Insects on the Surface of Oranges.

When a dish of oranges is seen on the table for dessert, the fact is hardly realized that in all probability their surface is the habitat of an insect of the *Coccus* family. This tiny creature is found on the orange skin in every stage of transformation, from the egg to the perfect insect, during the winter months, instead of remaining dormant in the cold weather, as is the case with most of the insect tribe. It would hardly be possible to find a St. Michael's or Tangerine orange that had not hundreds of these little creatures in various stages of development on their surface. Lemons, too, are frequently covered. Upon inspection, the skin of an orange will be found to be dotted over with brownish scarlet spots of various sizes. These specks can be easily removed by a needle; and when placed under a microscope, an interesting scene is presented, consisting of a large number of eggs, which are oval white bodies, standing on end, like little bags of flour, some of the inhabitants of which may very probably be seen in process of emerging from the opened end of the egg. The female insect upon leaving the egg has six legs, two long hair-like appendages, and no wings; it thrusts a sucker into the orange in order to obtain nourishment, and never moves again, passing through the various stages of development until it lays its eggs and dies. In the case of the male insect, the chrysalis after a short period opens and the insect flies off. The male is supplied with wings twice the length of its body, and each of the legs has a hook-like projection. It has four eyes and two antennæ, and is so tiny that it cannot be seen when flying.

From some parts of Spain, oranges come to us having their rind covered with a *coccus* of quite a different type. The surface of oranges, indeed, affords the possessor of a microscope an infinite amount of interest and amusement.—*Chambers' Journal.*

NEW FERTILIZER DISTRIBUTER.

It is said that "the manure pile is the farmer's bank." It is certain that upon it depend his crops and his success in farming. No farmer has manure enough; he can always find use for more than he has. It is therefore of first necessity that he shall employ it to the best advantage and get all the good there is in it.

The best authorities agree in saying that the more thoroughly manure is comminuted and the more evenly it is distributed over the entire surface of the soil, the more effective will it be in producing a rapid growth and a large crop. And it is certain that the more thoroughly the manure and soil are intermingled the greater will be the economy in the use of manure.

We give an engraving of the Kemp manure spreader, a machine that effects the thorough distribution of fertilizers. It is made by the Kemp & Burpee Manufacturing Company, of Syracuse, N. Y. The working parts of this machine are mounted on a substantial cart, capable of containing thirty bushels, or about one-third of a cord, and can be attached to the fore wheels of any ordinary farm wagon. The floor of the cart is a revolving apron, which is carried backward by the gearing, bringing its contents against a rapidly revolving beater, which breaks up the manure finely and distributes it.

It is thrown into gear by a single lever at the left hand of the driver's seat, and throws itself out of gear when the load is spent. In running to and from the field none of the machinery is in motion, and it may be used the season through the same as an ordinary cart, and it needs no special adjustment for different kinds of work. It will thoroughly and evenly spread all kinds of manure found on the farm, from the coarsest down to the finest, including ashes and lime, in all conditions, wet or dry. The time required to spread a load is from one and a half to two minutes, without manual labor.

It can be regulated to spread different quantities of manure to the acre. The farmer may know just how much manure he is using without the trouble of measuring his field and his manure pile. We are informed that the spreader has been in use for three seasons, and there are now a large number of them in the hands of the best farmers in the country, who speak of it in the highest terms.

KEMP'S FERTILIZER DISTRIBUTER.

Definition of "Innocent Purchasers."

"Innocent purchasers," literally translated, signifies willfully ignorant purchasers. People who purchase from irresponsible parties, or from total strangers, have no right to complain if they are victimized, and as a general thing it is only the class who expect to make two dollars' worth from an investment of fifty cents who are victimized. The man who, in playing a "skin game," comes out "peeled," is not entitled to protection; he accepts his chances and should abide by the result.—*Milling World.*

ONE THOUSAND CARS ORDERED.—The Indianapolis Car Works have commenced on the contract to build 1,000 cars for the New York, Chicago & St. Louis road. The car is 30 feet long, and has a carrying capacity of 40,000 pounds.

NOVEL BOOT SUPPORTER.

One of the boots shown in the annexed engraving has Reed's recently patented supporter applied to it; the other is of ordinary make, and both have been subjected to the same wear under the same conditions, with vastly different results, as will be seen by the engraving.

The improvement consists in a finely tempered and very flexible spring wire inserted in a pocket formed by a double seam or welt in the sides of the boot leg. These welts may be either inside or outside of the leg.

The steel springs, while they allow perfect freedom of motion of the leg and ankle, keep the bootleg from wrinkling down and prevent the counter from running over.

This improvement adds very little to the expense of the boot, while it greatly increases its value to the consumer. It may be applied to either fine or coarse boots, and will increase their durability. It gives ease and comfort to the wearer and prevent galled feet and ankles.

REED'S BOOT SUPPORTER.

Further information may be obtained by addressing Messrs. Reed & Simons, Williamston, Mich.

Vibrations Produced by Railway Trains.

