convenient shelf of the student; and the second edition, now in distribution, seems still more useful. Primarily the book is a biographic dictionary of a perfection approaching the ideal, in which the lives of prominent Americans are written in sufficient fulness for practical purposes; it is also a directory to prominent Americans by full names and present addresses. Naturally the first question as to the value of such a book connects itself with the classification, *i. e.*, with the definition of prominence and with the editor's success in equitably cleaving the mass of 80,000,000 into portions of 12,000 and 79,988,000, respectively, along the precise lines of the definition. Of course the performance of this task would out-Hercules the classic hero; it can never be done with mathematical precision, and even if it were made right for one day it would be wrong for the next; yet the chief excellence of 'Who's Who in America' lies in the truly remarkable measure of success with which the editor has established and maintained his primary definition. It is this measure of success in classifying prominence which gives the work its greatest utility; for the user may be reasonably certain of finding within it desired facts relating to any celebrity, and this without undue labor of search through irrelevant biographic material.

The 1899 edition contained 8,602 names, of which 752 are omitted in the 1901 edition, 498 by reason of known death, and the remaining 254 for various reasons; the later edition includes 11,551 names. Classified by residence (as they are in the introductory pages), these celebrities are distributed throughout the 45 States, 6 Territories and 1 District of the United States, and 47 foreign countries; 11,137 reside in the United States, 370 live permanently abroad, and 44 do not report. Of those resident in the United States 2,849 are credited to New York, 1,010 to Massachusetts, 889 to District of Columbia, 880 to Pennsylvania and 704 to Illinois; then follow Ohio, 422; New Jersey, 314; California, 291; Connecticut, 266; Missouri, 222; Maryland, 205; and the remaining States and Territories yielding less than 200 each of the aggregate. It would not be easy to class the celebrities by vocation, and the editor has not attempted to do so; but scientists may feel gratification in the fact that their important class has received especial care and effort, and that scientific eminence seems to have adequate recognition—indeed, scarcely a page is without one or more names distinguished in some line of scientific activity. Withal the book is a model of condensation and—considering the extreme difficulty of attaining accuracy in details of biography, bibliography, nomenclature, residence, etc.—a marvel of accuracy.

The new edition, like the old, is enriched by a readable prefatory narration of editorial experience, and still more by suggestive statistical tables, of which that entitled 'Educational Statistics' is a real contribution to knowledge. Of the 11,551 persons biographed, 9,760 furnished educational data, and in 8,141 cases the data permit useful classification. Of these 8,141 persons, 5,775 are collegians and 4,810 out of these graduates; 808 were educated only in common schools, 282 were privately educated, while 31 were self-taught. These figures, with the carefully selected data on which they rest, afford America's strongest argument in favor of higher education; at the same time they reveal the country's unparalleled element of strength in the possibility of eminence to those helped only by the public schools, and even to those not helped at all, along educational ways.

The book is notably fit in size, weight, quality of paper, typography, abbreviations, binding, and other matters which go to make up satisfactory book-making.

W J M.

SCIENTIFIC JOURNALS AND ARTICLES.

The *Botanical Gazette* for July contains the following papers: Charles E. Allen writes 'On the Origin and Nature of the Middle Lamella.' The general conclusion is reached that this structure is not merely the partition wall as laid down, either as a single or a double layer; nor is it merely an intercellular substance or cement, a means for binding the cells together. It is a wall layer with a complicated history, undergoing after its appearance changes in form, in mass, and in chemical composition. Carleton E. Preston has written upon 'Structural Studies of Southwestern Cactaceæ.' From a study of eight representative forms various

conclusions are reached, among which are the following: There is a slight variation in the roots as regards branching and vascular limits; in the stem there is a great range of structural deviations, which take place along definite lines and by definite steps, the variation extending to bundle branching and reticulation, extent of succulence, character of parenchyma, of pith and cortex, development of mucilage, and even to the kinds of elements entering into the xylem. Suggestive results from the systematic point of view were also obtained. Alfred Rehder has written upon *Vasilima* and *Schizonotus* of Rafinesque, both of which he regards as properly synonyms of *Sorbaria*. Arthur Bennett makes the first record of the appearance of *Potamogeton polygonifolius* in Newfoundland, the only other known North American situation being on the island of Nova Scotia.

In the numbers for August and September three continued papers appear. Dr. F. L. Stevens has written upon 'Gametogenesis and Fertilization in *Albugo*'; and Dr. W. L. Bray upon 'The Ecological Relations of the Vegetation of Western Texas.' Both of these papers will be noticed upon their conclusion in the October number. The third paper is by Dr. Florence May Lyon, entitled 'A Study of the Sporangia and Gametophytes of *Selaginella apus* and *S. rupestris*.' The description of *S. apus* is the first account yet published of the details of development of both gametophytes of any species of *Selaginella*. A preliminary study of the megaspore and female gametophyte of *S. rupestris* is added. The most striking fact observed is the persistent retention of the megaspores within the unshed sporangia throughout the formation of the prothallium and of the embryo. In the case of *S. rupestris*, at the time the strobilus is separated from the plant by the decay of the vegetative part beneath, it appears covered with sprouting plantlets. The megaspores of *S. apus* are shed before the embryo has emerged. The significance of this sequence of events lies in the resemblance to the formation of seeds in the higher plants. But one or two megaspores of *S. rupestris* form, whereas the normal number four appears in *S. apus*. The description of the male gametophyte differs from that given by Belajeff. It consists of a single cell, presumably the vestige of the prothallium, and the two masses of spermatozoid-producing cells. Fertilization is accomplished in a manner suggestive at least of the seed plants. The microsporangia open with force when the male gametophytes are mature, and the latter are shed like pollen grains. The outer wall of the microspore has cracked open at this stage and the endospore protrudes in a papilla-like protuberance like a very short pollen tube. This ruptures and the spermatozoids are freed in a mass of slime that is attracted toward the archegonia. Microspores were found within the megasporangia, having been hurled in when the latter were gaping open. The bryophyte-like character of the spermatozoids claimed for the Lycopodiaceæ was not demonstrated in these two species. As regards their form they were typically fern-like, spirally coiled, and the presence of cilia not determined. The methods by which the strobili were sectioned with their nut-like spores *in situ* is given in detail.

