

**IMPROVED WIRE NETTING MACHINE.**

A very ingenious machine for manufacturing wire netting has been invented by Mr. W. F. Dennis, of 101 Leadenhall Street, London.

In the Dennis machine is a disk mounted on a central pivot, to which a rocking motion is imparted. In the periphery of the disk are a series of semi-cylindrical spindles, each of which carries at one end a bobbin and at the other a toothed pinion. Surrounding the disk is a ring secured to the framing of the machine. In the internal surface of this ring is a second series of semi-cylindrical spindles, each of which carries at one end a bobbin, the bobbins being on the same side of the ring as those on the disk. The toothed pinions gear with a central toothed wheel, by means of which they twist each pair of wires together. The disk partakes of a rocking motion, the extent of its circumferential travel corresponding with the distance apart of the spindles mounted in its periphery. At a short distance from the face of the disk and ring carrying the bobbins is apparatus for twisting the several pairs of wires together in the formation of the netting. This mechanism consists of two series of half spindles, each series being carried in semi-cylindrical bearings formed in a bar. The faces of the bars in which these bearings are formed are opposite to and in contact with one another; and the pitch of adjacent bearings in each bar corresponds with that desired for the mesh. Each bar carrying half spindles receives an intermittent reciprocating motion equivalent to half the pitch, the motions of the two bars being in opposite directions. Corresponding ends of the half spindles are furnished with half pinions, which, gearing with racks, enable each pair of half spindles to be rotated. The half spindles employed in the twisting mechanism permit the passage of the wires employed in making the netting. The wires from the bobbins mounted on the disk and ring are led through the half spindles in the twisting mechanism; and, according to the number of the twists desired in the netting, the bobbins and twisting spindles are rotated. The bobbins mounted on the disk of the countertwist apparatus are then shifted to the next adjacent bobbins carried by the wheel; and similarly the two reciprocating bars of the twisting mechanism shift the half spindles they carry, so that the combination of wires thereby established corresponds with that prevailing in the countertwist apparatus. These wires, having been twisted and countertwisted as before, but in the reverse direction, the disk returns to its original position, and the twisting spindles, together with the wires they carry, resume their normal relationship. Beyond the twisting mechanism is a roller, provided with projections for engaging in the meshes of the netting. This roller has an intermittent rotative motion, and exercises a pulling action as the netting is formed.

It will thus be seen that the Dennis continuous wire netting machine possesses great advantages over those of the ordinary type. With the latter, a considerable waste of time and material arises in production, in consequence of the employment, besides bobbins, of a number of spools, each containing only a very short length of wire, which, moreover, must be of a soft description, and which has to be coiled into spirals ready for the spools. In the Dennis machine bobbins only are employed, and all the wire is drawn direct from them, thus obviating the evils already referred to, as well as that of the frequent stoppage of the machine for inserting fresh spirals in the spools. Besides these, there is in the old machine the difficulty of equalizing the tension between the bobbin wires and those drawn from the tubes, which difficulty disappears in the Dennis machine. Beyond this we have the fact that hard iron or steel wire can now be employed for the manufacture of the netting, which hitherto has not been possible. The bobbins contain a sufficient quantity of wire to keep the machine running continuously the whole day. The machine at Millwall, which we inspected, measures about 11 feet long by 8 feet wide and 6 feet high over all, and its output is 350 yards of 1 inch mesh continuous wire netting 2 feet wide per ten hours, or 1,050 yards for a machine 6 feet wide. Our inspection of the working of the Dennis machine leads us to the conclusion that it effects a considerable saving in labor, gives a largely increased output, and forms an important advance in machinery for the manufacture of wire netting.—*Iron.*

**Men of Thought.**

A young assistant of chemistry in the Boston Institute of Technology happened some years ago to be in the northern peninsula of Michigan, says the *New York Sun*. While there he observed that the Portage River and Lake Linden were of a peculiar copper color, and, when he asked the cause, was told that it was copper that escaped from the smelting and stamping mills of the Calumet and Hecla mines. The young teacher put his thinking cap on, and then requested the company to allow him to experiment, with a view of saving this copper. The company was only too glad to offer facilities. So the young man gave up his summer vacation and set to work, and was able to devise a method by which about 4 per cent of the copper mined was saved, and almost pure copper, too. The young professor no longer earns a trifling salary, but has acquired a comfortable income by this summer's vacation.

