

governed by the employment of a peculiar form of endless chain, commonly known in France as the *chaîne Vaucanson*. This chain is advanced one link at the formation of each row by the machine, and at proper intervals links of peculiar shape are introduced, which, by acting on inclines, throw out of action the cams moving the needles, and bring into action those working the "coverers," the first mentioned cams being brought into action again as soon as the narrowing has been effected. A link of special form also is used to stop the machine on the completion of a piece of work. The speed of work, as compared with the older methods of knitting, was shown by the fact, as the author believed, that a skilled knitter, with the ordinary knitting pins, would knit about 60 stitches or loops per minute in knitting the leg of a stocking, and a skilled framework knitter, with his hand frame, will knit on the same work 5,400 stitches per minute, whereas a girl, will on the same work, attend to three of the self-acting machines, each making 50 courses per minute, of 13½ inches wide, and 20 stitches to the inch, thus making 40,500 stitches per minute.

Correspondence.

The Editors are not responsible for the Opinions expressed by their Correspondents.

Copper Poisoning.

MESSRS. EDITORS:—The following notes taken from my case book (stated in the *Baltimore Medical Bulletin*, April, 1870), may, as other similar cases, serve as a caution against the use of brass or untinned copper cooking utensils:

March 14, 1868, seven persons—five being adults—soon after eating for dinner, in a public house, stewed fruit (dried peaches) that had been cooked in a brass kettle, were attacked with the following symptoms: Pain in the epigastrium extending over the abdomen, nausea, violent vomiting in some cases, and diarrhea. In some, the gastric distress was extreme, followed by giddiness and depression. All recovered, or nearly, within thirty-six hours. All those, and those only, who partook of the fruit were attacked and had the same symptoms.

Two ladies, of the above sick number, of undoubted veracity, one of whom superintended culinary affairs, stated that the peaches after being cooled were removed from the fire and not suffered to remain in the vessel, which was previously well cleansed. This fact, which is remarkable, is mentioned to show the possibility of accident, even when care is used with a view to prevent it.

Being requested by the proprietor to subject the fruit left over to chemical examination, this was done with the following result: First, the peaches not cooked, of the same lot which had been stewed, were examined for copper, but none was detected; iron found in large proportion, this being a normal constituent of organic matter generally, especially so with peaches. The peaches of the same lot which had been used for the table (all having been cooked in the brass kettle) were next examined, when copper was found in small proportion, this accounting for the symptoms. No arsenic, no antimony, no hydrocyanic acid. For the last substance, however, an examination was unnecessary, it being so volatile, if ever present, as to have been dispelled by the heat previously employed; moreover, the symptoms were unlike the effects of prussic acid. In searching for copper, ferrocyanide of potassium and the iron test were chiefly relied upon; for antimony, Marsh's test; for arsenious acid, Reinsch's and Marsh's tests.

Snow Hill, Md.

MEDICUS.

Moon Fallacies.

MESSRS. EDITORS:—In the *SCIENTIFIC AMERICAN* of August 6th, on page 86, you publish an article under the caption of "A Moon Fallacy Exposed," taken from the *American Builder*. The writer quotes from M. Dechamel, a celebrated French agriculturist, which ought to be good authority; but whether the moon has any influence on the timber being cut in the different phases of that planet or not seems to be the question under discussion.

Certain facts relative to this matter have come under my observation so forcibly that I am inclined to think there is some truth in what are termed "fallacies" on this subject. Whether the moon exerts this influence or not, I do not pretend to argue; but I am quite certain if hickory timber, for instance, be cut between the full and new moon, the worms will devour it; but if cut, say three days after the new moon, up to within three or four days before the full moon, the worms will not touch it.

Let some of your country correspondents give this matter a trial. Cut a stick of hickory, say three or four days after the full of the moon, and then cut another stick of the same kind of wood, say three to four days after the new of the moon, and set these sticks up side by side for a few months, and then let us hear the result.

I venture to say, the former of these two will become worm-eaten, and the latter will show no signs of worms or wood borers. Several other facts that would be classed as "moon fallacies" have come under my observation; but let the above suffice for the present.

D. A. M.

Cincinnati, Ohio.

A New Trade—Fish Oil.

MESSRS. EDITORS:—The Californian, Connecticut, and Massachusetts newspapers have been congratulating their countrymen that a "new trade" is open to them for the manufacture of the above oil, alleging as a reason "the desertion of the sardine, mackerel, etc., from the coasts of France and Spain," and "the export thereto of roes and spawn from the United States."

