Special NEWSLETTER • 14 *Edition*

1890

The Pivotal Year In Man's Quest To Automate Type Composition

1990 Conference • Nevada City, California

THE AMERICAN TYPECASTING FELLOWSHIP

Preface

Pondering what I might want to do as a keepsake for the 1990 American Typecasting Fellowship Conference at Nevada City, California, I asked myself whether anything of great significance in our beloved "hot metal domain" might have been going on exactly 100 years ago. I went to bound periodicals stored in my basement not too far from my Monotypes and to my amazement, found three different publications covering the year in question.

Those volumes were The Inland Printer, published in Chicago; The Superior Printer published in Cincinnati; and Paper and Press, published in Philadelphia—all extremely well-produced trade publications of that era.

Was anything happening in 1890? To my great surprise, 1890 was THE year (if any year could be signaled out at all) when man finally got the upper hand in his quest to automate the age-old manual process of composing type.

Eighteen-ninety was the turning point both for Ottmar Mergenthaler and his Linotype, and for Tolbert Lanston and his Monotype. John K. Rogers also was very successful in that year with his Typograph. Amidst such excitement, I thought it would be most interesting to reproduce contemporary articles with a bit of my own commentary, so we—in 1990—might have a better understanding and greater appreciation for what was happening exactly 100 years ago.

One key reason for undertaking the project was the chance to reproduce some of the fine wood engravings I found in my research. Unfortunately, reproduction hasn't always been so good in texts and other publications detailing printing history. I wanted to do a publication which would show everyone that the quality of work 100 years ago was every bit as good as it is today, even with all the over-rated technology we're always hearing about.

For example, optical character recognition (OCR) technology. Time wouldn't permit my doing the work on my Monotype, so I decided it would be a great opportunity for me to employ OCR software with a flatbed scanner to convert the pages of these fine publications right into keystrokes which could be used in my digital typesetting system. The software was "Image-In Read" and to be blunt, it never got better than a 50 per cent error rate. I soon realized I was wasting more time with the software than fresh keyboarding would take, so I bit the bullet and spent the necessary time at my computer re-keying everything.

Even still, it was fun to do and I hope this special edition of the ATF Newsletter helps you gain some appreciation for the many significant events precisely 100 years ago.

The typeface used is Goudy's University of California Oldstyle, digital version inside, hot-metal Monotype-cast version on the cover. This is Goudy's Deepdene Italic.

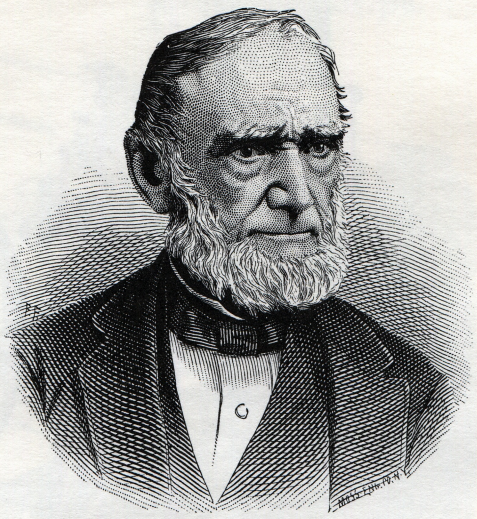
—Richard L. Hopkins
July, 1990

History of Machine Type Casting

The year was 1890. And the man who invented the first successful machine of automating the process of making foundry type was *still alive* and active enough to tell his own story.

Let's get things in perspective. Somebody (who knows for sure?) invented and perfected the process of casting individual metal types (through use of the hand mold) back about 1450. And that invention remained virtually unchanged for nearly 400 years—until a guy named David Bruce, Jr., came along in 1834 with his pivotal type caster. It's remarkable how rapidly his invention swept the industry. David Bruce, Jr., was an amazing man in at least three fields: he was an accomplished type designer and punch cutter, he was a successful inventor, and he was an historian of the typefounding industry as it developed in the United States. His *History of Typefounding in the United States*, printed by the Typophiles in 1981, is evidence of that fact. What's even more interesting is that David Bruce, Jr., was alive and quite verbal in 1890 trying (through trade publications) to set the record straight about what was done by whom and when.

