

chemical or mechanical laws ; although such plants may be excited by stimulants of a chemical or mechanical nature.

The most remarkable example of the irritability of vegetables occurs in a foreign species of santfoin, called the moving plant (*Hedysarum gyrans*.) It grows on the banks of the Ganges. It is an annual plant, rising up three or four feet ; the leaves are of a bright green color, and the butterfly flowers are generally in clusters of pale red. The leaves, which consist of a large terminal leaflet, and two smaller lateral ones, possess the singular property of moving without being touched. Sometimes one of them will move suddenly while the rest remain still ; at another time they all move together up and down, and circularly ; this last movement being performed by the twisting of the footstalks. And even when the leaves are detached from the plant, they sometimes retain their power of motion for four and twenty hours. If any obstacle happens to retard the motion, upon its removal, the leaves move with greater velocity. These movements are more evident when the sun's rays are striking upon the plant ; thus making it appear that the action of the sun's rays is the cause of the perpetual motion of the leaflets. In India, where the plant is in full vigor, and has every advantage which its native soil and air can give it, all the leaves are in motion at the same time.

Venus' fly-trap, (*Dionæa muscipula*) another of the greatest wonders of the vegetable kingdom, is an American plant, which was brought to Europe, from Carolina, about the year 1788. It is a pretty plant, bearing several elegant white flowers at the end of a simple stalk. All its leaves grow immediately from the bottom of the stem ; each terminating by two lobes, surrounded at the edges with prickles. These lobes, when undisturbed, lie open, like the leaves of a book, and their surfaces are covered with a number of minute glands, secreting a sweet liquor, which attracts the unwary fly. Between the two lobes, just where they join, there are three sharp bristles ; and, when a fly or any other insect, crawling over the surface of the lobes, happens to touch either of the bristles, the irritability of the plant is excited, and the lobes, suddenly closing, imprison the insect, like a rat in a common gin. Soon after the death of the insect, the lobes unfold and wait for another victim. It is supposed that this plant requires animal food for the performance of some of its functions. In support of this theory, it has been stated that Mr. Knight, after having secured some plants from the possibility of providing themselves with flies, furnished some of them with scraped beef, and left the rest without any such provision. The result of the experiment was, that the fed specimens were in a far more flourishing condition than the unfed ones.

A wood sorrel (*Oxalis sensitive*) a native of Amboyna, is reported by Rumphius to be so delicately sensitive that it will not bear the blowing of the wind upon it without contracting its leaves.

Light exercises a great influence over all these phenomena. When a sensitive plant is exposed to artificial light during the night its leaves expand, and if put into a dark room during the day the leaves close. If however, the plant is kept for a long time in darkness, it will ultimately expand its leaves, and the processes of folding and opening will go on, although at very irregular intervals. Any sudden degrees of heat or cold, the vapor of boiling water, the fumes arising from sulphur, the odor of volatile liquors, or, in short, anything that affects the nerves of animals, will also affect the sensitive plant. Any violent application, such as exposing the extremity of a leaf to the rays of the sun, or burning it with a lens or with a lighted taper, or squeezing it between a pair of hot pincers, caused the leaflet of the acacia to close instantly ; and, at the same time, not only the leaflet which is opposite to it does the same, but all that are upon the same stalk, the drooping taking place more or less, according to the strength of the impression. When the injury is very great, the plant will be violently agitated for some distance round the spot.

The sleep of plants, which was discovered by Linnæus, is something akin to the phenomenon of irritability caused by the different influence of light and darkness, cold, heat and moisture. The common chickweed, of which birds are so fond, furnishes a beautiful instance of the sleep of plants. Every night the leaves approach each other in pairs, so as to include within their upper surfaces the tender rudiments of the young shoots ; and the uppermost pair but one at the end of the stalk, are furnished with longer leaf-stalks than the others, so that they can close upon the terminating pair, and protect the end of the shoot.

The flowers of the Marvel of Peru (*Mirabilis jalapa*), which are very beautiful, do not open in hot weather until the evening ; but if the weather be cool, or the sun is obscured, they open in the daytime. Another variety of the same plant is called Four o'clock flower, from opening at that hour of the day. The scarlet pimpernel (*anagallis arvensis*), which is a plentiful weed in corn fields, is called poor man's weather glass, and shepherd's barometer, from the flowers always closing before rain ; and should the weather be ever so bright, they always shut up at noon.—*Dickens' Household Words*.

