The brass for the shell arrives at the factory in long strips or rolls of standard thickness, width, purity and hardness. In the first operation a machine punches out a disc which is at the same time pressed into a cup. Then by a process of annealing, pickling, washing and further punching this cup is drawn into the shape of a tube, closed at one end. Still another machine punches the primer pocket and flash hole or holes at the closed end and forms the rim or ejector groove. A die at the same time leaves the trade mark, name or initials of the manufacturer and the calibre stamped on the base. Finally the shell is sized and the mouth cut and reamed. Before being passed on to the loading room each shell is given a most minute inspection. Cracks and other defects are looked for, and the shells are gauged as for length, diameter, thickness of base and depth and diameter of the primer pocket or chamber.

During the process of manufacture shells may, according to size and type, be annealed four or five times. It must be understood that when brass is cold-worked it becomes hard and brittle and unfit to work through another stage unless it is softened by a process of heating or annealing. Excessive heat will burn the metal and completely destroy its resilience. In modern munition factories the operation is entirely mechanical, the shells pass through ovens, they are brought up to the required heat which is held for a specified period, and they are then cooled before being passed on for pickling and washing.

The finished shell, particularly the rifle shell, must be of a certain hardness at different points. The base is harder than the mouth and the variation is gradual from end to end. This permits of easy extraction, The resiliency of the metal about the centre and from there forward must be such that on discharge of the weapon the shell will completely conform to the size of the chamber and seal it, and then spring back to normal. The tests for hardness are generally made with what is known as the Brinell apparatus. A steel ball of certain size is held over the area to be tested and a known weight or force is applied. The unit or standard of measurement of hardness is the figure obtained by dividilng the applied weight in kilograms by the area of the depression in square millimeters.

Many and varied are the types and shapes of bullets in use today. The round ball is a thing of the past. All modern bullets are elongated, with rounded, wad-cutter or pointed tips. Individuals who engage in a large amount of revolver shooting generally mould their own bullets; moulds for almost every shape are procurable, but the home cast product is invariably of the wad-cutter, flat based variety. Shapes of tips vary, a very efficient twenty yard bullet has a sharp cone point with a cutting shoulder a sixteenth of an inch in front of the crimping groove. The .45 or .455 factory bullet is swedged, has a blunt cone point and a hollow base. The metal, with a small percentage of tin or antimony added to harden the bullet, is cast into ingots which are put into a press operating under a pressure in the neighbourhood of three hundred and fifty thousand pounds to the square inch. The metal is extruded in the form of a wire of slightly greater diameter than the bullet it will ultimately be used for. Slugs of this wire, approximately bullet length, are fed into the swedging machine. Once shaped the bullets are grooved and greased under pressure.