

Scientific.

The Phenomena of Sleep.

Dr. Dickson, of South Carolina, has recently published a work on Life, Sleep, Pain, and Death, which contains some curious facts and speculations. The following facts are given in relation to sleep, which is described to be the repose of the mind:—

The necessary amount of sleep differs in the various tribes, as well as in different individuals. The average proportion of time thus employed by our race, is estimated at one-third. Sir John Sinclair, who slept eight hours himself, says that in his researches upon the subject of longevity, he found long life under every circumstance and every course of habit—some old men being abstinent, others intemperate, some active, and some indolent—but all had slept well and long. Alfred the Great slept eight hours a day—Jeremy Taylor but three. Bonaparte, during the greater part of his active life, was content with four or five hours sleep. Old age and infancy sleep much.

Some boys slept, from fatigue, on board of Nelson's ship, at the battle of the Nile. Among the impressive incidents of Sir John Moore's disastrous retreat to Corunna in Spain, not the least striking is the recorded fact that many of his soldiers steadily pursued their march while fast asleep. Burdach, however, affirms that this is not uncommon among soldiers. Franklin slept nearly an hour, swimming on his back. An acquaintance of Dr. D., travelling with a party in North Carolina, being greatly fatigued, was observed to be sound asleep in his saddle. His horse, being a better walker, went far in advance of the rest. On crossing a hill, they found him on the ground snoring quietly. His horse had fallen, as was evident from his broken knees and had thrown his rider on his head, on a hard surface, without waking him.

Animal, of the lower order obey peculiar laws in regard to sleep. Fish are said to sleep soundly: and we are told by Aristotle, that the tench may be taken in this state, if approached cautiously. Many birds and beasts of prey take their repose in the day time. When kept in captivity this habit undergoes a change, which makes us doubt whether it was not the result of necessity which demanded that they should take advantage of the darkness, silence, and the unguarded state of their victims. In the menagerie at Paris, even the hyena sleeps at night, and is awake by day. They all, however, seek, as favouring the purpose, a certain degree of seclusion and shade, with the exception of the lion, who, Burdach informs us, sleeps at noonday, in the open plain; and the eagle and condor, which poise themselves on the most elevated pinnacle of rock in the clear blue atmosphere, and dazzling sunlight. Birds, however, are furnished with a nictitating membrane generally, to shelter the eye from light. Fish prefer to retire to sleep under the shadow of a rock, or a woody bank. Of domestic animals, the horse seems to require least sleep, and that he usually takes in an erect posture.

Birds that rest in a sitting posture are furnished with a well adapted mechanism, which keeps them firmly supported without voluntary or conscious action. The tendon of the claws is so arranged as to be tightened by their weight when the thighs are bent, thus contracting closely, and grasping the bough or perch. In certain other animals which sleep erect, the articulations of the foot and knee are described by Dumeril as resembling the spring of a pocket-knife, which opens the instrument and serves to keep the blade in a line with the handle.

Skill of Insect Builders.

Reaumer states that for twenty years, he endeavoured without success, to discover the materials employed by wasps in forming the blue, grey, papery substance, so much used in the structure of their nests. One day, however, he saw a female wasp alight on the sash of the window; and it struck him, while watching her gnawing away the wood with her mandibles, that it was from such materials as these she formed the substance which had so long puzzled him. He saw her detach from the wood a bundle of fibres, about the tenth of an inch in length, and finer than a hair; and as she did not swallow them, but gathered them into a mass with her feet, he had no doubt but that his opinion was correct. In a short time he saw her shift to another part of the window, and carry with her the fibres which she had collected, and to which

she continued to add. He then caught her and began to examine her bundle, and found that it was neither yet moistened nor rolled into a ball, as it is always done before used by the wasp in her building. He also noticed that before detaching the fibres, she bruised them into a kind of lute with her mandibles. All this he intimated with his penknife, bruising and paring the same wood till it resembled the fibres collected by the wasp; and so he discovered how wasps manufactured their paper; for these fibres are kneaded together into a kind of paste, and when she has formed a round ball of them, she spread it out into a leaf, nearly as thin as tissue paper; and this she accomplishes by moving backwards, and levelling it with her mandibles, her tongue, and her teeth. And so the wasp forms paper, placing layer upon layer, fifteen or sixteen sheets deep, and thus preventing the earth from falling down into her nest!

Oil from Rosin.