Prof. H. M. Paul has communicated to the Seismological Society of Japan some notes on the effect of railway trains in transmitting vibrations through the ground. A box holding about twenty pounds of mercury, thickened by amalgamation with tin, was placed upon a heavy plank screwed to the top of a post sunk 4½ feet into the ground. Images reflected in the surface of the mercury were observed by a telescope, as in meridian observations. An express train, passing at a distance of one-third of a mile, set the surface of the mercury in confused vibration for two or three minutes. Other observations were made at stations at somewhat greater distances. The experimenter also found that a one-horse vehicle passing along a graveled road 400 or 500 feet distant caused a temporary agitation of the mercury whenever the wheels struck a small stone.

TREATMENT OF PNEUMONIA BY THE INHALATION OF ETHER.—Dr. Samuel W. Francis, Newport, R. I., reports the successful treatment of an acute case of pneumonia by the inhalation of sulphuric ether. He says that "if seen early, during the first stage, by inhaling ether for thirty minutes, every six hours, many severe and protracted cases of sickness would be arrested." Dr. Francis recommended inhalation of sulphuric ether for bronchitis in 1868.

Cochineal.

Cochineal, as found in trade, is the dried body of the female cochineal insect, which lives on a species of cactus. During life it is about the size of a small ladybug. It is rather long, compressed, equally broad all over, wingless, and marked behind with deep incisions and wrinkles. The cochineal insect has six feet, which nevertheless are only of use directly after birth. It fastens itself upon the plant by means of a trunk placed between the forefeet, and remains there till it dies. The sap of the plant provides this little animal with nourishment. The male cochineal insects resemble the female only during the larva state. They change into the chrysalis, and soon come forth as small red flies. The female then lays some thousands of eggs, and becomes covered with a white powder. She protects the eggs under her body, and hatches them, so to speak, in this way. When the young insect appears the mother dies. The young are now in the larva state, and the sex cannot be discerned. They lose their skin several times, and the female then fixes herself on the plant. The males, after passing through the pupa state, are winged. Their whole period of life is from two to three months. The cochineal insects are gathered shortly before they lay eggs, and they are then very rich in coloring matter. Only sufficient eggs are laid as may serve to reproduce the insect. The dead females are also collected. They are killed with hot water or steam, and dried in the sun, in ovens, or on plates. They have a brown, red, white, or black color, and lose in the drying two-thirds of their weight. After drying the cochineal is sieved. About 70,000 insects go to make a pound of cochineal.

The Medicinal Value of Vegetables.

A celebrated cook book discusses the medicinal value of vegetables, as follows:

"Asparagus is a strong diuretic, and forms part of the cure for rheumatic patients at such health resorts as Aix-les-Bains. Sorrel is cooling, and forms the staple of that *soupe aux herbes* which a French lady will order for herself after a long and tiring journey. Carrots, as containing a quantity of sugar, are avoided by some people, while others complain of them as indigestible. With regard to the latter accusation, it may be remarked, in passing, that it is the yellow core of the carrot that is difficult of digestion—the outer, a red layer, is tender enough. In Savoy, the peasants have recourse to an infusion of carrots as a specific for jaundice.

"The large, sweet onion is very rich in those alkaline elements which counteract the poison of rheumatic gout. If slowly stewed in weak broth, and eaten with a little Nepaul pepper, it will be found to be an admirable article of diet for patients of studious and sedentary habits. The stalks of cauliflower have the same sort of value, only too often the stalk of a cauliflower is so ill-boiled and unpalatable that few persons would thank you for proposing to them to make part of their meal consist of so uninviting an article. Turnips, in the same way, are often thought to be indigestible, and better suited for cows and sheep than for delicate people; but here the fault lies with the cook quite as much as with the root. The cook boils the turnip badly, and then pours some butter over it, and the eater of such a dish is sure to be the worst for it. Try a better way. What shall be said about our lettuces? The plant has a slight narcotic action, of which a French old woman, like a French doctor, well knows the value, and when properly cooked it is really very easy of digestion."—*Medical Record.*

Sound Boots.

Viscount Cranbrook recently narrated a telling anecdote when distributing some science prizes to workingmen. He begged the medalists and prize winners not to be puffed up with their own importance because they had answered certain questions in chemistry and physics without a mistake. It was most gratifying to know that they, as hardworking handicraftsmen, were well grounded in science; but, for all that, they were not yet chemists. An old cobbler of the Viscount's acquaintance was exceedingly proficient in the subjects taught at science classes; he knew pretty well every star in the heavens by name, his knowledge of inorganic chemistry was profound, and he was one of the best draughtsmen in the village. But, after all, his great pride was to make a sound pair of boots.

Large Lathes

The South Boston Iron Works have nearly completed for their own use two 90-foot lathes, which are thought to be the largest and heaviest lathes in the world.

The lathes are made in six sections of 30 feet each. The head stocks and face plates weigh 10 tons each, and each bed section 10 tons. The completed lathes will each contain 600,000 pounds of iron. They are built specially for boring out cannon, but are adapted for all heavy work.

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