Yale Naval Training Unit for the rest of the year.

DR. W. F. G. SWANN has accepted a professorship in the department of physics at the University of Minnesota, the appointment to take effect on August 1, 1918.

DISCUSSION AND CORRESPONDENCE

SCOTT ON THE CANONS OF COMPARATIVE ANATOMY

IN a recent number of this journal (N. S., Vol. XLVII., No. 1204) my esteemed friend, Dr. D. H. Scott, the distinguished foreign secretary of the Royal Society has published a review of my recent volume on "The Anatomy of Woody Plants." He objects, with delightful British vigor, to the Canons of Comparative Anatomy described in the seventeenth chapter. His criticisms, in fact, of the volume mainly involve these canons, which he regards as highly controversial and based on deductive evidence. Dr. Scott naturally has his own opinions on many anatomical subjects, and these are often different from my own. The question, however, as to whether the Canons of Comparative Anatomy are deductive or inductive appears to be not a matter of opinion but a matter of fact. Inductive reasoning, which is ordinarily defined as the drawing of general conclusions from particular facts, was brought into prominence nearly three hundred years ago by Sir Francis Bacon, an eminent Englishman. I must urge that the Doctrine of Conservative Organs is based on purely inductive reasoning. In accordance with that doctrine it is stated that root, leaf and reproductive axis retain ancestral anatomical features approximately in the order named. This is an induction from the facts that the reproductive axis of the Calamites and Equiseta, the reproductive axis and root of the Araucarian and Abietineous Conifers, the reproductive axis and root of *Ginkgo*, the reproductive axis and root of the higher Gnetales, all retain notable the features of organization of older or extinct allied forms. It appears to me that Dr. Scott confuses the origin of the Canons of Comparative Anatomy with their application. The Canons are derived inductively by the comparison of older with modern forms, and are employed deductively to elucidate the relations of modern forms among themselves.

The soundness of the general principles of the seventeenth chapter of my volume on anatomy has a very sincere and flattering testimony in the attitude of a small coterie of critics of the anatomical work of "Jeffrey and his school." These critics use the canons in every case, but if I may be forgiven a pun are unable to aim straight. The most recent instance of this defect is furnished by an article on the vessels of *Gnetum* in the January number of the *Botanical Gazette*. This author calls attention to the fact that vessels of the lower *Ephedra* type having end walls with many large open bordered pits are found in the root, reproductive axis, and seedling of *Gnetum*. He argues very properly from this that the *Gnetum* type of vessel has come from that found in *Ephedra* and persists in the conservative organs of the first-named genus. This conclusion is correct as far as it goes, but when the author states that the type of vessel found in *Gnetum* is different from that found in the Angiosperms he shows a surprising ignorance, since in DeBary's classic text-book of comparative anatomy published over forty years ago a number of cases of angiosperms with the *Gnetum* type of vessel terminated at either end by a single large-bordered pore have been cited. I might go on to enumerate a number of other equally sincere and flattering testimonials to the soundness of the Canons of Comparative Anatomy, although not to the accuracy of their utilizers, from recently published works. If imitation is the sincerest flattery, I am indeed flattered. A number of lines of work being carried on in my laboratory, and among these, notably an investigation on a large amount of material of Comanchean and Laramie Cretaceous Conifers, will, I think, add much strength to these generalizations.

A frank and friendly criticism such as Dr. Scott has written always helps to clear up differences of opinion by bringing forth clearer and more forcible statements from either side.

E. C. JEFFREY