If the carpenter is accurate in taking these measurements as shown, it will insure accuracy in the work. And unless the above or some other equally correct plan of measurement, is observed it will lead to difficulty on the part of the mechanics in the execution of their work, as well as much annoyance to the owner.

ALLEN BARD, *Stair builder,*
No. 1616 N. Thirteenth street.
Philadelphia, May 30, 1869.

LESSONS FOR LEARNERS.

ACCORDING to promise, we will commence our series of instructive lessons for young men, in this number of the REVIEW, in the hope that we can make this department attractive and useful. There is in every community a great amount of latent talent which, like the bedded mineral, requires to be discovered, brought to light, and polished to its capacity. Innumerable are the instances of genius being discovered by mere accident, and few of our fellow-creatures are not gifted in some way. Education does not create talent, it only develops it. It is, in fact, the polishing of the diamond—the elucidation of Nature by Art.

It is true that a capacity to receive instruction exists without talent, and that education will produce effects which will go far to make up for the want of the heaven-born gift. And it is also very true that he who has to labor most zealously to overcome the incapacity to quickly comprehend, is he who retains longest and makes the best use of that which he acquires. This we all know to be the fact—that the most brilliant men are not by any means the most learned. Thorough understanding and talent are not, nor should they be, strangers.

"With the flash of the gem its solidity too,"

is the motto of EDUCATION, and he who possesses both is perfect in his way. Still, he who has but the one, is better off with the solid, sound, reliable acquirement of study, than he who catches by inspiration and retains but superficially.

PREFATORY DESCRIPTIONS.

Before commencing the lessons, we will give some descriptions of the instruments and other necessaries with which the student should be well acquainted, so that as by degrees he becomes possessed of them, he will not be at a loss to understand their use.

THE DRAWING TABLE.

There are numerous contrivances of this very desirable piece of office furniture, most of which fail to meet all the wants of a draughtsman. The drawing-table requires to be so contrived as to be easily raised to any convenient height, and to be sloped to any necessary inclination, and all this without being cumbersome.

Some architects choose to have the under part enclosed and fitted with drawers for the keeping of paper, drawings and tracing cloth. This is objectionable inasmuch as it causes the frequent interruption of the draughtsman, in order to apply to these drawers.

But we will not now stop to review the numerous pieces of furniture of this description, contenting ourselves with simply describing one that we consider most suitable as being easily adjusted, light, strong, and convenient; at the same time that it is perfectly steady, the leaf of the table answering for a large drawing-board.

The engraved perspective very clearly shows the mode of construction of one of those tables, and any carpenter can

put such a one together without difficulty.

The supporters at the back are hinged to the under part of the leaf, and having pins at the lower extremity which enter the holes in the diagonal brace, it is evident that the inclination of the leaf can be adjusted at once to any angle, as it is likewise hinged to the top of the frame.

The shelf underneath will be found very convenient for holding instrument boxes, color tiles, water cup, and any other things not in immediate use. It will also serve as a paper shelf.

The leaf ought to be cleated, as shown, and should not be less than one inch thick. The ends should be neatly planed, and the whole made a true square; for, as we before remarked, it may serve as a drawing-board.

THE INSTRUMENTS.

In the engraving, Fig. 1, is the case of instruments, containing the drawing pen, dividers, [plain and jointed,] the latter having the pen, pencil, and lengthening bar. There is also a spring bow-pen very useful for turning small circles. In the cover may be seen the half circle protractor, usually made of brass or german silver; but those of horn are preferable to either, as not soiling the paper and being so quickly applied to the required angle. The cost is the same whether in brass or horn. The German silver is three times the price of either.

The protractor is very useful for indicating angles, and cannot well be dispensed with.

Fig. 2 is a triangle, a very handy assistant to the drawing-square. They are made to angles of 30, 60, and 90 degrees. The hole is to hang the instrument when not in use.

Fig. 3 is an open or framed triangle.

Fig. 4 is an ivory scale with all its graduations. The edge is divided into degrees, so as to act as a protractor.

Fig. 5 is the reverse side, with various graduations by which to take off any scale of parts.

Fig. 6 is the drawing-board, cleated on the back and screwed. This board should be made of well seasoned stuff, clean on the edges all around, and perfectly square. In fact it is necessary that the edges be shot from time to time to guard against the bad effects of shrinkage.

It should be full an inch thick, and perfectly free from knots, shakes, or other defects. Pine knots always have a bad effect on drawing paper when wet down and strained over them.

The surface should be very even and smooth.

Fig. 7 shows the edge of the drawing-board, with the cleats beveled off on the angles.

Fig. 8 is the drawing square and bevel combined.

Fig. 9 is the T square, so-called from its resemblance to the letter of that name.

