II. "A Contribution to the Study of the Comparative Anatomy of Flowers." By Rev. G. HENSLOW, M.A., F.L.S. Communicated by Dr. B. W. RICHARDSON, F.R.S. Received December 2, 1887.

(Abstract.)

The author first drew attention to the importance of the class of observations illustrated in this paper; for by referring all the floral organs back to their vascular cords, or "axial traces," their real origins could be discovered, whenever their developmental history was incapable of showing them.

Taking the cords as "floral units," he showed how they can give rise to axes as well as all kinds of floral appendages. The two elements of which a cord is composed are tracheæ or spiral vessels and sieve-tubes, &c.. or soft bast. The significance of the relative positions of these two elements was pointed out, and M. Ph. van Tieghem's distinction between axial and foliar characters of cords, *i.e.*, in having the tracheæ on the side of the medulla in the former, and on the outside in the latter, was criticised as being by no means constant, especially as regards the floral cords; inasmuch as a more general rule is for the tracheæ of the latter to be exactly central or scattered irregularly in a groundwork of phloëm.

After describing the arrangements in peduncles and pedicels in which endogens often have their cords as regularly placed as in exogens, the author explained the different ways by which pedicels of umbells are formed in each class respectively, and how they are supplied with cords from the common peduncle.

He next pointed out the phyllotactical origin of the number of parts in floral whorls, and how the various arrangements of their members become altered in consequence of the union of their cords below, so that the proper angular divergences are not maintained, and parts often become superposed which would otherwise alternate in position.

The union, separation, reunion and fusion of cords, as well as the way in which they may shift their positions, were discussed, and the effects produced by such processes were explained.

The results of the multiplication of parts brought about by "chorisis" of a cord were illustrated; whereby a simple cord of a pedicel could give rise to any number of floral parts, such as the members of different whorls, as in the case of *Campanula medium*, in which a simple axial cord supplied a sepaline, a dorsal carpellary, a staminal and *half* a petaline cord: or when a repetition of the same kind occurs, as in double flowers.

Considerable light is thrown upon the phenomena of cohesion and adhesion by this method of investigation; and especially on *the undifferentiated state of organs when in congenital union.* This, if thoroughly understood, completely clears up the difficulties surrounding the interpretation of the "receptacular tube" and the "inferior ovary."

The investigation into the character and distribution of the vascular cords reveals the true nature of the axile and free central placentations; in the former case, it shows that with scarcely any exception the axis takes no part in the structure, all "carpophores," "stylopods," &c., being simply the coherent and hypertrophied margins of the carpels.

Similarly the free-central placenta of *Primulaceæ* received its interpretation as being coherent and ovuliferous bases of five carpels which have the upper parts of their margins cohering in a parietal manner and without ovules.

The illustrations are of about sixty genera, and nearly twenty orders.

The author proposes continuing his observations.

III. "The early Stages in the Development of *Antedon rosacea*." By H. Bury, B.A., F.L.S., Scholar of Trinity College, Cambridge. Communicated by P. Herbert Carpenter, D.Sc., F.R.S., F.L.S. Received December 7, 1887.

(Abstract.)

The materials for this study were obtained from Naples in the winter of 1886–87. In the orientation of the larva, J. Barrois' suggestion ('Comptes Rendus,' November 9th, 1886) has been adopted, viz., that the stalk of the pentacrinoid represents the præoral lobe of other Echinoderm larvæ.

Development.

External Form.—Segmentation is regular, and a gastrula is formed by invagination. The blastopore closes early and the larva gradually elongates. Ciliation is at first uniform, but soon an anterior tuft of cilia and five ciliated bands become visible, and the intermediate cilia disappear. The anterior ciliated band is incomplete ventrally, and is either absent in the British form or escaped Wyville Thomson's notice. Two ciliated depressions also appear on the ventral surface. The anterior one ("pseudoproct" of W. Thomson) may be called the "præoral pit;" and the posterior one ("pseudostome") the "larval mouth." The "yellow cells" (green by transmitted light) appear