

TYPE MAKING.

In the earliest day of the art, printers made their own type, and performed many other functions which are now delegated to others, and the same roof covered several different necessary arts. Ere long, however, the trades separated, and the type founder took his place in the ranks. Of course, the first tools and materials used were crude and but poorly fitted for the purposes for which they were designed. They were cast by hand, one at a time, and the processes were necessarily slow and tedious. The fac simile engraving below, the original of which



was given by Jost Amman, in *The Book of Trades*, published in Germany, in the year 1564, shows the founder at work, with his mould enclosed in a wooden box held in one hand, while with the other he pours in the melted metal. It is the purpose of this article to show something of the modern processes for manufacturing type, and the comparison with the engraving will be at least interesting.

The first attempt at type-founding in the United States was made at Germantown, Pa., by Christopher Saur, or Sower, about 1735, who cast the types for a German Bible which he himself printed. An unsuccessful attempt was made to establish the business at Boston, about 1768, by a Scoteliman named Mitchelson. Abel Buell soon after began the business at Killingworth, Conn., and was granted a loan of money by the Colonial General Assembly to aid him in his designs. At the close of the Revolution, John Baine, of Edinburgh, came to the United States and conducted the business until his death in 1790. About the close of the last century, Messrs. Binney & Ronaldson successfully established themselves at Philadelphia, and from that date type founding has been reckoned among the industries of the Republic. Now there are about thirty foundries in the United States; and it is no exaggeration to say that they excel those of every other nation in the extent of their operations and the excellence of their wares, for in no other country can there be found so beautiful and so great a variety of faces as are made there.

Type-founding in Canada was commenced in Montreal in 1830, by Thomas Guerin and Chilian Ford.

In 1834, Mr. C. T. Palsgrave became proprietor, and continued so until 1873, when it passed into the hands of the present company. This is the only type foundry in the Dominion.

To gain an insight into the processes employed in type-making—which all printers ought to be familiar with, but of which they generally know but little—we invite a visit to our foundry.

Type metal is a composition of lead, tin, antimony and copper, all of which metals are necessary to give the required ductility, hardness and toughness. No other composition has ever been found which so well answered all the purposes for type-making.

The first step in the making of type is cutting the letter desired, on the end of a piece of fine steel, forming the **PUNCH**, which is afterward hardened.



PUNCH.

This is an operation requiring great care and nicety—there being comparatively few adepts at it—that the various sorts in a font may be exactly uniform in their width, height and general proportions to each other. A separate punch is required for each character in every font of type, and the making of them is the most expensive portion of type-founding. During the process of its manufacture, the punch is frequently tested or measured by delicate gauge, to insure its accuracy. When finished, a smoke-proof taken and the letter pronounced perfect, it is driven into a piece of polished copper,



DRIVE.

called the **DRIVE**. This passes to the fitter, who makes the width and depth of the faces of the types uniform throughout the font. They must then be made to *line exactly with each other*. When thus completed, the drive becomes the **MATRIX**, wherein

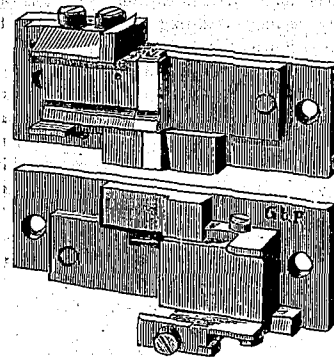


MATRIX.

the face of the type is made. This undergoes other processes in fitting and finishing, to make it true and square with the body of the type. Matrices are also made by the electrotype process, for the purpose of copying and multiplying certain faces without incurring the great expense of cutting new punches. The **MOULD**, in which the body is formed, is made of hardened steel, in two parts; one part is fastened to the machine and is stationary, while the other is movable, so that it may be adjusted for the proper width of the letters, as one is wider than another. The accuracy of these moulds is patent to every printer, who knows that types must be mathematically square, else they could not be used.

The combined matrix and mould are then adjusted

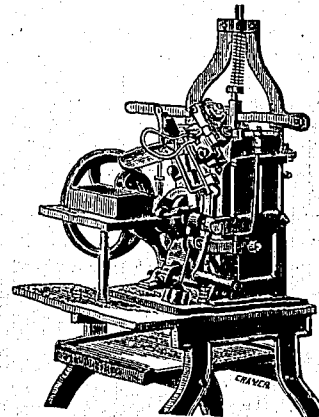
to the type-casting machine, which is set at work manufacturing types at the rate of from one hundred



MOULD.

to one hundred and seventy-five per minute. The type-casting machines in use in our foundry are of the most improved English and American make.

The following is a description of their operation:



TYPE CASTING MACHINE.

ation: "The metal is kept fluid by a little furnace underneath, and is projected into the mould by a pump, the spout of which, you see, is in front of the metal pot. The mould is movable, and at every revolution of the crank in the hand of the workman it comes up to the spout, receives a charge of metal, and lies back with a fully formed type in its bosom; the upper half of the mould lifts, and out jumps a type as lively as a tadpole. You don't see how the letter is formed on the end of the type? True, we had forgotten; well, this spring in front holds in loving proximity to the mould a copier matrix, such as you saw just now in the fitting-room. The letter a, for instance, stamped in the matrix, sits directly opposite the aperture in the mould which meets the spout of the pump; and when a due proportion of a's is cast, another matrix with b stamped in it takes its place; and so on throughout the whole alphabet." In casting small fonts, where frequent changes are made in the moulds, the machines are driven by hand power; but when the fonts are large, as in daily newspapers, steam is used as a motor, and the industrious little machines, with scarcely less than human intelligence, go thumping along at their work, requiring but little care or attention, except when changes in