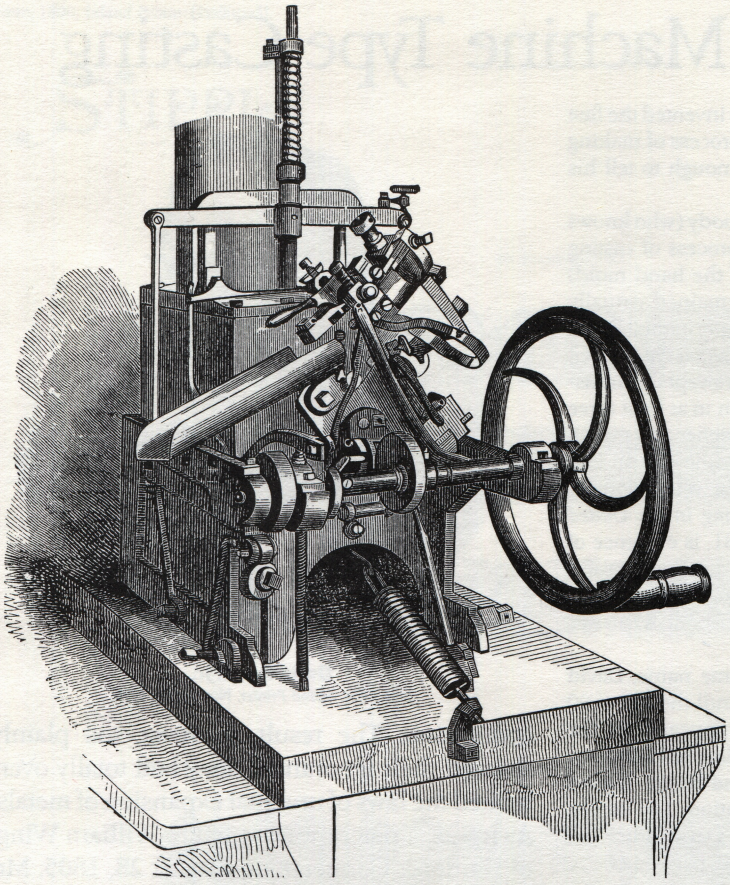
The son of a typefounder of the same name, David Bruce, Jr., was born in 1802 and lived until the age of 90 (1892). In 1890, the article below first appeared in *The Printers' Review*, the house organ of Golding & Company, and was quickly picked up by *The Inland Printer*. It gives some personal perspective on his invention. The article: "History of Machine Type Casting," by David Bruce, Jr., from *The Inland Printer*, September, 1890, page 1129.



David Bruce, Jr.
From *The Inland Printer*, November, 1892

TO GET A FULL appreciation of the revolution wrought by the invention of machine type casting, it should ever be borne in mind that all printing types, from Gutenberg in 1440 downward to the year 1827—nearly four hundred years—were cast by the pouring process or hand or spoon dipping, at the laborious rate of from twelve to fourteen per minute. This process was followed by all the typefounders throughout Europe and by Messrs. Binny & Ronaldson of Philadelphia. It is true the ingenious Mr. Binny had made several improvements, but these related to the still-used hand molds.

In the year 1804 Mr. Elihu White, of Hartford, Connecticut, in conjunction with William Wing and David Isham of that place (all only theoretically conversant with the casting and manufacture of printing type), conceived the idea of a machine capable of casting whole alphabets at a single dash. It was a plausible conception. The result, however, too plainly showed their ignorance. They had totally overlooked the laws of unequal expansion of metals. As it was, a patent was issued to William Wing, of Hartford, Connecticut, August 28, 1805. Mr. White took the model to England and in exchange received much practical insight into the ordinary methods of type casting, and brought back with him a few punches and matrices, with which rude materials he commenced type founding in Hartford in the usual way, but removed to New York City in 1808. This feeling of improvement lay long suppressed with Mr. White until it was revived by Mr. William M. Johnson, a resident of Long Island, in 1831. The outcome of all of Mr. White's costly experiments amounting in the aggregate to $50,000, was the complex machine of Messrs. Mann and Sturdevant. This machine was certainly encouraging in speed, accuracy, and labor-saving; but alas! there was an odium of porousness or instability which its uniform sharpness of face, lighter weight and accuracy could scarce overcome. True, this light weight was urged upon printers as so much in its favor—twenty-five per cent—*vide* Mr. White's specimens of those days, 1832-1839. But it was slow of sale. Whatever merit any



The Second Bruce Pivotal Caster
From Ringwalt's *Encyclopedia of Printing*, 1871

machine may have, Elihu White was the first to substitute the force pump for the sluggish natural gravity used by all the followers of Gutenberg.

It was a reckless resolve in the writer to wrench himself as it were from a prospective lucrative partnership with Messrs. George Bruce & Co., in the year 1834, to construct, if possible, a more perfect type casting machine than had yet been produced by his predecessors. But such was his prevailing weakness, and for the next five years he resided on his father's farm on the banks of the Delaware River, in New Jersey.

The year 1840 found him in New York City boldly attempting to establish a foundry operated by his machinery. But he found that however superior his type might be, the fixed odium and unreliability of machine-cast type was a powerful obstacle against him also; and with the exception of his old schoolmates, the brothers James and John Harper, he almost stood alone. Timid printers listened, shook their heads and no doubt inwardly pitied him.

