happen to read the volume under review may not base upon
it a general condemnation of the utterances of philosophers
concerning mathematics, but will give themselves an antidote
in the form of such books as Russell's Scientific Method in
Philosophy or Holt's Concept of Consciousness.

ARNOLD DRESDEN.

Homogeneous Linear Substitutions. By HAROLD HILTON,
　M.A., D.Sc. Oxford at the Clarendon Press. 1914.
　Pp. 184.

PROFESSOR Hilton's book is a welcome addition to the text-
book literature on the subject of linear substitutions. In the
preface the author states that he has "attempted to put
together for the benefit of the mathematical student those
properties of the homogeneous linear substitution with real
or complex coefficients of which frequent use is made in the
theory of groups and in the theory of bilinear forms and
invariant factors."

The first four chapters, comprising a little more than half
of the book, are intended to form an introduction to the whole
subject. In the first chapter, which is much the longest in
the book, the ordinary method of transforming the general
substitution into the normal and canonical forms by means
of the poles is shown and the simpler properties of symmetric,
orthogonal, unitary, and Hermitian substitutions are given.
In the second the author gives a very brief account of in-
variant factors* and develops the second canonical form which
is the direct product of substitutions of the type

$$x_1' = x_2, \quad x_2' = x_3, \quad \cdots, \quad x_{r'-1} = x_r,$$

$$x_r' = e_1 x_1 + e_2 x_2 + \cdots + e_r x_r.$$

In the third chapter devoted to bilinear forms the Hermitian
forms play a prominent part.

To the student who comes to the subject for the first time
the fourth chapter on Applications will be one of the most
interesting in the book. Illustrations from the theory of
equations, from differential equations, from the theory of
maxima and minima, from geometry, and from mechanics
serve to show the wide range of application of the subject.

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* Following Bromwich, Hilton uses the term "invariant factor" instead
of "elementary divisor."