

Pain and the Weather.

In his paper on the relation of neuralgic pain to storms and the earth's magnetism, read before the National Academy of Sciences, Professor S. Weir Mitchell reported the following observations:

Captain Catlin, U. S. Army, lost a leg during the war, and since that time has suffered from traumatic neuralgia, sometimes in the heel, but more frequently in the toes, of the foot. He has carefully noted the effects produced on himself by changes of the weather. Dr. Mitchell's own studies in this case, as he says, "would never have proved successful had it not been for the unusual ability, interest in the task, and perseverance of the accomplished gentleman who has obliged me by making his own torments useful in the solution of the question of how far weather effects the production of certain kinds of pain." The hourly observations cover a period of five years. "For the first quarters of these five years there were 2,471 hours of pain; for the second quarters, 2,102 hours; for the third quarters, 2,056 hours; and for the last quarters, 2,221 hours. The best yield of pain is in January, February, and March, and the poorest in the third quarters, July, August, and September. During these five years, while the sun was south of the equator, there were 4,692 hours of pain against 4,158 hours while it was north of the equator; and the greatest amount of pain was in the quarters beginning with the winter solstice, and the least was in those beginning with the summer solstice. The average duration of the attacks for the first quarters was 22 hours, and for the third quarters only 17.9 hours.

By taking the four years ending January 1, 1879, it is found that of the 537 storms charted by the Signal Bureau, 298 belong to the two winter quarters, against 239 for the summer quarters. Hence we have the ratio of the number of storms of the winter quarters and summer quarters corresponding to the ratio of the amounts of neuralgia for these respective periods, and the ratio of average duration of each attack for the same time corresponds closely with the ratio of the respective total amounts of neuralgia for the same periods. The average distance of the storm center at the beginning of the neuralgia attacks was 680 miles. Storms coming from the Pacific coast are felt furthest off, "very soon after, or as they are crossing the Rocky Mountains," while storms along the Atlantic coast are associated with milder forms of neuralgia, and are not felt until the storm center is nearer. Rain is not essential in the production of neuralgia.

It was found that the severest neuralgic attacks of the year were those accompanying the first snows of November and December. One of the most interesting and valuable results of this series of observations is thus stated: "Every storm, as it sweeps across the continent, consists of a vast rain area, at the center of which is a moving space of greatest barometric depression, known as the storm center, along which the storm moves like a bead on a thread. The rain usually precedes this by 550 to 600 miles, but before and around the rain lies a belt which may be called the neuralgic margin of the storm, and which precedes the rain about 150 miles. This fact is very deceptive, because the sufferer may be on the far edge of the storm basin of barometric depression, and seeing nothing of the rain, yet have pain due to the storm.

A NEW LOCOMOTIVE.

The accompanying sketch shows the plan of a small locomotive designed and constructed by the Baldwin Locomotive Works, Philadelphia, Pa., especially for sugar plantations and other similar service, where it is desirable to use either wood or coal as fuel. Having six wheels it is quite steady on the track, and moves along smoothly without plunging and without undue wear either in itself or in the track. It will be noticed that the fuel and water are carried at the back of the engine by the pony truck; by this arrangement the distribution of weight is made as nearly perfect as possible, and the center of gravity is kept low. The weight of the boiler and machinery is carried on equalizing levers midway between the driving wheels, so that the weight is equally distributed on the four driving wheels. This arrangement renders it impossible for an excessive weight to come upon any one wheel. It is never necessary to turn the engine, as the engineer can have a good view in either direction. One of the most important features of this engine is that it is carried on three bearing points only, and is therefore peculiarly adapted to a rough, uneven track, such as is usually found on a logging railroad, and it is capable of passing curves much more readily than a four or six wheeled engine, the pony truck under the tank being provided with a swinging bolster and radius bar which leads the engine to a curve when running ahead.

