

Decorative Ventilator Bricks by David Ballantyne

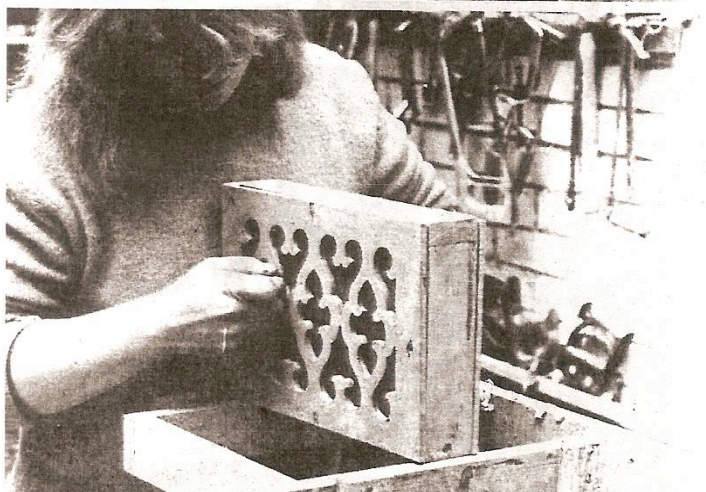
David Ballantyne, who recently retired as Head of Ceramics at Bournemouth & Poole College of Art, now runs the Saviac Proto-type workshop in Highcliffe. One recent commission was for new ventilator bricks to be fitted as part of a restoration programme. In this article he describes the method he developed for producing the bricks quickly and efficiently.

When we were asked to make replacements for a terracotta balustrade badly tree-damaged in a gale, I did not realise that the first hesitant step was being taken on what some would call a slippery slope, but I call the steep ascent towards a specialised branch of environmental craftwork, namely replica ceramic building elements. This was followed by a roof-tile job on Princes Street, Edinburgh; when the large number of massive (by today's standards) ridge tiles, hip and other tiles had been completed successfully, we had the bit between our teeth well and truly. Confident in the position we were in where it was virtually certain that if we did not do it, it was unlikely that anyone else would, we saw the economic advantages of sub-contract work of this kind as an attraction not less than the satisfaction of surmounting daunting technical obstacles.

So when, as a result of modest advertising in the 'Civic Trust' journal we were approached by Lewes District Council seeking a tender for the manufacture of replacement air-duct ventilator bricks for the restoration of the Great Fort at Newhaven, the challenge was irresistible despite lack of any guidelines as to how it should or could be done.

Such information as could be obtained from the Patent Office — where Jennings of Poole had registered their patent in 1860 — gave no clue beyond the fact that the pierced patterns were "expressed through dies"; if this meant extrusion, the outlay of capital investment for about

BELOW TOP Wiring off after filling the box. *BOTTOM* Cutting round the holes with the hat pin after the template has been screwed into position

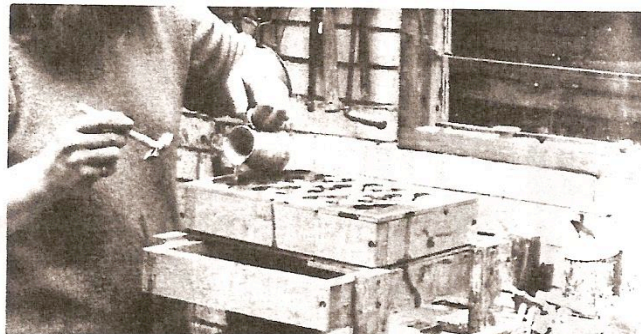


150 bricks of three sizes would be unthinkable. Cutting with a wire did not seem possible either so a new method had to be devised. Feasibility tests convinced me I could use a method whereby a set of cutting tools, made with sophisticated modern technology, were pressed simultaneously through a template, and the cost of these would not be uneconomic for a project in which hand work would be secondary to the mechanical process.

While waiting for these tools to be completed, the complicated rigging gear was set up, every detail of the operation having been elaborately worked out for an estimated 10 to 20 bricks a day according to size. Then I learned the truth of the saying, that 'Pride comes before the Fall'; when these beautiful and expensive tools arrived the first test proved the total failure of the concept. Tests with simpler more open shapes had been positive enough, and indeed showed that the cutters *had* to operate simultaneously in a cluster, otherwise I would have had one made first and saved a lot of time as well as money, but I had not been able to anticipate the friction on sharp corners, and consequent distortion of both faces.