The idea of producing oil from a substance like rosin, seems at first strange; and before chemistry had disclosed to use the compound nature of bodies, would have been deemed nearly as chimerical as that of the transmutation of metals, held by the old alchemists. But the thing is done. A few days since, we were invited by Mr. L. Maynard, one of the directors of the Boston Oil Company, to visit their works at South Boston. The business of this company is the manufacture of oil from rosin, which was commenced in June, 1851. Three distinct articles are obtained from the raw material, viz.: spirits of turpentine, oil and pitch—the latter the residuum at the close of the process. The oil, which is the primary object, consists of three kinds, which are variously adapted to machinery, currying leather, and the preparation of paints. We are assured that all these are of superior quality for their respective purposes; that leather for which the oil was used in the currying process, has been made into boots and shoes and found to do as good service as that produced by the old mode; that for harnesses, and all the ordinary applications of oil to leather, is unsurpassed; that the kind prepared for machinery is preferred to the best sperm oil—the cost of the former being only eighty-five cents per gallon, while that of the latter is one dollar and thirty cents. A certificate has been given by Wm. M. Ellis, Chief Engineer of the U. S. Navy Yard at Washington, stating that he has subjected this oil to the most careful tests, and that he finds it fully equal, if not superior, to the best oils that have been used in that yard—viz.: winter-strained sperm, and pure neat's foot oil. He states that on bearings or journals running at high velocities, "there is not the slightest appearance of the formation of gum, and the oil appears to be better diffused and to remain much longer on the bearings than the sperm oil." Mr. Souther, of South Boston, gives similar testimony, and states that one application daily of the "Boston Oil," keeps his machinery in better order than two applications of sperm oil.

It is a beautiful article, without any disagreeable taste or smell. The process of manufacturing was invented by Louis S. Robbins, of New York, by whom a patent of it has been secured.—*Boston Cultivator.*

The Aztecs.

These mysterious children are calling together hundreds who are curious to see them, and still more curious to learn something of their ancient history. The following remarks are from the Advocate and Journal, of New York:

These curious specimens of humanity are beginning to attract the attention which they really deserve from the inquisitive. We have heretofore given the dimensions and story of these children; but, for the benefit of those who may not have noticed that account, we will simply repeat the statement of their size and weight. The male is thirty-three and three fourths inches in height, and weighs twenty pounds; the female is twenty-nine and a half inches, and weighs seventeen pounds. It is not possible to ascertain their age with certainty, but physiological indications furnish grounds for believing that the male has reached manhood, and that the female is not so far advanced. From accurate measurement it is ascertained that neither of them have advanced in stature during the last year.

We have visited these little creatures at different times for six weeks, and can perceive that they make rapid improvement, both in understanding and in the power of speech.

The singular fact, that, when brought into the United States, they had no method of communicating their thoughts to each other, is matter of much speculation. They must have been kept in a state of utter seclusion, whether for some superstitious cause of some other wholly inexplicable, who can tell? We incline to the former opinion. Whether they are, as the Spaniard, of whom they were obtained, says, specimens of the remnant of a sacred race, or individuals of a peculiar family, is a question for solution. Several physiologists have become satisfied that they are not brother and sister. That they are not, in the ordinary sense of the word, dwarfs, is clear from the perfect symmetry and conformation of parts, and the utter want of evidence that, in their physical development, the process of nature was arrested. They now exhibit great and growing activity of mind, and seem in intelligence somewhat like children of about three years of age.

These children were brought to this country from San Salvador, and originally came from the interior of the country. They are of Indian complexion, and their physiognomy, mode of sitting, &c., almost perfectly resemble the specimens of statuary taken from the ruins in Central America. The little playful creatures are most interesting objects. No one can look at them without feeling an interest in them, and asking himself, Who are they? Whence came they? Will they ever be able to give their own history? We begin to have some hope that their story will some day be told—at least the outlines of it—by themselves. We take no interest in monsters; we are not easily humbugged: here are wonders which we can visit frequently, and feel an additional interest in on each successive occasion. We predict that *Maximo* and *Bartola* will yet make a stir in the world.

NEW SUBSTITUTE FOR OIL.—A new illuminating fluid has been developed, which will, in a great measure, supercede spirit-lamps, as soon as the Patent Office can settle its doubts. Large manufactories of benzole, a hydrocarbon, which has the property of producing an excellent illuminating gas by being dissolved in moist air, are going up in New York and Brooklyn. The substance is manufactured from tar or mineral coal, and while it can be afforded at half the price of "burning fluid" per gallon, it has yielded indefinitely more illumination. The use of it would require a gasometer and gas-fixtures in each house, but the cheapness of the consumption will put movable lamps of every kind nearly out of use.

IMPORTANT INVENTION.—Mr. De Bibery has invented one of the most important life-saving and swimming apparatuses we have ever seen. Application has been made by Mr. De B. for a patent. It is a kind of frock, or doublet, of ordinary dress material, made double, interlaid with small metallic boxes, inflated. This doublet may be worn as an overall on ship board, and it is impossible for the wearer to sink below the shoulders; and Mr. De B. informs us that a person may remain in the water any length of time, and the water has no effect whatever on the buoyancy of the dress.