But his uncle, Mr. George Bruce, after due examination of the product of his machine, noting its accuracy, solidity and speed, became its possessor, giving for the patent and machines a liberal compensation, with the proviso that should the inventor devise another machine, to give him the first examination and choice of purchase. It was not long ere machine-cast type in his extensive foundry displaced that made in his hand molds, without any depreciation in the selling price.

Acting on his encouraging suggestion of improvement, it was not long ere the inventor invited Mr. Bruce to call over at his workshop and examine a working model of the present machine, one capable of being worked, as at present, by wind, steam or water power. Unfortunately for himself and the inventor, he did not come personally, but sent instead his machinist and his partner, Mr. P. C. Cortelyan, to whom the capabilities of the invention were explained, and its advantages over any other preceding invention pointed out.

The indifference of Mr. Bruce to its adoption when the inventor called upon him subsequently was a perfect staggerer to the inventor's ambition, and his working model stood for the space of nearly two years in a corner, in quiet and gloomy silence.

It was indeed a bold step for the managers of the "Boston Type and Stereotype Foundry" to enter again into the arena and struggle for improvement, after having once been almost brought to the verge of ruin through the costly experiments of Messrs. Starr and Sturdevant, workmen in their employ. But the now popular-

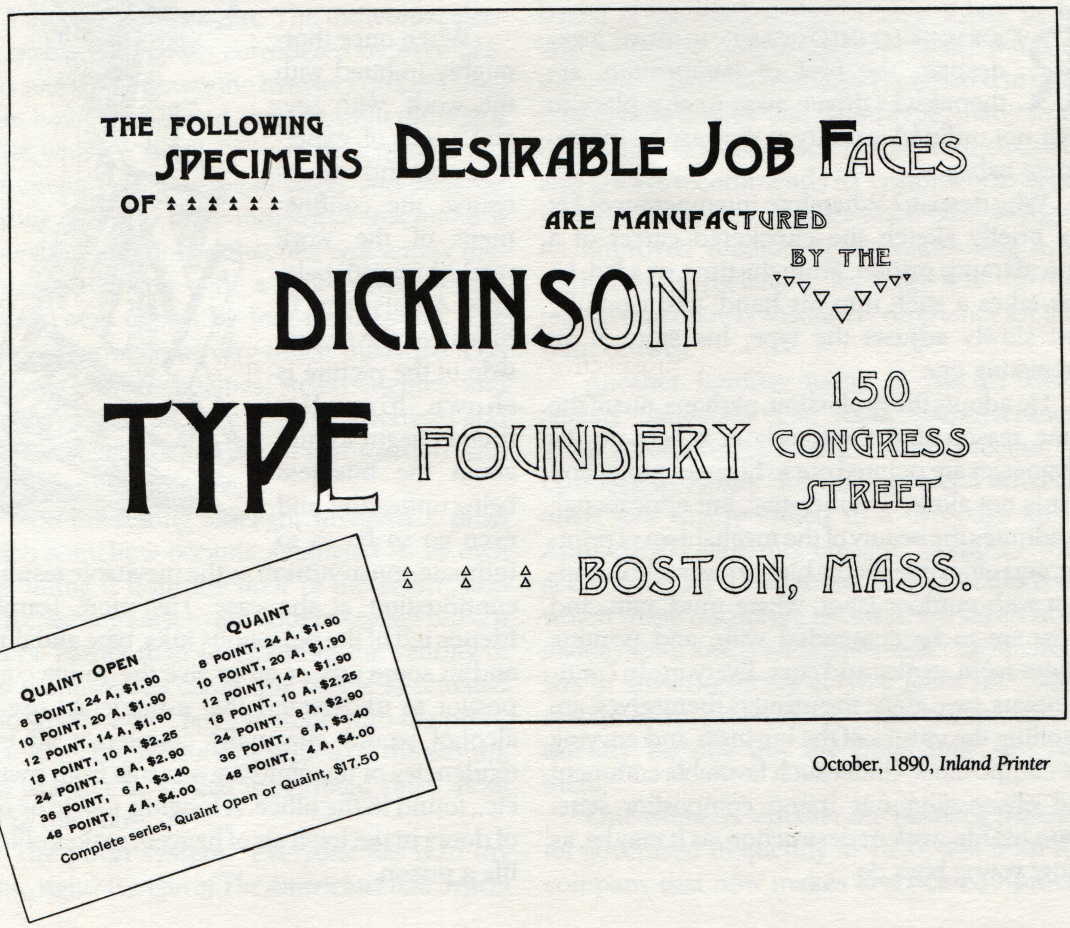
ization of the once-tabooed machine-cast type, through the boldness of Mr. George Bruce, was a strong financial argument. Something must be done to hold their position as manufacturers. Hence learning through my friend Mr. Dalton of my rejected model, they invited the inventor to give it a trial in their own foundry in Boston, under written stipulations defining weight, accuracy, speed and continuity of action; and the writer must be permitted to say that the written agreement allowed him very little margin.