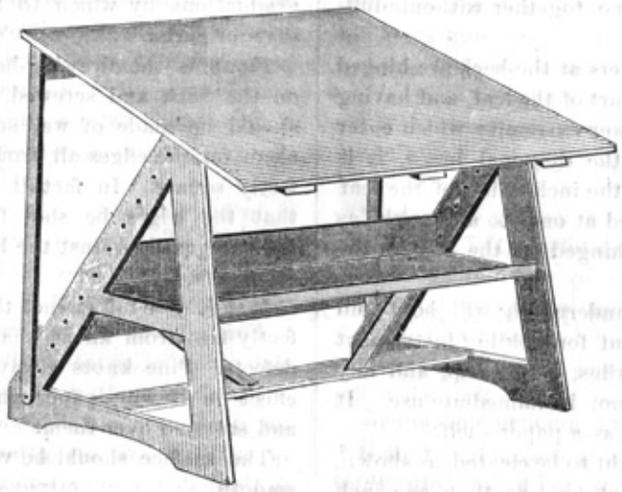
If this be used it would be well to make the other (Fig. 8) a double bevel, so that reverse angles could be lined off with facility; an operation which cannot be performed if one side is stationary. The drawing square should be true to the well squared edges of the board, and the blade should be beveled off on opposite edges, taking care that it be the left on each side of the blade, as shown by the black line in the engraving.

Fig. 10 is the parallel ruler, which whilst in order is a useful instrument, but is very apt to warp and get loose at the turning points; when it becomes unreliable and useless.

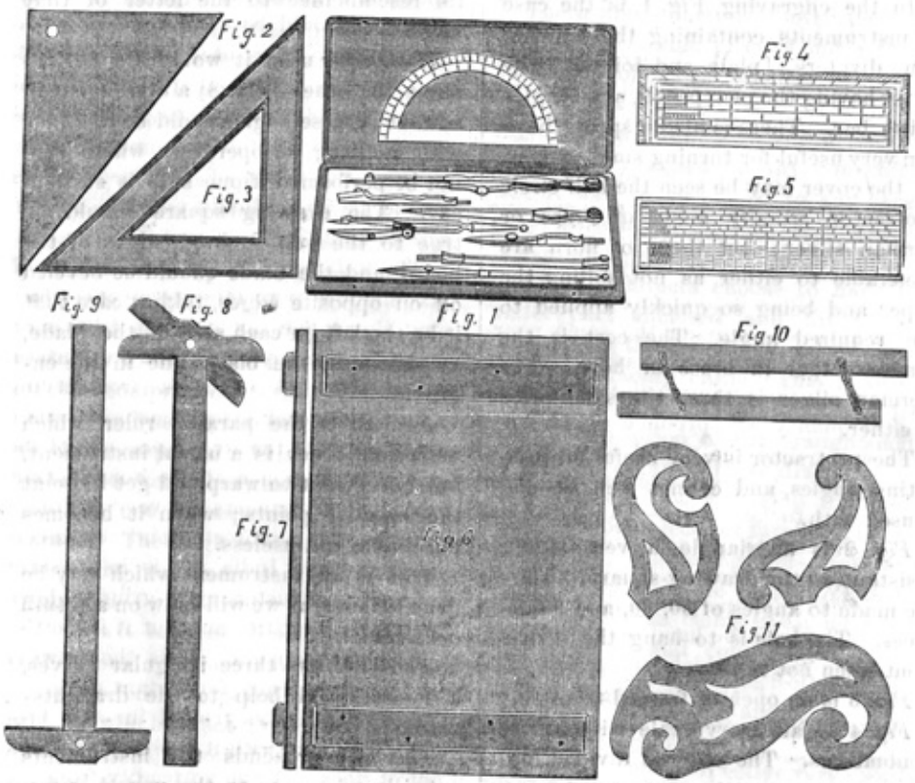
This is an instrument which may be done without, as we will show on a future occasion.

Fig. 11 shows three irregular curves, a most useful help to the draughtsman.

This comprehends the instruments actually necessary to the varied operations of architectural drawing. There



THE DRAWING TABLE.



THE INSTRUMENTS.

are many others which might be added and prove useful, but we now limit our list, so as to bring it within the reach of the majority of learners.

The next thing to be possessed of is a suitable pencil, without which, the instruments, however correct, will be of little avail in the making of good drawings; for the quality of the lines is the main excellence by which alone correctness can be relied upon.

The most popular maker of pencils is A. W. Faber, and the best grade for the learner's use is No. 4. But, when fine lining is to be done by an advanced student, No. 5 is desirable. Indeed it would be well to have both these pencils.

There are several other makers now, equally good with Faber; but there are also many very bad, so that it is advisable to ask for his. as being perfectly reliable, and to buy it at a respectable store (an instrument maker's would be preferable) for there are many worthless imitators of "A. W. Faber." A little attention to this matter will save a vast deal of expense and annoyance to the beginner.

