

you such remarks as have arisen from my own experience. If they shall afford you any useful information, or prove beneficial in alleviating the sufferings of those that may come under your care, I shall be gratified.

Very truly and respectfully yours, THOMAS SEWALL.

*Dr. Fred. B. Page, Ascension, La.*

### SENSITIVE ATTRACTION.

AN AFFINITY MANIFESTED BETWEEN LIVING VEGETABLES AND OTHER SUBSTANCES, DEFINED, IN A PREVIOUS PAPER, ATTRACTION OF SENSATION, OR SENSITIVE ATTRACTION.

[Communicated for the Boston Medical and Surgical Journal.]

ALL bodies have an affinity for heat. Like electricity, it everywhere tends to an equilibrium. The less heated attract it from those which are warmer, until the equilibrium is complete. But this is not the kind of affinity which is intended to be demonstrated. The solar influence is not the same upon a stone as upon a living vegetable. The one is simply heated, the other is drawn in a direction often opposite to that in which it begins to grow. The superaddition of the living principle to inorganic matter endows the plant with a new species of affinity. If an acorn or any other seed is planted under a flat stone, the stone does not prevent its growth, but the young sprout runs along under the stone until it reaches the edge, and then turns upward, making a right angle or a semi-circle. If a bean is placed in the hill so that the eye points upward and the lobes downward, the lobes, which in germination expand into seminal leaves, become completely inverted and ascend to the surface, while the roots, proceeding from the eye, turn downward. The solar influence acts upon the leaves, and the nutritious particles contained in the earth upon the roots.

The sun's rays consist of heat and light, and to these properties principally are to be ascribed the perpendicular direction of plants and trees. It may at first view appear surprising that the loftiest and most stupendous trees are indebted to this influence for their direction, but the history of their growth confirms the fact beyond the possibility of doubt. The air is an intermediate agent. Above the surface of the earth, if not below it, the leaves and other parts of plants and trees have about the same access to air, be their direction what it may. The same is the case with moisture. Being immersed in the atmosphere, a supply is attainable in all situations. An affinity between plants and the solar influence would, therefore, seem to be the only cause of the perpendicular direction. On a close inspection of trees and plants, it is evident that all their limbs and branches would grow in a perfectly perpendicular direction were it not for the force of gravity and cohesion. When a new branch or limb first begins to grow from the main stem, the direction of it is as nearly perpendicular as the trunk will admit. It continues in this direction until the weight of its leaves and secondary branches bends it entirely from its centre of gravity, and presses it away from the trunk or main stem. In the case of a tree, it must be recollected that its direction is determined in the earliest part of its growth,

while the stem is tender and green like the leaves. The process of wooding confirms and fixes the direction by the greater cohesion of its particles. At the end of the first year the trunk, increased in size and hardness, or cohesiveness, is able to resist the force of winds in addition to other obstacles. But in every successive growth, the principle of sensitive attraction is equally manifest in the direction of the new shoots or branches. A remarkable example may be seen in the button-wood, where, from limbs bent down by gravity and broken off, new shoots grow upward in a reverse direction or nearly so. In the poplar, the branches spread but little, and the young shoots are nearly erect, and, in some instances, completely so. In apple trees, where the limbs are yearly loaded with fruit and leaves, they are pressed further from a perpendicular direction, and often bend to the ground. But every new shoot, obedient to the force that first gave direction to the tree, is attracted to the zenith. In the elm, the enormous weight of the original limbs, in the process of growth, presses them outward in the same way with those of the apple tree. Every deviation from a perpendicular direction in the limbs of trees, as well as in the trunk, is traceable to some opposing force. Some trees and plants manifest a greater degree of attraction for the solar influence than others, and all are endowed with different degrees of hardness and flexibility; but every species, from the tall cedar to the humble moss that grows only upon the exposed sides of stones and rocks, demonstrate the constancy and uniformity of the general law. The weeping-willow weeps from the force of gravity upon its long slender limbs. The wind, however, performs for them what they lack in an erect position.

In all young trees and herbaceous plants where the force of gravity is small and flexibility great, the solar influence is too manifest to be mistaken. Were it possible for our plants to grow while the sun was in the southern tropic, doubtless a somewhat different direction would be visible in their growth. There are but few plants and trees which point directly to the place of the sun, but they ascend in a direction in which all the leaves and parts receive the heat and light to the fullest extent as a whole. If the main stem or the trunk pointed directly to the sun, it would bring some of the leaves and branches into a position where they would overshadow and interfere with each other. The leaves and branches all contend for the heat and light, which finally fixes the tree or plant in the position most favorable for the growth of its several parts. The action of the wind no doubt reconciles many leaves to situations in which they would not stay without it.

In pines, oaks, and many other trees, which grow thick in forests and deeply overshadow each other, the under limbs die and fall off, while the same kind of trees in open fields retain all the lower branches, which become long and large. In the forest, the lower limbs die from the want of heat and light, while the tops of trees exposed to the sun survive and contribute to the great height to which they grow in this situation. In the open field, the elm is not a tree usually of great height; but denude it constantly of its lower limbs, and we can scarcely set a limit to the

height to which it might grow, or to the straightness it might attain when the sun's influence operated undisturbed.

Sensitive attraction seems to be co-existent with the essential wants or necessities of the plant or tree. Their roots are attracted downward and the seminal leaves upward, each part obeying a law of attraction varied by its organization or essential wants. The roots hold an essential relation to earthy matter, water, and decomposed vegetable matter, and mutual attraction brings the substances in contact. The roots are drawn to the spot where the substances exist. The peculiar wants of tendrils and vines are bodies to embrace for their support. Vines, like other plants, tend to a perpendicular direction, and are sure to attain it where their situation is favorable. The necessities of the germ are the pollen and the protection of the calyx and corolla. The essential wants of the leaves, flowers and branches, are heat, light, air and moisture. Between them there is a fixed relation like the relation of parts to a whole. There can be no surprise, therefore, in the development of a new species of affinity, or the reduction of effects witnessed in the growth of vegetables to a general or universal law. It is probable that a principle of repulsion also exists between vegetables and other substances to a certain extent, as well as between inorganic bodies. This, however, remains to be determined by observation and experiment.

Providence, R. I., Sept. 21, 1849.

D. B. SLACK.

## PRACTICAL OBSERVATIONS AND SUGGESTIONS ON THE MOTIVE FOR SCARIFYING THE GUMS DURING THE PERIOD OF DENTITION.

FROM MY NOTE-BOOK.

BY A. C. CASTLE, M. D., NEW YORK.

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THE circumstance which first directed my earnest attention to this subject, and which led me to doubt the soundness of the views entertained by many physicians, and the practice recommended by the celebrated Dr. Marshall Hall, of London—whose valuable discoveries and writings upon the nervous system are so familiar to the medical world—was the narrow escape of two of my children from the disastrous effects of this scarification of the gums in the manner so highly extolled by that gentleman.

In the year 1837, my eldest child, then at the age of seven months, was suffering extremely from tumefaction of the gums, with much attendant constitutional irritation and the usual fretfulness accompanying the symptoms of teething children. I, in accordance with *established* rules, lanced the gums freely, making crucial incisions over each tooth down to their substance. Immediately after the operation was completed, the child sunk into almost a comatose state, with cold, clammy skin, torpor of the bowels, the eye-balls turned up and fixed, no motion of any muscle or limb; and notwithstanding the best possible care and treatment for five days, no hope of recovery was presented. It was with the great-