In due time the trial came off. The tests were every way satisfactory and were what may be called crucial. In fact the product, speed and continuity of casting rather exceeded the specified requirements, and both parties were fully satisfied. The "Boston Type and Stereotype Foundry" purchased an exclusive right to manufacture in the six New England states.

And the new invention fell into good hands, and now from the once slow and laborious Gutenberg process of spoon dipping and pouring, of fourteen or fifteen per minute, type casting by the power of steam has been increased to from one hundred and fifty to two hundred types per minute.

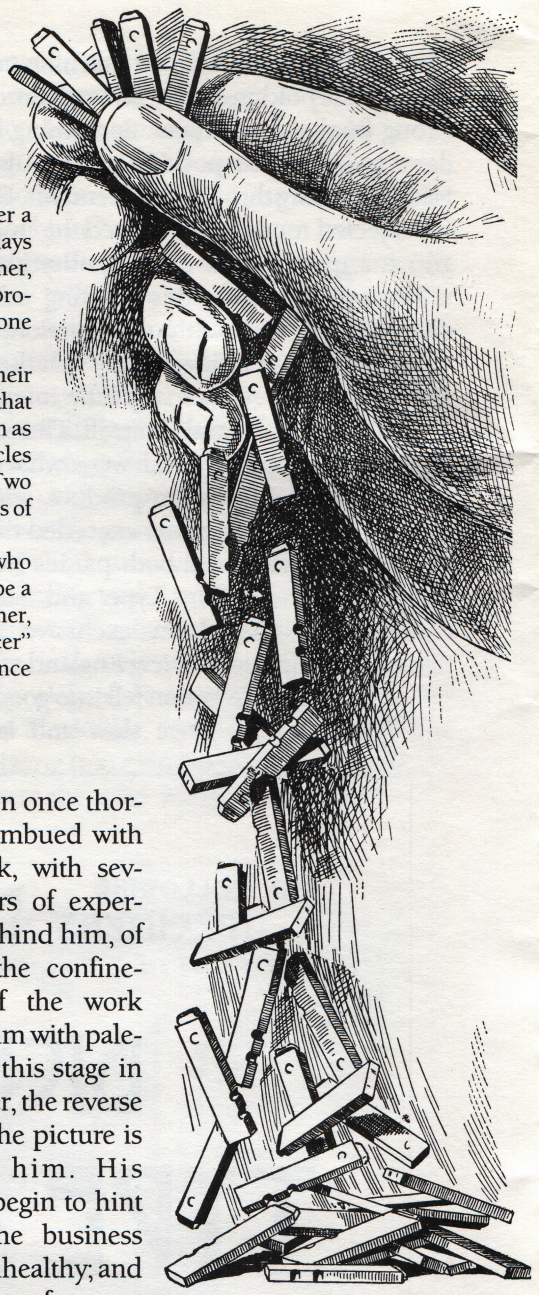
That the invention has not to the inventor been a financial success he blames none but himself, as he is not the first inventor who has failed to profit from ideas which have enriched others.

All inventors should be ever cognizant, however, of the fact that most, if not all of our prominent inventions are at best but the outgrowth of some humble predecessor, as the wheel-barrow was the forerunner of the locomotive, or Franklin's electric kite was the predecessor of the ocean telegraph or telephone. Wonderful as are the developments that daily occur, the world is still an unexplored domain, but by the agency of the press and machine-cast type the world is ever ready for further unfoldment.



October, 1890, *Inland Printer*

A Plea for the Tramp Printer



How was type set in 1890? Nearly all of it was set by hand—a letter a time—by a legion of workers who generally labored 12 hours a day six days a week. They weren't paid by the hour as nearly all employees today. Rather, they were paid by the thousand ems of corrected composition they produced. The pay? Around 38 cents per thousand, or a little more if one worked the night shift.

Women had entered the composing room and in great numbers. Their presence was still a topic of heated discussion with general agreement that women simply were not up to the task. But in retrospect, there's question as to whether *men* were either! *The Inland Printer* frequently contained articles about drunken printers. These gave a hint of working conditions. Two articles are chosen to illustrate conditions back in 1890 for the thousands of "comps" necessary to get words into type.

(These help me better understand the lament of my grandfather who asked me as a teenager—about 1955—what I wanted to do. "I want to be a printer," was my reply. "Good Lord, Annie," he said to my grandmother, "we're going to have another drunk in the family." Working as a "bouncer" in bar rooms before the turn of the century, he had a first-hand experience with some of the situations explained in the following.)

By F. Marion Cole

RESORTING TO INTOXICANTS to drive away despair, the best of compositors are themselves driven away to give place to men not unfitted for duty at the case by intemperate habits.

