50). Then one has a transformation of an element *s*, or system *S*, *into* an element $\varphi(s)$, or a system $\varphi(S)$, and also (page 56) a transformation of *S in Z*. [The latter denotes a transformation of *S* into $\varphi(S)$, a part of *Z*.] This use of the word transformation is not easily associated with its ordinary use. The translation "representation" for Abbildung has been used by others By its adoption, the language becomes very smooth. Then, under the representation φ, a system *S* is represented by $\varphi(S)$. If the latter is a part of a system *Z*, we have a representation of *S* in *Z*.

In rendering more accessible various important foreign books, the Open Court Company is doing excellent work for science.

L. E. DICKSON.

Annuaire pour l'An 1902, publié par le Bureau des Longitudes. Paris, Gauthier-Villars.

THE Annuaire for the year 1902 does not differ materially from its predecessors. The information on the various subjects which it treats is, as usual, brought up to date; otherwise the body of the volume contains no material changes. The only matters which call for special remark are the notices placed at the end of the volume. The committee which has charge of the Annuaire always chooses subjects for these notices which shall be scientific and of general interest. The current Annuaire is no exception to the rule.

M. Poincaré writes a luminous article of thirty-four pages, on wireless telegraphy. He gives a simple account of the main principles which underlie this latest development in the applications of electricity. As usual, he carries the reader by easy stages up to the most recent results, including those of Marconi, so far as they are known.

M. Cornu develops, with much detail, the theory and practice of polyphase currents. Some parts of this article will perhaps be a little tedious to the mathematician, as several pages, here and there, are devoted to elementary explanations of harmonic motion, and the composition of harmonic motions of the same phase and different ampli tudes ; but this is doubtless an advantage for many of the readers whom this volume reaches. Considerable space is devoted to the construction of the most modern forms of dynamos.

In the third appendix M Guyou makes a plea for the use of the decimal division of the angle. He admits that it is hopeless to ask astronomers to change from the degree to

the grade on account of the large masses of results which
have been published in degree measure and the trouble of
continual comparison between the two systems He thinks,
that for navigational and geodetic purposes, the decimal
division is far easier to handle. and that the trouble re-
quired to make the change is not prohibitive.

Finally, M. Janssen gives his annual report of the work
done in the Observatory at the summit of Mont Blanc.
This time, he adds to it the history of the foundation of
the observatory.   It is interesting to notice that the lowest
temperature hitherto recorded by the self-registering instru-
ments (—45° C.) was obtained last year.

<div align="right">ERNEST W. BROWN.</div>

NOTES.

THE spring meeting of the Chicago Section of the AMER-
ICAN MATHEMATICAL SOCIETY will be held at the University
of Chicago on Saturday, March 29.

THE library of the AMERICAN MATHEMATICAL SOCIETY is
now bound and catalogued and ready for use.   Members
desiring to draw books may do so on applying to the Libra-
rian.   Books will be sent, express due, and must be returned
within four weeks, express prepaid.   Letters of inquiry
concerning books, publishers, prices, etc., will be answered
by the Librarian, so far as the facilities of the Society's li-
brary or of the library of Columbia University permit.   It
is the desire of the Council and of the Librarian to make
the library as helpful as possible to the members.   Circulars
have been sent to learned societies and institutions, to edi-
tors of mathematical journals. and to publishers, asking for
coöperation in the plans for enlarging the collection.

It would be fortunate if this library could become an ex-
ponent of the mathematical work of the Society.   To this
end members are invited to contribute copies of their publi-
cations, whether of books or of monographs. and to con-
tinue to do this as new works appear.   Such a library would
soon, with slight sacrifice on the part of each member, be-
come an invaluable record of the advance of mathematical
thought in America.   The Librarian will be glad to ac-
knowledge the receipt of any works of this nature, to in-
scribe the information that they are gifts from the author to
the Society, and to state this fact in the catalogues as they