THE PORCUPINE.

The porcupine is an herbivorous animal belonging to the order *Rodentia*, or gnawers, and the genus *Hystrix*. The latter comprises a large number of curious animals, which are distinguished principally by the long, horny spines which cover the larger portion of their body.

The porcupine is probably indigenous in the northern part of Africa. It was known to the ancient Greeks and Romans, who, it is supposed, introduced it into Europe. Aristotle mentions that the animal slept through the greater part of the winter. Pliny tells us "that it shoots off its spears like arrows."

Although the porcupine is, in reality, rarely over two and a half feet long, it seems to be much larger on account of the long spines covering it. The tail is from four to six inches in length, and its height at the shoulder is about one and a half to two feet. Its weight varies between twenty and forty pounds. The snout is short and broad, and the mouth is furnished with powerful incisors. The upper lip is very thick and provided with numerous long, shining black bristles. The neck is covered with long, flexible bristles, which may be raised or laid down smoothly at the will of the animal. The back is covered with sharply pointed spines of various lengths, which are held loosely only in the skin. Hence they are liable to fall out when the animal moves about violently, as for instance when defending itself. This has no doubt given rise to the story related by Pliny. Along the sides of the body the spines are shorter. The longer spines are quite flexible and about fifteen or sixteen inches in length, while the shorter ones measure about eight inches, being at the base about one fifth of an inch in thickness. In the interior they are filled with a spongy mass. Both the spines, as well as the bristles on the neck, are of a brown color, intercepted by white rings; the point and the root are also white. All the spines can at once be raised into an erect position by the contraction of a powerful muscle, which extends all over the back, directly under the skin. The belly is covered with dark brown hair, and the neck is encircled by a white band.

The porcupine leads a dreary, solitary life; during the day it hides away in its burrow, from which it emerges at night to look for food. This consists of herbs, roots, and fruit. The porcupine needs very little water, all that is necessary being supplied by succulent fruits.

It does not undergo regular hibernation, although it only emerges at great intervals from its burrow during the winter. When attacked, the porcupine raises the spines, rattles with the tail, and then turns its back to the enemy to advance, or rather retreat, against him, in order to bury the spines in his flesh. Once embedded in the latter, they are difficult to remove, and, when allowed to remain any length of time, they cause suppuration, which has in some cases been followed by death. Although the animal could inflict serious wounds by biting, it never uses its teeth defensively; this is probably due to an instinctive desire to protect the nose. The latter is very sensitive; a blow even with a cane is sufficient to stun or even kill the animal; when pressed to the last, it therefore sticks its head under the belly and rolls up into a ball.

The porcupine is hunted extensively in the southern parts of Europe and in Africa on account of the spines, which are of some commercial value. The meat is also esteemed by many. It is hunted at night by dogs. When brought to a stand it is either caught alive by means of a large cloth thrown around it, or the hunter, allowing it to approach him, keeps it off with a stick, steps back, and immediately inflicts the deadly blow on the nose.

In imprisonment it is easily tamed, and, when caught young, it learns to know its master and follows him like a dog. It never loses its timidity, however, and the least unusual noise or strange object throws it into fits of fright and anguish.

THE PORCUPINE.

Summer Flowers in Winter.

Roses are popular at all seasons. At midwinter no rose is held in higher esteem in New York than the Jacqueminot, or "Jack" rose, as it is commonly called. The "Jack" is only an ordinary June rose such as may be seen in any roadside garden on a summer's day. The secret of its popularity lies in its rarity and in the difficulty of bringing it to perfection at midwinter. To do this it is necessary to dig up the plants after they have done flowering in the summer, freeze them in an ice house, allow them to remain frozen for a while and then restore them to life and force them to maturity with a high degree of heat.

Next to the roses the favorite flowers for this season are the lilies of the valley, a few sprays of which will pervade a whole room with their sweet subtle fragrance. They are very rare, and sell at New Year's for 20 and 25 cents a single spray. That they are so costly is in a large measure owing to the fact that to be produced in full perfection at this season they, too, must be taken up and frozen after flowering in the summer, and afterward forced to a second maturity in the same year by great heat. By this freezing process the entire rotation of seasons is reproduced within a few months.

Physiology of the Brain.