Why despair? Wherefore intemperance? Let me briefly sketch the checkered career of a typical tramp printer. From the time, as a lad, he first takes a stick into his hand, and carefully and slowly adjusts the type, his story is an interesting one.

He adopts the profession, perhaps, out of the same reason that thousands of others do. Its advantages are pointed out to him as a profession that is not alone remunerative, but educational; he admires the beauty of the mechanism of printing; and office-life seems highly desirable in contrast with outdoor labor, where mud, rain, and snow are to be contended with, and printing offices seem so nice and cozy. Everyone in country towns, save alone the printers themselves, are extolling the virtues of the business and envying the compositors. Under such favorable comment and observation our tramp compositor starts upon his life work or destruction, as it may be, as many young boys do.

When once thoroughly imbued with the work, with several years of experience behind him, of course the confinement of the work marks him with paleness. At this stage in his career, the reverse side of the picture is shown him. His friends begin to hint about the business being unhealthy; and even go so far as to intimate consumption as the inevitable result of continuation at the case. His more learned friends tell of the poisonous inks, type and dust, and in some way or other give the young compositor to understand that a moderate use of alcohol would effectually counteract all evil tendencies of the obnoxious scents from metal, etc., found in the office. A longing, too, to be out of doors in the fresh air of heaven, makes office-life a prison.



Finding representative illustrations of what the "comp" and his or her workplace looked like is, indeed, difficult. This early photo is from Robert F. Karolevitz's *Newspapering in the Old West* and depicts two comps for the *Cherokee Advocate* in the Indian Territory which eventually became Oklahoma.

After many years have passed, and confinement, coupled with other effects of office-work, has partially unfitted him for hard labor, a weak despair fastens itself upon him. He had probably reached his twenty-fifth year; and from his standpoint he views life as a short stretch of miserable existence. Nothing is visible to him except a few more years at the case, then death. It is then that he resorts to drink to drive away despair.

What follows is natural; as natural as the law of "the survival of the fittest." He is discharged in a short time to give place to a man of steady habits, one not incapacitated for work by drink.

Thus, the incipiency of a dread life as a tramp is thrust upon him by his own recklessness. No person wants an incapable employee, and the intemperate compositor will remain intemperate.

In his hours of soberness he is given work, but on the recurrence of his "spree" he is discharged; and on the downward road through hunger, cold and gnawing thirst, the poor wanderer goes, asking, forever asking, "How's work?" "Can you give a fellow a show this morning?"

Five, ten, twenty, perhaps thirty years see him still on the road, old for his years, poor as of yore, with dark lines of suffering and privation deepening each furrow on his brow, living a life of regret.

Not long will he remain with us, soon tottering into his grave; but as sure as the sun rises and sets, his place on earth will be filled by one whom a little forethought or a little will-power would save from a life of misery.

Brothers in the art preservative of arts, in any dealing with an intemperate tramp printer, weigh the probable inception of a terrible existence and be charitable, at least, toward our erring kinsmen-in-trade. Deal with him as a Christian, humane conscience would dictate; and at last when your form is locked in the chase of death it will be by the quoins of love with an assurance that all will lift.

The Inland Printer, February, 1890, page 408

A Plea for Printers

So how would you react to being at the type case all day sticking type? It would be downright drudgery, right? But let's look at other aspects of the workplace back in 1890. Folks often put in unbelievably long stints at the case and frequently seven days a week. There's no doubt the International Typographical Union was at the forefront of the movement to reduce the workday to eight hours—and to restrict the work week to six days. Much comment on these subjects filled the pages of *The Inland Printer*. The article below gives better insight into what conditions really were like.

By Duncan F. Young

ON EVERY CONTINENT, in every clime, in every section of country where civilized people reside is to be found the ever-indulgent printer, and in each place is cast upon him a reputation ever the same. In success, in poverty, in weal or woe, the poor printer is aspersed by the untiring multitudes who rather condemn than extend a helping hand to a suffering and unfortunate fellow-mortal. On the beautiful asphalted Avenue St. Charles, in New Orleans, dotted here and there with a flower-bedecked cottage or an imposing mansion, the cry is heard as printers pass along: "Come in, children; there are those drunken printers." And on the cosmopolitan Street of Broadway, New York, unnoticed in the motley crowd until arrested, the remark is spontaneous: "It is only a drunken printer." And, I may say, who among printers has not heard someone outside the printing business say: "Printers are a very dissipated class of men, are they not?" Such, indeed, is the reputation of printers—deserved or not is known really by but few printers even.

Far away in the age of generations long gone before us, printers were regarded with a marked degree of respect, and that that respect to a considerable extent has been lost to them is due in no small part to printers themselves and in part to the misfortune of the business acting somewhat as a lodestone, thereby bringing into the craft a surplus of motley characters.

