is seen to be merged in the larger and general question.

What that is at Princeton, it is perfectly well known. President Wilson has left his attitude in no doubt. He is for the freest and fullest play of the democratic spirit in colleges, and as a means of securing it at Princeton urged the system of dormitories in which all the students should live. This involved the abolition of the expensive and exclusive clubs which have been so marked a feature of life at Princeton. But though the faculty approved a proposal which many considered revolutionary, the trustees have thus far declined to give their assent to it. This is clearly the question about which the "dissensions" have sprung up, involving as is known a great deal of bitter feeling with rumors that President Wilson would be forced to resign.—New York *Evening Post.*

AN attitude was taken towards Mr. Proctor's generosity in regard to Princeton's long-professed hope, he was catechized in such a manner in regard to what he was attempting with commendable forbearance to do for his Alma Mater, that, as Mr. Pyne said in the statement he felt it necessary to make public, "From the start his generosity has met with such an extraordinary reception, his motives have been so misconstrued, his patience has been so sorely tried that self-respect has at last demanded the withdrawal of his princely gift. Thus at least $900,000 has been lost to Princeton by the treatment he has received."

The recent meeting of the Board of Trustees closed one act of this remarkable drama —with an anti-climax. It has by no means settled the matter. We have merely lost a Graduate College, with very little chance now of getting one. But the controversy over the issues raised seems only to have begun. The object of the recent meeting of the board was to call a truce. . . . To state, therefore, as most of the newspapers did, that Mr. Pyne and the other members of the board who were not in accord with the treatment by the Committee of Five of Mr. Proctor's offer were won over from their position is about as far from the truth as it could be. They stand exactly where they stood before, only more staunchly so, more indignantly so, and have expressed the desire to have this clearly recognized. —Jesse Lynch Williams in *The Princeton Alumni Weekly.*

SCIENTIFIC BOOKS

New Manual of Botany of the Central Rocky Mountains (Vascular Plants). By JOHN M. COULTER. Revised by AVEN NELSON. New York, American Book Company. January, 1910.

When the present reviewer landed in America, in 1887, his first purchase was a copy of Coulter's "Manual of Rocky Mountain Botany," at that time rather recently published. In his subsequent wanderings over the state of Colorado, this volume was his inseparable companion, proving itself a most serviceable hand-book to the flora of the region. In those days it was innocently supposed that the Rocky Mountain flora had been nearly all described, and if a plant did not altogether agree with any of the descriptions, it was generally assumed that the species must be variable. It was not possible for the worker in the field to discover that numerous species, supposed to be identical with those of distant regions, were in reality quite distinct.

About the year 1894 there began a new era in the study of Rocky Mountain plants. The material in the herbaria was scrutinized anew, and many collections were made in different parts of Montana, Wyoming and Colorado. Presently new species began to be described, and new generic names proposed. The activity increased until the output was astonishing, and this has continued down to the present time. The old manual no longer represented the knowledge of the day, and a new edition was planned. This was placed in the hands of Professor Aven Nelson, of the University of Wyoming, who has been a much larger contributor to the knowledge of Rocky Mountain plants than all the other residents of that region combined. The appearance of the new book was looked forward to with extreme interest and impatience by students of this flora, and now that it is out, many are the discus-

sions and investigations it is stimulating. The author, as we learn from a private letter, does not for a moment consider that he has said the final word on the subject, but hopes that this presentation of his results up to date will prove of service, and especially will cause others to study the subject in the field, and gradually put it on a firmer basis. In this he is wholly justified, and whatever we may think about particular disputed matters, we must recognize that he has done an immense service, in the first place by his researches, and in the second by presenting them in a compact and convenient form, so that all may make use of them. No one, in future, will pretend to study the plants of Colorado or Wyoming without a copy of Nelson's "Manual" by his side.

I have had the curiosity to count the number of species admitted as valid in the new manual, which were undescribed at the time of publication of the first edition, in 1885. The number is 787, about 28 per cent. of the whole flora. This count includes all specific names first published since 1885, but does not include varietal names proposed prior to that date, and given specific standing later. Of the 787, no less than 244 were proposed by Professor Aven Nelson himself; 152 are by Dr. Rydberg, of the New York Botanical Garden and 148 by Dr. E. L. Greene, now of the U. S. National Museum, but at one time a resident of Colorado. The other authors are as follows: Elias Nelson, 20; Jones (of Utah), 18; Scribner (grasses), 17; Vasey, 15; Coulter and Rose (Umbelliferæ), 15; Bailey (mainly *Carex*), 13; Osterhout (of Colorado), 12; Small, 11; Eastwood (formerly of Colorado), 10; Britton, 10; Wooton (of New Mexico), Nash and Sheldon, each 5; Goodding (of Wyoming), Trelease and K. Schumann (Cactaceæ), each 4; Sargent, J. G. Smith, Bicknell, Piper and Porter, each 3; A. S. Hitchcock, Beal, Vasey and Scribner, O. Kuntze, Howell, Robinson, Ramaley, Blankinship (of Montana), Henderson and Leiberg, two each; Underwood, Maxon, D. C. Eaton, Macoun, Nash and Rydberg, Scribner and Williams, Holm, Fernald, Bebb, Ball, Coulter and Fisher, Canby and Rose, Pax, Huth, Cockerell, Vail, Eaton, Coulter, Wiegand, Holzinger, Nelson and Cockerell, Mackenzie, Pammel, E. G. Baker, Léveillé, Coulter and Evans, Wight and Wright, one each.