Some years ago, a mechanic near New Haven was riding in a railway train, and was jolted and jarred as in the early days of railway travel passengers were apt to be. He didn't fret and fume, as the other passengers did, but began to study and experiment, with a view to making a spring that would reduce the jolting to a minimum. He at last succeeded, and his spring was adopted by every railroad in the country. He is no longer a poor young mechanic. His name is Carlos French, and he has just been elected to Congress from the New Haven district.

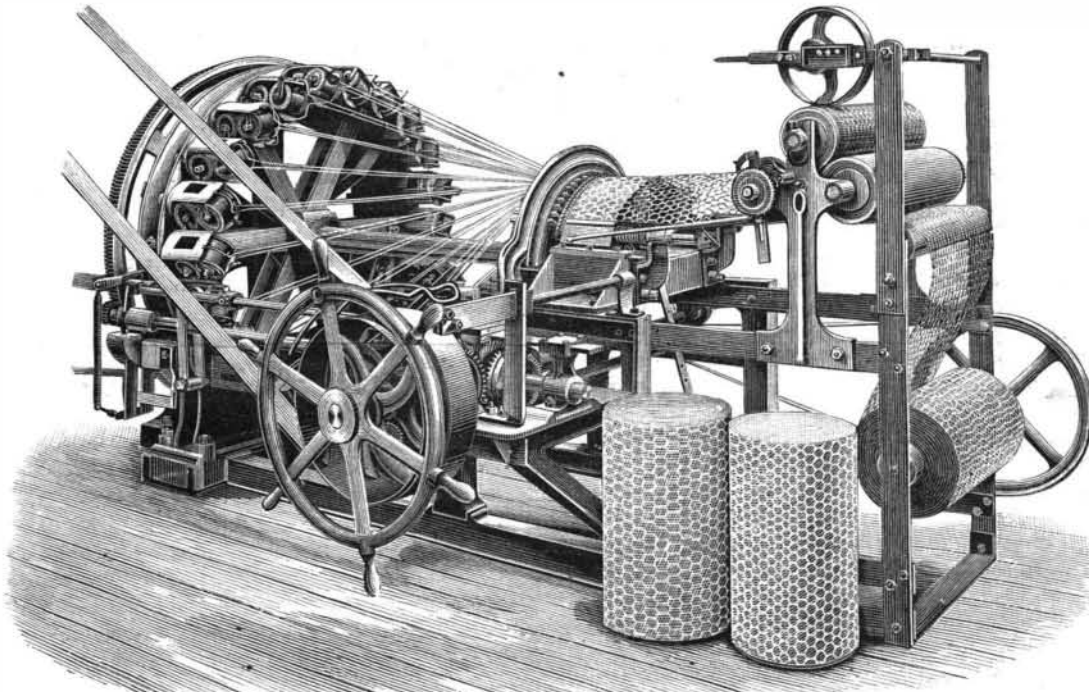
There died, a few days ago, in Waterbury, a man who began life in the narrowest circumstances. He learned the trade of a machinist, and he gave his whole soul to his trade. By and by he startled wire manufacturers by producing a cold reducing machine,

competency. No men in the world are quicker to recognize and reward fidelity and ability. This operator was promoted to a more responsible post. Here his whole time was given to mastering his duties and bettering the service. So he was promoted again and again, until a year ago he was made the general superintendent of the vast system, and with a salary commensurate with his responsible duties. His name is Wade.