There are men who love the taste of intoxicating liquors and others who appreciate the effects alone. These are to be found in every calling and every sphere of life. Very few physicians are there who do not at times recommend or prescribe liquors, and there are many men who find it very essential to at times use liquor. This is particularly so in the printing business. Very few doubt the efficacy of the use of liquor. The difficulty in its use as a medicine lies in the ignorance of the quantity required at a time. Printers, it is claimed, indulge more in strong drink than any other class of men. This, no doubt, is a fact, and there is every reason for it. Let temperance advocates and ministers of the gospel everywhere strike at the root of this evil, if they will, and bring every effort and influence to bear in correcting it. Let them view the hungry man who imbibes voraciously and the overworked man who tipples persistently, and they have discovered the cause which most frequently leads to drink. Let them observe the workings of an average newspaper office and they will say: "Aye, go, thou, and drink, for thou needest it."

Few readers of the many big dailies know through what terrible ordeals printers have to go in getting them out. As a general thing the work of the first four days of the week is regular and comparatively easy. During those days printers are permitted to eat their breakfast at noon and dinner at 5 in the evening. On Fridays and Saturdays, however, they are obliged to rise at 10 or 11 a.m., as they have an unusual amount of work to perform, and if they have an opportunity to go home in the afternoon it is but to get a bite. From the effects of these heavy days' work they are unable to rise on Sundays until 12 or 1 o'clock in the day. The effect on one of this disparity of rest and meals everyone knows.

It does not seem much to say that printers, as a rule, work some days ten hours and others fifteen or sixteen, and in fact it could be easily endured at laborious work; but when we consider that mind, eyes and body are steadily at work during those long hours, and at work which does not develop and strengthen the body, but rather nourishes from it, we can readily understand that the body and mind crave for



This crowded classroom situation at Kansas State University, where printing was taught as early as 1873, is fair representation of what conditions were like in the typical composing room before the turn of the century. Photo also from Karolevitz's book.

and require artificial restoratives. More than this, type dust is inhaled, and very few printing offices are ventilated sufficiently for the number of men who work in them, fifty to one hundred men being sometimes obliged to work in a room less than 100 by 200 feet square. Legislation in this matter is seriously required—a sanitary measure for our common good. Since such legislation is lacking is it any wonder that printers, after a siege of such work, should require drink to excite the blood to exclude these terrible inhalations? The point may be made, do not work so steadily. In answer I would say: One man does not know another's needs. True, a man may work a week, following with a three or four days' drunk. Evidently the strain of work was too intense for him, but he was probably forced to work that length of time to meet a certain obligation. Did he receive a regular salary, thus knowing the amount he could depend on receiving at the end of the week, it is more than likely that he would not work so steadily. The amount of one big day's work, especially when a "fat take" and several "bonuses" are thrown in, is an inducement which it is difficult for one to resist, be he ever so fatigued.

If we would avoid this tendency toward degeneration, all admirers of a sturdy and robust nation must amalgamate in an effort to regulate the hours of work on morning papers. The extra amount of work is superinduced by a determined competition on the part of publishers—not by a legitimate demand of the patrons, for who reads through the mammoth Sunday paper? And all to the detriment and injury of the printer, who makes a few dimes for his extra work, and expends treble the amount in obtaining recreation.

Some may say that the whole difficulty may be averted by putting on extras on the big days, but such has been tried and failed, as is shown by statistics of the hours of work in all the larger

offices of the country: first, because few men will hold two-day-a-week situations; second, because the men are not always to be obtained on those days.

When it is seen that this terrible evil exists and that the only remedy lies in the reduction and equalization of hours of work; that printers are slowly but surely sliding into this monstrous abyss in an avocation which enlightens the world—is there the man who will stand by and let them go as the ox led to the shambles? In the name of civilization let the answer be No, and action follow the word!

—*The Inland Printer*, February, 1890, page 391-392

Typesetting Contest

Let no one conclude that every "comp" was a drunk and of inferior abilities. Indeed, some were magnificent in their ability compose metal type hour after hour. During this era contests frequently were staged to help determine the "fastest comp in the nation." The report here came from *The Inland Printer*, November, 1890 (page 174-175).

In case you're not familiar with the old sizing terminology, nonpareil was the equivalent of 6-point type. The error which forced Monheimer to concede the contest would not have resulted had the contestants used composing sticks calibrated to the point system, something relatively new and advertised by the Golding Company in *The Inland Printer* during that same year. Sticks used in that contest had a sliding knee, and were locked into place against the prescribed number of ems set up. The comp set the measure by assembling the prescribed number of letter m's (28 in this case) turned sideways in the stick. Apparently em quads were not always perfectly square and therefore were not to be trusted for measuring purposes, much to Monheimer's dismay. Working to the "wrong measure" was a devastating (yet easily made) error, for it required that all work be re-justified to the correct measure—a line at a time!

