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CURIOSITIES
OF
GLASS MAKING:

WITH
DETAILS OF THE PROCESSES AND PRODUCTIONS OF ANCIENT
AND MODERN ORNAMENTAL GLASS MANUFACTURE.

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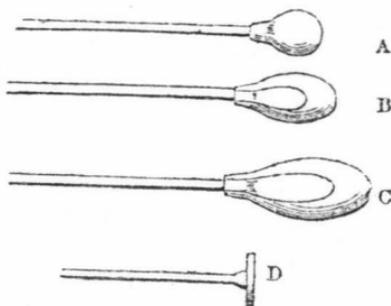
1849

Pillar moulding is, however, one of the greatest modern improvements; and is used advantageously for lamp pedestals, chandelier work, toilet bottles, salt-cellars, &c., at very moderate cost. This was supposed to be a modern invention, and introduced by the late Mr. James Green, as such, a few years since; but, in some Roman specimens, recently exhumed in the city of London, and now in the possession of Mr. Roach Smith, it is proved beyond doubt that these projecting pillars, and the mode of their manipulation, were well known to the ancients. (See coloured Plate 3, fig. 2.)

CANE AND TUBE DRAWING.

The ductility of Flint Glass is strikingly exhibited in the process of Cane or Tube-drawing, which is extremely simple, and depends so much upon tact and adroitness, that it is a matter of surprise how an approximation to uniformity of size and bore can be attained. A solid ball being gathered on the

end of the blower's iron, A, if for hollow tube, is expanded a little by blowing, B; but if for cane, blowing is not requisite: when partially cooled, it forms a nucleus for one or more other gatherings, until the requisite quantity be obtained. Where flat bore tube



is required for thermometers, the first ball is flattened by an iron or wood battledore, on the marver, prior to the subsequent gatherings; this ensures a flat bore, although the exterior of the tube is round. The ball is then elongated by

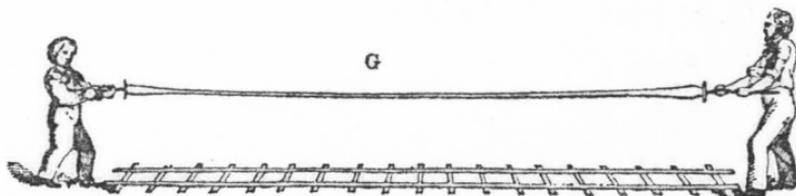
swinging, c, and the further end of it is chilled by dipping it into cold water. A workman then, having prepared a disk of hot Glass, d, called a post, places it vertically as near the ground as possible, to receive the ball from the chief workman; he next ascends his chair, or an elevation, so that the hot Glass may by its gravity be dropped upon the post below, to which it adheres by partial welding, e. The chief workman then



descends from his elevation; the drawing now begins—each workman constantly receding from the other: at first, the suspended Glass between the two rods assumes (at a red heat) the form of a parabola, F; but, as the tension proceeds, the



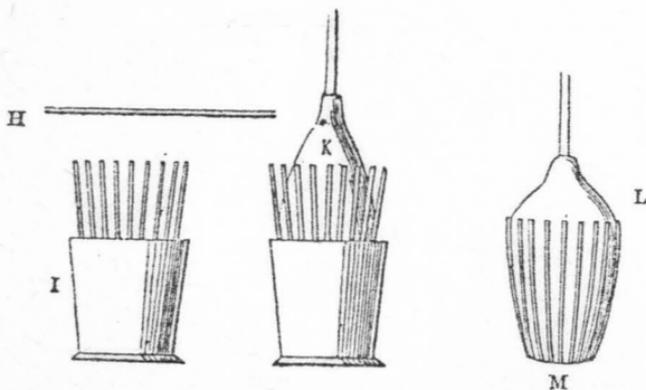
workmen are continually rotating. Some parts are cooled by fanning with the hat of an attendant boy, to ensure uniform elongation, till the cane or tube is drawn to a length, sometimes of from sixty to seventy feet: as the metal cools, the tube ceases to rotate, and it assumes, by continued tension, nearly a straight line, G; except at the extreme ends, it is



nearly of one uniform bore, diameter, and substance; and whatever may be the diameter of the tube, the bore and substance will always bear an exact relative ratio to each other. Lastly, it is deposited upon the wood rounds of a ladder, and requisite lengths are whetted off by the cold iron, or by a steel file.

VENETIAN FILIGREE GLASS.

As Glass-house manipulators, the Venetians were pre-eminent; they produced, if not the most elegant, at least extremely curious, work. In the manufacture of Glass beads, the Venetians have no rival, their price being far below English competition. The Venetian glasses, termed "filigree," have recently been made in France and Bohemia, and a few specimens in England. Before ornaments or vessels can be blown, small filigree canes* with white or variously coloured enamels, must be drawn by the following process:—Pieces of plain, coloured, or opaque white cane, previously drawn as explained above, are first whetted off to the required lengths,



* "Cane" invariably means a solid stick of Glass; and "tube," hollow.

