

point and called by numerical names: pica became 12-point; long primer, 10-point; brevier, 8-point; nonpareil, 6-point, etc. The present article is set in 8-point leaded.

**THE AUTOPLATE.**

In the SCIENTIFIC AMERICAN SUPPLEMENT for October 26, 1901, we had occasion to illustrate and describe a machine for making and finishing curved stereotype printing plates for use in printing newspapers, which had been but recently invented by Mr. H. A. Wise Wood, of New York, and first put into use upon the New York Herald.

It will be recalled that this machine—the autoplate—after a flexible papier maché matrix, made from a type page, is inserted therein, proceeds to cast printing plates, weighing about fifty pounds each, at the rate of four a minute, and to dress their edges and inner surfaces and prepare them for attachment to the printing cylinders, and that this is done automatically—all within the compass of one machine.

Previous to the advent of the autoplate such work had been invariably done by hand-worked devices, with which the fastest rate of production attainable was at the rate of slightly less than one plate per minute.

So great a change did this invention make in the work of stereotyping upon the larger newspapers, that not only was the machine generally adopted by the New York Herald, New York World, New York Times, Brooklyn Daily Eagle, Philadelphia Bulletin, Philadelphia Telegraph, Boston Post, Boston Globe, Chicago Tribune, and other papers, but in every case the hand apparatus were entirely dispensed with, and sole dependence placed upon the autoplate.

It will doubtless seem strange that so great a stride in so important an art should have been delayed until the very last year of the old century; but it was nevertheless the case that until Mr. Wood's machine came full-fledged into the stereotype room, not a single automatic device of any kind had been used therein for the production, or even for the finishing, of plates. How much such a device was needed may be realized when it is known that for the larger newspapers the saving in operating expense by means of the autoplate approximates \$500 to \$700 weekly; that its product in clearness of types and in beauty of illustrations far surpasses hand work; and that by reason of its celerity it is not only possible to hold pages open longer, and thus to print later news, but successive presses may be set running so much more quickly as to greatly increase the capacity of any given printing plant. So great is the last-mentioned benefit, that for an issue of a given size from one to two presses less need be run where autoplates are used; and even into the mailing and delivery room has the saving gone, for by reason of its now being possible to finish the printing of an issue earlier than formerly, much more time is left for the all-important work of distribution.

**STEREOTYPING AND ELECTROTYPING.**

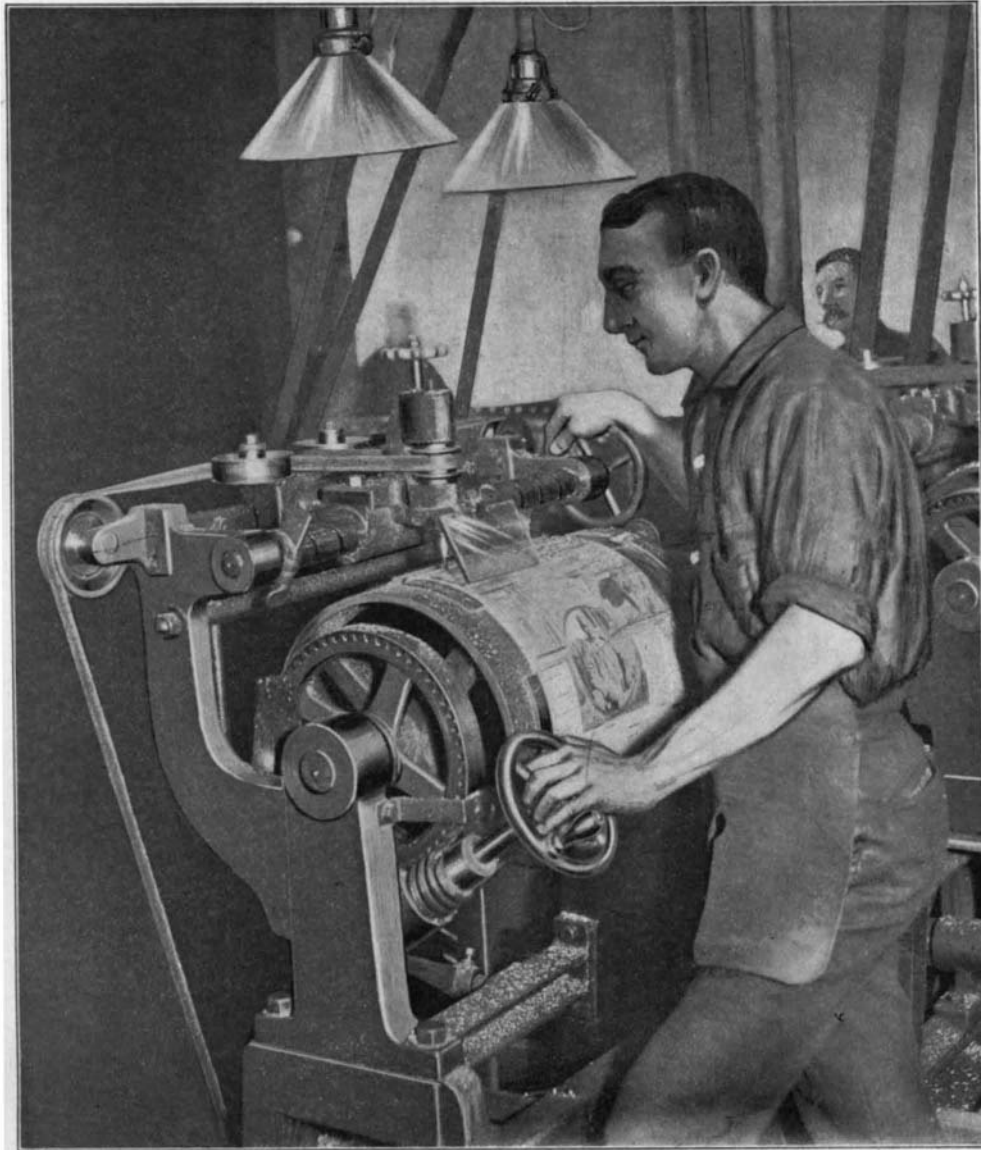
The development of book and newspaper printing has been aided to an extraordinary degree by stereotyping and electrotyping. The stereotype plates or the matrices can be stored for future use at low expense and the type can