To better judge their performances, consider the average em of type contains somewhere between two and three characters. Let's say 2½ characters. Thienes' winning performance works out to equal 40 characters a minute of justified, *corrected* composition. (Back then, poor spacing, poor justification, improper word breaks, misspelled words, etc., simply were not tolerated.) There are many modern-day typists who will never do that well!

It is explained that fairly "clean" copy was provided to the two contestants and that their speed was reduced by the amount of time they took on correcting errors. This same procedure was used in determining the pay a comp was to receive for his work. He was paid by the thousand ems of *corrected* composition he produced. Though speed was not a direct requisite to be a comp, rest assured if a man (or woman) was unnessarily slow, that person would be removed and replaced by a faster comp.

ONE OF THE MOST remarkable typesetting contests that ever occurred in this country was held in the composing room of *The Inland Printer* on Sunday, November 9. Peter Thienes, of the Chicago *Mail*, and Leo Monheimer, of the Chicago *Herald*, being the contestants. Great interest was taken in the affair, as the men were so evenly matched, each having a large number of friends ready and willing to stake their "pile" on the contestant they believed would surely win. The ladies, too, took great interest in the affair and were not afraid to back their choice.

The following are the terms under which the match was contested:

Chicago, Ill., October 20, 1890

We hereby agree to set nonpareil type, beginning at 12 o'clock,. November 9, 1890, unless sickness prevents either contestant being able to work on that day, in two stretches of two hours each, the first to begin at 12 o'clock and continue until 2 o'clock, and after an hour's rest to resume work at 3 o'clock and continue until 5 o'clock, for $200 a side, a forfeit being deposited with the sporting editor of the *Inter Ocean*, who is to be the final stakeholder. Each contestant is to appoint a manager, the two to appoint a third party to act as referee. Each contestant has the privilege of selecting spaces such as he wishes to use. Should either contestant have an "out" during composition it is not to be measured after being corrected. The national typesetting rules are to govern the contest in regard to spacing, justification and correcting. The type to be used is to be decided upon at least ten days before the day of holding the contest. The final deposit is to be made on the Tuesday preceding the day of the contest.

Leo Monheimer, Chicago *Herald*
Peter Thienes, Chicago *Mail*



Peter Thienes

This is the second match the same men have been engaged in during the last two years. Monheimer winning on the former occasion. Thienes, however, was not satisfied, and issued the challenge, which Monheimer at once accepted, and chose nonpareil as the type to be used.

William Lumsden looked after the interests of Monheimer, while Gus Bilger anxiously waited upon Thienes. O. G. Wood, of *The Inland Printer* office was chosen referee, and was called upon to give some very close and exact decisions. Harry Flinn and Adolph Scholl acted as proofreaders.

The copy given to each compositor was identical, and was taken from *The Inland Printer*, the subject being a lecture by A. C. Cameron on the labor problem, delivered in June, 1888.

Time was called at 12 o'clock, and both men commenced steady and at a good gait and kept it up for two hours, when they rested for one hour. At the end of the first stretch Monheimer had set 3,666 ems and Thienes 3,598 ems gross. At 3 o'clock time was called again, and both contestants started out to do better than they had in the first half. The task was completed at 5 o'clock, with the following result: Monheimer had a string of 7,359 ems, Thienes having 7,305 ems, a difference of only 54 ems in four hours' composition. Monheimer was 23¼ minutes in correcting his two proofs. Thienes only taking 18¾ minutes to complete his task, 25 ems being deducted for each minute occupied in correcting proofs. This left the match in the following close order: Monheimer, 6,783 ems; Thienes 6,837.

Both parties now commenced to look for the slightest error or bad spacing, and the referee was called upon to carefully examine the matter set by the contestants. In going over the galleys the referee discovered that Monheimer's stick has been unfortunately set a three-em space too narrow, "quads" being used instead of the letter "m," which is correct when turned sideways; Monheimer's stick, therefore, only contained 27⅔ ems, instead of 28 ems of the type used. Thereupon the referee awarded the match to Thienes by 142 ems, his stick containing the full 28 ems. It may be well to state that Mr. Monheimer was not aware of the mistake and accepted his defeat gracefully, the utmost good feeling existing, and thus ended one of the most remarkable typesetting matches ever known.

The following is a short history of the two men with some of their performances at the case:



Leo Monheimer

Peter Thienes was born in Edinburg, Indiana, and is thirty-three years old, and is known throughout the trade as an exceedingly fast and accurate workman. The only public contest in which he participated was that of Philadelphia, when he set in thirty-three hours 60,323 ems, and lost but thirty-two minutes in correcting the entire amount. His best gross score was 2,912 ems in one hour and a half; his best net score was 3,843½ ems in one hour and a half. The most remarkable run he has ever made was in this same contest, when he set 2,734 ems in one hour and a half, with only one turned letter. In this tournament he won the local championship and an elegant gold medal. He also was presented with an engraved silver stick by the employees of the Philadelphia *Times* in reward for his splendid work in the Philadelphia tournament.

