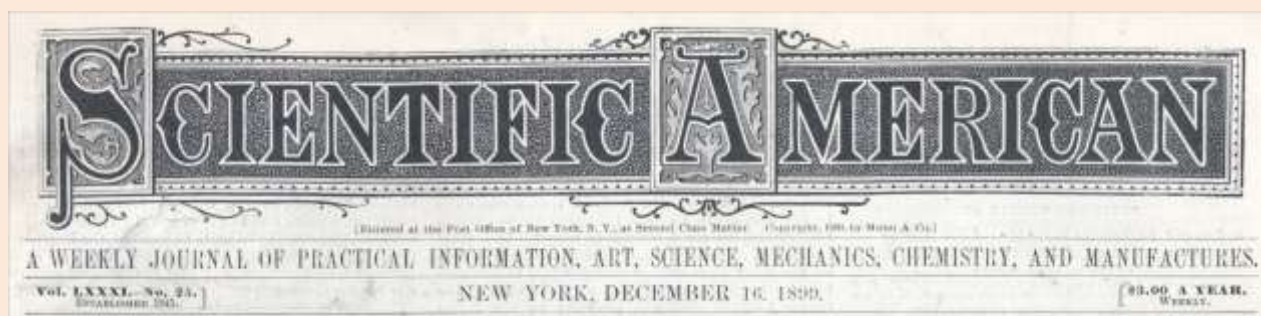


“Sculptors Change the Scale of Their Statues”

Scientific American, Vol. LXXXI, No. 25
December 16, 1899, pp. 395



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“Sculptors do not always make a full-sized model of their work, but occasionally they do. At any rate, almost none of them actually do their own cutting in marble. This is intrusted to highly skilled artisans who do the work under their direction, and the sculptors superintend all of the finishing touches and even occasionally do some of the work on face and hands. The actual cutting of the stone is a most difficult process, requiring great expert skill. In case a full-sized model is made, the sculptor sends it to one of these professional marble cutters, who roughly outlines the block before it leaves the marble quarries in order to save freight. The rough carving is then done by the marble cutter, who so shapes the block as to give it the general outlines of the

figure to be reproduced. To effect this he drills a series of holes in the block, the depth of each of which corresponds to an external point of the statue supposed to be inclosed in the stone. After a sufficient number of these holes have been made, he removes the entire perforated portion, and what remains gives the broad lines of the statue. This focusing can be effected simply by means of a series of vertical cords and the compasses or by a special instrument called the 'sculptor's cross.' In the first method a rectangular frame is secured over the head or top of the statue and from it depend a series of plumb lines around the model, and an exactly similar series depend from a frame suspended above the marble to be chiseled. These lines are marked with divisions starting from the frame. In order to mark a datum point of the statue in the marble, the workman measures upon one of the guards its vertical distance from the plane of the wooden frame, and then by means of compasses its horizontal distance from the cord. This done, he places the drill near the corresponding cord of the rough block and marks upon the drill the length of hole which he then bores until this mark comes even with the cord. The end of the hole is then at the same distance from the cord as the real point in the model, which has been ascertained with the aid of a compass. The workman then operates in the same way for a series of datum points which have been marked in the model, so that finally the workman succeeds in determining the general scale and form of the statue by means of a multitude of facets, which, when the marble is removed in flakes, gives the general form of a statue.

“This method of procedure is advantageously replaced in many cases by an instrument called the 'sculptor's cross,' which is based on the principle that a point is determined by position in space when we know its distance from three fixed points. The apparatus consists of two iron rods at right angles with each other and connected by a double socket similar to that of a marking gage. The vertical rod has a slider, which holds at right angles an arm provided at its extremity with a bent point, and the lower or horizontal rod is provided with two straight points. The extremities of these three points constitute fixed points, with respect to which the positions of the different parts of the model are determined. Upon the vertical rod slides a socket, which, through a ball joint, supports the bar upon which is the exploring style. The use of the instrument will be seen from our illustration, for which we are indebted to Lectures pour Tous. The workman selects three points upon the model and three corresponding ones upon the block. The points of the apparatus are fixed once for all, so as to apply themselves either upon points upon the model, or upon the block, so that the three points may be determined with the greatest accuracy upon the rough-hewn block. After fixing the intermediate style-bar in the proper position, one of the points of the model is put in contact with the style; the screws of all the joints are tightened, and then the instrument is transferred to the block. The latter is then chiseled away until the region is reached upon which the point of the style is resting. The three fixed points rest in their places. The same thing is done for a series of points quite near each other and arranged over whole surface of the model. The mobility of the sockets and of the ball and socket joint of the stylus-carrier permits of reaching all the regions of the statue without changing the position of the points, and this insures great accuracy in the work as a whole. Finally all the contours of the figure are determined point by point. The workman becomes so expert in the use of this instrument that a sculptor can confide his model to him with a full assurance that all parts of it will be reproduced with absolute fidelity.”