

Correspondence.

An Invention Much Wanted.

To the Editor of the Scientific American:

We are greatly in need of a cheap and speedy press which may be operated by a steam thrashing engine to press our grain straw into small, solid blocks to furnish fuel for this immense wheat growing but woodless and fuelless country. Such a press, if practical and cheap and durable, would certainly be one of the greatest blessings this country could be favored with.

Millions of tons of straw are now burned in the fields which might be converted into valuable fuel by the use of such a press.

LEWIS V. SMITH.

Beatrice, Beadle County, Dak., Oct. 1, 1884.

Is Salt Good for Wood Pavements?

To the Editor of the Scientific American:

In noticing an article in SCIENTIFIC AMERICAN regarding "Wooden Pavements," the thought came to me to inquire whether salt had ever been used in covering the plank on which the block rested, and if so, the result. I am aware that salt has been used with good results in and about frames of mills, and believe it an excellent preserving agency.

Have never known a stave from a salt barrel when dug from the ground, after being buried for years, to be in a rotten condition.

W. L. C.

Chicago, Aug. 20, 1884.

Railroad Time between New York and Philadelphia.

To the Editor of the Scientific American:

On January 9, 1882, Philadelphia and Reading R.R. Co.'s engine No. 224 ran from our station in Jersey City to 9th and Green Street depot, Philadelphia, in exactly one hour and forty-one minutes (1 h. 41 m.), with train consisting of one ordinary coach and one Pullman car.

Engine No. 224 was manufactured in this company's shops, is provided with the "Wootten firebox," and is of the following dimensions, viz.: Cylinders, 18½ x 22; drivers, 67 inches; weight, 89,750; weight on drivers, 67,800 pounds.

W. W. STEARNS,

Superintendent Philadelphia and Reading R.R. Co.
Elizabeth, N. J., October 24, 1884.

The Starvation Remedy for Disease.

To the Editor of the Scientific American:

You mention, in your issue of Sept. 6, a black snake cure for rheumatism, and properly suggest that a rubber tube filled with warm water would be better. Last spring, in Ohio, many who were bedridden with rheumatism were flooded out of their houses, and had to take refuge in trees, and open fields, and on their roofs. They were for several days without food, exposed to rain and cold. In every case the rheumatism was cured. Since then I have preached the starvation cure for rheumatism. Any man can, without permanent injury, go entirely without solid food for many days, and yet most people are terrified at the idea of missing a single meal; and I have had sufferers from rheumatism tell me, when I advised them to go without eating for just one day, that they preferred the rheumatism.

SENEK.

Bradford, Sept. 10, 1884.

[Being put to soak in cold river water and then hung out to dry for several days in trees, etc., is not commonly deemed good treatment for the "rheumatics;" and the idea of curing the poor mortals by starving them, during their washing and rough drying, would seem very strange were it not that no crude fancies in connection with the removal of disease can be found too absurd to meet with abundant supporters. The starvation plan is every now and then suggested by some one of ill-balanced mind, but all fair experience shows that while occasionally a case of some sort may be found where long abstinence from food can be of service, they are only isolated instances, and that the common belief that food is a good thing has really some ground for adoption.—ED.]

[CORRESPONDENCE OF SCIENTIFIC AMERICAN.]

The Wooden Pavements in Paris.

The New York readers of the SCIENTIFIC AMERICAN will probably wonder to hear that in Paris they are now extensively laying wooden pavements. At present they are thus replacing the fine macadam on the two side roads of the Boulevard St. Michel, the center alone paved with stone blocks remaining untouched. One side is completed from the Seine to the Boulevard de Port Royal, a distance of over a mile, and they are now at work on the Carrefour de l'Observatoire, opposite the Rue d'Assas.

Any one remembering the disastrous results of the wooden pavements in Maiden Lane and Wall Street, cannot help being struck with the apparent folly of changing a splendid macadamized road, finished less than a year since, for the wooden abomination so dear to the memory of New Yorkers. Yet on closer examination it will be seen that a radical difference exists between the modes of laying the two pavements. In New York the foundation for the wooden blocks consisted chiefly, if the writer's memory is not at fault, of wooden boards impregnated with tar, with a thin layer of gravel underneath. Here the foundation is got up with the greatest care, and without regard to expense.

