

## Following Isaiah Thomas: Casting Sorts in a Composing Stick

Our press was frequently in want of the necessary quantity of letter; and there was no trade as that of letter-founder in America. I had seen the practice of this art at the house of James, in London; but had at the time paid it very little attention. I, however, contrived to fabricate a mould. I made use of such letters as we had for punches, founded new letters of lead in matrices of clay, and thus supplied in a tolerable manner the wants that were most pressing.

(Benjamin Franklin, *Works of the late Dr. Franklin, consisting of his life, written by himself*. London, 1793.)

... during the time *Blutigen Schau Platzes* was in the press [1748-49] particular sorts of the fonts of types on which it was printed ran short. To overcome this difficulty, one of the workmen constructed a mould that could be moved so as to suit the body of any type not smaller than brevier, nor larger than double pica... The best type they could select from the sort wanted, was then placed in the mould, and after a slight corrosion of the surface of the letter with aquafortis to prevent soldering, or adhesion, a leaden matrix was cast on the face of the type, from which, after a slight stroke of the hammer on the type in the matrix, we cast the letters that were wanted. Types thus cast answer tolerably well. I have often adopted a method somewhat like this to obtain sorts that were short; but instead of four pieces of brass, made use of an even and accurate composing stick, and one piece of iron or copper having an even surface on the sides; and instead of a leaden matrix, have substituted one of clay, especially for letters with a bold face.

(Isaiah Thomas, *The History of Printing in America*, second edition, Worcester, 1874, i, 288 footnote.)

Benjamin Franklin's comments on his experience as an impromptu type caster in 1727 are well known. Isaiah Thomas' are hardly known at all, since they appear only in a footnote in the second (1874) and third edition (1970) of his *History of Printing in America*. The need for casting sorts was acute during the Colonial era of this country, and it is not unreasonable to suppose that other printers, faced with an emergency, tried their hand at it. But I am not aware of any other accounts of the practice.

Recently, however, I had the opportunity to watch an experiment in the casting of sorts in a basement type foundry in Columbia, Maryland. The workshop, fitted up in fine 17th century style, is that of Stan Nelson, Museum Specialist in the Graphic Arts department at the Smithsonian Institution, and perhaps the most accomplished hand type caster and mould maker active today. Stan Nelson thinks more about the techniques of type casting in the 17th and 18th century than most of us do. Lately he has been concerned

with casting lead type in lead moulds, and when our discussion fell to Franklin's and Thomas' comments, he said that he had thought of a simple way to duplicate the process. At my urging, he demonstrated the process.

The stick chosen to serve as a mould must be square, clean and free of projections and perforations. (In this instance it was a Grover stick, the first American stick to receive a patent, in 1856.) The type to be replicated was a 24 point Garamond lower case "n." It was held in the smoke of a candle flame and coated with soot, which Stan explained served as a mould release and prevented adhesion (as did the aquafortis in Thomas' account.) It was placed horizontally in the bottom of the stick, groove upward, and the stick closed tightly around it. Then, to seal the open edge of the stick, a quad was clamped tightly against the opening with a C-clamp.

The next step was casting the matrix around the type (figure 1.) The metal used to pour this matrix was melted from leads and slugs; Stan explained that these contain less tin and antimony and therefore have a higher melting point than type, and this would help prevent adhesion. When the metal has cooled, the stick is opened and the original piece of type is found surrounded on three sides by the newly-cast matrix (figure 2.)

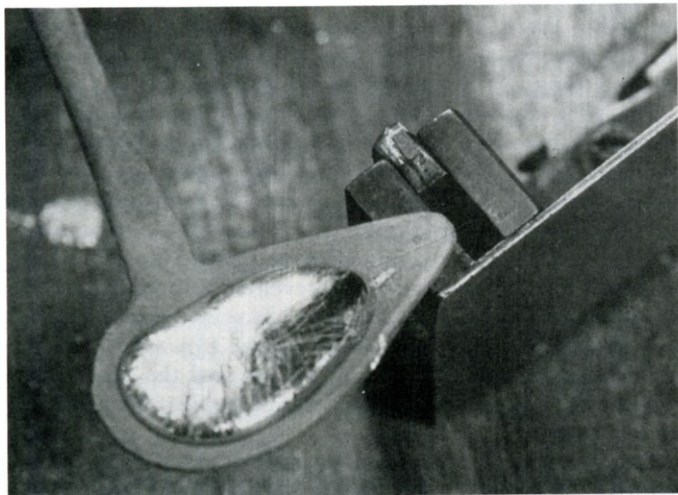
The matrix with its type is put into a vise and, using a hacksaw, that portion of the matrix at the foot of the type is cut off and removed. The original type, now free on two sides, can be freed from the matrix with a little manipulation (figure 3.) The matrix, now an L-shaped piece of lead, has an exact intaglio replica of the face of the type at one end.

