We do not see that this charge is well founded. We do not see why the technicalities of legal procedure should be followed in such cases. Certainly our courts are not so prompt and efficient in their action as to commend their methods for extension into academic circles. It is the business of boards to talk over freely the qualifications and defects of the professors, and they would be seriously hampered in their consideration of the subject if the individuals discussed had to be present or represented by attorney.

The reason why no definite and serious charges such as would necessitate his dismissal were brought against Dr. Kemp was probably because there were none to bring. The president seems to have objected to him on the ground that he was not a first-class teacher or administrator and that he was a hard man to get along with. These are as intangible as they are important, and it is difficult to see how they could be proved or disproved by any form of court-martial. President James practically appealed to the trustees to express their confidence in his judgment of men, and this is what they have done. Since to be a good judge of men is one of the most important qualifications of a college president, they could hardly have decided against him if they thought him worthy of office. It may be that President James underestimated Dr. Kemp's ability and overestimated his incompatibility, but the error, if it were such, does not involve any moral obliquity. The University of Illinois should have the best physiologist it can find, and it is not clearly demonstrated that Dr. Kemp is that man.

We believe that the board of trustees are right in holding that further discussion of the case is unnecessary and detrimental, although we do not regard their resolutions, reported in *The University of Illinois Press Bulletin* of December 16, as satisfactorily worded. We do not find in Dr. Kemp's letter of resignation the reasons they quote as his. The letter as published in SCIENCE gave altogether different reasons. And the statement made by the board that Dr. Kemp's resignation was not even suggested at the board meeting is quite too sweeping an assertion.

On the whole, we fail to find evidence to prove that academic freedom is in danger in the University of Illinois or that President James is more autocratic than other successful presidents, as, for example, our revered President Eliot. He certainly is less inclined to be arbitrary and dictatorial than his predecessor, President Draper. We can not here enter upon the wider question of whether a more democratic system of government, such as is advocated by Professor Cattell, is desirable. At present the tendency is to regard a stronger centralized and personal administration as best for universities and cities. The liability to abuse such power is checked by the watchfulness of supervising boards and by the fact that an aggrieved party may appeal to Cæsar, *i. e.*, SCIENCE.—*The Independent.*

SCIENTIFIC BOOKS

Essays on Evolution, 1889–1907. By E. B. POULTON, Hope Professor of Zoology in the University of Oxford. Oxford, Clarendon Press. 1908.

Professor Poulton is well known as an ardent neo-Darwinian and as one who has made the subject of insect mimicry his own, the wonderful collection illustrating this interesting phenomenon in the Hope department of the Oxford Museum being a monument to his enthusiasm, energy and information in this field of investigation. In the volume of essays now under review these two topics are very much in evidence, the essays being for the most part addresses delivered by the author on various occasions, now brought up to date and reprinted. Inasmuch as the essays dealing with the Darwinian theory were originally written before the theory of mutations and Mendelism had become important factors in the question of the origin of species, Professor Poulton has added an introduction to his book dealing with these topics and protesting against the extreme position taken by those whom Professor Hubrecht, himself an upholder of the mutation theory, has lately characterized as "silly antagonists of Darwinism and evolution, who have thought fit to proclaim with a loudness that is in inverse ratio

to the square of their accuracy that Darwinism has been played out since the appearance of de Vries's 'Mutations-theorie.'" It can not be said that Professor Poulton doth protest too much, but he certainly errs in the same direction as those against whom his protest is directed, in that he endeavors, unnecessarily for his purpose, to minimize the importance of both mutations and Mendelism, instead of recognizing them as factors in bringing about conditions upon which natural selection may act.

The first essay is a discussion of the age of the earth, considered from the standpoint of an evolutionist, and had for its exciting cause Lord Salisbury's presidential address to the British Association at the Oxford meeting in 1894. The question is an old one and has had many answers, none of which are very definite, nor does Professor Poulton's discussion of it lead to any more definite conclusion than that the earth must be old enough to have allowed time for the accomplishment of evolution. This will, no doubt, be quite acceptable to evolutionists. Similarly, the second essay, on "What is a Species?" while interesting as a discussion of the meaning that has been applied to the word species at different times, naturally leaves one with a sensation of indefiniteness, and the three succeeding essays, on "Theories of Evolution," "Theories of Heredity" and "The Bearing of the Study of Insects upon the Question 'Are Acquired Characters Hereditary?'" discussions of the respective merits of the old antagonists, Lamarckism and Weismannism, while more interesting reading than the majority of such discussions, yet, again, are quite as futile as these so far as any settlement of the questions at issue are concerned.

The sixth and seventh essays are largely historical. The sixth deals with the views concerning inheritance advanced by the anthropologist, Prichard, in his "Researches into the Physical History of Mankind" (2d edition, 1826). These constitute a remarkable anticipation of the conclusions later advanced by Weismann concerning the non-transmissability of acquired characters, as a quotation of one sentence from the work will suffice to show. Prichard says "changes produced by external causes in the appearance or constitution of the individual are temporary, and, in general, acquired characters are transient; they terminate with the individual, and have no influence on the progeny."

