

Mr. George H. Powers, of Boston, and Messrs. J. A. Allen and W. H. Niles, of Cambridge, were elected Resident Members.

December 3, 1862.

The President in the chair.

Dr. Pickering referred to two *Esquimaux* now on exhibition in this city. From their low stature, florid complexion, broad, flat countenance, with the profile very slightly projecting, one would be disposed to reject the idea of affinity with the general aboriginal population of this continent. But the sea-going tribes of Northwest America, of which he had seen the Chinooks, are intermediate in aspect; having very generally a lighter complexion, and less prominence of profile, than the interior or hunting tribes. He had remarked, that the strange custom among the Chinooks of flattening the skull produced "unusual breadth of face;" and he now thought that the purpose aimed at may have been the Esquimaux standard of personal beauty. In addition to his published opinion that, with one minor exception, America was originally peopled from the Northwest by the sea-going tribes following the coast, personal inspection now satisfied him that the Esquimaux are Mongolians, and that there is no distinct physical race of man in the Arctic regions.

Mr. S. H. Scudder gave an account of the structure of *Pogonia ophioglossoides* Nutt., and of the probable manner in which its fertilization is effected:—

The plant is of special interest, since it belongs to the only group of Orchids of which Darwin in his recent work has given no account. The flower is thrust out at nearly right angles to the upright stem, the column being a little raised from the horizontal; the labellum is spatulate, heavily crested and fringed, the distal half depending somewhat; the shield-shaped, stigmatic surface is situated at the upper front portion of the column, which is surmounted by a pretty deep clinandrum, with an elevated, jagged border; and to the hind part of this, the curiously shaped, auriculated anther is attached as a lid by a narrow, elastic hinge, which compels the anther-lid to remain deeply seated in the clinandrum, whose thin, jagged edges border it on every side. Upon the under surface of the anther-lid, as it thus lies, are situated the two bunches of pollen, confluent, forming a prominent oval mass; they are not pollinia, that is, they have no caudicle and disc, but are only pollen-masses, completely sessile, which a slight touch

may remove. The thin edges of the clinandrum do not border the anther-lid equally on every side, for if it were so the raising of the lid would brush the prominent pollen-masses against the front edge, causing the pollen to fall useless into the bottom of the pit, and thus render the plant self-destructive; to obviate this, the edge of the clinandrum in front is hollowed and thrust forward slightly, leaving sufficient room for the passage of the pollen-masses at the raising of the lid; the resulting space is not, however, left completely open, but, as if to prevent the accidental removal of the pollen-masses, the lower front edge of the anther-lid is furnished with a row or fringe of elongated papillæ, quite effectually closing the opening. So by this means, although the masses of pollen and the stigmatic surface are in close contiguity, they are entirely prevented by the exact structure and sculpture of the parts of the flower from ever coming in contact with one another except through foreign aid; for the pollen-masses are seen to be completely packed away in a deep pit, pressed down by a ponderous lid, whose elastic hinge will not allow its elevation without considerable force: and should by any possibility a portion of the pollen escape through the opening in front, really effectually closed by the fringe, it would drop, not upon the stigmatic surface, but upon the labellum, opposite to it.

By what means does an insect effect the fertilization of this plant? Its probable action may be readily and successfully imitated. Flying to the flower intent upon its sweets, it would alight upon the labellum, and, creeping in, would strike its head and back first against the protruding anther-lid, only pressing it down more tightly, effecting nothing, and then against the stigmatic surface. The passage into the flower is narrow, allowing no room for anything but a very small insect to turn round in, so that no sooner does the insect withdraw itself backward, than the top of the back and of the head striking, as it almost infallibly must, against the front of the anther-lid (which at its upper portion projects forward somewhat, in order the more readily to catch the passing head), raises it more and more with its continued withdrawal, rolling the outer and under surface of the lid against the upper and front portion of the head of the insect, till it has passed, when the lid snaps back to its original position, leaving the pollen-masses adhering to the upper portion of the front of the insect's head;— or if only a portion of the pollen be removed, the lid, being closed again, is ready for the services of the next visitor. The insect flies to another flower, and, striking with the top of the head plump against the viscid stigmatic surface, leaves the pollen glued to it, and thus fertilization is ensured.