At the end of a week of unremitting search for alternatives, the prospect was grim. A method earlier rejected of cutting round holes in two congruent templates on both sides, was revived but no way could be found reliably to expel or withdraw the plugs; that is, until 2 a.m. one morning when a miracle occurred. I tried a trickle of water and called my wife out of a late bath to witness the ease with which a slight push of the fretted dies screwed to dowels allowed the plugs to slip out with a sensuously pleasing plop. From then on it was only a matter of continuous improvement in technique to achieve a performance that would meet the deadline and still show a profit despite the fact that each brick was to be individually hand made.

BELOW TOP Lubricating the cut holes. *BOTTOM* Pushing out the plug of clay



At first, more time was spent on finishing than on basic making in the box, but towards the end, finishing was virtually eliminated. Of the three sizes of two inch thick brick, the production time on the smallest, 9" x 6", was reduced from two hours to just over 15 minutes. Maximum efficiency depended critically on the precise stiffness, thickness and length of the hat-pin, along with the optimum consistency of clay. The latter had to be soft to limit resistance to the pin, and hard to resist pressure from the dies, which is an impossible requirement so the right condition was a compromise which tended to change according to what one had eaten for lunch. As for the pins, it took an army of agents a couple of weeks of search among market stalls, haberdashers, antique shops and treasured collections inherited by middle-aged friends and neighbours before a supply of those most suitable was found. They were the cheapest. Some quite costly ones had quickly lost their mother-of-pearl or gold-plated knobs to the cause.

Among the special skills needed were first, keeping both hands working in parallel on both sides of the templates, and right to the edge; second, a sleight of hand at the end of the cut to control the shifting of the plug leaving even clearance all round. Judgement was needed also in sensing when and where a second cut after watering was needed to minimise displacement of clay from one hole into the adjacent one. Before taking off the top template the pin did a final tour of the holes searching for the nasty bits of sludge and excess thickness in the walls and several rolls of bog-paper found a new use in soaking up the wet. However clear the outline, the charm of these patterns lies in the perpendicularity of the wall to the face. Installed in a mass on site, they look very nice indeed.

Apart from the making, there were two further problems to resolve: one — avoiding cracking. Release from the frame had to be done after about 10 minutes resting on the porous asbestos batt cut slightly within the frame so as to allow a taut wire to be drawn along the inside surface after un-

screwing one corner.

Second, drying: it is astonishing how susceptible these forms are to twisting and cracking. The cold weather and humidity of late February/March held back drying so much that we were tempted to hurry it by standing them on edge over rising warm air round and through the rack. The distortion damage was not revealed till beyond the point of no return; many were lost before provision was made for laying the bricks flat, in ambient temperature until visibly hardened.

Finally a word about clay and firing. After various tests it was decided to use a Wenger buff earthenware to which we added 15% sand. (The pug served a dual purpose; wads cut to the right lengths, and for one size of brick sliced longitudinally, provided the most efficient way of filling the boxes, dropping from a height to level the bottom, beating and wiring off the top). Fired to 1120°C this mix gave the density required commensurate with a close resemblance in colour — an ochery greyish yellow — to the original samples. 28 hours firing overall was about right after restricting the first 10 hours to 120° or slightly more. The gas kiln is well suited to these requirements since fitted with four low-output ignition torches which precede the use of main injectors.

As usual with jobs like this, i.e. limited repetition over several weeks, withdrawal symptoms set in when the undertaking has run its course. It is sad that unless the D.o.E. or some other agency decides to restore one or perhaps all of the 60 odd forts still derelict around the coast, we may never again use the know-how and skills acquired for this purpose. Such sentiments however are soon buried under the heap of new problems attending the next and successive projects in action and in the pipeline. Generally speaking, I find that replica building elements are just like any other architectural, or for that matter commodity design problems, only differing in scale, more demanding since lying outside the perimeter of experience, and usually more profitable.

BELOW TOP Separating clay from wood after the box has been unscrewed and the template removed. *BOTTOM* Removing the box frame



The finished bricks set out to dry

