SOCIETIES AND ACADEMIES

GENEVA

Physical and Natural History Society, March 2.—M. Casimir de Candolle gave the result of his researches on the movements of the leaves of *Dionæa muscipula*, undertaken for the purpose of ascertaining if the anatomical constitution of these leaves furnished a sufficient explanation of these movements. His investigation has confirmed this hypothesis and has proved to him that the movements referred to, as well as those of the sensitive, for instance, are the result of the turgescence of the tissues and not of electric currents or other causes. The leaf of Dionæa is composed of two essential parts; one part petiolary, and at the extremity of that a limb or circular leaf, whose two halves are movable around the central nerve. Each of these two valves carries three hairs, which it is sufficient to touch very gently, with a human hair for example, to cause the valves to close. Having investigated the internal structure of these valves, M. de Candolle has found that they are composed of two different kinds of tissues. The upper layer is composed of parenchymatous cells, relatively young and yet turgescent; the inferior layer of cells much older, which are no longer turgescent. At a given moment, and in consequence of the shock communicated to the upper layer, the water which it contained is expelled, a contraction is produced, and the leaf closes. All the arrangements of the leaf and especially that of the secondary nerves, which are perpendicular to the great nerve, contribute to bring about this maximum movement. The gradual development of these leaves is in favour of this theory; the valves of all the young leaves are at first rolled up and they are stretched out at the moment of complete expansion. The leaf does not close if one simply touches the leaf; it is necessary to touch one of the hairs. Their anatomical structure was then examined and M. de Candolle found that they are composed of very elongated cells, forming a rigid cone, which rests on an articulation formed by two great cells, round which it turns very easily. The least shock communicated to this long arm of the lever, is transmitted with great readiness to the internal layers of the leaf, and develops the phenomenon of turgescence, which is not produced when simply the epidermis of the leaf is touched. These hairs are not true hairs, but excrescences in intimate relation with the interior parenchyma; hence their energetic action in the internal portions of the leaf.

PARIS

Academy of Sciences, Aug. 7.—Vice-Admiral Paris in the chair.—The following papers were read:—Experimental critique on glycæmia (continued), by M. Claude Bernard. He illustrates three statements:—1. Glycæmia does not differ in carnivorous and in herbivorous animals; it is independent of alimentation. 2. In traversing the arterial system the blood contains nearly the same proportion of sugar. 3. In the general venous system the proportion of sugar is variable, but always inferior to that of the arterial blood.—Observations of M. P. Thenard with reference to M. Bernard's communication. He calls attention to capillary affinity, and a mode he found of destroying it. He left a large vessel of gelatinous alumina in a chamber where it froze during winter. In spring he found the vessel filled with water, and, at the bottom, a thin layer of an alumina, which as to its capillary affinity, shared but little the properties of the frozen alumina. He has practised the method artificially in purification of his black acids. Now M. Bernard pours into a maximum solution of sulphate of soda an equal volume of blood. The blood coagulates, then by evaporation and cooling, crystallisation of the salt is effected. This crystallisation, the author points out, is virtually the same as his congelation.—On the alteration of urine; reply to Dr. Bastian, by M. Pasteur. He considers Dr. Bastian's reply as aside from the point in discussion. The difference is solely with regard to interpretation of the facts.—On the carpellary theory according to the Loaseæ (second part), by M. Trécul.—Reply to the last communication of M. Hirn, by M. Ledieu.—On radiometers of intensity, by M. de Fonvielle. The dissymmetry of action necessary to rotation may be obtained by substituting a dissymmetry of figure, relatively to the axis, for dissymmetry of substance or of coloration. The arrangement of feather mills might be imitated, or that of cup anemometers, or that of screws actuated by an air current, or that of the orreries turned by the current from a Holtz machine.—On a new process for preparing tinder wicks without poisonous substances, by M. Monier. Oxide of manganese is substituted for chromate of lead. The wicks are impregnated with sulphate of manganese, which is decomposed by caustic soda, or they are simply immersed in a solution of permanganate of potash.—On the phylloxerised spot (4 hectares) of Mancey (Saone-et-Loire), by M. Rommier. The facts show that in its progress northwards, the phylloxera is not prevented by the greater coolness of climate, and that application of sulphocarbonates to advanced spots at the proper time, may reduce the swarming, and save, for a long period, the neighbouring unattacked vineyards.—On determination of the carbonic acid contained in waters (of irrigation, of drainage, of springs, of rivers, &c.), by M. Houzeau. The method is to liberate successively, in the gaseous state, the free and the combined carbonic acid, and absorb by 5 cubic centimetres of a concentrated solution of soda with addition of $\frac{1}{1000}$ of oxide of zinc. The carbonic acid is then estimated volumetrically by a method the author described in *Ann. de Chimie et de Physique*.—On a new process of qualitative testing and determination of potash, by M. Carnot. He uses the new reaction given by salts of potash in presence of hypo-sulphite of soda and a salt of bismuth in a charged solution of alcohol.—On the different rotatory powers possessed by sugar-cane according to the process employed for measuring them, by M. Calderon.—Process for determining hydrocarbons, and especially fire-damp in mines, by M. Coquillion. He composes a certain number of mixtures of air and protocarbonised hydrogen, introduces a given quantity of the mixture into a tube in which is soldered a palladium spiral, reddens the wire, awaits cooling, then measures the remaining gas. (Platinum wire gives frequent detonations in hydrocarbons with air, but palladium does not.) By comparison, the quantity of fire-damp in a given atmosphere may be estimated.—On the employment of chloride of calcium in watering of streets, promenades, and public gardens, by M. Cousté. He calls attention to his experiments on the subject, previous to those of M. Houzeau.—On some peculiarities of reflex movements produced by mechanical excitation of the cranial dura mater, by M. Rochefontaine. Such excitation on one side will cause contraction of one or of several muscles of the face on the same side, and for this a slight excitation suffices, or the animal may be but partly anæsthetised. A stronger mechanical stimulation causes also movement of the limbs on the same side, and a still stronger one movements of all four limbs. In the second case the excitation must be transmitted directly to the corresponding half of the chord; and in the third there is both direct and cross transmission; the direct being more intense, however, for the movements on the corresponding side are stronger.—Botanical affinities of the genus Neuropteris, by M. Renault.—On the annual revision of the magnetic map of France, by MM. Marié Davy, and Decroix. Table of declinations given. From June, 1875, to June, 1876, the mean annual variation of Paris was about $-0^{\circ}\ 2'\ 12''$.

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