Dr. Brown Séquard, formerly of this city, has removed to Paris, and about the first of December he began his course of lectures on physiology at the Collége de France. In his opening address, according to the *Lancet*, he made known the subject which it was his intention to treat of this year. He proposed to combat all the doctrines which are actually received upon the physiology of the brain, and especially those which have reference to cerebral localization. He will study the mode of action of the brain upon the spinal cord, and will discuss the question whether it is right to admit the existence of two brains or one only. He will then review all the lesions of the brain which are capable of producing physiological or morbid phenomena. According to Dr. Brown Séquard, each half of the brain possesses all the functions of the encephalon; it is capable of any act, and can perceive all sensations. He hopes to be able to show that it is not indispensable to admit the theory of the decussation of the nervous fibers of the right side to the left and *vice versa*, and that each half of the brain is capable of perceiving all sensations emanating from any point of the body.

Dr. Brown Séquard believes in the existence of cerebral localizations, but maintains that the localizations, instead of existing in certain limited points of the brain substance, are composed of elements disseminated everywhere. He then cited a certain number of facts which would tend to show that the center of speech is not situated, as Broca has stated, on the posterior part of the third frontal convolution of the left side. The eminent professor has already exposed his views upon this subject in an interesting discussion which took place before the Société de Biologie in 1876. It is not his intention to have recourse to experimentation to demonstrate the truth of his doctrines, but will bring forward pathological facts in support of them.

Trichinæ.

Some investigations have just been completed by two Chicago microscopists as to the prevalence of trichinæ in the pork that comes to our markets, that seem worthy of record. Some time ago Dr. William T. Belfield, Demonstrator of Physiology in Rush Medical College, and Mr. H. T. Atwood, Vice President of the State Microscopical Society of Illinois, were asked by the Commissioner of Health, of Chicago, Dr. DeWolf, to examine specimens of pork taken at random from the hogs being slaughtered at the different slaughtering houses. Specimens from one hundred hogs were carefully examined, and in eight trichinæ were found, the number varying according to estimate from thirty-five to thirteen thousand to the cubic inch of muscle. This s doubtless approximately the average of infection of the pork brought to Chicago for packing. The trichinous disease among hogs—if disease it is—must be much more prevalent now than ten or twelve years ago. Then an examination of quite a large number of hogs in behalf of the Academy of Sciences showed only about one in fifty infected.

Messrs. Belfield and Atwood have experimented with rats and other animals, to which they have fed trichinæ, and have reached the conclusion that, taken in small numbers and not too frequently, any animal or man may eat these worms with impunity. A rat weighing two ounces was fed at intervals of two or three days a few trichinæ for six weeks, when it was killed. It was full of live trichinæ—which, immersed in warm water, would move vigorously—the estimated number in the rat being 100,000. During the six weeks the rat appeared perfectly healthy. Dr. Belfield felt so sure of the innocuousness of small numbers of the worms, that he made a practical test by himself eating twelve live trichinæ three weeks ago. He has not experienced an unpleasant symptom to date. He believes a large per cent of our population are really infected with trichinæ. It is a fact in confirmation of the theory of these observers, that many of the infected hogs have received the trichinæ without symptoms of disease, certainly without any damage to their fattening qualities. It is surely impossible that eight per cent of all the hogs raised for market could get sick with symptoms approaching in severity those of severe human infection, without such a panic among farmers as would be noticed by the whole country

Some experiments with different agents used for the destruction of the worms showed that the best inexpensive agent was sulphurous acid; a very little of this acid, mixed with the brine in which pork is preserved or pickled, will kill all the trichinæ, without, of course, any damage to the pork for any purpose. The lowest per cent of the acid required to be effectual has not yet been determined.—*Medical Record.*

Recent Work at the U. S. Torpedo Station, Newport.

Premising that comparatively little has been done at Newport for the improvement of torpedoes during the past two years, owing to the smallness of the appropriations therefor, a special correspondent of the *World* writes that one of the most important discoveries made within that time has been Lieutenant A. R. Couden's improved method of determining the internal resistance of galvanic batteries. The method hitherto practiced at the station is described by Professor Farmer as follows:

"Introduce into the circuit of a galvanic battery a convenient rheostat and a suitable fine wire galvanometer. Open and adjust the rheostat until a convenient deflection is obtained (42° 21′ is liable to least error); note carefully the deflection. Next reduce the total external resistance of the circuit one half. (This presupposes that the rheostat, as opened, offers more resistance than the galvanometer.) The needle will now be deflected more than it was at the first observation. If now another adjustable rheostat be used as a

shunt across the terminals of the battery, this shunt can be so adjusted that the reading of the galvanometer shall return to the same position as in the first observation. When this is the case, the resistance of the shunt is equal to the internal resistance of the battery."

