lines, *s*, *s*, shown at the ends of the pattern, represent the tenons that are to be left on the braces. This pattern is now complete; to make it handy for use, however, we will nail a strip 2″ wide on its edge, to answer for a fence as shown at *k*, and the pattern can then be used either side up.

The cut at Fig. 3 shows the brace in position, on a reduced scale. The principle on which the square works in the formation of a brace can easily be understood from this cut, as the dotted lines show the position the square was in when we laid out the pattern.

We hope that it is unnecessary to inform the young student, that the "square" as now arranged, will lay out a brace pattern for any length, if the angle is right, and the *run* equal. Should the brace be of great length, however, additional care must be taken in the adjustment of the square, for should there be any departure from truth, that departure will be repeated every time we move the square, and where it wouldn't affect a short run.

We will now endeavour to lay out a pattern for a brace with an irregular run. We want a pattern for a brace where the run on the beam is three feet, and the run down the post four.

Prepare a piece of stuff, same as the one operated on for four feet *run*, joint and gauge it. Lay the square on the left hand side, keep the 12″ mark on the shank, over the gauge-line, place the 9″ mark on the blade, on the gauge-line, so that the gauge line forms the third side of a right-angle triangle, the other sides of which are nine and twelve inches respectively.

We now proceed as on the former occasion, and as shown at Fig. 4, taking care to mark the bevels at the extreme ends. The dotted lines show the positions of the square, as the pattern is being laid out.

Fig. 5 shows the brace in position, the dotted lines show where the square was placed on the pattern. The young student will do well to thoroughly understand the obtaining the lengths and bevels of irregular braces; by a little study he will soon be able to make all kinds of braces.

If I want a brace with a two feet run and a four feet run, it must be evident that, as two is the half of four, so on the square we must take 12″ on the shank, and 6″ on the blade, apply four times, and we have the length, and the bevels of a brace for this run.

For a three by four run, we take 12″ on the shank, and 9″ on the blade, and apply four times, because, as 3 feet is $\frac{3}{4}$ of four feet, so 9″ is $\frac{3}{4}$ of 12″.

From these few examples, it is hoped that all enquirers may be able to master this method of laying out braces. Should there be any fellow-workman, however, who does not fully understand this system, and who is desirous of further information on the subject, he will always find us willing to answer.

Next month we propose dealing with the "Rafter question," and we venture to predict, that what appears to be a great mystery to the young and inexperienced workman, will resolve into a very simple matter.

(*To be continued.*)

A Giant Tree.—A patriarch of the forest has been lately felled in California, and the greater portion of the wood taken to San Francisco. It was known by the epithet of "Old Moses." If one might infer with accuracy its age from the number of its rings, it must have been 4,840 years old. Its capacity is said to have been so great that 300 persons could find room within its trunk.

Useful Information.

Sights Seen from a Railroad Train.—Some new optical delusions have been described by Dr. L. P. Thompson. Those connected with the railroad may serve to relieve the tedium of travel by affording an agreeable exercise to the mind in endeavoring to explain them. When a landscape is observed from a moving train, all objects to the remote horizon appear to be passing in the contrary direction, those nearest having the greatest velocity. Consequently, if the attention be fixed upon any object at some distance from the line, all objects beyond will relatively appear to be moving forward with the train, while objects nearer appear to be moving backwards. The combined effect is to make the landscape appear to be revolving centrally round whatever point we fix our attention upon. Rain seen from a moving train always seems to be falling obliquely (except in a very strong gale in the direction of the train's motion) in a direction opposite to that of the motion of the train. But if another train happens to pass in the opposite direction, and we look out at this and follow it with our eyes, raindrops falling between the two trains will seem to be flying forward with ourselves. If we stand upon the platform of a station and watch a train approach, the end of the engine appears to enlarge or swell as it approaches, and occupies a larger area of the field of vision. Conversely the end of the last car on a returning train appears to shrink down and contract as it diminishes in apparent magnitude. An observer at some slight elevation above a railroad, seeing two trains pass along simultaneously in opposite directions, will receive the impression of one long train moving round a circle.

New Nickel-Plating Solution not Patented.—In view of the recent decision in regard to nickel-plating, the following information from the *Manufacturer and Builder* may be found of useful interest: Messrs. Boynton, Wiler & Co., in England, have for sale a new nickel-plating solution, which they confidently recommend for the following reasons: 1st. It is a solution of the double salt of cyanide of nickel and potassium, and consequently not a solution which is used and prepared by the alleged Adams process. 2nd. It will plate on all metals directly, including zinc, lead and solder, and penetrates deeply into the pores of the cathode, thereby preventing oxidation. 3rd. It will positively plate faster than any known process; sometimes in about eight minutes. 4th. It never requires a special regulation by electricity, thereby preventing the burning of the smallest articles by the strongest currents. 5th. Articles to be plated never become injured from oxidation in the solution. 6th. It produces a coherent, tenacious and flexible deposit, superior to any known to science. 7th. No acid dips are required for any kind of work, while Dr. Adams claims that acid dips are very essential for good results. 8th. The expense of keeping the solution in perfect working order does not exceed $5 per 100 gallons per month, if ordinary care is used, as in all other solutions. They are prepared to sell this solution on favorable terms, thereby dispensing with the license or royalty business altogether.

To Make a Razor Strop.—Select a piece of satin, maple, or rose wood, 12 inches long, $1\frac{3}{4}$ inches wide, and $\frac{3}{8}$ inch thick; allow $3\frac{1}{2}$ inches for length of handle. Half an inch from where the handle begins, notch out the thickness of the leather so as to make it flush toward the end. Taper also the thickness of the leather; this precaution prevents the case from tearing up the leather in putting the strop in. Then round the wood very slightly, just enough (say one-twelfth of an inch) to keep from cutting by the razor in stropping and turning over the same. Now select a proper sized piece of French bookbinder's calfskin, cover with good wheat or rye paste, then lay the edge in the notch, and secure it in place with a small vice, proceed to rub it down firmly and as solid as possible with a tooth-brush handle (always at hand, or should be), and, after the whole is thoroughly dry, trim it neatly and make the case.

Bronzing Wood, Leather, Paper, Etc.— The *Moniteur Industriel*, of Paris, describes a process for bronzing wood, leather, paper, etc., as follows: The inventor dissolves gum lac in four parts by volume of pure alcohol, and then adds bronze or any other metal powder in the proportion of one part to three parts of the solution. The surface to be covered must be very smooth. In the case of wood, one or several cats of Meudon or Spanish white are given, and the object is polished with an iron of proper shape. The mixture is painted on, and when a sufficient number of coats have been given, the object is well rubbed. A special advantage