the causes that affect the observer's perception of the image. The first portion of the paper was concerned almost exclusively with the secondary aberration of the refracting telescope. He found that it was impossible to bring more than a small fraction, perhaps one fourth of the light emanating from a star within a radius of one tenth of a second. For this reason a black line on the planet would not be imaged as black in the telescope, but only as a gray diffused line. This effect was one that could not be cured by any arrangement or figuring of the lenses, but could be diminished by increasing the ratio of focal length to the aperture of the telescope.

The second part of the paper was devoted to what the author proposes to call 'visual inference.' This includes the process by which the eye, from the image on the retina, infers the nature of the object which produces the image. He showed at some length the extent to which this form of inference might be carried. It is based largely on experience, but in cases where this is wanting habit may take its place. One result of this process is that different people may see the same image very differently when it approaches the limit of visibility. It was shown by diagrams that broken lines under certain conditions appeared continuous, that double lines may be seen as single, or as a group of which the observer could not give the number without closer inspection. A peculiarity near the two ends of a line affected the judgment throughout the whole length of the line.

Lowell's observations of Mars were very highly spoken of as superior to all others, both in the favorable conditions under which they were made and their careful and critical character; but the general conclusion reached was that his drawings of the canals could not be accepted as certainly correct without a more complete investigation of the possible effects of visual inference in influencing the perception of the observer.

R. L. Faris,
Secretary

THE TORREY BOTANICAL CLUB

The annual meeting was called to order at the American Museum of Natural History, at 8:30 P.M., with Vice-President Burgess in the chair.

Following the presentation and acceptance of annual reports from officers and committees, the annual election resulted as follows:

President—H. H. Rusby.

Vice-Presidents—E. S. Burgess and L. M. Underwood.

Corresponding Secretary—J. K. Small.

Recording Secretary—C. Stuart Gager.

Treasurer—C. C. Curtis.

Editor—J. H. Barnhart.

Associate Editors—Philip Dowell, A. W. Evans, T. E. Hazen, M. A. Howe, W. A. Murrill, H. M. Richards, Miss A. M. Vail.

John Hendley Barnhart,
Secretary pro tem.

DISCUSSION AND CORRESPONDENCE

A SCIENCE TRUST

With the liberal appropriations by Congress for the study of the problems relating to scientific agriculture, there seems to be a growing tendency to form classes, and 'rings,' even as in the commercial and political activities of the nation. In too many cases the executive heads of the experiment stations take to themselves the credit of all that is done in their respective stations and, from the vantage ground of publicity, hamper and cripple, in many ways, the real workers in the respective fields. In many cases, of course, this injustice is unintentional; but it is none the less real. Often the true state of affairs is not realized by the offending directors; in other instances, naturally, it is not conceded.

Directors frequently assume the attitude of the political 'boss,' and attempt to 'pull the wires' in such a way that there can be no recourse for the workers except to humble themselves and 'pay court,' or to resign. They even go farther and deliberately plan to make it difficult for a worker to go from one field to a more congenial field, by throwing out insinuations as to obscure 'outs' that make a change very desirable. In other words, the 'political boss' director claims everything in sight, attempts to bully the workers into what he pleases to call 'respect for authority,' and aims to cut off any possible redress either from

local sources or from equally good situations elsewhere.

Of course, the hypothetical case here given is typical only of men of small caliber who happen to occupy directors' chairs. Nevertheless, the proposed concerted action of executive officers to prevent competition in the securing of men for certain positions, by precluding the possibility of transfer, may in many cases work injustice to the men who are, in fact, responsible for the success of every station. By this combination, and the heading off of competition, salaries are held down to a disproportionately low figure, and the inspiration of possible advancement is withdrawn.

While the importance of retaining the services of valued members of a station staff is unquestioned, and while some means of ridding the service of undesirable workers is also essential, it is equally important for the success of the work that the individual have a sense of the security of his position and that he be not subject to the whims and moods of a 'boss' who does not recognize the difference between a body of educated gentlemen, who have quite as much at stake as he himself, and a force of clerks in a mercantile establishment or a factory.

On the other hand, and every well-balanced station worker recognizes the fact, the station must move forward as a unit, and there can be but one head. With a mutual understanding, and mutual confidence between the executive head and the heads of the scientific departments, the work will move forward without the necessity of 'combining' to hold down the workers, and with much saving of friction for all parties concerned. W.

THE PRIMARY SEPTA IN RUGOSE CORALS

IN SCIENCE for August 24, 1906, and in a more recent and longer paper[1] Dr. J. E. Duerden deals in a critical and analytical way with a paper read by me before the New York Academy of Sciences and published in full in the *American Journal of Science* for February, 1906. In that paper I offered another interpretation of certain figures which Duerden had drawn of sections made through *Lophophyllum proliferum*[2] and offered evidence for the support of my interpretation. Dr. Duerden's articles call for a reply. It is made in the same spirit in which the first paper was written.

It was, perhaps, to be expected that Duerden would not agree with my interpretation; but the excellent spirit of his article is commendable. I desire to discuss the matter in an equally fair manner, without any wish to belittle any work of investigation, to ignore a profound knowledge of the particular field of discussion, or to deny the possibility of other interpretations.

I still maintain the view that the resemblance to the Zoantheæ of certain rugose coral tips in dispute is not a structural resemblance, but an apparent likeness; that the important deductions about the origin of the cardinal fossula are largely based upon this supposed resemblance, and that the number of primary septa was four. If this appears to be obstinacy in the face of strong assertions to the contrary, I desire to submit the following argument.

I am not prepared to admit that the evidence afforded by the specimens of *Streptelasma profundum* examined by me is to be considered lightly. The forms examined were undoubtedly young specimens showing all the septa and having in the tip only four primary septa. In those specimens, which were much younger than the one figured by Duerden,[3] the cup was open to the bottom, thus allowing a complete view of the septa down to the tip —the septa not having reached the center in these specimens. If a section close to the tip of these specimens were made only four septa (protosepta) would be seen. Two specimens were examined by me, both of which showed unquestionably that only four protosepta were present in the youngest stage, and Professor Grabau assures me that several others of the same kind, though less perfect, are in the collection at Columbia University.

[1] *Annals and Magazine of Natural History*, Ser. 7, Vol. XVIII., September, 1906.

[2] See 'Johns Hopkins University Circular,' January, 1902.

[3] *Biol. Bull.*, June, 1905.