General Superintendent Kerrigan, of the whole five or six thousand miles of the Missouri Pacific system, began his career as an ordinary axman on the Iron Mountain road. He handled the ax well, and was next made rodman. He was absorbed in his work, and the company recognized his industry and value, and to-day he receives \$10,000 a year for managing the system. The late Vice-President Hoxie himself, whom the Knights of Labor regarded with so much bitterness, was in his early life a laboring man, even performing such duties as taking care of horses. But he did that work thoroughly, and when he was twitted with having once been a hostler, he laughed and replied: "Yes, and I was the best one in Des Moines."

The late President Rutter, of the New York Central road, began life as a station agent on the line of the Erie road, but he wasn't satisfied simply with being prompt and accurate with his accounts. He made a study of the freight business, so far as he could at his station, and opened the eyes of his manager with his valuable suggestions and his quick and successful solution of some of the troublesome problems of freight transportation that he had to meet in that early day, before the business was systematized and so well understood as now.

Some years ago two long freight trains met at a siding on one of the Illinois prairies. The siding was not long enough to allow the trains to pass. The assistant manager of the road happened to be on one of the trains, and he was at his wits' end to know what to do. There stepped up a young brakeman, who said he could manage the trains so as to enable them to pass. The engineers laughed at him, but the manager asked him to explain. With a stick he traced in the ground his plan, and it was so simple that every one at once comprehended it. In fifteen minutes the two trains had been moved by, and the operation is now universally adopted on sidings that are too short. It is called sawing. The young fellow, while riding on the top of his car across the dreary prairies, had studied out and solved the problem, and when the opportunity came, he was ready for it. He is now the general manager of the great Northwestern system.



**IMPROVED WIRE NETTING MACHINE.**

by which wire was drawn cold. Seeing one day a woman fretting because she had pricked her finger with a pin, he was set to thinking, and in a week had devised the valuable safety pin. His name was E. J. Manville. He died a rich man.

If we take the railway business in all its branches, we shall find that in every one of them the men who now are at the head, and who are getting large salaries and are making money, began life without a cent, except in a very few instances. Thirty odd years ago a rosy-cheeked young man ran one of the engines on the New York and New Haven road. He spent every moment of his spare time in studying mechanical engineering and surveying. Soon his suggestions respecting the building of engines, and also respecting the construction and building department of that road, became so valuable that his services were recognized by promotion. He became assistant superintendent, then general superintendent of the whole system, and is now vice-president and director, and has control of the entire mechanical department of the road. This is E. M. Reed, and when he sees a discontented engineer, he says to him that the opportunities for advancement to-day are just as great, probably greater, than they were thirty odd years ago, when he fired on the road. Another superintendent, C. N. Davidson, of the Hartford division, years ago stood at the footboard, and secured his promotion because he made his services so valuable that the company could not do else than appoint him to responsible places. The general superintendent of the great Wabash system some years ago was a common telegraph operator in Delphi, Ind., earning barely enough to pay his board and clothing. But he made a study of the railroad business as opportunity presented in that obscure town. By and by the opportunity came for making a suggestion to the managers. It was a good one. Railway managers are constantly on the lookout for men who show their

**The Great Lenses Safe at Mount Hamilton.**

The *San Francisco Chronicle* says the crown and flint glasses of the great objective of the Lick Observatory have arrived safely at the summit of Mount Hamilton. The boxes containing the glasses were taken to the south room of the observatory, where a fire had been started hours before to produce the proper temperature.

When the covers of the boxes were removed, it was found that the glasses had not moved out of place in the slightest degree. The wrappings of cotton flannel, forty yards to each glass, were then carefully cut away, and the glasses brushed and wiped with the utmost delicacy by Mr. Frazer, in accordance with instructions given him by Alvan Clark. This done, the glasses, set on edge on steel rollers, were put in a cast iron cell inlaid with silver, with a space of six and a half inches between them. This space has eight oval houses for cleaning and ventilation.

The next move was to transport the cell, with its valuable attachment, weighing altogether 600 pounds, to the vault in the north room under the pier which supports the twelve inch equatorial. Here every precaution had been taken to prevent moisture, and here the glasses will remain until the time comes for mounting them. Investigation shows that neither the flint nor the crown glass had been injured at all. Each was in as good a condition as when it left the hands of the Clarks. Captain Floyd thinks that the observatory will be ready to be turned over to the trustees of the university by the 1st of September.

