Correspondence.

How to Get Rid of English Sparrows.

C. T. says: We are simply overrun with the irrepressible sparrow in our foundry, causing the moulders a large amount of annoyance, by dropping of filth and nesting material from the beams into the moulds. Can you recommend some way we can drive them from the building, or some suitable poison we can mix with their food? Also can a mirror be repaired where the quicksilver has been scratched pretty badly in shipment?

Reply by Prof. C. V. Riley.—"I would suggest as a method of ridding your buildings of the English sparrow, that you destroy as many as possible by shooting them. An energetic boy can accomplish a good deal in this direction in a short time. They can be destroyed more easily, however, by giving them poisoned food. Wheat or other substances which they will eat readily may be poisoned, and will thus destroy the birds in large numbers; and if care be taken, this method will probably drive them from the premises the present year. Two or three pounds of arsenic to the bushel of wheat, or one ounce of strychnine to the bushel of wheat, will answer the purpose. The arsenic is in some respects preferable, as it acts more slowly, and is not likely to give the cunning birds such ready clew to the danger. Six or seven poisoned kernels will kill a single sparrow, so that the quantity of grain to be used can be estimated approximately by observing the number of sparrows which it is desired to destroy. The easiest way of applying the arsenic is to first wet the grain thoroughly with strongly sweetened water and then to sprinkle the arsenic dry over the grain. In this way the arsenic adheres more fully, and at the same time the sweetened water neutralizes the taste of the poison and makes the grain more attractive to the birds. To be most successful in this mode of destroying the birds, they should be accustomed for a few days to the spreading of the grain by baiting in a given locality a certain amount of grain that has not been poisoned. This kind of strategy is almost essential in dealing with birds as cunning and quick to learn as the English sparrow."

There is no way to repair a scratched mirror and make it perfect, except by resilvering the entire mirror. A patch of silver may be put on, but it will show as a patch.

An Improved System of Block Signal for Single Track Railways.

A new block system for running trains on single track has been devised by Mr. Thos. Fitzgerald, superintendent of B. & O. R.R. The idea was reached by him after long and careful study, and it is the first of the kind in the country. It is now being successfully operated on the Metropolitan Branch B. & O. R.R., or that part of the road where single track is used.

It is well known that in railroading a block is a section of track between two telegraph and signal stations. The block signals are *absolute* or *permissive*.

An absolute block is where a red signal is displayed, and a permissive block is where a green or white signal is displayed.

One stretch of the road from Garthersburg to Washington Junction (about 20 miles) embraces seven block stations.

Normally the signal displayed at these blocks is red, and only changed to white or green to permit trains to pass in accordance with the rules.

All trains in opposite directions and all passenger trains following in the same direction are run under absolute block, and no permissive signal is displayed (except white when block is clear).

The operators in their respective single track block sections are instructed to have a full understanding with each other before moving trains over their block. It being distinctly understood that no train is allowed to enter a block unless the operator is absolutely certain that there is no train on the block running in opposite direction. In this instance, Mr. Fitzgerald displays considerable forethought. An example of running trains in accordance with the above paragraph is herein below given.

Example: When train No. 2, engine 835, east bound, arrives at Washington Junction, the operator calls by telegraph the operator at Tuscarora (the next block), and asks for last engine or train passing his station west bound. If train No. 5, engine 837, was last west bound at Tuscarora, the operator thereat so reports, giving time it passed; and then, if train No. 5 has arrived at Washington Junction, and the operator has record of it, he will instruct operator at Tuscarora to hold all west bound trains following No. 5, engine 837, until No. 2, engine 835, arrives. If Tuscarora gives Washington Junction permission to allow No. 2 to come into this block, he at once displays his west bound red signal, and keeps it displayed until No. 2 reaches Tuscarora.

As soon as No. 2 enters the block at Washington Junction, Tuscarora is advised accordingly. Tuscarora immediately gets permission from Dickersons (the next block east) for a clear track for No. 2 in the same manner that Washington Junction secured a clear track from Tuscarora, and each succeeding block does the same.