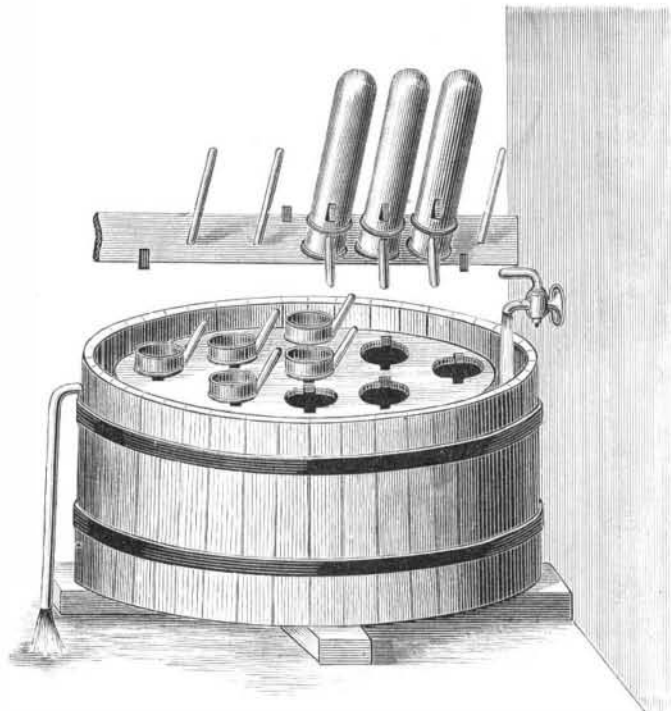
No wood is used in the construction of the engine excepting the bumper beam, cab, and floor. The general arrangement of the parts admits of a large fire box, which is required for burning wood, and if necessary a rack may be placed around the water tank for holding wood. The manufacturers inform us that the style of engine may have a separate tender,

and the truck may have four wheels instead of two, if preferred.

MILK COOLER.

Our engraving shows the Austrian mode of cooling milk, which is very simple and, in some respects, novel. It consists of a vat or tub through which cold water is constantly circulating. On the surface of the water floats a circular wooden plate, provided with a number of round holes, into which are inserted the vessels containing the milk. These are made of sheet zinc, two feet long, and each, according to the *Wiener Landw. Zeitung*, contains a little over a gallon of milk.

It takes about fifteen minutes to cool the milk down to a temperature slightly above that of the surrounding water. When not in use the cylinders are turned up-

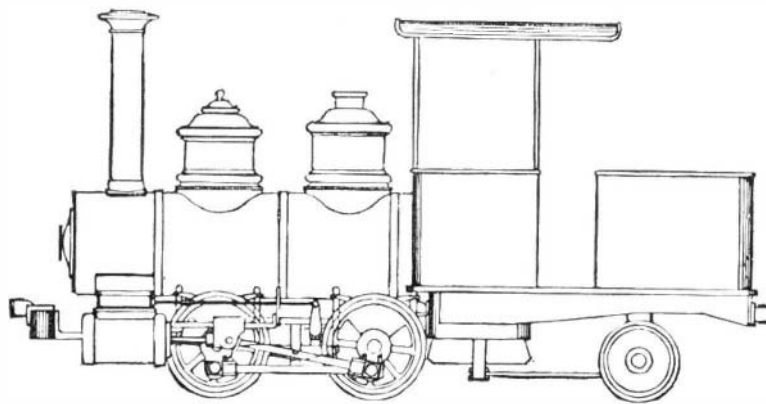
**THE VIENNA MILK COOLER.**

side down, on a wooden rack, as shown in the engraving, to drain and dry.

Cheap Freighting.

The transport of Pittsburg coal to the towns along the Ohio river is described as the cheapest freight transport in the world. The *Commercial* of Louisville, Kentucky, tells how the business is managed.

In and about Pittsburg there are 50 operators or firms engaged in the coal business; about one half of whom sell at the mines, the other half are shippers engaged in running coal to southern ports. The shipments for Southern consumption from Pittsburg amount annually, on an average, to 80,000,000 bushels of coal and 20,000,000 of coke, which is sent south by the shippers on the tides as they occur. For this purpose they employ 96 tugs or tow boats and about 1,500 barges and shells in which the coal is transported. Each barge costs about \$1,000 and carries from 12,000 to 13,000 bushels. The shells cost about \$500 and they carry about 24,000 bushels. The barges, when unloaded at their destination, are returned to the mines; the shells are generally sold in the South and broken up for other uses by the

**SMALL SIX-WHEELED LOCOMOTIVE.**

purchasers. On an average there are ten coal tides or rises at Pittsburg during the year, which occur suddenly, and frequently last only from 24 to 36 hours. The barges and shells must, therefore, be kept loaded and ready for departure at an hour's notice. When the opportunity arrives, the tows are lashed to the tugs, each taking about 10 barges, containing, say, 150,000 bushels of coal, the great length of the tows and the short time allowed by the rapidly falling river requiring the most expeditious movements.