In all the numbers there are the usual 'Briefer Articles,' 'Reviews of Current Literature' and 'News Items.'

THE August number of the *American Geologist* contains a history and biographical sketch of the late George M. Dawson, of Canada. The paper is accompanied by a portrait of Mr. Dawson and a bibliography of his writings. 'The Pleistocene Problem of the North Atlantic Plain,' by Geo. Shattuck, contains a discussion of the views of W J McGee and N. H. Darton followed by those of Professor R. D. Salisbury. The writer concludes by stating his own views based on considerable field work in the area. He claims that five terraces have formed in this period and he approaches their study through a study of the present work of the Chesapeake and the Atlantic Ocean. For these four formations below the present terrace he proposes the following names: (1) Talbot, (2) Wicomico, (3) Sunderland, (4) Lafayette. In the editorial comment is an extended description of 'The Department of Geology in the National Museum.' This discussion is accompanied with five plates illustrating types of the various

collections. Following this is the 'Review of Recent Geological Literature' and the 'Author's Catalogue of Recent Geological Literature.' The September number contains a valuable discussion of 'The Basic Rocks of Northeastern Maryland and their Relation to the Granite,' by Alfred Gray Leonard. The author describes several rocks, all from a limited area, ranging from acid to ultra-basic. He attempts 'to show that these types are intimately associated in their geological occurrence and closely related in composition; that many of the types graduate into others by intermediate varieties, and that they probably represent facies of one original magma.' The article is accompanied by four plates of microphotographs illustrating rock structures, and a map showing the distribution of the varieties in the area studied. 'A Preliminary Geologic Section in Alpena and Presque Isle Counties, Michigan,' by Amadeus W. Grabau, has a plate showing a geological section at Thunder Bay accompanied by a description of the various outcrops. This is followed by 'Editorial Comment on the Archæan of the Alps.'

THE October number of the *American Journal of Mathemathics* (Vol. XXIII., No. 4) has the following articles:

Memoir on the Algebra of Symbolic Logic, by A. N. Whitehead; Secular Perturbations of the Planets, by G. W. Hill; Representation of Linear Groups as Transitive Substitution Groups, by L. E. Dickson; A Class of Number Systems in Five Units, by G. P. Starkweather.

The Osprey for August contains articles on 'Birds about Lake Tahoe,' by Milton S. Ray; 'Life History of the Prairie Warbler,' by Jno. W. Daniels, Jr.; 'Camping on the Old Camp Grounds,' II., by Paul Bartsch; 'Cage Birds of Calcutta,' by Frank Finn, and the seventh instalment of 'The Osprey or Fishhawk: Its Characteristics and Habits,' by Theodore Jill.

DISCUSSION AND CORRESPONDENCE.

DIFFERENTIATION OF SUBJECTS AND TITLES IN COLLEGES.

IN your last issue Professor F. W. Rane makes objection to the all-comprising title of professor of agriculture, and very properly points out that the subject is now so differentiated that the nomenclature in professorship should follow suit. While the claim is perfectly proper, I cannot suppress a smile in reading the signature of the 'Professor of Horticulture and Forestry.' Why should not Mr. Rane begin differentiation at home? Horticulture and forestry are two so widely different subjects that the man who proposes to teach them both must, indeed, be able to turn his coat most readily. Both, to be sure, have to deal with trees, being both branches of the wider field of arboriculture; but each deals with entirely different classes of trees, for entirely different purposes by, entirely different—I might almost say opposite—methods. The forester is after the substance of the tree; the final object of his efforts is attained by the cutting, the removal of the tree. The horticulturist's object is not the substance but the fruit, or, if he be a landscape gardener, the form and beauty of the tree, both aims being only fulfilled by the presence of the tree. These different objects are attained by entirely different methods, as could be readily pointed out, did space permit.

I would not wish to discourage any laudable attempt to make students of horticulture and of other agricultural branches know something of forestry, but it is a question whether they can get much professional knowledge of either the one or the other subject from an undifferentiated professor of horticulture and forestry. As we have now two fully organized colleges of forestry, the one at Yale with two, the other at Cornell with three, professors of forestry, without any other branches to teach, it would appear quite time for other colleges, who find it necessary or desirable to educate foresters, to realize the wide difference between the various branches of arboriculture, and not mix up botany, horticulture, landscape gardening and forestry in their courses and professors' titles.

B. E. FERNOW.

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A FINAL WORD ON DISCORD.

TO THE EDITOR OF SCIENCE: Mr. Max Meyer, in his criticism a few weeks ago, implied that I had made a mistake in a book review. This,