In cutting the pencil for use we would advise as the best mode, to pare one side *flat* to the lead for an inch and a half, or two inches up. The object of this style of cut is to ensure the pencil's point always occupying the same nearness to the edge of the drawing-square. In making the paring round, the slightest inequality will produce an unequal line every time the pencil is turned in the hand. A little observation will prove this to be the case, and the *flat cut* will soon make its correctness visible. In using the pencil it is necessary to hold it as nearly perpendicular as possible, and to lean the hand on the side of the little finger, which will glide along the surface of the drawing-square in answer to the motion of the arm, which should be perfectly free.

A four-sided stick, shaped like a razor strop, having sand paper attached to each of its sides will be found very useful in keeping a fine point on the pencil. Some use a file for this purpose, and some use a piece of ground glass, or rough slate. This is all a matter of choice. Whatever is used it should be placed, with the instruments, at the right hand side of the drawing-table, so as to avoid the possibility of its being rubbed by the sleeve, and thus soiling the paper.

For *inking in* the drawing, an ink slab or set of saucers will be requisite. The slab is handy as the slip is suitable for grinding on, whilst the three holes or cups receive the ground India ink in three degrees of strength.

A camel hair pencil may be used to fill the drawing pen with ink by pressing it in on the side. It would be well to have a cleaning rag attached to the drawing table to keep the pen clean, so that after filling no surplus ink shall get upon the edge of the square. Besides, the pens should be carefully unscrewed and cleaned after use, and if a small square of chamois leather were provided its use would preserve the pens in good serviceable order and save much trouble. In fact the whole of the instruments should be occasionally polished and all screws kept free from rust.

The *ink saucers* are a collection of six shallow porcelain receivers which shut down one upon another, having a cover for the top one. They are useful for keeping ink or colors from drying up, which speedily happens when they are exposed to the air, on account of the presence of gum arabic. For this purpose then the saucers are very useful.

In some architects, and engineers offices, where India ink is in constant request, it is customary to grind it down in large quantities and put it in bottles with close stoppers. It is thus always on hand and ready for instant use.

If India ink be ground in stale beer the lines made with it are very brilliant, but it does not run so readily from the pen as when ground in water.

The paper to be used is the best German Roll Drawing Paper, extra white, forty inches wide, and weighing eight ounces to the yard. The price is forty cents per yard, and one yard of it is cheaper and better than five sheets of Whatman's Demy at nine cents per sheet. There is no waste, and there is an even surface, which is not the case with Whatman's, which has a crease in the middle.

We now speak of the inferior article of paper suitable for learners, and advise the purchase of the German Roll.

When the size of the intended drawing is determined on, cut that much paper from your roll and turn in the four edges, say three-quarters of an inch. Then straighten them out again. The inside of the roll is the right side, which must be gone over with a wet sponge until it is well wetted, leaving no water standing on the surface. The paper is now to be placed evenly on the board fair with the sides, and the edges before turned are now to be evenly coated with a strong solution of gum arabic, glue, glycerine or paste. The first we think is best. The gummed edges are now to be pressed out, and all air carefully excluded. Four flat sticks placed all around and heavily weighted will accomplish this purpose if left on sufficient long to dry perfectly. The body of the paper, wet with water will strain as it dries, and if it does not pull too hard upon the edges will leave a nice smooth surface to work upon.

However, success in this matter depends altogether on the watchfulness of the operator.

With these preliminary remarks we will proceed in our next number to guide the learner forward and make his work as easy as a fair knowledge of its first difficulties will assist in doing.

During the progress of these lessons we will always be ready, and ever desirous to answer any questions, or elucidate any difficulty which may occur; as our object is to render them as practically useful as possible.

THE IMPORTANCE OF BUILDING.

WE wish we could impress the general mind with the vast importance that attaches to Building as an art and as a trade. Few, comparatively very few, ever suffer the subject to have a place in their every day thoughts—and that few are intimately connected with its existence. Not but that the number of those actually relying on Building for a living is very great—No, every trading community is chiefly composed of those who depend entirely on the great art for their living, and could not sustain themselves a day without its demands on them. Is it necessary to prove this assertion by referring to the numerous trades and callings that go to make up the Building community? And yet, with this fact staring the world in the face how great is the apathy of that world towards the merits and the interest of this industrial commonwealth, constituted by Building and its dependents.

The Hardware man looks upon his as a trade in itself, and considers that Building is rather dependent on him, than he on it. But were it not for the manifold requirements of Building what would become of his stock. Where would be the demand for his locks, hinges, bolts, screws, nails—and the thousand and one etceteras, not to speak of the tools required by artizans.

The Lumberman despises mere Building as an ignoble trade. He is above it, and the builder has to come to him for a supply which cannot be done without.