Thus the three principal workers have contributed 544 between them, 65 have been published by miscellaneous residents of the region covered by the manual, 168 by American botanists not resident in the Rocky Mountains and ten by European botanists.

After all this, the reader may be astonished to learn that Nelson's work is planned on what are called "conservative" lines, *i. e.*, those of *not* conserving the names of "critical" or doubtful species. The number of species accepted as valid is 2,733, while no less than 1,788 specific names are rejected as synonyms or insufficiently known. Many of those latter were proposed by Professor Nelson himself, more by Rydberg and Greene. In addition to the large number rejected, very many are not mentioned at all, presumably because the author did not possess specimens. Most of these latter are "critical" forms, but by no means all. Thus *Woodsia mexicana,* for which Rydberg cites five Colorado localities, is absolutely ignored, and there are many instances only a little less striking. It is stated in the preface that the flora includes the northern half of New Mexico, but we miss not only the rarer endemic plants of that region, but many of the commonest roadside flowers, such as *Sphæralcea fendleri, Commelina dianthifolia* and *Cosmos.* On the other hand we find a few species of southern New Mexico, as *Rosa stellata* and *Polemonium pterospermum.*

Rydberg, in his recent (1906) "Flora of Colorado," recognized 2,912 species, a number somewhat greater than Nelson admits for his much larger area. As is well known, Rydberg treats many of the minor or critical forms as full species, which of course accounts for the difference. The quite recent (1909) French edition of Schinz and Keller's "Flora of Switzerland" includes 2,534 species of vascular plants. When we consider the much smaller area of Switzerland, and the greater variety and distinctness of the life-

zones in the Rocky Mountains, it would seem that the latter might be expected to have twice as many species. Switzerland has, of course, been more thoroughly investigated, but the large number of species given is not due to the inclusion of the "critical" forms, for the authors tell us in the preface that these are all to be given separately in a subsequent volume, the "Flore Critique." In the 1909 volume the species are supposed to be such in the ordinary sense, and a special mark is appended to those (and they are very numerous) of which segregates are known, the account of these being promised in the later work.

There is no doubt that the separation of the ordinary from the "critical" flora, after the manner of Schinz and Keller, is convenient to the numerous class of botanists who are not specialists in taxonomy. Professor Nelson's work corresponds to the Swiss volume before me while Dr. Rydberg's book on the plants of the same region, expected in about a year, will really be a "Flore Critique," at least to a considerable extent. American workers are at present roughly divided into two groups, of which a modern European botanist would say that one failed to discriminate the lesser types, many of which are of the highest interest from a biological standpoint, while the other, recognizing minor segregates, treated them all as species, without any attempt to indicate in the nomenclature their various kinds and degrees of relationship to the species of the older school. We venture to hope and believe that at length a middle ground will be found in a system of classification more like that of advanced European workers, which permits the presentation of the most minute details, without seriously disturbing the current conception of species.

T. D. A. COCKERELL

Umwelt und Innenwelt der Tiere. Von J. VON UEXKÜLL, Dr. med. hon. c. Berlin. Verlag von Julius Springer. 1909. 8vo, pp. 259.

The bold and original investigations of von Uexküll have culminated in his "Umwelt und Innenwelt der Tiere"; culminated, not because there are reasons to suppose that this will be his last contribution to science, or perhaps even his best, but because he has synthesized into a coherent whole the results of earlier work, and with the addition of fresh materials, and maturer judgments, has sketched in the outlines of a reformed biology.

Large sections of the book must be left to those who have made certain protozoa, cœlenterates, annelids, molluscs, crustaceans and insects, subjects of prolonged study, yet as a whole, the work should appeal to every biologist, no matter what group of animals or facts he knows best. It is these matters of general appeal that concern us.

First of all, a living thing is neither a bundle of anatomical details nor a collection of physiological processes, nor both of these together, for things that live, live in an environment. To cultivate either anatomy or physiology exclusively is as futile as the study of environments with all the animals left out, for the business of the biologist is to know, not merely structure or function, but what the vital machinery is, how it works and the circumstances under which the work is done.

The organism, von Uexküll teaches, must be studied, not as a congeries of anatomical or physiological abstractions, but as a piece of machinery, at work among external conditions. Our analyses, so far, have been by no means exhaustive, for we have largely neglected the fact that the organism makes its surroundings. It is true that environment includes the sum total of everything outside the individual, and, within these limits, is the same for all living things. Yet this is wholly misleading, for environment is both essential and unessential, and only the former counts practically in the shaping of biological destinies. The shark, the jellyfish and the pluteus, that swim side by side at the base of a wharf-pile, under uniform conditions of salinity, temperature, light and mechanical agitation, have each a different effective environment, and to this extent live in different worlds. Only when the receptors, through which external conditions make their appeal, are alike, are the outside conditions similar, but as the stimulated organs vary, so do the