culus involves a differential equation, the students remain unable
to treat even the equation of harmonic motion and completely
ignorant of the necessity and significance of " determining the
arbitrary constants." Thirdly the author introduces Fourier's
series long before he reaches the chapter on " more difficult
exercises and theorems " in which he first states the rule for
differentiating a product. Curious as this arrangement may
seem, we wish to use it to call attention to the value and the
possibility of early introducing the expansion of a function
into a Fourier's series. Mathematicians as a rule are so pre-
occupied with contemplating the difficulties encountered in prov-
ing the expansibility of an arbitrary function into a Fourier's
series that their students study calculus three hours a week
for two full years, one hundred and eighty lessons, without
hearing of any such series. Yet so valuable are these series
in physics and astronomy that they might well be introduced,
even crudely, as Professor Perry introduces them, early in the
study of calculus. The actual determination of the coefficients
in a case of the simpler functions is not difficult and furnishes
a practical problem in integration.

Such are some of the advantages and disadvantages of Pro-
fessor Perry's *Calculus for Engineers*. We can heartily recom-
mend to any teacher the perusal of this book. In many places
he will find his eyes opening to ways in which the treatment
of difficulties, unsuspected and unappreciated by the student,
may be replaced by questions of practical use and interest
without endangering the career of any possible future pure
mathematician. It will be only by a rational compromise on
both sides that the inconvenience of the present tendency to
different courses and different books for each class of specialists
can be avoided without harm to any.

E. B. WILSON.

Leçons sur les Fonctions Méromorphes. Par ÉMILE BOREL.
Recueillies et rédigées par LUDOVIC ZORETTI. Paris, Gau-
thier-Villars, 1903. 8vo., vi + 122 pp.

THE Leçons sur les Fonctions Méromorphes is a natural
sequel to the author's Leçons sur les Fonctions Entières which
appeared about three years ago. The results are in great part
mere generalizations, to the case of functions possessing poles,
of the results earlier obtained for functions possessing no singu-
larities in the finite region of the complex plane. Considerable

attention is paid to numerical equalities and inequalities.
The work draws its inspiration from Weierstrass, Du Bois-
Reymond, and especially from Cauchy. It is distinctly of the
modern French School, however, for with the exceptions of
Mittag-Leffler. and Lindelöf, who draw from the same source,
the names that one meets are Picard, Poincaré, Hadamard, Borel
and other less-known French mathematicians.

The chief topics treated are Mittag-Leffler's theorem that a
meromorphic function is the sum of an integral (transcendental)
function and a series of rational fractions; Weierstrass's theorem
that a meromorphic function is the quotient of two integral
functions; Hadamard's investigation on Taylor's series with
applications to meromorphic functions and to the zeros of inte-
gral functions; the generalization of Picard's theorem to the
statement that any meromorphic function must take on every
value, except possibly two, an infinite number of times; and
series of rational fractions, with ordinary and extraordinary
distributions of poles, as applied to the study of meromorphic
functions. Four notes, two of which Mr. Zoretti contributed,
bring the subject so far up to date as to include some memoirs
not published when the book went to press.

This little book, like the others, is of great value in putting
us abreast of the present state of a particular branch of mathe-
matics. So carefully has the matter been chosen and so clearly
has Mr. Zoretti written that only a very limited knowledge of
the theory of functions is presupposed. This pedagogical
method is peculiarly French. It quickly places the student in
absolute command of an advanced field so that he may com-
mence his investigations at once without that vast auxiliary
knowledge which some consider necessary. By such a work
as these Leçons the whole mathematical world is given the
same advantage.

E. B. WILSON.

NOTES.

THE April number (volume 25, number 2) of the *American
Journal of Mathematics* contains the following papers: "The
double-six configuration connected with the cubic surface, and a
related group of Cremona transformations," by EDWARD KAS-