The process of casting duplicate types in this matrix now begins. The matrix is now coated with candle soot, taking care especially to cover the recessed portion that includes the letter. The matrix is returned to the composing stick, in the



same position as before. When the knee of the stick is closed around the matrix, the opening (corresponding to the mouthpiece or jet of a true type-mould) is at the top of the stick.

For casting the letters, this time type-metal is melted down, again to provide the difference in melting points that prevents fusion. The type-metal should be poured at the lowest possible temperature. With a steady hand, the molten metal is poured into the opening without stopping until the cavity is filled (figure 4.) After cooling for a few moments,



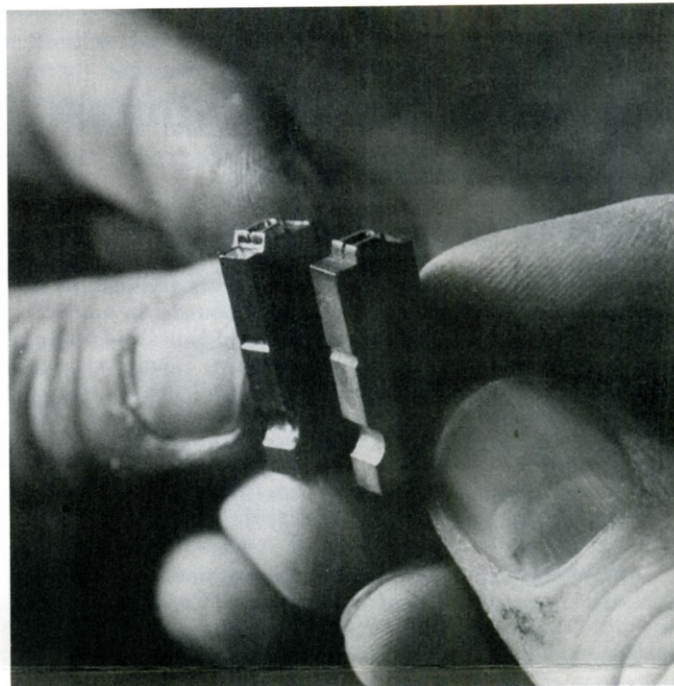
the stick is opened once again and the matrix and the newly-cast type are removed (figure 5.) A gentle pressure is all



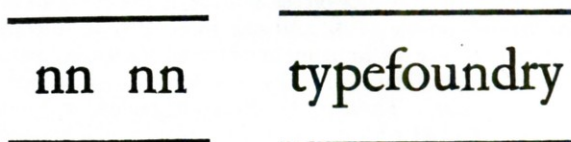
that is needed to separate them.

If the face of the type is deemed satisfactory on examination, the final steps involve making it ready for printing. First a mark is scribed across the bottom of the type, allowing a bit over type high. In a vise, the hacksaw is used again to remove the jet. Then the foot of the piece of type is rubbed

across a file while being kept carefully square and vertical against the file. Some rubbing of the sides of the type may also be necessary. The rubbing, both of the foot and the sides, should be done with care; it is important not to take away more metal than necessary. The height of the type should be checked frequently with a type-high gauge commonly used by printers.



A comparison of the newly-cast type with the original shows that the new sort will "answer tolerably well." Of course, there is an inevitable degradation that must occur in the process, and continued use of the matrix and of the



model letter will coarsen them. As a demonstration of the quality obtained, we printed the new letter twice: first, mixed with lower-case n's of the original font, and then mixed in a word composed of original types. In the first instance, the final letter is the sort. The proofs speak for themselves of the feasibility of Franklin's and Thomas' process, and of Stan Nelson's ingenuity.

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Warning: Typefounding with molten metal can be a dangerous undertaking. The description above is intended as an historical footnote, not as encouragement for the amateur to try his hand. Stan Nelson's demonstrations of traditional type founding are given several times a week at the Smithsonian Institution's Hall of Graphic Arts.