Lieutenant Couden conceived the idea that if the two changes, viz., shortening the resistance and applying the shunt, were made simultaneously, there would be at the first instant no movement of the needle, if the proper shunt were first chosen. He availed himself of the two keys used in manipulating the Wheatstone bridge to carry out the idea. The results were quite satisfactory, but the two keys being independent of each other and far apart required two fingers to press them, and sometimes failed to operate with complete simultaneity. To remedy this Professor Farmer had made for Lieutenant Couden a key with a single finger piece, but with two independent contact closers, which admitted of such adjustment as to secure the required simultaneous closing of the two circuits when the key was depressed. The apparatus as thus constructed operates with entire satisfaction.

Improvements have also been made in the method of splicing the torpedo cables and leading-wires now issued to ships. Mr. Farmer says that in all insulated wire now issued to ships for permanent wires, for spar leading-wires, and torpedo cables, the conductor consists of seven strands of small copper wire, and is therefore very flexible. Should it become necessary to join two pieces of cable together, it can now be done by knotting the wire by, first, a sheet bend; second, a reef knot; third, a carrick bend. The advantages over the earlier form of splicing are fourfold, viz., first, the splicing nippers and splicers in the supply box are abolished; second, instruction to the sailor is unnecessary, and the operation is more quickly performed; third, it is the strongest way of joining two pieces of wire; fourth, the electrical properties are all that can be desired.

The modification and improvements in the electric primer are as follows: In putting in the bridge great uniformity in length and consequently in the electrical resistance is obtained; rounding up the quills so that the primers will enter the vent guns freely; a method of "choking in" the quills and securing them firmly to the wires.

The United States steamer Trenton's electrical apparatus is a noteworthy result of discoveries at the torpedo station. A full description of it would occupy too much space, but it may be stated that it is for two distinct purposes—firing of guns and torpedoes, and calls and automatic fire alarms. That intended for guns and torpedoes is designed to place the firing under the control of a single officer stationed at some central point, who shall be able to fire any gun when it is ready, or either or both broadsides, or as much of a broadside as may be ready.

Professor Walter N. Hill has made a variety of experiments in chemistry, as pertaining to torpedo construction and firing, and below are given a few opinions he gives as a result of them. He states that liquid nitro-glycerine is readily exploded, as is well known to scientists, by five to ten grains of fulminating mercury, but when frozen he has never been able to fire it. When dynamite freezes to a loose, fine powder, he finds it may be exploded with tolerable certainty by the ordinary detonating fuse (fifteen to twenty grains of fulminate). In a large number of experiments with small amounts he found but very few cases when explosion did not occur. But in proportion as it is solidly frozen, that is compacted together, the explosion is less sure. It would be uninteresting to give particulars in detail of the experiments. It is sufficient to state that the conclusions arrived at are that an exploder containing fulminating mercury only will not fire frozen dynamite with any degree of certainty. In the experiments it did so twice, but in one instance it is doubtful if the charge was well frozen.

The present service torpedo has proved objectionable for several reasons, principally on account of its weight, lack of strength, and the great surface offered for resistance in being towed through the water, whether ahead or abeam. A new design has been perfected; it is of steel, and possesses decided advantages over the present service pattern, being stronger, lighter, and offering less surface for resistance. The cost of each steel torpedo is about $60, and as even ten would be a very small number to experiment with it has been found impossible to make much progress. Their general shape is very nearly that of a sphere. Another feature they possess, an advantage over the service pattern, is the mode of attaching them to a spar or outrigger; the center of the torpedo case lies in a prolongation of the axis of the spar, and is secured to it by a conical cap permanently attached to the torpedo case, and also of steel, which is keyed to a metal cone rigidly secured to the end of the spar; this mode of attachment reduces the surface of the spar exposed to the effect of explosion, and the force is exerted in the direction of the length of the spar, the most advantageous for the spar and the boat. Further trials have been had with the improved spar, fitted with the attachments of spars to the forward guy and topping lift, and it continues to give good results, tows well, preserves its immersion, vibrates but little, and has stood the fire of twelve service 100-pounder torpedoes without any material injury. It has been found that, in the case of boat spars, if the spar is left free to recoil, the effect upon the boat and spar is reduced; the spar recoils usually from 10 to 15 feet, but not past the balancing point, therefore not coming into the boat. A ready man at the heel rope can easily, at this time, rig the spar in by a pull on the heel rope, leaving the launch free to steam without the drag of the spar. Spars have been very successfully worked in this way at the station, and a number of spars have each withstood the explosions of six service boat torpedoes without any considerable damage. By this precaution the lifetime of the spar is prolonged.