To kill or keep roaches away, use borax or Persian insect powder. These must be renewed frequently, as they deteriorate by exposure to the air, and lose their power.

**Our Warbler (*Mniotiltidae*).**

E. M. HASBROUCK.

In writing this article, I do so, not with the intention of giving something strictly scientific, but with the hope of awakening in the mind of the reader an interest in the various forms of bird life that surround him, and which, could he once see clearly, would always hold a prominent place in his memory. To accomplish this, then, I have chosen this family of birds as my subject, and having set forth a few of its handsomer members as an introduction to the whole, leave it with the interested to pursue his investigations, which, if he does, my aim will have been accomplished.

This family of birds, although composed of many of our smaller songsters, unquestionably contains the handsomest specimens of the North American avifauna.

What casual observer of nature, in passing through the woods in spring time, has not noticed numerous brightly colored little forms flitting about through the bushes and tree-tops, and heard a constant faint chirping, that evidently came from somewhere, but apparently nowhere; he might have wondered what these were, and from whence these notes proceeded, without once realizing that he was in the presence of some of the most exquisitely colored creatures of the feathered kingdom.

They do not frequent the woods alone, but often stray into the cities and into our yards and parks, where, although they are not seen by the "man of the world," they are at once espied by the passing naturalist, and welcomed by him with gladness.

I remember one spring of passing down a noisy, dusty street of one of our large cities, and on coming to a few sickly looking elm trees naturally cast my eyes toward their tops and instantly paused, for there, in the midst of the noise and turmoil, was a single specimen of the black-throated green warbler (*Dendroica virens*), a bird that I had long sought for in vain. It carried me back to the previous spring, when I had been almost constantly in the field; and as I watched the little bird, I wondered how it was that men could be so wrapped up in this world as to be insensible to the presence of the many beautiful forms in nature that surround them, and are intended to cheer them on their path through life.

To become acquainted with these beautiful little creatures, one should go into the woods about the first of May, and search them diligently—not only the woods, but the swamps and overgrown pasture lands, each of which places will be found to contain its own particular set of birds.

You who have access to the country, arise some morning bright and early, take a small gun with you, and go to some patch of hemlocks that you may have noticed within a short distance, and which looked so dreary and uninviting. Seat yourself on a log, and remain quiet for an hour or two; my word for it, if you have never observed bird life before, you will see more beauty in those two short hours than you ever dreamed could exist in the wild woods; for here you will find the parula warbler (*Compsothlypis americana*—that matchless combination of blue, yellow, and old gold) flitting about as numerous as the sparrows in the noisy streets, uttering their sweet, quaint little warble, and hard at work catching the insects that are just starting out on their day's journey.

Turn your attention upward now to the tops of the trees, and try to find the source of that silvery little song that now and then breaks in upon your ears. You may search and search, and almost dislocate your neck in the attempt to discover the author of it, and yet not succeed; but have patience. Suddenly, what appears to be a small ball of fire darts out from the branches of a tall hemlock, seizes an insect, and is back again in a trice; but you have got trace of him at last, and by moving a little can obtain a good view of him at work, as he moves here and there among the branches, gleaming his morning's meal. He is so high up that you cannot see him clearly, so resort to your gun. At the report he comes down, whirling over and over, and as you pick him up you cannot help exclaiming, "How beautiful! how exquisite!" and beautiful he certainly is, and well worth the trouble you have taken to secure him, for you have before you a specimen of the Blackburnian warbler (*Dendroica blackburniae*), one of the handsomest of the family. His back is black, but his throat is the color of flame. One would think that such a one would be named after the gods, but no, he was destined to bear the name of a discoverer—Blackburn; hence the name, and surely with his fiery throat it is an appropriate one.