2. A NEW FOOD FOR BEES.

Two agriculturists of the Department of the Var observed one day in the month of May last, that all their bees had left their hives, although the latter were well filled and exceedingly heavy. Towards even the fugitives returned heavily laden, but on the following morning set out again in a direction which was this time carefully noted by the farmers, who had been watching their doings. They immediately followed them, and soon arrived at a farm where cakes of tilseed, which had been previously subjected to the oil press, were being beaten up into a paste with water, to be used as manure for potatoes. There, to their surprise, they saw their bees clustering round the tubs containing the paste, evidently enjoying a luxury hitherto unknown to them. The lesson was not lost upon the agriculturists, who immediately procured their bees abundance of this food, and have now been rewarded with nearly ten times the usual quantity of produce, besides an immense increase in the reproduction of the insect.

VII. Biographical Sketches.

No. 13. BARON ALEXANDER VON HUMBOLDT.

Frederick Henry Alexander Von Humboldt was born at Berlin, September 14th, 1769. He died on Friday, May 6th, 1859, full of years and honours. A highly endowed naturalist, possessing great powers of eloquence by tongue and pen, of untiring industry, and great judgment, Alexander von Humboldt has passed through a busy life of four-score years and ten, adding knowledge to knowledge, giving and bequeathing it to mankind.

The city of Berlin expressed by public signs of grief the national loss of a good citizen, an honest courtier, an honourable and venerable man. The scientific and literary circles especially deplore the loss of an earnest and generous friend.

Amongst men of science, Von Humboldt stands pre-eminent as one of the few who have combined much special work in the several departments of research, with great and useful generalisations of the results of the scientific study of nature. The empirical observations of the uneducated, and the hypothetical systems of philosophers, filled for many ages the place of science ; and there were few, like Aristotle and Bacon, that, patiently sifting truth for error, made strict search themselves in Nature's secrets, and sought to theorise alone on facts. In early times the medical man, brought by his course of study into direct communication with nature, stood almost alone among the learned as the naturalist (hence his name Physician) ; the philosophers and clergy being rarely led, by peculiar circumstances or turn of mind, out of vague imaginings into strict research. The study of natural phenomena, unbiased by popular fancies, the prejudice of party, and the authority of the ancients, in time led naturalists to special studies of the several groups of things and conditions of things observed in earth, sea, and sky. Hence, instead of the "*Curiosi et Scrutatores Nature*" of the fifteenth century, we have the specialised astronomers, geologists, mineralogists, chemists, biologists, and physicists of the eighteenth and nineteenth centuries.

Each scientific labourer now finds work enough in his own field to task his skill and strength ; and that, too, whether he applies himself to the study of some group of physical phenomena, or to the study of some branch of science in its relation to man. Still the several fields of labour are closely approximate, and the work in one cannot be carried on without the aid and counsel of fellow-labourers, and without some of the products of their toil. One man, indeed, may often advantageously devote himself to two, or even more kindred subjects of research ; the chemist may and should be versed in collateral studies in physics and mathematics ; but who can till each field himself, and reap and gather in the crops ?

One man at least has done so in this our day, when Science has so wide a domain that her servants scarce know of each other's doings, and much less occupy themselves with all her works.

Commencing his scientific life early, educated with the direct object of being a mining-director, and favoured by the circumstances of his family, Alexander von Humboldt took his place among German naturalists, well prepared with a knowledge of chemistry, geology, mineralogy, and botany, with a general acquaintance of the allied branches of science, and with a good store of classical learning, to see Nature in her many aspects, and to read her features aright ; and he possessed, too, that love of Nature's works, and enthusiasm for the advancement of truth, that lead men through the difficulties and hardships of travel, and, still more, support them through the weariful labour of patient research, and the chilly disappointments of fruitless labour.

After having studied successfully at Gottingen, Frankfort-on-the-Oder, Hamburg, and Freiburg, he entered upon his duties at the