

anthers one-celled by confluence: indeed Prof. Oliver has found them so in some specimens of our North American Mistletoe, *P. flavescens*. No. 1125 of Fendler's Venezuela collection is found to belong to Pœppig's genus, *Antidaphne*. The bracts or scales subtending flowers in the genus *Lepidoceras* of Dr. Hooker are found to persist as the apex of a true lamina of a leaf, which is subsequently developed by a growth of its base in a very curious manner. The scale does duty first as a bract, and afterwards, by a basal growth, the insertion or petiolar portion of this scale becomes a green leaf. The true Lorantheous genera here admitted, and succinctly defined, are twelve, with indications that *Eremolepis Wrightii* of Grisebach, one of Mr. C. Wright's discoveries in Cuba—may be the type of a thirteenth genus. A. G.

5. *Parthenogenesis in Plants.*—A presumed Case of *Parthenogenesis in a species of Aberia*, a Bixaceous genus, reported by Dr. T. Anderson to the Linnæan Society, is recorded in the *Journal* of the proceedings of that Society, No. 26. One or two bushes of the species (of unknown origin) flowered in the Calcutta Botanical Garden in the year 1861. "They were female plants, no stamens were detected, yet they bore a large crop of well ripened fruits." "The seeds obtained from these plants were sown, and there is now a vigorous stock of young plants." In 1862 the same plant flowered again, and during a month produced only pistilliferous flowers. "From the opening of the first flower-bud until the last withered flower dropped off, not a day passed without a careful examination being made by me for the traces of a stamen in the flowers, but without finding one." The fruit set from many of the ovaries; but the tree was soon after destroyed in a gale. The evidence is not wholly complete; but as far as it goes it confirms the case of *Cœlebogyne*. A. G.

6. *Structure and Fertilization of certain Orchids.*—In this *Journal* for November, 1862, I gave some notes on the arrangements of the *genitalia*, &c. of most of our Orchids of the Northern States of the genus *Platanthera* or *Habenaria*. One common species, which was not met with last summer in season, I have now glanced at, viz.,

Platanthera flava, or *Habenaria flava* Gray. This, although ascertained by me to be the *Orchis flava* of Linnæus, so ill deserves its specific name, which I restored to it, (the flowers being in fact green, instead of yellow) that, notwithstanding priority, one would like to see it take Muhlenberg's name of *virescens*. This might well enough be allowed on the ground that the Linnæan name is a "*nomen falsum*."

As respects its arrangements for fertilization, I had anticipated that this would be an interesting species, on account of the strong protuberance or crest on the base of its labellum. This narrow and nasiform protuberance projects upwards and backwards, so as almost to touch the column between the two disks or glands of the stigma (or rather between the two cups or deep grooves which contain them), and therefore lying over and dividing the orifice of the spur. The anther cells are parallel, but set at a little distance apart: they lie almost in line with the labellum, but with the front ends depressed, so that the disks are a little lower than the base of the protuberance. These disks and this protuberance are so correlated in shape and position, that the proboscis of an insect fitted

to suck out nectar from the spur, inserted, as it must be, obliquely from above, cannot keep the median line at the entrance, but will take the right or the left of the protuberance, as may happen, and so will slide into the disk-bearing groove of that side. The structure of the disk-bearing portion of the column answers, perhaps, to what is expressed by Lindley's vague character of *Gymnadenia*, "*rostello complicato*," and is quite different from that which prevails in the more genuine species of *Platanthera*. But nearly every species has its peculiar arrangement. Viewed from the front (on removing the labellum), each disk is found to line an oblong cavity or deep groove: viewed vertically from above, this appears as a ring with the front edge cut away, or as something more than a semicircle, lined by the thin broad disk. On directing a delicate bristle vertically from above into the spur, taking either side of the protuberance of the labellum, the bristle will either enter the discal groove from above, as a thread enters the eye of a needle, or, if presented more obliquely from the front, will slide into the groove when, as it enters the spur, it is raised, as it must be, to a more vertical position. The disk clasps the bristle, adhering by its sticky surface, and is withdrawn with it along with the attached pollinium. No good observations were made as to any movement of the stalk of the pollinium on the disk when thus extricated, nor as to its application to the stigma.

It is evident that in this species self-fertilization cannot occur, that only one pollen-mass will be likely to be extracted at one visit of an insect, and that this will doubtless be conveyed to another flower to impregnate its stigma.