There are several minor points of structure in the plant, all seeming to aid in this special mode of fertilization through the agency of

insects. The prominence of the front of the anther-lid has already been referred to ; besides this, the fringe upon the under edge of the lid in front is directed slightly outward, and may assist by becoming entangled or interlocked in the hairs of the retreating insect, and more surely effect the raising of the lid ; the edges of the column on either side of the stigmatic surface project outward a little, making a shallow channel for the better guidance of the insect toward it ; and it does not seem too fanciful to suppose that the heavy beard upon the labellum, through which the insect must pass with difficulty, may cause it to walk through it as it were on tiptoe, in order to raise its abdomen high above the obstacle, and therefore to strike more surely the stigmatic surface on entering and the anther-lid on retiring. There is besides another curious fact : on raising the lid, it will be seen that it does not open altogether as we should expect it, but is thrust forward a little, apparently through some elasticity of the hinge, so that the pollen-masses, when the lid is partially open, are found to reach a position nearly as far forward as the projecting front of the lid did when closed, although on the removal of the pressure it will revert to its original position ; this again seems to lend its aid in the same direction.

Out of nine flowers examined on the first of August at the White Mountains, N. H., seven had both pollen-masses and stigmatic surface intact ; the other two had each their stigmatic surface smeared with pollen, and the pollen-masses, in one wholly, in the other partially, removed. The plant very generally has but a single flower, so that, by what has been stated, it will be seen that, with rare exceptions, no plant is ever fertilized by its own pollen. It is stated by Prof. Gray in his Manual of Botany that the *Arethuseae*, to which group *Pogonia* belongs, all have the fertile anther like a lid over the column, and that this lid after a time is deciduous ; it may be questioned on this account whether it might not here prove to be directly capable of self-fertilization ; but in one of the plants examined, in which the pollinia had been removed, the stigmatic surface smeared with pollen, and the petals of the flower quite withered, the lid still remained, and no loss of elasticity in the hinge was noticed, so that the anther probably does not fall off till a period subsequent to the fertilization of the plant. In another plant not yet showing any signs of decay, where the pollen had been partially removed, that which remained was much discolored, and even seemed to show signs of decay, as if but a temporary exposure to the atmosphere were injurious to it.

This Orchid agrees more nearly with *Dendrobium chrysanthum* than with any other mentioned by Darwin, but differs peculiarly from that

in altogether wanting a rostellum,* a second of the characteristic features shared by most Orchids which is wanting in this plant, the pollinia being the first. By noticing the peculiar action of the anther-lid in *Dendrobium*, resulting mainly from the remarkable elasticity of the hinge of the lid (or filament of the anther), we may understand better the structure of the same parts in *Pogonia*, and shall discover in the slight projection of its opening anther-lid that which, attaining its development in *Dendrobium*, forms so remarkable and important a feature in its economy.

Mr. Scudder also stated that he had noticed in the middle of the previous month the operations of the minute *Platygaster*, which attacks the eggs of the canker-worm moth, *Anisopteryx vernata* Harr. After moving round a long while in search of a suitable place to lay its eggs, using its ovipositor as a sort of feeler, the abdomen is plunged down into the space between three contiguous eggs, and the ovipositor perforates the side of one of them, out of view. The body of the insect assumes a position perpendicular to their exposed surfaces, supported in the rear by the wings, which, folded over the back, are placed against the surface behind, while the hind-legs, spread widely apart, sustain the insect on either side, and the middle pair are placed nearer together in the front; with the fore-legs dangling it remains motionless, with the exception of a slight movement of the antennæ, for some three or four minutes, after which it moves off, seldom flying, in search of another place. They were very abundant, eight or ten specimens being frequently seen upon a single bunch of eggs. This parasite was first observed by the late Mr. E. C. Herrick, of New Haven.

Prof. J. Wyman described some of the phases of development in the exterior of the human body, and pointed out some of the resemblances between the limbs of the human embryo and the permanent condition of the limbs of the lower animals. In some human embryos about an inch in length, recently examined by him, he found that the great toe was shorter than the others, and, instead of being parallel to them, projected at an angle from the side of the foot, thus corresponding with the permanent condition of this part in the quadruped.

Mr. George D. Smith was elected Resident Member.

* It would be interesting in this connection to know whether, as in *Cypripedium*, the stigmatic surface is trifold, or, as in *Cephalanthera grandiflora*, it is bifid; the importance of the knowledge of this fact was not recognized when the examination of the fresh flowers was made.