be distributed and used anew. It was made practical by Earl Stanhope about 1804, and was introduced into New York in 1813. The plaster and clay processes were superseded in 1829 by the papier-maché process, in which a mold is taken on prepared paper, which is baked and which can then be curved, if necessary. Periodicals, other than dailies, and books are usually printed from electrotypes, which

Original half-tone cuts are often soldered or cast in to insure good printing results.

**MACHINE COMPOSITION.**

The linotype machine, invented by Ottmar Mergenthaler, may safely be said to have revolutionized the publication of newspapers. The linotype does away entirely with the foundry type and goes back to first principles—the block book. It produces a slug the length of a line with the various characters cast upon one edge. These slugs are locked up in forms like ordinary type. The linotype consists of a bank of keys connected with a magazine containing about 1,500 brass matrices, which are smooth plates about an inch high and a half inch wide, and of varying thickness. On one edge is a die from which is cast the letter, and at the upper end a series of nicks or teeth for distributing purposes, every character possessing a different combination. There are also spaces, molds, etc. The magazine containing the matrices is an inclined receptacle 2 feet 6 inches high, the top being 6 feet from the floor. Within this magazine are channels in which the matrices with the different letters are stored and through which they pass. The machine is so adjusted that as the type bar is manipulated, the matrices are selected in the order in which they are to appear in the slug or casting. When the operator depresses a key, the matrix to which it corresponds emerges from its channel, is caught upon an inclined traveling belt, and is then carried to the assembler, which corresponds to the ordinary printer's stick. As each word is completed, a stroke of the space key inserts the wedge-shaped space used between each two words. When the line is completed, the operator can correct errors by extracting matrices or substituting others for those which are in the line. The wedge-shaped spaces are now pushed up through the line, securing instantaneous and complete justification. The completed line is then transferred automatically to