The true state of the case is this: Liverpool (and the neighborhood) is famous for its soap manufactories, and turns out some 50,000 boxes weekly. Common fish oils, when obtainable, are largely used in fabricating soft, and cheap hard soaps. Our people suggested to the French and Spaniards that instead of packing the sardine for edible purposes only, they should press them into oil with the spare roes of any other fish that could be procured, and consign to England for sale and a market. The hint was carried out so successfully that within these last twelve months, 1,000 tons of sardine, and other fish oil have come to this market, and have sold readily at £33 and £35, equal to \$160 and \$168, gold, per ton of 252 gallons (nine pounds per gallon). This new application of the sardine has competed so completely with its previous use for the table, that enough fish are not to be got for "casing," and the dearth now in France and Spain is not that the production is less, but that the consumption is more. Hence the demand for American roes.

There is therefore vast scope along the almost unlimited American coast for the catch and press of any amount of fish and roes; and be the oil ever so inferior, we can take it at about the quotation given. In this, then, there was just cause for the congratulation referred to, and the soapers of this country will be glad to welcome any quantity of common fish oil that the producers of the United States can remuneratively send them.

Liverpool, England.

A. M.

Balancing Cylinders.

MESSRS. EDITORS:—I see by the *SCIENTIFIC AMERICAN*, of August 13, that C. E. M., of N. Y., like many others, does not quite understand why his shaft, being balanced, should shake so.

Now, let us suppose we have a cylinder four or less feet long and twelve inches in diameter, built of staves on iron rings, the same as a thrashing machine cylinder or a card cylinder. We will suppose that when built it is perfectly balanced. Now let us bore a hole in the end of a stave at one end of the cylinder, and put into the hole so bored one pound of metal; then the cylinder will be so much out of balance. Now we will bore a similar hole at the other end of the cylinder, but on the opposite side. Now, if a similar piece of iron or metal of same weight be inserted it will be balanced again if laid on level, parallel steel bars, but will be out of balance while running; and this is what ails his shaft.

The only way that I have found successful is to balance while running, or rather to test while in motion. If pulleys have much force and high speed they will require to be balanced in the same way.

W. O. JACOBI.

Mellenville, N. Y.

[Our correspondent would add much to the value of his communication if he will explain how, unless centrifugal force acting unequally on the opposite sides of the cylinder destroys its regular form, the cylinder will, after being balanced as described, be out of balance when running. Also, if he would give his method of balancing or testing cylinders while running. The first will be a theoretical point of interest to many who will disagree with his conclusions. The second is a matter of practical importance. If cylinders can be so balanced—which we doubt—the mechanical world would like to know it.—EDS.]

New Bread.

MESSRS. EDITORS:—Your paper of the 13th of August had an article headed "New Bread," asking why it is unwholesome. The true answer to this question is, I conceive, to be found in an account, published some years ago, of some experiments made upon the soldier St. Martin, a part of whose stomach was shot away, leaving an opening by which food could be introduced, and the process of digestion watched and carefully noted. In new bread the process of fermentation is checked, but not entirely stopped, by the drying out of the moisture in baking. It appeared from the experiments on St. Martin that when new bread was introduced into his stomach the heat and moisture caused the fermentation to recommence before the process of digestion had commenced, greatly interfering with it.

W.

Screw-Holes in Cast Hinges.

MESSRS. EDITORS:—Can manufacturers of cast butt hinges be induced to diminish their sales and benefit the public by diminishing the number of screw holes in their hinges?

The breaking of a cast hinge is a common occurrence—the breaking or wrenching out of a screw is rare.

Three holes in an ordinary shutter hinge, for example, will, by so decreasing the strength of the hinge, cause it to break from a strain that would be harmless if there were only two screw holes. A great saving in screws and labor would also be effected.

WM. C. BUTLER.

Sassafras, Md.

Dyeing Wood.

MESSRS. EDITORS:—In No. 4, present volume of the *SCIENTIFIC AMERICAN*, one of your readers asks for a method of dyeing some of the lighter colored and cheaper woods to the natural color of walnut. Here is the process which Mr. J. B. Rochard, a French carpenter, used while working in Paris. Take green husks of walnuts (Brou) and put them to macerate in water for say fifteen days. At the end of that time boil them a little in the same water. Let the decoction cool, and use it by soaking a piece of rag in it and rubbing the surface of the wood with it. Two rubbings will give to the wood the color desired. When wanted to dye hard wood, like oak, rub the wood previously with salt of niter and proceed as before.

Jacksonville, Fla.

F. GUICHETEAU.

Lowest Line of Perpetual Snow.