A telegraph operator's form, made up of letters and figures, to facilitate gaining the above information between the operators is ingeniously devised.

Provision is also made for construction or work trains. They are required to be at telegraph stations to meet or be passed by trains.

If the telegraph line should fail and the block cannot be ascertained to be clear for an approaching train, the approaching train is stopped and notified in writing, the operator then displays the green (permissive) signal and the train proceeds cautiously to the next block station, as per its schedule rights and train orders.

This block system is in the hands of telegraph operators exclusively. They are required to keep themselves thoroughly posted in regard to movement of trains. They keep a copy of train orders sent to all trains that meet at their respective stations and acknowledge their understanding to the train dispatcher's office.

The rules governing this single track block system do not relieve trainmen from observing all rules in regard to protection of their trains, and the instant any train stops or comes down to very slow speed between block stations, a flagman goes back at full speed to protect his train.

Manufacture of Tin Plates.

The form of tin plate known as "roofing plate" is now made in Philadelphia, by taking imported steel plate of proper quality and coating it with a mixture of tin and lead. A mill near Front and Laurel Streets is turning out every day a score or more of boxes of the American roofing plate thus prepared. This mill has been in operation just two months, and, with the exception of a plant at Pittsburg, it is the only one in Pennsylvania. At the close of two months' operations the proprietors of the manufactory maintain that they can produce a first class article of roofing tin plates as cheaply as they can be made in England or Wales, plus the duty of $44 per ton. In other words, the consumer can purchase American roofing plate of a good grade for as small a price as he can get the British article and pay the duty thereon of 2 1-5 cents, to be collected after July 1, 1891.

So far, this mill has not attempted to produce bright tin, which is used for the manufacture of tinware. However, the firm has completed plans for the duplication of its present plant, and still other additions are anticipated. N. & G. Taylor Co., large manufacturers of tin plate in Great Britain, and extensive importers, are making an earnest test to determine definitely whether or not they can hereafter make their plates at home instead of 3,000 miles away.

Tin plate is made of sheets of iron or steel coated with pure tin or a mixture of tin and lead. When the sheets are covered with pure tin the product is called "bright" tin, and when the coating is a mixture of tin and lead the product is called "roofing" tin. The value of both kinds depends entirely upon the quality of iron or steel used, the manner in which the tin plates are made and the quality and quantity of the coating. In making cheap tin plate, Bessemer steel is employed, and is coated by a cheap process, acid being used as a flux, and the plates finally rolled to squeeze all the coating possible off the steel, leaving only enough to cover the base. The flux is the wash put on the steel plates to make the coating stick fast to it, or, as the Welsh say, to make it "bite."

There are mills in England where rolls are used which spread the coating of tin so thinly upon the steel plates that one pound of the tin is made to cover 100 square feet of plate. This, of course, is a low grade article. As the steel costs but 4 cents a pound and pig tin costs 21 cents a pound, there is a general desire on the part of manufacturers to put as little tin on the plates as possible.

A first rate grade of "bright" tin contains about 10 pounds of pure tin to 100 square feet of plate. This is put on Siemens-Martin steel. An average of 6½ pounds of tin to 100 square feet of plate makes a good article. As lead costs but 4½ cents a pound, it is usually mixed in liberal quantities with the tin to make the coating metal. To be sure, lead alone will not adhere to iron or steel, and a little tin is absolutely necessary.

Tin plates are usually made in two sizes, 14 by 20 inches and 20 by 28 inches. They are packed in boxes containing 112 plates. A box of the best quality of bright tin, of the 14 by 20 inches size, sells for $11. A fair grade sells for from $6.50 to $7. The steel before it is coated is cut to thicknesses. One size is 14-1000 of an inch and the other 12-1000. The first is called the I X, and the second the I C brand.

On July 1 the new tariff duty of 2 2-10 cents a pound, or $44 a ton, went into effect.