In the seventh essay Huxley's position on the question of natural selection is considered, and it is maintained that he "was at no time a convinced believer in the theory." This conclusion can not but seem strange when one recalls that Huxley received from Darwin the title of "general agent" by the vigor with which he wrote and spoke on behalf of the new theory. Professor Poulton certainly makes out a strong case, claiming that Huxley, while a strong evolutionist, was unable to appreciate the bearings of the theory of natural selection, his inclinations being towards the study of the "engineering side of nature," rather than towards the contemplation of structure in relation to environment. But in opposition to Professor Poulton's conclusion one may oppose Huxley's own statements. Writing to Darwin in 1859 he says:

> As to the first four chapters [of the Origin], I agree thoroughly and fully with all the principles laid down in them. I think you have demonstrated a true cause for the production of species, and have thrown the *onus probandi*, that species did not arise in the way you suppose, on your adversaries.

True, he goes on to confess that he did not feel that he had fully realized the bearings of the theory of natural selection, and criticizes the adoption of the principle that *natura non facit saltum* and the slight importance assigned to continued physical conditions as a cause of variations. These criticisms do not, however, apply to the theory of natural selection; they concern only the question of the origin of variations. Further, writing in 1880, he said:

> I hope you do not imagine because I had nothing to say about "natural selection [in "The Coming of Age of the Origin of Species"], that I am at all weak of faith on that article. On the contrary, I live in hope that as paleontologists work more and more . . . we shall arrive at a

crushing accumulation of evidence in that direction also.

These statements can hardly be regarded as those of an unbeliever, but suggest the possibility that Professor Poulton is speaking in his essay as a neo-Darwinian, an upholder of the doctrine of the all-sufficiency of natural selection.

The latter part of the Huxley article and the remaining three essays are devoted to a consideration of the question of insect mimicry. They are the *pièces de résistence* of the whole volume, forming, as they do, the most thorough exposition of the significance of insect coloration we possess or are likely to possess until the fuller treatise promised by the author is published. In the abundance of illustrations cited and in the keen criticism to which the various cases are subjected the essays stand alone, and their usefulness is immensely increased by the addition of a list of the mimicking and mimicked forms referred to, and also by the most complete and thorough index to the entire volume that it has ever been the present reviewer's pleasure to use. If any points may be selected for special mention from a treatise whose general excellence is so high, they are the evidence advanced tending to place the Mullerian theory of common warning coloration on a firmer basis, and the extension of its applicability to a greater number of cases at the expense of the Batesian theory of mimicry.

What has been said above is intended as a review of the book from the standpoint of a biologist. To non-biological readers the perusal of every essay will be both pleasurable and profitable; pleasurable because Professor Poulton's style is admirable and both his description of facts and his statement of criticisms clear, and profitable because his information concerning the topics of which he treats is extensive. Accuracy is never sacrificed to an attempt to popularize the subject; such a defect is unnecessary in the writings of one who has so marked a faculty for the exposition of scientific topics in a manner intelligible to the general reading public.

J. P. McM.

THE GENERA OF AFRICAN PLANTS

THE agricultural, commercial and industrial activity of Europeans in Africa has been so great of recent years that the interior of that great continent has become to-day perhaps the most eagerly exploited field in descriptive botany, not even excepting the Philippines under American administration.

Though the British and French pretty evenly divide honors in the earlier study of African botany, and the former are likely long to maintain their lead in knowledge of the Cape flora, other nations have contributed very materially to our knowledge of the dark continent; and despite the fact that England was the first to press into the tropical interior, the present development of the latter has fallen largely to the Germans and Belgians.

To botanists possessed of collections of African plants, no recent publication is likely to be more directly and frequently helpful than Thonner's "Blütenpflanzen Afrikas."[1] This stately volume brings together in synoptical form the scattered skeletal elements of the flora as a whole. Nomenclature, taxonomy and general ideas of segregation follow the Berlin practise. Well-contrasted keys are provided for the differentiation of families, and, under them, of genera: and the illustrations, from original drawings, simplify the application of text-characters. Indexes to popular and Latin names of plants add to the value of the book.

One of the most interesting features of the manual is a tabulated conspectus of the known African plants, which may be summarized as follows:

Distribution.	Families	Genera	Species
Total known	285	9,942	136,000
African	221	3,648	39,000
Indigenous	213	3,486	38,600
North African		981	4,850
Middle African ...		2,185	18,300
South African		1,393	13,300
Insular		1,266	5,950

[1] Thonner, F., "Die Blütenpflanzen Afrikas: Eine Anleitung zum Bestimmen der Gattungen der afrikanischen Siphonogamen," Berlin, Friedländer, 1908, pp. xvi + 673, pl. 150, 1 map.