By this admirable barge system coal is kept at a price but little above that of Pittsburg to the cities above the falls of the Ohio, the expenses of running the coal to Louisville, including the cost of returning the barges to the mines, being only about 1½ cent per bushel.

Discovery of Male Eels.

We are glad to state that finally what we believe to be genuine male eels have been discovered. In the January number of this journal it was announced by Prof. Packard that he had discovered male eels. A number of the supposed males were afterward again examined, by Prof. Packard and Dr. C. S. Minot, who were then led to conclude that the so called male eels were immature females, and the mistake was corrected by Prof. Packard in the February *Naturalist*. A large number of living eels were then examined by Messrs. Packard, Kingsley, Pierce, and Minot without success, until at Prof. Packard's request Mr. Kingsley spent a few days at Wood's Holl, at the laboratory of the U. S. Fish Commission, in the last of February, examining living eels supplied by Mr. Vinal N. Edwards, by favor of Prof. Baird, U. S. Fish Commissioner. One hundred and ninety-three eels were there examined, and of these three were found by Mr. Kingsley to be, in his opinion, males. His observations made on these living individuals, which were speared in a pond through the ice, are as follows:

"On February 18, 19, and 20, I examined one hundred and ninety-three eels, at Wood's Holl, and found three males, the testes of which agreed closely with Syrski's figures as reproduced in the U. S. Fish Commission Report for 1873-4 and 1874-5, p. 719. Although I made careful examination I could find no external characters to separate the sexes. The three males were each about seventeen inches long, while the females examined varied from about twelve inches to nearly three feet. This average length of males agrees closely with Syrski's (430 mm. in length). The principal criticisms I would make of his figures, or rather points of difference that I found, are that his enlarged figure showing the lobulation of the testis has the lobes far more crowded than they were in the specimens I examined. His drawing of the histological structure was greatly larger than what I supposed to be the same. His cells measure, according to the explanation, about 1/4 of an inch on their major axis, while I saw nothing that could have been over 1/10 of an inch. The structure of the testis was similar to that which I have seen in the testes of the cod, perch, smelt, cat, deer, rooster, monkey, dog, and man. On teasing it out under a Tolles one fifth, I saw what I am confident were spermatozoa, although I could not distinguish the tails. The heads were oval and from

one half to one third the size of those of the smelt, or about 1/10 of an inch in length; they had an independent motion, changing their position on the slide without reference to any current in the water in which the tissue was placed, and this motion was wholly different in its character from the vibrations of the Brownian movement."

Prof. Packard examined, independently of and in company with Mr. Kingsley, preparations made by himself, and found scattered through the tissues, nucleated and nucleolated testis cells, of the same appearance as those of the animals above named, which were kindly obtained by Prof. Pierce. Moreover, Prof. Packard, found two mother-cells, containing several immature nucleated spermatozoa. So that after the examination of about five hundred female eels and three males, we are glad to be able to affirm the entire accuracy of Syrski's observations and figures, he being the first observer, so far as we are aware, who has discovered the male sex of the Italian eel. Which species of eel it was that Syrski examined is not stated. In making these investigations we have to acknowledge the aid of Prof. John Pierce, of Providence, in the use of a fine series of mounted histological specimens and lenses of high powers. He has worked jointly with us, and is of our opinion as to the sex of the three males. Dr. Minot examined one of the three males, preserved in alcohol, and found, as Freud and Brock had done previously, a follicular structure, the follicles being filled with small spherical cells, which Dr. Minot considered to be probably immature spermatozoa, although the development could not be traced.—*Advance proof from American Naturalist for May.*

Singular Action of Pilocarpine.

According to the *Pharmaceutical Journal*, a singular action of pilocarpine has recently been made known by Dr. G. Schmitz, of Cologne. In the course of his ophthalmic practice, Dr. Schmitz had two cases in which the patients were bald, and found that after the use of subcutaneous injections of hydrochlorate of pilocarpine (with the object of causing absorption of inflammatory residue within the eye) the scalp rapidly became covered with young downy hairs. In one of these cases a man sixty years of age had his head covered in four months, partly with gray and partly with black hairs of considerable growth, so as quite to hide his previous baldness. If this stimulant action on the hair bulbs be proved to generally follow the use of jaborandi or its alkaloid (pilocarpine) a rapid increase in the demand for the latter may soon be expected.

A SPRINKLING of lime, plaster, or sulphur over the leaves of the strawberry at the first appearance of the blight, is suggested as a remedy for this disease, which has made such sad work with the foliage of this delicious berry.