Turn your attention to another part of the woods now, where the trees are less thick, and where there is considerable underbrush; here, if you are still, you will see the hooded warbler (*Sylvania mitrata*), a bird whose colors are so brilliant as to attract your attention at once. Such a tasty arrangement of black and yellow I have never seen equaled; and as you examine a specimen in your hand the thought comes to you, as it often has to me on similar occasions, Why will men doubt the truth of the existence of an Almighty power, when such evidences as these are continually confirming it?

While lost in such thoughts as these, a sharp chirp is uttered close beside you, and you look up to see a bird about the size of the last named, but of a clear golden yellow, with a bluish ash color on the back and wings; it is the prothonotary or carbonated warbler (*Protonotaria citrea*), a species rare in most localities and unknown to some, and consequently much sought after by collectors, and classed among the golden swamp warblers.

Another busy little songster is the Maryland yellow throat (*Geothlypis trichas*). You will find him in the bushes and swampy thickets, where his loud song will at once force itself to your notice; but although you may desire a specimen, you will have to search carefully for them, as they are exceedingly shy, and no sooner are they aware that you are desirous of seeing them than they at once become silent and cautious in their movements; and it is only with careful maneuvering that you can obtain a glimpse of him, and then only for a moment, as he peers out at you from some bunch of grass or from behind some stump, and is instantly off to safer quarters. I have had them skulk through the grass a few feet in advance of me for quite a distance, without once catching sight of them, following them only as I would hear some slight rustling, and then for a time losing track of them, would suddenly hear them back in the same place they started from. They are a handsome bird, although plainly dressed, the ashy line over the forehead being the most prominent marking.

One of the handsomest birds, and also one of the rarest, is the cerulean or blue warbler (*Dendroica cerulea*), and if you are interested in birds, as I hope you are, go to some woods in which grow either elm, linden, or sugar maple, and there you will find them in considerable numbers. They are a beautiful bird, with their mantle of blue, white breast, and blue ring around the throat; but you will have to search the tops of the taller trees for them, as they seldom come low enough to be closely observed. You will find them fully as interesting as the preceding birds, and that they illustrate a fact in regard to many species known only to a few, and that is the difference in plumage between the males and the females. You have undoubtedly noticed that all you have seen are alike, but has it ever occurred to you that these were all males, and that the females are an entirely different looking bird, which, on account of their plain colors, were very hard to discover? Yet it is a fact, and a wise provision of the Almighty, that provides for the safety of the nests and eggs, which would be more easily discovered were they of the same color as their mates.

Who, then, can say that nature has no charms, or that he who spends his time in studying her is a fool?

But come with me, you who are not wearied, and take a peep into a Florida swamp at the time when spring migration commences, and see for yourselves a dozen different species in sight at once, and hundreds and hundreds of them within a radius of a quarter of a mile. Look on all these brilliant colors flitting about, and see if you do not agree with me when I say that this is the most beautiful of all the families, and that the study of them is well worth the time and trouble it takes to hunt them out.

**How to Secure Good Prices and Ready Sales for Furs.**

**Cased.**—Ermine, fisher, fox, lynx, martin, mink, opossum, otter, skunk, must be cased; that is, not cut open. In skinning, cut at the rump, and turn the skin inside out (like a glove) over the body of the animal, leaving the pelt side out.

Then, after scraping, cleaning, and drying, turn the skin back again while it is soft and easily managed, leaving the fur side out.

Then put a thin board inside the skin, cut the natural shape of it, stretching the skin to its fullest extent, but not so much as to make the fur thin. Too much stretching spreads the fur over a large surface and makes it thin and lacking in richness. A liberal supply of good boards should be kept on hand. Stand or hang in a dry, airy, shady place.

Keep out of the sun, away from fire and smoke.

Remove board when fairly dry.

Never use bent sticks, bows, or anything irregular in shape, or that yields.

When the above are opened, they have a Southern appearance that lessens the value greatly.

**Open.**—Badger, bear, beaver, cat, raccoon, wolf, wolverine, must be open; that is, cut open up the belly from rump to head. After scraping, cleaning, and drying, stretch a uniformly oblong shape, to the fullest extent of the skin, but not so much as to make the fur thin.

