

in this series, and the latest especially will be a boon to a rapidly increasing audience. It surprises us to find that M. Reinach has been able to cram so much into so small a space, and to fix a price that puts the volume within the reach of most students who are interested in the subject. The old folio volumes were out of print, and were for the most part inaccessible to students in America. Besides that, the accompanying texts were mostly unscientific and antiquated, and could be used with safety only by those who knew well the ground they were treading. All this has been materially changed, thanks to the tireless work of M. Reinach, who has compressed the thirteen volumes (mostly folio) into the compass of one large octavo volume consisting of xv and 195 pages and 137 plates, while the cost is only thirty francs.

The reduction in the size of the old plates has not impaired the value of the original engravings for purposes of study and comparison. M. Reinach has really written a new text to these old plates; he has eliminated the stuff and padding (or, in other words, the greater part) of the original texts, and has cited the literature relating to individual gems. Indeed, the 195 pages of this volume are of far more value than the entire texts of the original thirteen volumes. We can go even farther and assert that the original volumes are now relegated to oblivion, because completely superseded by this modest publication.

And yet, in spite of all that can be said, we must warn the student that it is not safe to make unquestioning use of these plates, in which a strong element of caricature, untrustworthiness, and misrepresentation is always present. Methods of study and teaching have changed since the olden days of unquestioning faith when these plates were regarded as real boons. Nowadays true archaeological research must needs be done in the presence of the originals or of casts from the originals; lacking which, photographs from the casts of gems give us the only other safe means of studying art. All engravings and mere outlines involve error and misrepresentation, involve a loss of details, of type, and an obscuring of the motive subject.

The plates of this volume need further sifting and elimination, and, in spite of the debt we owe to M. Reinach, we see clearly that the definitive publication of antique gems has not yet been made. It is a fascinating subject that calls aloud for a devoted worker.

*The Number Concept; Its Origin and Development.* By Levi Leonard Conant. Macmillan. 1896.

THIS volume is made up of tables of the numerals of a great many (perhaps 500) different languages, with a slight connective commentary, drawing attention to the signification and composition of the words. The shortcomings of the work are numerous and regrettable, though by no means fatal; its merits are few and simple, but considerable.

The title is a misnomer, and the author shows that his own number-concept is in a low stage of development. Numerals are not themselves concepts at all, nor do they signify concepts. They are simply a scale of vocables, which we use very much as we use a foot rule. We apply them to a multitude, and mark how far on the scale that multitude will go. In explaining this, we explain what the number-concept really is: it is the intelligent conception of the purpose and method of the system of numerals. It is entirely unnecessary that this should, in the form of a concept, or intellectual product,

be in the minds of those who use numerals. It is sufficient that they should know by experience that counting is somehow useful, that it aids bargaining, etc., and that they should be habituated to the use of a series of words in counting. The continual use of the word "concept," instead of speaking of "words" or "terms" and their "significations," is a German way of speaking, very inferior, both in logical accuracy and in perspicuity, to our English idiom. At any rate, the real subject of this book is numerals and their modes of formation.

Very little is said of the number-concept (which is really of very late development), nor of the idea which the tribes mentioned may entertain in regard to number in general; and what little is said is not worthy of criticism. Not only does the author fail to discriminate the number-concept from the use of numerals, but he also falls into a confusion of thought which must greatly embarrass his mathematical pedagogy, namely, a confusion between number, in the sense of the result of counting, and multitude. He tells us that all tribes "show some familiarity with the number-concept." Yet he mentions Bolivian tribes which are said to have no numerals whatever. Still, he says they show "a conception" of the difference between one and many. In another place, he says that the "number-concept" of ordinary people is imperfect, in that they have little sense of the different degrees of multitudinousness of high numbers. On the contrary, this has nothing to do with the accuracy of their "number-concept," or of their power of applying numerals to the purpose for which they were invented. It is true that to the mind trained in certain branches of applied mathematics the word "trillion" carries associations of rigid statistical uniformity which the word "million" lacks. Such a mind may be said to attach different conceptions to the two words; and the distinction is useful to such a mind. But this has nothing to do with the use of numbers as numbers. The person considered will put all that out of his mind when he has any definite numbers to deal with, and will perform his arithmetical calculations just like anybody else. A system of numerals is an apparatus for counting. Those numerous tribes which have names only for one, two, and three, which express four by two twos, five by two and three, etc., evidently did not count at the time their language was formed, and probably do not count now. They, like all men, recognize pairs and triplets by their configurations, fours as pairs of pairs, etc. The so-called numerals of such tribes are, properly speaking, not numerals at all. When a tribe has a numeral system based upon five, ten, or twenty, the evidence is that they possess the art of counting. They are quite prepared to count indefinitely as soon as they can count at all, provided they have the power, possessed by most savages, of unconsciously coining a name as soon as they need it. The limits of their numeral words mark the limits of their need of such words.

