

HOW TO LAY SHINGLES.

Not one-half the persons who lay shingles when making a roof on a building have any correct ideas in regard to making a roof that will be absolutely "rain-tight" during a driving storm of rain. We have frequently seen men shingling, who, when they would meet with a worthless shingle, say once in laying two or three courses, would lay this poor shingle among the good ones, saying: "It is only one poor shingle—one shingle cannot make a poor roof." But one poor shingle will make a leaky one. If first rate shingles are employed and one poor one is worked in among every 100, that roof might about as well have been without any shingles. If any poor shingles are to be used let them all be laid together near the upper part of the roof. The best of shingles will not make a tight roof if they are not properly laid, while the same shingles would make an excellent roof if laid as shingles should be laid.

The correct rule for laying shingles of any length, in order to form a roof "leak-tight," is to lay the courses less than one-third the length of the shortest shingles. For example, when shingles are 18 inches long many of them will not be more than 17 inches in length. Therefore, five inches is all that the courses will bear to be laid to the weather with surety of forming a good roof. The shingles must be three thicknesses over the entire roof. If they are not three thicknesses—if now and then a shingle lacks a quarter or half an inch of being long enough to make three thicknesses—there will, in all probability, be a leaky place in the roof at such points. Moreover, when the lower courses lack half an inch of extending up far enough to receive the rain from the outermost course, in case the middle course were removed, it would be just as well to lay them seven or eight inches to the weather as to lay them only five, or five and a half inches. Many shingles are only 16 inches long and many that are sold for 16 inches long will hardly measure 15 inches. In this case, if the roof be rather flat—say about one-quarter pitch—four and a-half inches is as far as they should be laid to the weather. In case a roof were quite steep it might answer to lay the courses four and three-quarter inches to the weather.

When buildings are erected by the job, proprietors should give their personal attention to this subject, and see that jobbers do not lay the courses a half inch too far to the weather.

There is another important consideration which is too frequently overlooked in shingling, which is "breaking joints." Careless workmen will often break joints within half an inch of each other. When the joints of the different courses come so close together the roof will most certainly leak. Why should it not? There is nothing to prevent it during a heavy rain. Unless a roof is steeper than a quarter pitch much care should be taken to break joints not less than one and a quarter inches. Let all workmen and helpers be taught the vast importance of rejecting every poor shingle, except when the upper courses are being laid.

UTILISATION OF SLAG.

An important process for the utilisation of slag has (according to the *Mining Journal*) recently been introduced on the Continent. The slag is reduced to a fine state of division, in which it becomes capable of a great variety of uses in addition to those for which it was originally supposed to be adapted. The channel through which the molten slag flows from the furnace is made, in this arrangement, to terminate in a running stream of water leading into a pit or excavation. On striking the water the lava stream of slag is blown and broken into a sort of fine porous gravel, which the flow of the water then bears along into the pit. Meanwhile the iron grains contained in the slag, which previously were separated by crushing, are now sorted out by this water process, sinking to the bottom by their weight instead of being carried on with the rest. The slag sand accumulating to the pit is charged thence into waggons or railway cars by means of an endless chain and buckets driven by an engine run by hot gases from the furnace. Thus treated the artificial sand or granulated slag is said to be not merely easier and cheaper to get rid of, but applicable to a number of valuable uses. One of these is for casting sand, pigs made in such a bed coming out exceedingly bright. For this purpose the material is now very largely used in some parts of France, Belgium and Prussia. The next step was a natural outgrowth of the last—to use the finer portions, separated by sifting, to sand the moulds for fine castings; thus employed, it is found cleaner and better than common sand, and the castings are improved. Another use to which this artificial or metallic gravel is put is that for ballasting railroad tracks, for which it is very serviceable. Being

also very porous, packing well, and holding but little wet, this slag-sand forms a valuable concrete-like mortar, and not only this, but is capable of being used for cement. This is regarded, in fact, as its most important speciality, it being found that first-class cement can be thus obtained from almost any slag at a very small cost. Other uses for this substance are likewise mentioned, such as employing it upon land for the lime and silica contained, manufacturing fire-brick, &c., and enamelled bricks of different colours may be manufactured cheaply from this hitherto waste material, and this being the case its industrial value, under the hand of wise improvement, is likely to be very great.

A GERMAN TORPEDO BOAT.

The German papers announce the launching of the "offensive torpedo steamer" Uhlran from the Stettin Engine Company's docks. This vessel will receive a torpedo charged with dynamite, to be carried on a 10 ft. ram lying deep under the water line, which torpedo is to explode on contact with the hostile ship. To protect the torpedo boat from the results of the discharge of its own torpedo, the vessel is built with two complete foreparts, sliding one within the other, and having a considerable extent of intermediate space between them. This space is filled with a tough and elastic material (cork and marine glue), and thus, if even the bows were carried off, there would be a second line of resistance. The object of the filling is to act like buffer, deadening the blow and protecting the stem. Another striking feature is the great power of the engines, the Uhlran carrying an engine of 1,000 indicated horse-power. The steam is supplied by Belleville's tubular generator. The vessel, in fact, is all engine, only a very small space being left for coal and crew. The great power of the engines is necessitated by two circumstances. In the first instance, the steamer has to be propelled at a maximum speed, and then it has a very deep draught so as to offer but little scope to projectiles. In the next place, the greatest facility of steering or manœuvring had to be attained; hence the proportion of width to length—25 ft. to 70 ft. In order to save the crew at the worst, a raft has been constructed, which is fitted with the above mixture of cork and marine glue, and it is placed near the helm. When the Uhlran enters upon action the dynamite cartridge is to be fixed by divers at the point of the ram. The rudder is then to be fixed, and the crew are to open a wide port on the ship's side, and with their raft jump into the water. The steamer is then allowed to rush forward and burst its cartridge on the enemy's armour. The crew, however, are to hold on the torpedo boat by a line, whilst they are awaiting the result of the explosion, and in case their boat is not hurt they are to board it again, in order, if necessary, to repeat the manœuvre. The price of this torpedo boat is about £30,000.

CARE OF THE HAIR.

A writer in *Harper's Bazar* says: To get and retain beautiful hair you must attend to daily brushing it, occasionally washing it, and periodically trimming it, and striving at all times to keep the general health up to the average.

Now as to brushing. The skin of the head, like that of every other part of the body, is constantly being renewed internally, and throwing off minute scales externally, and these are removed by means of the body brush. But it is not so easy to brush the hair as one might imagine. Few hair dressers, indeed, know very much about it. The proper time for the operation then, is in the morning, just after you have come out of your bath, provided you have not wetted your hair. Two kinds of brushes ought to be found on every lady's toilet table, a hard and a soft. The former is first to be used, and used well, but not too roughly; it removes all dust, and acts like a tonic on the roots of the hair, stimulating the whole capillary system to healthy action. Afterward use the soft brush—to give the gloss from which the morning sunshine will presently glint and gleam with a glory that no Macassar oil in the world could imitate. Whence this gloss? you ask. Why, from the sebaceous glands at the root of the hair, nature's own patent pomade, which the hard brush does not spread.

Secondly, one word on washing the hair. This is necessary occasionally, to thoroughly cleanse both head and hair. One or two precautions must be taken, however. Never use soap if you can avoid it; if you do, let it be the very mildest and unperfumed. Avoid so-called hair cleansing fluids, and use rain water filtered.

The yolks of two new-laid eggs are much to be preferred to soap; they make a beautiful lather, and when the washing is