MALAGA RAISINS.—As soon as the grapes begin to ripen, the vine dressers pass through the vineyard and cut the clusters off from the vines, and leave them on the naked ground, turning them over daily, until the heat of the sun above and the warmth of the earth upon which they lie, have baked and dried them, when they are gathered up, put into boxes, and are ready for use. Care has to be taken, however, that the fruit does not get wet while undergoing this process.

The Farm.

Advantages of the Farmer of this Age.

Within the course of a century, what vast discoveries have been made in relation to the structure of plants and to the vegetable economy in the functions, especially of absorption and perspiration. Science has shown the mode in which plants take up their aliment, the particular kind of aliment required for them, and the circulation of the food in the juices of the plant, its changes by respiration and its evacuations by perspiration. These accessions to our knowledge of the vegetable kingdom have been made by degrees, the results of long studies and exact experiments by many different persons. In relation to perspiration, Dr. Hales found that a sunflower lost 1 lb. 14 oz. weight in twelve hours of

a hot day. In a dry night it lost about 3 oz. In a moist night little alteration was perceptible.

Haymakers know the rapidity with which grass is dried, which is owing to this perspiration, the juices not being again supplied by absorption, as when the grass was living. It would be interesting to trace the history of these discoveries in vegetable physiology, but would require more time and space than we can now devote to the subject.

A century ago, nothing, it may be said, was known of the vegetable anatomy. Now the structure of plants has become nearly as well known as the anatomy of the human body, though the knowledge of the former is probably confined to a fewer number of persons than the latter.

It is only little more than fifty years since the first suggestion of what were the true sap vessels of plants, was given by Dr. Darwin, and their operation and functions ascertained by experiments of himself and others, followed to more certain results by Mr. Knight. It was discovered from these experiments that the sap ascends through the spiral vessels of the plant, forming in its ascent the alburnum, and descending in the outer bark. This knowledge is valuable to the farmer, who by this knows that if he would destroy his tree by girdling, he must cut through the alburnum to the hard wood, while if he merely girdles the outer bark of his vine with a narrow ring after midsummer, when the sap is descending, he may much increase his crop of grapes by preventing the descent of the sap, and retaining it for the nourishment of the fruit, without any injury to the vine, if the ring is not made too wide to unite again. The two gentlemen named, with a few others, Mirbel, Malpighi, Grew, Wildenow, Hales, Priestly and others, by a series of interesting experiments, have made us acquainted with the structure and functions of the vegetable world.

To Dr. Priestly we owe the knowledge of the respiratory action of the leaves of plants. And his opinion was, that the inspiration was by the upper, and the expiration by the under surface of the leaf. The fact is corroborated by the use of the cabbage leaf in medical treatment; the upper and smooth side is always applied to the skin, which "draws," as it is termed; while the under side, if applied in the same manner, will have no such effect.

It is true a great deal remains for the research of science to accomplish. "When we attempt," says Dr. Smith, "to consider how the particular secretions of different species and tribes of plants are formed; how the same soil, the same atmosphere, should in the leaf of the vine or sorrel, produce a wholesome acid, and in that of a spurge or machineel a most virulent poison; how sweet and nutritious herbage should grow among the acid crowfoot and aconite, we find ourselves totally unable to comprehend the existence of such wonderful powers in so small and seemingly simple an organ as the leaf of a plant."—*New England Farmer.*

The Best Breed of Swine for the Farmer.

I am perfectly satisfied from long experience, and have publicly advocated it for upwards of ten years, that the best and most profitable swine for the farmer, is that breed which will nearly mature at eight to twelve months old, and then weigh, well fattened and dressed, from 250 to 350 pounds. A pig that has to be wintered and kept till sixteen to nineteen months old, before fully fattened, rarely pays for itself at the ordinary price of pork; and the average weight of these, in the United States, even at a year and a half old, I do not believe exceeds 300 pounds.

Now, what the farmers want is a large breed with fine points and great growth. Such a breed can be made fat at any age, and invariably matures quick. But recollect they must have fine points; by this I mean fine or small heads, ears, legs, feet and tail, a wide, deep chest, and a round full body, like a barrel. These constitute what are technically called fine points. None of your big heads, large lop ears, coarse bristles and hair, long legs, great feet, and flabby, thin, slab-sided bodies, after the alligator or landpike order. Of the large breeds, I prefer the Lincoln.

In order to get pigs to weigh well, they must come early. February in the Southern, March in the Middle, and April in the most Northern States, are the best months to drop pigs. Feed them from the start, all they will eat, and they will be ready to kill from October to January; and thus you dispense with wintering any, except those reserved for breeding.—*From the Plow.*