A towing torpedo, capable of being towed on either quarter or shifted from one quarter to the other while being towed, has been designed, and the trials had with a little working model give promise of success with a larger and more practicable one.

Experiments have also been made with the fittings designed for fast torpedo launches, with a view to determine the requisite strength for a beam spar. The results have been satisfactory.

A small non-automatic hand lamp, constructed by Mr. Farmer, for use on the torpedo boat Lightning, has proved very advantageous as a means of signaling when its beams have been waved in the sky in a manner somewhat similar to the usual method of waving a signal flag. In dark and cloudy nights this method of signaling has some advantages, since the position of the lamp can be screened, as, for instance, by being sunk in a rifle pit, so that its exact location could not be determined at a distance.

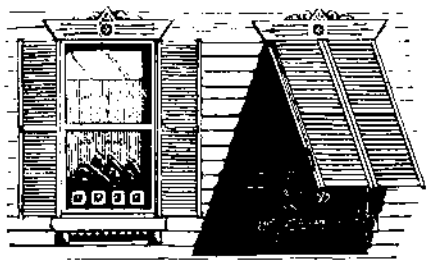
Some experiments have been tried with parallel carbons arranged somewhat after the plan of the carbons in the electric candle of M. Jablochkoff, but a sufficient number have not yet been tried to warrant an expression of opinion as to the serviceableness of carbons used in that manner.

Experiments have also been made with the telephone in order to ascertain its suitableness for communication between the bridge and the powder magazine, as well as between other parts of the ship. It has been found possible to communicate over a circuit of 22,000 ohms, having a stated capacity of eight microfarads, whence it is easy to see that it would be entirely feasible to communicate through an ocean cable between two stations that should be at least 500 miles apart. The rapidity of communication, too, is astonishing, since 145 words in 17 seconds were distinctly heard over a short circuit. This is at the rate of 512 words per minute. The possibility of communicating with way stations at a distance from the direct line, and without a loop, has been satisfactorily demonstrated by Professor Farmer and his assistants.

Captain F. M. Ramsey, United States Navy, is now in charge of the station, having succeeded Captain K. R. Breeze, who is now preparing a *résumé* of all the work that has been done at the torpedo station.

IMPROVED WINDOW AWNING.

With the ordinary wooden blinds placed on the exterior of windows it is only possible to open and close them one way. The annexed illustration represents an improved form



WINDOW AWNING.

of blind, window screen, or awning applicable to all windows in brick and wooden buildings where ordinary blinds are in use, and also to bay windows where there is little or no chance to swing blinds back. The improvement consists in constructing the blind so that it will swing on hinges as usual, and in addition to this the two halves can be drawn and fastened together to form one entire blind, and then quickly and easily adjusted to swing from a top horizontal hinge, instead of the vertical ones.

The blind can be used both ways, as shown in the cut, and the improvement may be applied to either old or new blinds; it is an economical and effective way of shading a window; it makes a perfect screen from outside observation; and it allows a free circulation of air. The view from the inside is not obstructed; blind fasteners are dispensed with, a bolt being used to hold the blinds together, and arms are provided which hold them open against the house. This kind of blind can be used in fall or winter, when a cloth awning has to be taken down to preserve it. Further information may be had from the Boston Blower Co., 2 Foster's Wharf, Atlantic avenue, Boston, Mass.

Carbolate of Soda for Whooping Cough.

Dr. Pernot describes in the *Lyons Medical Record* a very successful treatment of whooping cough with carbolate of soda. He places the carbolate of soda in a small porcelain crucible held above the flame of a spirit lamp, which keeps it in an unvarying temperature as long as wished. As the carbolate of soda becomes volatilized, the atmosphere of the sick room is impregnated with the vapor of carbolic acid.

When the crucible and lamp are not at hand, a satisfactory substitute is found in a fire brick heated enough to vaporize the carbolate. In numerous cases the following results have been obtained:

1. A notable diminution of the paroxysms of coughing after from two to ten days' treatment. 2. Less labored and painful respiration. 3. Shorter duration of the paroxysms of coughing. 4. The most confirmed attack of whooping cough remains *in statu quo* from the commencement of the treatment, and it always appeared to him to diminish more or less rapidly, but always in a time relatively short to its usual duration.

