitting oneself a variation on a well known theme, one could perhaps
say to a nation: "Show me your fundamental course in analysis and I will
tell you who you are mathematically." For doubtless, a valuable estimate
of a nation's state of development in mathematics can be obtained by
considering the form in which the fundamentals of the infinitesimal calculus
are presented to the students of that nation.

If the two works under review may be taken as representative Italian
courses, one must form a high estimate of the esteem in which mathe-
matics is held in that country. In scope, point of view and method of
approach, they are broad and scholarly. They cover practically the same
ground except for Pascal's third volume which is devoted entirely to the
calculus of variations and to the calculus of finite differences. They
are not encyclopedic like the French cours d'analyse; neither are they
written on the superficial plan of so many of our American college texts.
From them a student can learn enough to be well prepared for special
study in analysis, as well as for work in the applied sciences—he will at
least have acquired that which he is to apply. Both intended for technical
students, the authors do not hesitate to include the elements of the theory
of point sets and other topics usually regarded in our classes as material
unfit for the training of "practical men." In his preface, written May
1917, Pascal says "It is certain that through the profound changes which
the critical spirit has made in the foundations of the calculus, even a course
intended for those for whom mathematics is a means rather than an aim,
cannot but use the new results which have been reached . . . it would
therefore exhibit a shortsighted view and little esteem for the ability of
the future engineer, to believe that it would be sufficient for them, at least
if they can, to learn to operate the calculus in about the way in which
a workman knows how to operate a machine made by others, and of
which he does not know the inner connections."

Is not this a point of view worth the consideration of our teachers of
engineering students? Not merely for the mathematical specialist, but
for the person concerned with the applied sciences, a fundamental theoretical
course, not merely a working course, is requisite if these applications are
to be more than mere mechanical adaptations of the thoughts of others.

The two books differ in their method of treatment, inasmuch as Vivanti
is in favor of and Pascal opposed to the fusion of differential and integral
calculus. The *Lezioni* of Vivanti consists of the following six parts:
I. Analytical introduction (90 pp.), II. Derivatives and integrals of
functions of one variable (150 pp.), III. Derivatives and integrals of func-