the name of the thing pictured may suggest the phonetic value. The work is not easy. Brinton takes up one after another such as have been most studied, or for which he has a meaning to suggest. That we are still far from final conclusions is shown by the variation in interpretations of different authors. A group of signs which Seler considers are derived from 'man' and signifying 'person,' others distribute among crescent, ear, a serpent's mouth, eye and eye-lash, comb, claw, feather, part of a plant, etc. One of the commonest of glyphs, believed by Brinton to be derived from a picture of a feather ornament, and with the phonetic value of *yax*, and meaning (by metaphor) green, new, young, strong, fresh, virile, etc., is by others variously identified as representing a gourd, a tree, a *zapote* fruit, the phallus, etc. Such diversity of opinion is not discouraging; it only shows that much remains to do.

Our author does not slavishly follow authority. The bee-god sign and the *yax* character already mentioned show independence. His recognition of the *pax* (drum) sign is ingenious and probably strong. He introduces much new argument in identifying the deities. His suggestions in reference to day and month signs are thoughtful.

In so new a field we must have conflict of ideas. Dr. Brinton fairly aims to present all sides. The Primer shows the real position of knowledge on the question as resulting from the labors of Seler, Thomas, Schellhas, Förstemann and a host of other students. It is a good summary of present knowledge with a considerable addition of new and thoughtful material. It points the way, gives suggestion and help. The beginner must have the book, and every worker must recognize that Dr. Brinton by its publication puts all under genuine obligation, whether they agree with all his arguments or not.

Frederick Starr.

University of Chicago, Feb. 16, 1895.

Steam and the Marine Steam Engine. By John Yeo. London and New York, Macmillan & Co. Illustrated. 105 Engravings. Pp. xiv, 196. 8vo. $2.50.

This is a book written by a Fleet Engineer of the British Navy, for use at the Royal Naval College and elsewhere, embodying lectures prepared by Mr. Yeo for a course addressed to Executive Officers. It is thought that it may prove also useful for officers of the merchant service, and for students in engineering. It is a very compact presentation of the subject, and, as might be expected, coming from an officer of long service, abounds especially in well-made illustrations exhibiting the construction of the marine engine in its various usual forms and all its details. Of these engravings we can hardly speak too highly. They are largely reproductions of the diagrams and drawings employed in the lecture-room, and reductions of working drawings made especially for the book. The introduction gives an abridged account of the history of the marine engine, from the time of Watt to the present, and indicates, in a general way, the methods of improvement which have brought about the enormous gain, meantime, in economy and power of steamships.

The structure of engines and boilers, and of all their minor parts and accessories, including the slide-valve and its gearing, indicator-diagrams and their interpretation, and the condenser, the screw, and the powering of ships, are subjects treated of with evident knowledge and with brevity and accuracy. Little space is given to theoretical discussions of the thermodynamics or of other principles, mathematical or physical, illustrated by the action of the steam engine, and the special value of the book lies in its presentation of the forms of parts and its descriptive account of the machine. It is well made; paper, type, style and binding all being excellent; and the publishers

are to be congratulated on their good work in this respect. R. H. THURSTON.

The Life and Correspondence of William Buckland, D. D., F. R. S. Some time Dean of Westminster, twice President of the Geological Society, and First President of the British Association. By his daughter, MRS. GORDON. With portraits and illustrations. New York, D. Appleton & Co. 1894. Post 8°. Pp. 288. $3.50.

To those who were 'brought up,' geologically speaking, on perhaps the most weighty and yet brilliant of the Bridgewater Treatises, 'Geology and Mineralogy considered with reference to Natural Theology,' and are familiar with the prolonged struggle for existence undergone by the 'noble subterranean science' in the first half of our century, this life of the English participant in the contest will show what a force he must have been in the intellectual and scientific life of his time.

Dean Buckland was one of the creators of the science. Himself inspired by the teachings, though at second-hand, of William Smith, 'the father of English Geology,' he became the teacher of Lyell, of Murchison, of Etheridge, Daubeny, Egerton and Lord Enniskillen. As early as 1809, when a Fellow at Oxford, he had by his energy in collecting, his contagious enthusiasm, and his bold and effective advocacy of the infant science, produced a sort of panic in the minds of those who would have gladly strangled this newly born science.

The philosophic calm and classical serenity of the Oxford dons was sorely vexed and disturbed by the young savant. "Some dreaded lest his example should drive the *amœnitates academicæ* out of fashion." When his shorter journeys on British soil finally led to a longer excursion to the Alps and to Italy, one of the elders is said to have exclaimed: "Well, Buckland is gone to Italy; so, thank God, we shall hear no more of this geology." But young Buckland's zeal, energy, overflowing humor and eloquence, led to his appointment in 1813 to the Readership of Mineralogy, and in 1819 a Professorship of Geology was created for him.

He went on triumphantly in his career of advancing and popularizing his favorite science, overcoming objections and theological narrowness either by a joke, a hearty laugh, a strain of lofty eloquence, or by earnestly insisting that the study of geology, so far from being irreligious or atheistic in its consequences, had a tendency to confirm the evidences of Natural Religion, and that there could be no opposition between the works and the word of God.

His humor, quick wit and overflowing jollity or playful fancy in the lecture room were contagious. His field lectures were largely attended, and many are the stories told of his apt illustrations on these occasions, as well as of some of his adventures on his geological excursions. They are illustrated by rhymes and by comic pictures from the pen and pencil of his fellow geologists. As an example of his graphic mode of explaining the earth as understood in his day, it is said "He compared the world to an apple-dumpling, the fiery froth of which fills the interior, and we have just a crust to stand upon; the hot stuff in the centre often generates gas, and its necessary explosions are called on earth, volcanoes." When riding towards London with a friend on a very dark night, they lost their way. "Buckland therefore dismounted, and taking up a handful of earth, smelt it. 'Uxbridge,' he exclaimed, his geological nose telling him the precise locality." Mr. Etheridge tells the story of Buckland when travelling in Scotland, "in order not to shock the feelings of the Scotchmen on Sunday, carrying his hammer up his sleeve." Ruskin, who was an undergraduate of Christ Church when Buckland was not only