water supply is not so limited as is the case with epiphytic orchids.

In distribution orchids are very local. Few genera are common to both the old world and the new, and when they are common to both, the distribution is a zonal one. The genus *Cypripedium,* as at one time understood, was a supposed exception to this. Recent authors, however, basing their conclusions upon well-defined structural differences in the flowers, have divided this, at one time cosmopolitan, genus, into four genera, each of the four genera with a well-defined geographical distribution. We have now, instead of the one big genus, the following:

Selinepedium, new world, with 3 species, known only from Central America to Brazil.

Cypripedium, old world and new, but zonal in distribution, with 28 species, north temperate.

Phragmipedium, old world, with 11 species, tropical America only.

Paphiopedilum, old world, with 46 species, tropical Asia, Malaya, Philippines, etc.

As genera typical of a zonal distribution, there were mentioned: *Cypripedium, Pogonia* and *Limodorum.* Among the genera peculiar to the new world are: *Masdevallia, Pleurothallis, Epidendron, Cattleya, Lælia, Lycaste, Maxillaria, Odontoglossum, Miltonia, Oncidium* and *Dichæa.*

Among those confined to the old world are: *Thunia, Cœlogyne, Pleione, Ansellia, Phagus, Dendrobium, Eria, Bulbophyllum, Cymbidium, Phalænopsis, Vanda, Angræcum* and *Ærides.*

The different features were illustrated with lantern slides, many of them colored. The latter were the work of Mrs. Van Brunt, and were kindly loaned for the occasion by her.

Alluding to Mr. Nash's discussion of the satisfactory breaking up of the old genus *Cypripedium* into four genera, and the restriction of *Cypripedium* to its type species and immediate relatives, having a well defined zonal distribution, Dr. Britton remarked upon the wide application of this principle in the progressive study of plants and animals, causing the recognition of very many more genera than were believed to exist by most botanical and zoological students in the last century.

The vastly greater number of species now known, and their more critical comparative study in the field and in collections, as well as the more exact understanding of long-recognized species, show that the number of homogeneous groups which we call genera, existing in nature, is larger than previously supposed. The genus *Habenaria* has recently been subdivided into several genera, and this subdivision has been a distinct advance in the taxonomy of orchids.

C. STUART GAGER,
Secretary.

DISCUSSION AND CORRESPONDENCE.

A NEW TYPE OF ELECTRIC ORGAN IN AN AMERICAN TELEOST FISH ASTROSCOPUS.

JORDAN in his last book on fishes (1905) mentions that *Astroscopus* gives an electric shock, quoting Gilbert and others as his authorities. He also states that Professor Agassiz and others felt an electric shock from *Urophycis regius.* Dr. Gilbert, of Stanford University, kindly wrote me, in answer to inquiries, stating that he had felt electricity in *Astroscopus,* and that another collector had felt it in a Pacific specimen. These facts were mentioned in the bulletin of the National Museum.

I have examined *Urophycis* carefully and find no trace of electric organ, but have found that *Astroscopus* does possess a highly developed if small electric organ.

It consists of two masses of tissue, one lying behind each eye and extending as an approximately round column from the bare spot on the skin behind the eye down to the roof of the mouth. Like *Torpedo* it is composed of thin electric plates or 'electroplaxes' that lie in a horizontal position.

The electroplaxes do not occupy the full width of the column, but are much smaller and overlap and imbricate. Each one is a wide, thin syncytium, markedly different from any form yet described.

Its neuro-electric surface is smooth and has a thin structureless layer containing very few nuclei. Its other surface is raised into a close-set series of long, evaginated papillæ that

anastomose somewhat. They project into the jelly tissue that fills the remainder of the compartment.

A remarkable feature is the striation of the substance of the electroplax. Even in the poor alcoholic material at my command, it stands out almost as marked and clear as in striated muscle, and it has much the same structure. As in *Raja,* these lines of striation are parallel but not straight; but, differing from *Raja,* they have an intermediate line and they are found in all parts of the papillæ and up to the electric layer. The presence of so much striated substance does not accord with Ballowtiz's view of the specialization and efficiency of electric tissue. That so small an organ should give so marked a shock puts it on a level with *Gymnotus* and *Torpedo,* both of which are supposed to have specialized their striated substance out of existence by developing the network for greater power.

However, it is not proper to go further into the question until I have prepared fresh material and studied the details of nerve endings, 'rod-net,' and coarse and fine network. Mr. C. F. Silvester has undertaken to work out the gross anatomy as part of this paper.

Ulric Dahlgren.

Princeton University,
January 28, 1906.

A NEW METHOD OF COLLECTING EARTHWORMS FOR LABORATORY USE.

For the benefit of teachers of biology who use the earthworm as one of the laboratory types it has seemed worth while to briefly report a method which has been successfully employed in my laboratory during the past two years, and which in the saving of time and labor we have found a very great improvement over the old methods of capturing them at night by the aid of a lantern, or by digging over the earth by means of a spade or such implement.

The method was first called to my attention by the care-taker of the golf greens on the university campus, who used a proprietary article, sprinkling it over the greens, following which the worms would emerge in great numbers from their burrows, and were then swept up and destroyed, thus relieving the surface of the annoyance of the castings.

This preparation is known by the name of 'Rushmore's Concentrated Worm Destroyer,' and may be had by the barrel of the manufacturer, Garden City, N. Y. It is, as indicated, a concentrated liquid, and for use must be diluted with about one hundred and fifty times its bulk of water. In using, it is simply sprayed over the lawn, where worms are known to abound, from an ordinary watering pot till the surface is well saturated. Within five minutes, usually, the worms begin to emerge from their holes and may be collected and placed at once in clean water, which should be changed several times in order to remove all trace of the irritant, in order that they may not distort themselves and thus be injured as specimens. They may then be narcotized after the usual method and preserved in either alcohol or formalin. In using such specimens for dissection they have been found to be quite as good as those taken by older modes of collection.

We have found it quite important to use a greatly diluted preparation, otherwise it tends to drive the specimens deeper into the burrows and thus fail of its object.

Commenting upon the method among some of the students it was discovered that similar methods have been used by others, though involving greatly differing media. For example, it was said that when using a very dilute solution of corrosive sublimate, one part in ten thousand, for killing potato 'bugs,' in many cases earthworms would emerge in the same manner as in the former. Again, it was also learned that to obtain angle worms for bait a decoction of mustard in water had been sprinkled over the ground, in response to which specimens would readily come to the surface.

It would seem, therefore, that probably any of several such means might be employed successfully. The proprietary article has a considerable use among keepers of golf links, and where so used one may easily take advan-