MESSRS. EDITORS:—In your number of August 6th, page 85, is a communication on this subject, indicating that there is something like a uniformity in the snow line in the same latitude, whereas the fact is quite the reverse, depending on a great diversity of circumstances.

On detached high peaks, like Teneriffe, it descends low for the latitude. On the Himalayas, it descends lower on the south side where the descent is abrupt, than on the north where the descent is less, and to an elevated extended table land.

And do we not see the same thing in America? The line of perpetual snow descends lower on Mount Hood and other peaks of the Cascade and Nevada range, with its abrupt western slope, almost to the ocean level, than on the peaks and ranges of the high table land of the Rocky Mountains.

And though the temperature on the west sides of the great continents is much milder than in the interior and on the east sides on lower lands, does that apply to the same degree at high altitudes? My impression is that it does not.

Grand Rapids, Mich.

JOHN BULL.

Tin Fruit Cans.

MESSRS. EDITORS:—There are various qualities of tin purchased by fruit packers for manufacturing their cans. You probably know as well as any one of what the coating of that tin consists, whether it is all pure tin or a mixture of tin and lead. I have several times eaten peaches which had a decidedly metallic flavor, and have suspected that it was derived from the coating of the cans. I have reason to think that packers use the cheapest grade of tin for fruit, and that they use different grades for oysters and vegetables.

A. B.

Balancing Pulleys and Shafting.

MESSRS. EDITORS:—If C. E. M., of N. Y., will take his pulleys from the shaft, and balance each one separately, he will have no further trouble with their shaking, if the shaft is of proper dimensions.

In my opinion, the trouble will be found in this, that the maker of the machine balanced the pulleys on the shaft. This practice is all wrong. Work balanced in this way will not run steadily.

J. G. F.

Winchendon, Mass.

How the Dead Soldiers are to be Identified.

A Berlin letter says: "Mark one instance of the German practical spirit as a proof of the fashion after which these Teutons prepare to fight. In recent wars popular feeling has demanded that rank and file, captains and generals, shall be equally and impartially mentioned in the lists of the slain; but difficulties have arisen, because the enemy cannot know the dead men's names, and when the muster roll is called after battle, the missing may be only wounded or prisoners. Germany has in her solid, calm manner, arranged, in view of this difficulty, that each wife and mother shall speedily know the best or the worst about those who go to fight 'with God, for King and Fatherland.' Slips of parchment, like luggage labels have been prepared, on which the number of each German soldier is plainly written, and one of these will be fastened inside his coat when he goes into action. After the day is decided, the enemy, if he be master of the field, will be requested to collect and return these labels, of which about a million have been provided, grim tickets for an unknown journey! Think of the German wife or mother sewing it on—the battle ticket of her stake in the quarrel—the address of her particular 'material of war,' the awful traveling label whereon no loving hand may write 'with care,' seeing that its bearer goes into the Valley of the Shadow, to come forth again or not as Heaven shall decree. Sewn on with German thread, ripped off, perchance, with French knife, whole packets and parcels of these little human memoranda will surely be returned; but yet every man who buttons his coat over the label of death has looked his fate full into the face, and made himself 'ready for the burial.'"

The Fly-catching Plant.

In an article on "Flowers in Paris" in the last number of *London Society*, the writer says:

"A very curious fly-catching plant, flowered in my garden this summer, and a most curious inflorescence it is. The Corsican arum, *Arum crinitum* or *muscovorum*, called by French gardeners *gout-chevelu* and *Attrape-mouche* (please not to confound this either with the Dragon or Italian arums, *A. dracunculoides* and *italicum*), produces a flower like the common arum of the hedges, only much larger, and with the upper part bent downwards, as if it were an accidental distortion. Both the central spadix and the spathe are thickly covered with dull purple bristles (whence its name *crinitum* and *chevelu*).

"The spathe contracts towards the base, like an hourglass, and there issues from it a faint cadaverous smell. This attracts blow-flies, blue and green. They come accordingly, not in swarms, but one by one, leisurely and taking it easy; and there are no outward and visible signs of their being caught.

"You skeptically ask yourself why the plant is named *muscovorum* or *attrape-mouche*. By-and-by, perhaps, when the spathe is shriveled, you tear it open to see whether you have any chance of obtaining seed, and the secret is revealed. At the bottom you find dead flies by scores, beguiled into a sort of vegetable Black Hole of Calcutta. Like the animals that entered the lion's den, all their footsteps pointed inwards; none came out; the bristles prevented them.

"Another year, I should like to try whether those bristles have any motion of irritability, or power of entangling and shutting in their victims."