From actual observation, and from information supplied

very good naturedly by several of the foremen, the following particulars are gathered. To receive the foundation layer, the road bed is first dug sixteen centimeters (about 6½ inches) deeper than the thickness of the wooden blocks. The ground being properly leveled, and the curves and declivities being staked on the ground by surveyors, workmen begin by laying long lines of beton, capped with thin wooden strips, to the requisite level, thus dividing the work into sections about four yards wide and from ten to twelve long. As soon as these sorts of ribs are set, workmen proceed to fill each section with beton made as follows: Into a bottomless box resting on a board, and measuring half a cubic meter (about 5½ cubic feet), they dump by turns one wheelbarrowful of broken stones, half a bag of Portland cement, another wheelbarrowful of stones, the remainder of the cement, and finally one wheelbarrowful of fine gravel, which just completes the measure. The bag of cement is said to weigh 45 kilog., or about one hundred pounds. The stone is broken to the average size of nut coal.

The bottomless box having been withdrawn, the materials are first mixed dry, then with water, and dumped on the ground previously dampened with a watering pot. Each section is thus filled up to within a centimeter or so of the staked level, and the beton is allowed to set for a day. Lastly, the surface, purposely left somewhat rough, is finished with a mixture of one-third cement and two-thirds fine gravel made into a thin mortar with water, spread with shovels, and smoothed with a board sliding on the levels. When set, the foundation is as even as an asphaltum sidewalk, and in a few weeks becomes as hard as granite—so at least say the workmen. At any rate, it is now ready to receive the wooden blocks. This part of the process is not very different from that followed in New York. The blocks are laid edgewise, in lines perpendicular to the axis of the street, touching one another on the side, but each line being kept slightly apart by means of thin wooden strips. This is now quick work. Hot pitch is poured over the blocks so as to run to the foundation and form a layer of about half a centimeter, and all the voids between the blocks are immediately filled up to the surface with a semi-liquid mixture of cement, fine gravel, and water. Two or three days later the pavement is covered with a little coarse gravel, and open to circulation.

Of course the various operations described are going on at the same time at different places, so that no time is wasted, but one cannot help remarking the extreme care and nicety displayed at every stage of the work.

At first sight, the wooden blocks you could swear to be American spruce, but it seems they come from Norway, and are tarred and creosoted here. As to the pitch, it is apparently identical with the familiar article used for making "tar and gravel" roofs in America. When acquainted with the unsatisfactory experience of New York with wooden pavements, the foremen here agree in attributing the rotting of the wood, and other bad features in general, to the defective character of the foundation. They claim that a section of several blocks, laid properly in this city, in a well frequented thoroughfare has now lasted five years without scarcely any repairs. They admit also that the first trials of the "Pave Americain," as they call it here, made ten or twelve years since, were unsuccessful. But this they attribute to the adoption of tarred boards and gravel for a foundation. Their opinion, however, may not be unbiased, for a workman is not apt to decry the work he is paid for doing.

The admitted advantages of a wooden pavement are its smoothness, noiselessness, and ease for horses and carriages. Its chief disadvantage is its costliness. Even here, with comparatively cheap labor and strict accountability, each wooden block, of the old New York size, is said to cost twenty-three cents when laid as above described.

J. C.
Paris, September, 1884.

Polishing Wood with Charcoal.

The method of polishing wood with charcoal, now much employed by French cabinetmakers, is thus described in a Paris technical journal:

All the world now knows of those articles of furniture of a beautiful dead black color, with sharp, clear cut edges, and a smooth surface, the wood of which seems to have the density of ebony. Viewing them side by side with furniture rendered black by paint and varnish, the difference is so sensible that the considerable margin of price separating the two kinds explains itself. The operations are much longer and much more minute in this mode of charcoal polishing, which respects every detail of carving; while paint and varnish would clog up the holes, and widen the ridges. In the first process they employ only carefully selected woods, of a close and compact grain; they cover them with a coat of camphor dissolved in water, and almost immediately afterward with another coat, composed chiefly of sulphate of iron and nutgall. The two compositions, in blending, penetrate the wood, and give it an indelible tinge, and at the same time render it impervious to the attacks of insects.

When these two coats are sufficiently dry, they rub the surface of the wood at first with a very hard brush of couch grass (*chiendent*), and then with charcoal of substances as light and friable as possible; because if a single hard grain remained in the charcoal, this alone would scratch the surface, which they wish, on the contrary, to render perfectly smooth. The flat parts are rubbed with natural stick charcoal; the indented portions and crevices, with charcoal

powder. Alternately with the charcoal, the workman also rubs his piece of furniture with flannel soaked in linseed oil and the essence of turpentine. These pouncings, repeated several times, cause the charcoal powder and the oil to penetrate into the wood, giving the article of furniture a beautiful color, and also a perfect polish which has none of the flaws of ordinary varnish.

