USEFUL OFFICE BREVITIES.

IN all levers the power is in proportion to the length of the arm on which it acts, which means that if the fulcrum is close to the body to be moved, the effect is greater than if it were nearer the balancing point or centre where the lifting force would only equal the downward pressure, increasing or decreasing as the fulcrum recedes or approaches it.

All plumb lines drawn to the earth's surface continue to its centre, showing that walls and other parallel erections are not in reality parallel, and if continued to a sufficient height a differ-

in reality parallel, and it continued to a sufficient height a differ-ence would be perceptible in the distance between them. The same rule applies to horizontal lines, owing to the earth's curvature, which is 8 in. to the mile, making all lines drawn parallel to its surface similarly curved. In making patterns for iron castings the iron in pounds is equal to the same weight of pine in ounces. A hollow cast-iron column is capable of bearing as much strain as a solid cast col-umn of the same diameter. umn of the same diameter.

To space any number of articles the thickness of same being given : Place them closely together and measure their combined width, then subtract this dimension from length of distance to given :

be spaced, and divide the number of articles in the remainder. A simple way to strike lancet Gothic arches is to join the apex and a point of springing, bisect this line, and draw a line at right angles to it. The intersection of this line with the springing line is the radius point.

To find mitres on the Steel Square.

rafters :-

G

			1	
12	×	12=	Square	Mitr
7	×	4=	Triangl	e.
13	1×	10=	Pentag	on.
4	×	7=	Hexago	on.
12	13×	6=	Heptag	on.
18	Š×7	75)		
	or	- }=	Octago	n.
-	7×1	[7]		
22	ł×	9=	Nonage	on.
	Ť		Decad	m

 $9\frac{1}{2} \times 3 = Decagon$

Half an ounce of iron loses one-eighth of its weight in water. A mans daily labor could be performed by 4lb. of coal. Figures on the square for top and bottom cuts on common

1/8	pitch	-	3"	rise	12"	run.	
1/6	L 66	-	4"	66	12"	66	
1-5	"	-	410	. 66	12"	66	
1/	66	-	6"	66	12"	66	
1/2	"	_	8"	"	12"	"	
1/2	66	=	12"	66	12"	"	
2/2	"	-	16"		12"	66	
othic	"	=:	21"	"	12"	**	

For hips substitute 17in. run for 12ft. run.

For hips substitute 17in. run for 12ft. run. When a beam is fixed at one end the strain on it is four times as great than if it were fixed at both ends. To calculate the area of an ellipsoid or spheroid : Call the base 10ft. and the height 7ft. Then $10^4 \times (7 \times 4) = 296$ sum of square of base and four times square of height $296 \div 2 = 148$ and $\sqrt{148} = 12.1655$ square root of 148. Then $12.1655 \times 3.1416 \times \frac{10}{4} =$ 191.0957. Square feet and area of spheroid or ellipsoid. Table of the gravity of wood from cork to lignum vitae :—

Specific	gravity.
Cork	246
Poplar	383
Larch	544
Flm and English fir	556
Mahogany, Honduras	560
Willow	585
Coder	596
Dick pine	560
Pitch pine	661
Webert	671
Fin forest	694
Parah	696
Deech	715
Cherry tree	745
I eak	750
Maple and Kiga in	760
Ash and Dantzic oak	798
Yew, Dutch	793
Apple tree	800
Alder	807
Yew, Spanish	855
Mahogany, Spanish	872
Oak, American	012
Boxwood, French	012
Loe wood	913
Oak, English	970
Oak, English, sixty years cut	11/0
Ebony	1331
Lignum vitae	1333

To find out how many feet there are in one ton of mahogany :

To find weight of a log of larch 14ft. long, 21/2 ft. broad, and 1 1/1 ft. thick :

2.5ft. × 1.25ft. × 14ft. = 43.750; then,

43.750 × 544 = 23800 ounces = 13cwt. 1qr. 3lb. 8oz. Ans.

The standard of specific gravity of bodies is water, one cubic foot weighing 1,000 ounces.

"GEOMETRICAL DECORATED " WINDOWS.