The vapors of carbolate of soda have valuable disinfecting and antiseptic properties.

It is worthy of note in this connection that the fungoid origin of whooping cough, asserted some years since by M. Svetzerich, seems to be confirmed by the recent researches of M. Yschamer, who says he has found certain lower organisms in the spittle of whooping cough patients—organisms not met with in any other disease accompanied by cough and expectoration. He claims, further, that the organisms in question are identical with those which, by their agglomeration, form the black points on the skins of oranges and the parings of certain fruits, especially apples. Thus, M. Yschamer, by inoculating rabbits with this dark matter, or even causing it to be inhaled by men, produced fits of coughing several days in duration, and presenting all the characters of the convulsive whooping cough.

How Roquefort Cheese is Made.

In an address on "Dairy Interests Abroad," at the International Dairy Fair, Mr. F. B. Thurber gave the following account of the manufacture of this variety of cheese:

The French Roquefort is made from the milk of sheep and goats, principally from that of the former. In 1866 250,000 out of a flock of 400,000 supplied the milk for 7,150,000 lbs. of cheese. The fertile pasturage of these animals is an immense plain, 8 or 10 leagues across. In the evening, after the return of the sheep from the pastures, they are allowed to rest for an hour before being milked, after which they will yield the milk more readily, and are milked as rapidly as possible. From May 1 to the middle of July the yield of milk is the largest, and each animal gives nearly a pint.

The Larzac breed of sheep, from the milk of which the cheese is made, have large udders, made so by beating them with the hand as soon as the milk ceases to flow. The evening's milk is heated almost to boiling and set aside. In the morning it is skimmed, heated to 98°, and mixed with the morning's milk for coagulation. After the curd has been divided by stirring with a paddle and the whey drawn off, it is kneaded with the hands and pressed in layers into moulds with perforated bottoms, and usually a thin layer of mouldy bread made of summer and winter barley, sour dough and vinegar, is put between the layers of curd to hasten the ripening of the cheese by supplying the germs of the green mould peculiar to cheese. The curd remains under pressure for three or four days, after which the cheeses are wrapped in linen and put to dry. After drying for three or four days they are taken to the village of Roquefort, where the ripening is completed in a peculiar manner.

The village is situated in a deep, narrow gorge, with high precipitous walls of limestone rock overhanging. These walls are full of caves and fissures, from which currents of cold air issue at a temperature, in the hottest weather, of from 41° to 44°. The air currents flow from south to north, and are believed to yield the best cheese. The proprietors of the vaults purchase cheeses at all seasons from the shepherds. They are carefully examined and classified. Salt is then sprinkled over them, and they are piled up for two or three days; then the piles are taken down, the salt and brine rubbed in, and they are piled up again. After a week in the vaults, they are scraped and pared, pricked through with needles, driven by machinery, to accelerate the moulding, and again kept in piles for fifteen days, or until they become dry and firm in texture, and become covered with a white mould, with filaments sometimes five or six inches long. Its succulency and thickness indicate the quality of the cheese.

New Agricultural Inventions.

Mr. Slaughter G. Major, of Haynesville, Mo., has patented an improved device for use in Milking Cows, which is convenient and may be easily and quickly applied, and will not injure the cow.

Mr. William J. Klaunig, of Richmond, Va., has patented an improved Mower, having a wave wheel of peculiar form which imparts to the knives a scythe-like cutting action, that prevents the dropping of the grain from the ears, which is likely to occur in the ordinary machine from the rapidly reciprocating motion of the knives, which motion shakes out the grain, and compels, therefore, the cutting of the grain before it has become entirely ripe.

PARAFFINE AS A LUBRICANT.—A correspondent of the *Railroad Gazette* announces that the Erie railway has reduced its oiling expenses from $5,000 to $1,000 a year by using paraffine on passenger car journals, and has reduced the number of hot journals from 535 to 332. It is now used during the winter months, without the addition of any other oil, but it is found that in summer it becomes so limpid that it is hard to keep it in the axle boxes. During the summer months it is therefore mixed with some other lubricant to give it more "body."

ERRATUM.—In our issue of January 18, p. 35, in the article on the Columbia bicycle, the description should read: "The front wheel bearings are conical and well hardened, and fitted with coned fastenings. The India-rubber is 1 inch on the front and ¾ inch diameter on the back wheel."