When thoroughly dry, trim off legs, shanks, flippers, and any little pieces that spoil appearance of skin, but leave on heads and noses.

Beaver are sometimes stretched almost round, but appear very much better stretched oblong. Value by the skin, never by the pound. They rapidly lose heavily in weight. They bring most sold by the skin. Muskrats must be cased, but with the fur side in. Chop off the tails as explained. Skin at the nose and

make rumps square. Round tails have less value, and do not sell well.

Muskrats must not be injured by shot or spearing. Trap them.

Skins that have dried without proper care can be treated same as fresh, green skins. Otherwise they have no value. Dissolve a handful of common salt in a pail of fresh water, and apply frequently with brush or rag (to pelt side only, as it spoils appearance to wet the fur) until the pelt becomes perfectly soft. Then handle as explained.

The same with open skins.

Trap furs. Spearing tears the pelt. Shot cuts the pelt and shaves off the fur. Both do bad injury and lessen selling price.

Do not cure with alum or salt. It injures them for dressing and spoils their sale.

Do not dry skins at a fire, or in the sun, or in smoke. It often burns them, when they spoil and ruin on being dressed. Dry in the open air where shady.

Meaty skins often burn. The meat and fat on them heats and burns them, and they then go to pieces and rot on being dressed. Skins should be attended to at once, when fresh, and every particle of fat and flesh removed, when it can be done easily, and without tearing or injuring the pelt.

Too much warmth curls and spoils the top fur or hair.

Never stuff furs of any kind; dry and stretch as explained.

Do not stretch out the noses and make them pointed. It gives a Southern appearance and lessens value.

Do not cut off heads, ears, or noses, or mutilate in any way. It lessens value and injures sale.

Remove as much of bone from the tail as possible; otherwise the tail rots.

The pelt should be as clean and smooth as a piece of paper.

Skunk with the white stripe (or any portion) shaved out, blackened, or tampered with, must be collected at half price.

**Trapping.**—Fur-bearing animals must not be killed till they have at least a fair growth of fur.

Stop trapping as soon in early spring as the fur begins to shed or become thin or a little faded.

These too early or too late caught furs are a disgrace to fur trappers and collectors, and a wasteful, worthless slaughter.

**How to Tell the Age of Any Person.**

When the writer was a good deal younger than he is now, and attended school, he possessed what was termed an "age card," which created considerable interest among his schoolmates of both sexes. It was a perplexing problem at that time how six rows of figures could be so arranged as to produce by so simple a rule an accurate answer. The *Hartford Daily Times* recently published the table above referred to under the above new heading, and as a good deal of amusement may be derived from it by young people, we copy the following magical table of figures.

Just hand this table to a young lady, and request her to tell you in which column or columns her age is contained, and add together the figures at the top of the columns in which her age is found, and you have the great secret. Thus, suppose her age to be 17, you will find that number in the first and fifth columns; add the first figures of these two columns, and you have her correct age.

1	2	4	8	16	32
3	3	5	9	17	33
5	6	6	10	18	34
7	7	7	11	19	35
9	10	12	12	20	36
11	11	13	13	21	37
13	14	14	14	22	38
15	15	15	15	23	39
17	18	20	24	24	40
19	19	21	25	25	41
21	22	22	26	26	42
23	23	23	27	27	43
25	26	28	28	28	44
27	27	29	29	29	45
29	30	30	30	30	46
31	31	31	31	31	47
33	34	36	40	48	48
35	35	37	41	49	49
37	38	38	42	50	50
39	39	39	43	51	51
41	42	44	44	52	52
43	43	45	45	53	53
45	46	46	46	54	54
47	47	47	47	55	55
49	50	52	56	56	56
51	51	53	57	57	57
53	54	54	58	58	58
55	55	55	59	59	59
57	58	60	60	60	60
59	59	61	61	61	61
61	62	62	62	62	62
63	63	63	63	63	63

THE nearer the freezing point the cellar can be maintained without actually endangering the stored fruit, the better for apples. Heat and light do more damage than cold. Alternate freezing and thawing will soon destroy fruit or vegetables.