H, and then put into a cylindrical mould, I, with suitable internal recesses; and both cane and mould are thus submitted to a moderate heat. The selection of the colour of the canes depends upon the taste of the manufacturer: two to four white enamelled canes are chiefly used, alternately, with about half the number of coloured. The blower then prepares a solid ball of transparent flint Glass, K, which being deposited in contact with the various canes, at a welding heat, causes them to adhere. This solid ball is then released from the mould, as L, is reheated, and marvered, till the adhering projecting ornamental canes are rubbed into one uniform mass; the ball is next covered with a gathering of white glass, which must then be drawn to any size and length that may be required, by the same process as before described and illustrated. Should a spiral cane be preferred, the pucellas holds the apex, M, in a fixed position, while the ornamental mass, still adhering to the Glass-maker's iron, is revolved during the drawing, till the requisite twist is given. Where vases are formed of alternately coloured and enamel filigree canes, the above process is repeated, and the usual mode of blowing and manufacturing is followed; but the ball, K, must be hollow instead of solid, so that the filigree canes become, by marvering, &c., amalgamated with the flint Glass ball, and expand with it in its progress of manufacture.

VENETIAN BALL.

The Venetian ball is a collection of waste pieces of filigree Glass conglomerated together, without regular design: this is packed into a pocket of transparent Glass, which is adhesively collapsed upon the interior mass by sucking up, producing out-

ancients or the Venetians.* It may be thus described:—a die being prepared, secured by the ring and handle, A, metal is gathered and dropped into it, B, and the matrix, or plunger, C, operated upon by the lever, &c. D, presses the metal into the required form of the article. If an overplus of metal be gathered, it thickens the article throughout; but if too little, it fails to fill up the mould, and is spoiled. This is a rapid mode of reproduction, but great practice is required to gather the exact quantity of metal. The chief condition of success, in getting a polished surface on pressed Glass, depends upon the moulds being kept at a regular temperature, a little short of red heat. The effect is not so good as pillar-moulding, nor does it anneal so well; but it is much less expensive. The interior plungers and the outer die will adhere to the Glass if too hot; and if not at a proper temperature, will fail in producing a clear transparent surface.

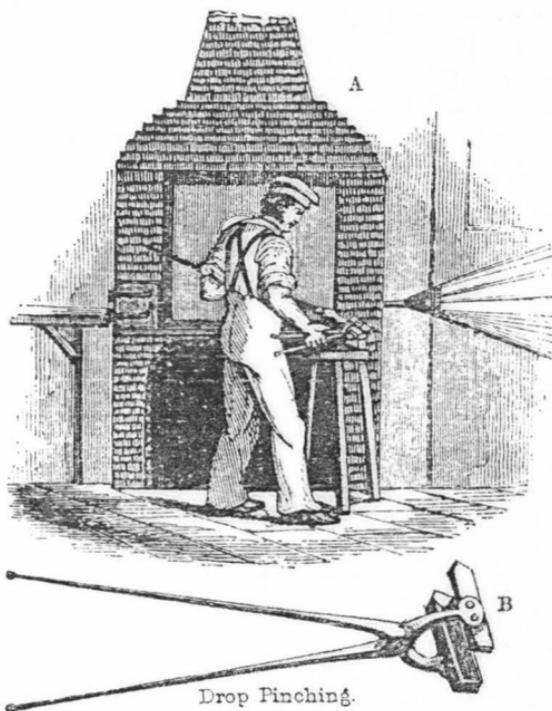
DROP PINCHING.

Pinching by moulds is chiefly used for solid drop-work, spangles, &c. Lumps of Glass made expressly for drop pinching,† when softened sufficiently by a blast-furnace, A, are shaped in twin brass dies, affixed to tongues, B. Arms of chandeliers are pressed also by twin dies, the upper die being fixed to the plunger, and the under one to the bed of a

* Various slabs of coloured Glass, of small sizes, were pressed into metallic dies by the ancients, as proved by the specimens of embossed and intagliated Glass, of various patterns, in the British Museum; but no machinery was used by them in producing any completely pressed hollow vessel or utensil, at one operation.

† A considerable number of the Glass drops used for chandeliers, girandoles, and candlesticks, in England, are pinched from thick tumbler bottoms, or waste glass, causing a variety of tint, and inferior refraction.

powerful leverage press; the metal being gathered as usual, and the power of the press applied. Both arms and drops receive only the crude form; they afterwards require cutting, and polishing on a lead lap, to produce the required brilliancy.



GLASS-CUTTING.

Glass-cutting, or, more properly Glass grinding, as illustrated in the next page, is too well known to need minute description. A cast-iron wheel has sand and water dropping from the hopper, while revolving in a lathe propelled by steam power; the friction of the grit of the sand, reduces to its required form the Glass placed beneath it. A stone wheel with water smoothes out the rough sand marks, and prepares