Gymnadenia tridentata, Lindl.—Examinations of flower-buds and open flowers, July 27–30, substantially confirm those of the previous year, which are recorded in this *Journal*, vol. xxxiv, p. 426, and in a foot-note on p. 260. The flowers before expansion are horizontal and somewhat reclining, so that the packets of pollen, which spontaneously detach themselves from the pollen-mass, may fall out when the anther-cells open. The anthers dehisce before the flower-bud is full grown, or at least four or five days before the flower opens. In every instance when the flower has naturally opened, the anther-cells will be found widely gaping, and several or many pollen-packets will be found upon the three "stigmatic processes," into which their pollen-tubes will have copiously and deeply penetrated. This, indeed, is the case two or three days before the blossom would have opened.

These three processes are so remarkably developed in this species, and they so strikingly represent functionally, and to appearance morphologically, three elongated clavate stigmas, that the species would not be regarded as a congener of *G. conopsea*, the type of Brown's genus *Gymnadenia*. *G. flava* Lindl., and *G. nivea* Lindl., which I have examined only in dried specimens, however, present intermediate states. In *G. flava*, there are two strong stigmatic lobes projecting laterally beyond the disks by the side of the base of each anther-cell. The middle or rostellar lobe is hidden by the approximate anther-cells, and is functionless. In *G. nivea*, the rostellar lobe is minute and hidden; the conspicuous lateral lobes are linear and deflected forwards so as to lie along the border of the base of the labellum on each side. I do not know whether they

receive the pollen, or whether there is a stigmatic surface between them under the disks, or both. But neither of these two species show any evidence of being self-fertilized in the bud. In *G. tridentata*, the species now in hand, the three elongated and somewhat clavate stigmatic bodies or processes, which are nearly alike, ascend, one on the outside of each anther-cell, and one between the two cells, to considerably above the level of the almost horizontal anther; their surface is loosely cellular and slightly viscid, so that the pollen-packets stick to them readily: all three, as already remarked, act functionally as stigmas. But also, underneath the disks and the common origin of the three stigmatic processes, I find a green surface, in position and character just like the stigma in *Orchis* and *Platanthera* except that (so far as I have observed, in unexpanded or freshly expanded flowers) it is only very slightly viscid. On application, few or no pollen-packets are left sticking to it, while they stick in considerable numbers to the upper part of the "processes." From the appearance, thus far, I should suppose that this normal stigmatic surface had become functionless. But, on the other hand, the large disks are in perfect condition; in the expanded flowers they adhere to a bristle or other body, and are thus removed from the shallow cups in which they rest, bringing away the caudicle with the considerable portion of the pollen-packets which still remain attached: the caudicle effects a prompt movement of depression, and now, if the bristle be returned to its position at the entrance of the spur, the pollen-mass will strike this broad ordinary stigmatic surface. The examination of older flowers may be expected to settle the question. But it is certain that the three linear club-shaped bodies act as stigmas.

In a systematic point of view, it is evident that the *Ophrydeæ* with naked disks need to be studied and arranged anew, upon living plants. But the forms cannot be clearly described and correlated until the morphology and terminology of the parts of the column have been reconsidered and elucidated.

A. G.

ZOOLOGY.—

7. *Monograph of the Aye-Aye (Chiromys Madagascariensis Cuvier)*; by RICHARD OWEN, D.C.L., F.R.S., &c.—The curious animal which forms the subject of this monograph, was first noticed in Madagascar by Souverat in 1780, and owes its name to an exclamation of astonishment uttered by the natives of the east coast, to whom, it is said, he exhibited it for the first time. Souverat brought home with him a stuffed skin and a cranium, which have since remained in the museum of the Garden of Plants, the only representatives of the species in European cabinets. Zoologists have been puzzled as to the true affinities of the Aye-Aye, some placing it among the Rodents, and others among the Quadrumana. Buffon assigned it a position in the former group, and in so doing was followed by Cuvier, who at the same time distinctly stated that it "is related to the Quadrumana in more points than one." In view of these differences of opinion, it is easy to see how desirable whole specimens were.

Science is indebted to the Hon. H. Sandwith, M.D., for the specimen, preserved in spirits, which forms the subject of the present investigation. This has enabled Prof. Owen to determine definitely its position among