Improved Photographic Emulsion.

Mr. A. L. Henderson, of London, has recently made some improvements on what is termed his cold precipitation process of making gelatine emulsions. The formula is as follows:

No. 1.

Distilled water.....	1 ounce.
Nelson's No. 1 gelatine.....	5 grains.
Bromide of potassium, chem. pure.....	180 "
Iodide of potassium, chem. pure.....	2 "

The above is heated just enough to melt the gelatine; next is added—

Alcohol.....	4 ounces.
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No. 2.

Distilled water.....	1 oz.
Alcohol.....	4 oz.
Nitrate of silver.....	240 grs.

Both of the above solutions may be prepared by day or gas light.

In the dark room, by a non-actinic light, such as a faint ruby light, three-quarters of an ounce of ammonia, 880 U. S. standard, is added to 2½ ounces of No. 2, which converts half of the silver solution into ammoniated silver. This is next mixed with the remaining 2½ ounces of No. 2, and the whole is poured into No. 1 and well stirred. Bromide of silver is thus formed, and it only remains to raise the temperature and add gelatine to complete the operation.

The emulsion, in a beaker, is next set into a water bath, the temperature of which is 120° F., and 240 grains of dry, hard gelatine (Heinrich's) is added, the liquid being continually stirred until all of the gelatine has melted.

It is then set away to cool, and in a short time the silver and gelatine coagulate at the bottom of the beaker into the form of a cake. The alcohol, about 8 ounces, is next poured off and preserved for future use.

The emulsion cake is then broken up into small pieces and subjected to a two or three hours' washing in constantly changing water; it is then remelted by means of the hot water bath as before stated, and enough distilled water added to increase the bulk up to from 11½ to 14½ ounces; then—

Thymol.....	6 grs.
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dissolved in—

Alcohol.....	4 drachms.
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is added, and the emulsion is complete; after being filtered it can be flowed upon plates.

If it is desired to mix up a small batch, one-half or one-quarter of the pellicle cake may be remelted, and the proper proportion of water and thymol added. The pellicle cake will retain its sensitive qualities for any length of time if kept in the dark.

Some of the advantages of the process are that successive batches of emulsions of uniform sensitiveness can be made with great certainty; emulsions can be economically made; less alcohol is required; the gelatine extracts all the water from the alcohol, leaving it free (or nearly so) from the nitrates, which will be found crystallized at the top of pellicle cake; lastly, the alcohol can be continually used over and over again as a vehicle to promote emulsification, provided it is carefully filtered each time and added to the silver and bromide in the dark room, and allowance made for the ammonia it contains.

Economy of Wood in France.

A correspondent of the New York *World*, describing how every foot of the soil is utilized in France, mentions the method pursued to supply the country with fuel by the growth of Lombardy poplar. The correspondent says: "In going from Paris to Geneva, via Dijon, we pass through the best portion of France. For hundreds of miles every inch of land is cultivated. The abrupt side hills are in grape vines, and the flat land in grain. Here we see the phenomenon of double crops—a crop of grain and vegetables growing under a crop of trees. The Normandy poplar trees are from an inch to three feet in diameter. They are planted thickly, but give no shade. They are trimmed within six feet of the top. The boughs, which are cut off every year, make fagots enough to warm France. We often see men and women cradling wheat or hoeing beets in the midst of a wood giving no shade. When you look across the country, the tall boughless trunks look like black streaks painted against the sky. They make the view very picturesque. Wood is sold in France for a third of a cent a pound. It is worth as much as corn in Kansas by the pound. So when the Kansas man burns corn, he is no more profligate than the Frenchman who burns fagots."

An Electrical Exhibition in Boston.

The two great fairs in Boston this fall are to be followed by an electrical exhibition, to open Nov. 24 and close Jan. 8. It will be held in the great building of the Massachusetts Charitable Mechanic Association, and applications for space must be made by Nov. 1. The exhibits will be classified under nine sections: production of electricity, conductors, measurement, applications, low and high power, terrestrial physics, historical apparatus, special novelties, and electrical literature.