The process of making roofing at the new mill of N. & G. Taylor Company, near Front and Laurel Streets, is an interesting one. The company buys its steel plates in England. The manner of converting them into tin is this, there being sixteen distinct steps in the process:

1. The sheets of steel are cut into perfect sizes by a squaring machine.
2. From the squaring machine the steel is put into a pickling box. This pickle contains a good deal of sulphuric acid, and is applied for the purpose of removing rust.
3. Then the plates are lifted with swing tongs from the pickling box into a trough of water, where they are thoroughly washed.
4. The next is another water bath.
5. Then they are scoured with sand to remove the last particle of rust, and to make the plates bright and smooth.
6. A short distance away over a hot furnace are arranged six pots, the first of which contains boiling palm oil. Into this the steel plates are immersed.
7. The second vat contains the mixture of lead and tin metal, which is kept at the boiling point, and here the plates get another bath.
8. A second pot of metal comes next, in which the plates remain but a few minutes.
9. The plates are then laid on a tin-covered table and both sides are vigorously brushed with a heavy brush. This is to remove any little blisters that may have been formed before the coating gets cold.
10. A pot of metal similar to the other mixtures is next, and into this the hot plates are swung.
11. The plates are put in a vat of boiling oil.
12. Then they are dumped into a pot of metal once more and for the last time.
13. One by one they go to a bin of sawdust and are rubbed on both sides.
14. Alongside of this is a bin of bran, and here a boy again rubs the sides of the plate.
15. The plates then go to a boy who lays them on a sheep skin and rubs both sides thoroughly. This is the final touch, so far as the making of the tin is concerned.
16. The plates go from the sheep skins to the stamping machine. Then they are packed into boxes and are ready for shipment.

From the time a plate leaves the water bath until it is stamped not more than twenty minutes elapse. The pickling, sand rubbing and washing processes do not require everything. The mills are run in "sets." Each "set" consists of the vats, pots, etc., mentioned above. To work them properly seven men and six boys are employed. Such a force can turn out forty boxes of tin plates a day. This is the capacity of the Taylor mill.

Several new steel plate mills are being built in this country, when it is expected the factories that make American tin will be able to purchase the black sheets at a more advantageous price.—*Phil. Record.*

Bleaching of Wax.

When beeswax is exposed in thin layers to the air and to direct sunlight it is quickly rendered colorless, but in the dark, in presence of a free supply of air, oxygen, or ozone, no decolorization whatever is effected, even after a long time. In presence of sunlight oxygen, and especially ozone, destroys the color very rapidly, but the presence of oxygen is not absolutely necessary. When the wax is exposed to sunlight *in vacuo*, or in an atmosphere of carbonic anhydride, it is bleached, but much more slowly than in the presence of air.

The composition of the unbleached wax differs considerably from that of wax which has been bleached by exposure to air and sunlight. The latter contains a slightly larger percentage of free acids, but a large proportion of the unsaturated acids of the oleic series and of the unsaturated hydrocarbons in the crude wax have disappeared. This fact shows that in the bleaching process not only does the coloring matter suffer total combustion, but the unsaturated acids and the unsaturated hydrocarbons are converted into saturated compounds by the fixation of oxygen. This is also the case with other fatty substances, such as suet, and the reason why the addition of 1 to 5 per cent of suet to beeswax causes decolorization to proceed more quickly is because the suet, in its oxidation or combustion, aids the destruction of the coloring matters. The addition of a small quantity of other oxidizable substances, such as essence of terebenthene, also hastens the action, so that it would seem that the destruction of the coloring matter is due to the formation of ozone by the oxidation of the added substance.—*A. and P. Buisine.*

Remedy for Ivy Poisoning.

Dr. James J. Levick, of Philadelphia, writes to the *Medical News:* "In a case of poisoning of the hands from *Rhus toxicodendron*—poison oak—recently under my care, which had reached the vesicular stage and was attended with much swelling and burning, the happiest results promptly followed the free dusting of the powder of aristol on the affected parts. The change was almost magical, so sudden and so prompt was the relief afforded. Might not this powder, applied in the early stage of the disease, do much toward preventing the ulceration and pitting of variola?"