From a philological point of view, the execution of the book is slovenly. The author copies the various transcriptions of the writings from which he has compiled the lists, without explanation, and omitting all diacritical marks. We do not know whether *c* is to be pronounced *k* or *sh* or *ts* or *th* or *dh*, whether *g* represents the German guttural *ch* or the velar *k*, whether *x* stands for *ks*, for *h*, or for the Arabic *ghain*, whether *j* has the English, French, German or Spanish sound, etc. When we remember that the English word

*fox*, pronounced by a Cherokee, and transliterated according to a recognized system, but with the diacritical marks removed, appears as *kwagisi*, we see that, for the purposes of comparison of languages, this book presents nothing but an imperfect list of references. There is little notice of Semitic numerals, none of the Egyptian, and scarcely any of the Babylonian. There is no mention of the so-called Chaldean names for the Arabic figures found in Latin twelfth-century works. There is no classification by races; but North American and African languages, the furthest remote from one another in their spirit of any of the tongues of men, are shovelled in together. Of many minor faults we take no notice.

The merits of the work are that it exhibits all the modes of formation of numerals, that it shows the universality of the bases 5, 10, 20, and the non-existence of any true binary scale or any use of 6 or 11 as a base, that it affords evidence that many tribes do not count, and consequently have no proper numerical system, and that there are the greatest differences in the arithmetical capacity of races equally barbarous.

*Hunting and Fishing in Florida*, including a Key to the Water Birds, etc. By Charles B. Cory. Boston: Published by the Author. 1896. Sm. 4to, pp. 302.

FLORIDA is so peculiar in its geographical position and climatic conditions that it may be said to have a fauna and flora of its own. Naturalists have only gradually waked up to this fact, with the result that during the past twenty-five years almost every writer of any scientific pretensions who has studied the subject has had to describe some new species or subspecies. A formal systematic treatise on the land vertebrates, for example, would reflect an extraordinary assemblage of nearctic and neotropical characteristics, with a faunas on the whole different from either. Florida, in fine, is almost as much Antillean as North American. Mr. Cory in this work first formally distinguishes the peninsular cougar, rehabilitates Rafinesque's wildcat, and adopts the particular subspecies of various recent specialists among the rodents and insectivores. The general trend of variation among both birds and mammals is toward darker coloration and smaller size, though in the latter respect peripheral parts, such as the beaks and feet of birds, may not be proportionately reduced, but rather the reverse. The Florida red bat, for example, may be distinguished as *Atalapha borealis peninsularis*, and we doubt not that the small deer of the peninsula is equally entitled to recognition as *Cariacus* (or *Damelaphus*) *fraterculus*.

The birds have been subjected to such searching scrutiny of late years that perhaps no new forms remain to be discovered, excepting estrays from the insular offspring. The latter half of the present work is devoted to a systematic treatise upon the waters and swimmers. Mr. Cory is nothing if not orthodox in nomenclature; he lays firm hold of the horns of the A. O. U. altar, observes the code punctiliously, and would as soon be out of the world as out of the fashion of a "Key" to the species he describes. The birds are also very fully illustrated by means of process plates. These portraits are as a rule elegant and effective; but they vary in these respects according to the better or worse taxidermy of the particular specimens which were shot with the camera. The text in each case is a formal diagnosis,

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