utilitarian tendency, together with Blundau's manifest aversion to cross the threshold of higher mathematics, that to the disciples of Gauss, Lagrange and Tissot (who care more for the theory than for the application of projections), the treatment of 'autogonal' or 'conformal' projections is not altogether satisfactory. He should have introduced the elements of the theory of functions without which a proper treatment of these projections is impossible. He should at least have said that the coördinates of a sphere $(u, v)$ are connected with those $(x, y)$ of Mercator's projection by the relation

$$x + iy = u + i \log \text{tang} \left(\frac{\pi}{4} + \frac{v}{2}\right)$$

and that by suitably taking $\Phi$, the coördinates of any other autogonal projection $(X, Y)$ are given by the relation

$$X + iY = \Phi (x + iy).$$

If $\Phi(\ ) \equiv e^{\pm i(\ )}$ a stereographic projection is obtained in which the north or south pole is the center of the map. If to this stereographic projection we apply $\Phi(\ ) \equiv -K + \text{cn}^{-1}(\ )$, we obtain Peirce's *quincuncial* projection, etc.

A. Lindenkohl.

December 28, 1899.

*The Evolution of General Ideas.* By Th. Ribot. Translated by Frances A. Welby. Chicago, Open Court Publishing Company. 1899. Pp. 231.

The scope and mode of treatment of Professor Ribot's monographs are well known; and this one follows closely the general plan of those which have preceded it. The topic itself is a most interesting one; the genesis of the powers of abstraction and the evolution of the general ideas which represent the fruit of such abstraction. The material for the early forms of the process is to be found in the mental operations of animals, of children and savages, and of deaf-mutes before education. These have, in common, the absence of words and the dependence of the abstraction upon the generic images formed by sense-experiences. The intermediate stage involves the use of words and is reflected in the character and growth of language. The word fixes the material basis of the abstraction and aids the mind in focusing upon the 'abstracted' relation. In the highest stages of abstraction the element of representation has faded away, and the word practically constitutes its entire content. Following the description and illustration of these processes is a special consideration of the development of the special concepts of number, space, time, cause, law and species. The fundamental insistence upon experience as the basis of such development and the suggestiveness of the genetic point of view find apt application in this part of the thesis.

But in spite of a well-chosen theme and of a discerning utilization of the literature; in spite of much interesting material and suggestive modes of treatment, the general impression of the book is a rather unsatisfactory one. There is a judicious occupation of points of advantage; skirmish lines are thrown out in various directions, a campaign is carefully planned—and the planning is rather too freely discussed—but there is no vigorous nor successful attack upon the real stronghold of the situation. None the less, the monograph will be a helpful one to the student, who will appreciate the significance of the problem, as Professor Ribot outlines it, and who will be led by the interest of the exposition to assimilate the essential factors involved in the growth and functioning of the powers of abstraction. His attention may be specially directed to a point touched upon in the last chapter, but worthy of more extensive treatment; namely, that the criterion of the utility of abstraction is not to be sought merely in its products—such as the higher mathematics or metaphysics—but as well in the process itself, by which the individual learns to focus the attention at will upon any aspect of a complex experience which may become important. And, in the same chapter, he should not overlook the suggestive delineation of the parts played by theory and practice, by the incentive of genius and by gradual development, in the actual history of the sciences depending upon abstraction.

Of the translation, the best that can be said is that it is barely satisfactory. A good translation of a psychological work involves the absorption and re-expression of the author's perspective of ideas, not of his words alone;

abundant Latinisms, ambiguous phrases, and awkward statements reveal that this process has not been very successfully accomplished in the present instance.

JOSEPH JASTROW.

UNIVERSITY OF WISCONSIN.

BOOKS RECEIVED.

*Plane Trigonometry.* DANIEL A. MURRAY. New York, London and Bombay. Longman's Greeen & Co. 1899. Pp. xiii + 95.

*Irrigation and Drainage.* F. H. KING. New York and London, The Macmillan Company. 1899. Pp. xxi + 502. $1.50.

*The Logical Bases of Education.* J. WELTON. London and New York, The Macmillan Co. 1899. Pp. xvi + 288. $1.00

*Muscle, Brain and Diet.* EUSTACE H. MILES. London, Swan, Sonnenschein & Co. New York, The Macmillan Company. 1900. Pp. xv + 339.

*Elementary Chemistry.* ALBERT L. AREY. New York and London, The Macmillan Co. 1899. Pp. xi + 271. 90 cents.

*Plant Structures.* JOHN M. COULTER. New York, D. Appleton & Co. 1900. Pp. ix + 348.

*Central Station Electricity Supply.* ALBERT GAY and C. H. YEAMAN. London, Wittaker & Co. New York, The Macmillan Co. 1899. Pp. xiii + 467. $3.00.

*Water and Water Supplies.* JOHN C. THRESH. Philadelphia, Pa., Blakiston's Sons & Co. 1900. Pp. xx + 438. $2.00.

*A Text-book of Physics.* W. WATSON. London, New York and Bombay. 1899. Pp. xii + 896. $3.00.

## SCIENTIFIC JOURNALS AND ARTICLES.

THE New York Botanical Garden has begun the publication of a monthly journal to contain notes, news and untechnical articles of general interest. It is edited by Dr. D. T. MacDougal, director of the laboratories, and is sent free to members of the Garden. The first number, containing sixteen pages, opens with an article on the Museum building by Dr. N. L. Britton, with a plate, and this is followed by short unsigned articles on 'Coöperative Forestry,' 'Etiolated Plants as Food,' 'Micorhizas of Orchids' and 'Colors.' At the end there are notes on recent accessions to the Gardens and on other subjects of botanical interest. The New York Botanical Garden now has four series of publications. The *Journal* just mentioned, the *Bulletin*, containing official documents and technical articles, *Memoirs* and *Contributions*, the latter being reprints from other journals.

THE December number of the *Bulletin of the American Mathematical Society* contains a report of the October meeting of the Society, by the Secretary; 'Note on the Simply Transitive Primitive Groups,' by Dr. G. A. Miller; 'On the Commutators of a given Group,' by Dr. G. A. Miller; a review of Oltramare's 'Calcul de Généralization,' by Professor E. O. Lovett; 'Shorter Notices'; 'Notes'; 'New Publication.' The January number of the *Bulletin* contains the Presidential Address of Professor R. S. Woodward. 'The Century's Progress in Pure Mathematics,' delivered at the annual meeting of the Society, December 28, 1899; 'The Status of Imaginaries in Pure Geometry,' by Professor Charlotte Angas Scott; 'Notes'; 'New Publications.'

## SOCIETIES AND ACADEMIES.

### GEOLOGICAL SOCIETY OF WASHINGTON.

AT the 94th meeting and 7th annual meeting, held December 13, 1899, the following officers were elected for the ensuing year: *President*, Whitman Cross; *Vice-Presidents*, J. S. Dilller, C. W. Hayes; *Treasurer*, M. R. Campbell; *Secretaries*, F. L. Ransome, David White; *Members-at-large of the Council*, G. P. Merrill, Bailey Willis, A. H. Brooks, Waldemar Lindgren, G. O. Smith.

THE 95th regular meeting was held January 10, 1900. Under informal communications Mr. G. P. Merrill exhibited and briefly described a nepheline-melilite-basalt from Rocky Hill, Oahu, where it had been found in place by Professor C. H. Hitchcock. It was stated that while a rock of this type had been previously described by Wichmann and others from fragments brought by vessels as ballast, this was, it was believed, the first discovery of the rock in place.

Under the regular program the following papers were presented:

(1) Mr. Joseph A. Taff: 'Structural Features