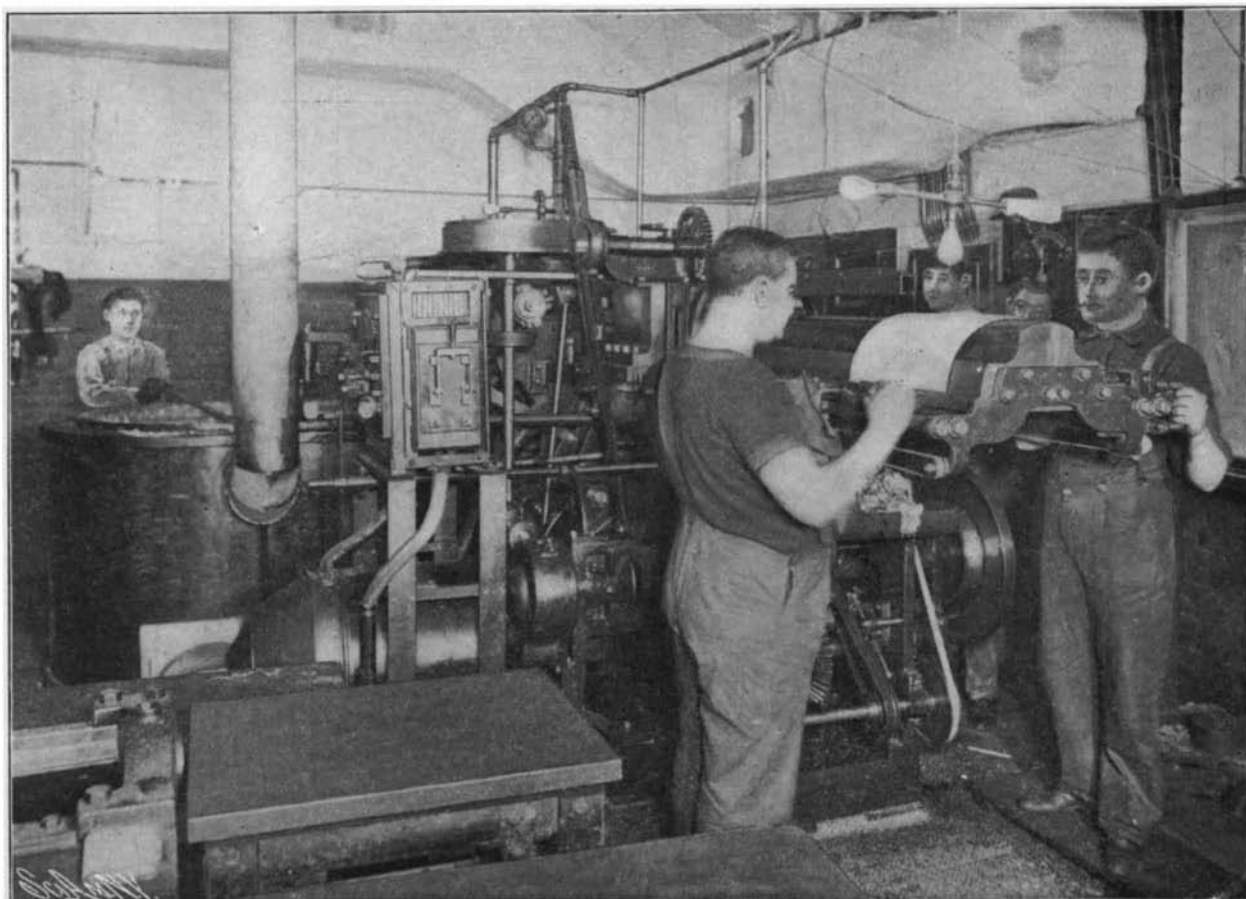


**ROUTING CURVED STEREOTYPE PLATES.**

process was tried experimentally in New York in 1841 by Prof. Mapes. An impression is taken in specially prepared wax, and the mold is blacklead to insure electrical contact. It is then placed in a plating bath and a shell of copper is deposited. This is stripped from the mold, curved if necessary, the back is tinned, and an alloy resembling type metal is then poured over it, to give it strength. The electrotype is then planed so that it will be type-high when blocked.

the front of a mold. Behind the mold is a melting pot containing a molten alloy resembling type metal. Within the pot is a pump plunger leading to a perforated mouth arranged to close the rear of the mold. When the matrix line is in position, the automatic operation of the plunger forces the metal into the mold and against the line of the matrix letters, where it instantly solidifies in the form of a slug. The mold wheel then makes a partial revolution which brings

the mold in front of a blade which pushes the slug into a receiving galley. The slugs are type high and can be used in connection with ordinary type. The matrices are automatically returned to the magazine to be utilized in making new combinations. A change of face is easily effected by changing the matrices. By the aid of the new double-magazine linotype which we illustrated in the SCIENTIFIC AMERICAN for August 8, 1903, it is possible to set work in two faces of type, so that we can now set body letters, italics and full-face type on the same machine, changes being made instantaneously. Heretofore the type known as pica, or 12-point, has been the largest face of type which could be set on the machine; but it is now possible to make letters twice the size by casting one half of the character on one slug and the other half on a



**THE AUTOPLATE CASTS FOUR 50-POUND STEREOTYPES A MINUTE.—SAVES \$500 A WEEK IN OPERATING EXPENSES AND ENABLES PAGES TO BE KEPT OPEN LONGER.**