THE important subject of the due subordination of the mouldings of Decorated windows was very ably worked out by Edmund Sharpe, though at the present day, when Gothic principles are so well understood, some of his comments may appear to give almost elementary information. He remarks on page 51 that "the different orders of the window arch seldom consist of the same mouldings, and do not often even resemble each other. This is, perhaps, less the case with the earliest windows than with the later ones." He proceeds to say, "On the other hand, with the later ones." He proceeds to say, "On the other hand, the rich series of curvilinear arch-mouldings, commencing with Carlisle and ending with Beverley, exhibit profiles of great variety and beauty". Further on, "As soon, however, as the double ogee began to be a prevalent curve, the practice of repetition in the orders of mouldings, both of windows and door ways, became again very common." All this is very interesting. In some thirteenth century work there is good reason for saying the mouldings have the effect of bundles of reeds tied together. In some thirteenth century work there is good reads in the sping the mouldings have the effect of bundles of reeds tied together, and this complaint is justified by their sameness, also by the want of proper prominence and boldness to the leading members of the several groups of mouldings. Again, page 53, Sharpe says, "The section of a tracery bar is usually the same on both sides. This rule, which may be said to obtain throughout the whole of the curvilinear period, has its exceptions in the Geometrical period. Occassionally the circular centrepiece has a differ-ent series of mouldings on the inside and on the outside. . . . Where, also, two orders of Foliation are used, not occurring to Where, also, two orders of Foliation are used, not occurring to-gether, a tracery bar will sometimes show a different profile on its two sides." Even were there no Mediæval precedent for what Sharpe has described, there can be no reason whatever why, when the architect thinks fit, he may not act according to the particular circumstances. For example, the employment of what has sometimes been called "edge-tracery" (*i.e.* where the fillet is dispensed with the plain chamfers or hollow chamfers, as the case may be, meet in an arris) is very useful where the as the case may be, meet in an arris) is very useful where the tracery requires to be lightened, more particularly in wood-work. For the same mouldings can be used in the same window with or without the fillet. What is somewhat unfortunately termed or without the fillet. What is somewhat unfortunately termed a "false" mitre is also handy in those parts of tracery where the a "talse" mitre is also handy in those parts of tracery where the plan just mentioned does not suit, so as to get a perforation. Even although an architect gives a drawing of the tracery half or full size, he is sure to find that he can improve it when he has seen the masons set it out full size on the boards, as every architect ought to make a point of doing if he possibly can. It is very apparent that much of old Geometrical tracery was never

struck in by compasses, and varies in outline where, according to rule it ought to be the same. In modern practice such a pro-cedure is undesirable, but at the same time it will be found that an occasional deviation from compasses is a decided help. It was just remarked that some license might be taken in lightenwas just remarked that some license might be taken in lighten-ing tracery, but, on the other hand, there is occasionally an ad-vantage in giving, at any rate, an appearance of strength where desirable by refraining to pierce according to routine. What ought to be avoided is any "cut-and-dried" look to a window. It should show the evidence of the care and thought bestowed upon it by the designer, and not look as if turned out from a mill. To make one last quotation from Edmund Sharpe :— "Much ingenuity is often shown in the manner in which these three members of a traceried window [*i.e.* window-and, scoinson-arch and rear-vault] are respectively arranged and united with its lower part and with one another ; and the subject is one which deserves more attention and study than is usually bestowed up-on it." These words might be written in letters of gold, so true are they. But, happily, since they were penned architects have

on it." These words might be written in letters of gold, so true are they. But, happily, since they were penned architects have begun to pay a good deal more attention to the point Sharpe alludes to than they did then. But, with the best intentions, what can the unfortunate architect do who is tied and bound by want of funds placed at his disposal? It is most difficult to find room for a window-arch well recessed from the exterior, an ornamental rear-vault, and a bold drop-arch for internal effect— for it means walls of substantial thickness. The successful treatment of a scoinson arch is important, for it gives a charm-ing variety, and prevents a too large soffite where the window is placed at a considerable height. If treated in combination with an order of tracery distinct from that of the exterior of with an order of tracery distinct from that of the exterior of the window the effect is the more enhanced, as it gives that slight feeling of mystesy which is so valuable an aid to the architect.—Builders' Reporter.

Mr. Horwood, architect, recently from New York, has opened an office at 90 Bank Street, Ottawa.

It is understood that the Owen Sound Portland Cement Company, whose works were destroyed by fire recently, is being reorganized under the name of the Georgian Bay Cement Co., with a capital stock of \$90,000.