Leo Monheimer is a native of Lancaster, Missouri, is twenty-four years old, and has been in Chicago several years. He has never worked east of Cincinnati. In private he has frequently set over 2,000 ems per hour. The only public record that he holds was made in the Chicago tournament, when in one hour and a half he set 2,600 ems gross and 2,522 ems net, and made a total set, in twenty-one hours of 35,165 ems gross and 33,346½ ems net. He is called one of the fastest typos in the United States, and his recent performance was one which justifies his reputation.

"The Golding Jobber stands unrivaled as a rapid-running, well-built, perfectly balanced machine."—*THE INLAND PRINTER, March, 1890.*

PRESSES.

The Golding Jobber.
Rapid and powerful: perfect ink distribution, convenient impression throw-off and adjustment. Sizes, 8 x 12, 10 x 15, 12 x 18, 15 x 21 inches. Speed, 1,500 to 2,500 per hour.

The Pearl.
Balanced platen movement; strong and light running; unequaled for speed. Sizes, 5 x 8, 7 x 11, 9 x 14 inches. Largest size with throw-off. Speed, 2,000 to 3,000 per hour.

Fairhaven Cylinder.
Compact, strongly built; can be run easily either by hand or steam power, and has impression throw-off. Speed, 1,200 per hour. No. 6, 31 x 46, $900.

TOOLS.
Little Giant Rule Cutters and Shapers, Lead Cutters, Rule Curvers and Miterers, Card Cutters, Wire Stitchers, Mailing Machines, Wrought and Cast Iron Chases, Perforators, Bellows, Tablet Presses and Liquid Cement, Brushes, Galleys, Imposing Stones, Quoins, Mallets, Planers, Tweezers, Bodkins, Comp'g Rules and Sticks.

FURNITURE.
Wood and Steel Run Cabinets, well-made and handsomely finished; Standard News and Job Stands; Poplar Job Stands at special prices; Window Cabinets and Stands, Cases of every pattern, Roller and Galley Cabinets, Wood Furniture and Reglet in yard lengths or labor-saving fonts with Racks, Drying Racks, Galley Cabinets–anything made of wood and useful to printers.

STANDARD JOB COMPOSING STICK.

Saves $20 a Year in a Job Compositor's Time.

ABSOLUTELY CORRECT. CANNOT SLIP.

It is graduated, and can be *set instantly* to any regular measure, and once set it is impossible for it to slip, as it is held by a hardened steel pin which extends from the clamp through back of stick *into* the knee.



OPINIONS.

"Can save five minutes on every job, and would not part with it."

"By all odds the best I ever had."

"My compositors steal that stick one from the other whenever they can, and I'll have to get more to keep the peace."

	2-in. deep.	2¼-in.	2½-in.
6-inch	$1.75	$1.85	$1.95
8 "	2.00	2.10	2.20
10 "	2.25	2.35	2.45
12 "	2.50	2.60	2.70

Nickel plating—6-in., 25c.; 8 to 10-in., 30c.; 12-in., 40c.

Every Stick warranted to be true, and accurate to standard.

Send Postal for Illustrated Catalogue of Presses and latest Novelties in Labor-Saving Tools.

"OWL BRAND" INKS.

Art Tones—*Large variety of beautiful tones, unequaled for producing rich, artistic effects.* ***Gold Size***—*That will work freely and adhere firmly to any stock, drying with a bright and permanent gloss.* ***Gold Ink***—*A perfect substitute for bronze on low-priced work.* ***Copying Inks***—*Work easily and do not injure rollers.* ***Typewriter Inks***—***Blue, Green and Purple.*** ***Colored Inks*** *of every shade and color, put up in screw-top cans and collapsible tubes.* ***Blacks***—*Unapproached for density of color and working qualities.* ***Owline***—*Reduces the stiffest ink quickly, and preserves the elasticity of rollers.* ***Bronze Powders***—*Our own importation; guaranteed the most brilliant.*

TYPE.
Largest stock and best variety of type in the country. The best productions of all leading foundries. Special agency for the MacKellar, Smiths & Jordan Co. and Benton's Self-Spacing Type.

SUPPLIES.
Steam Engines, Electric and Water Motors; Challenge, Advance and Acme Paper Cutters, or any other pattern desired; Standing and Proof Presses; Felt and Rubber Blankets, Tress Board, Cutter Sticks, Stereotype Blocks, Sponges, etc.

BINDERS' CEMENT—Elastic, liquid, strong. Always ready for use. Has no equal for tablet work, and will stick anything.

ORDERS FOR COMPLETE OFFICES—newspaper or job—selected from our catalogue, filled in from one to three days.

GOLDING & CO. 177 TO 199 FORT HILL SQUARE AND 27 TO 29 PURCHASE STREET, **Boston, Mass.**

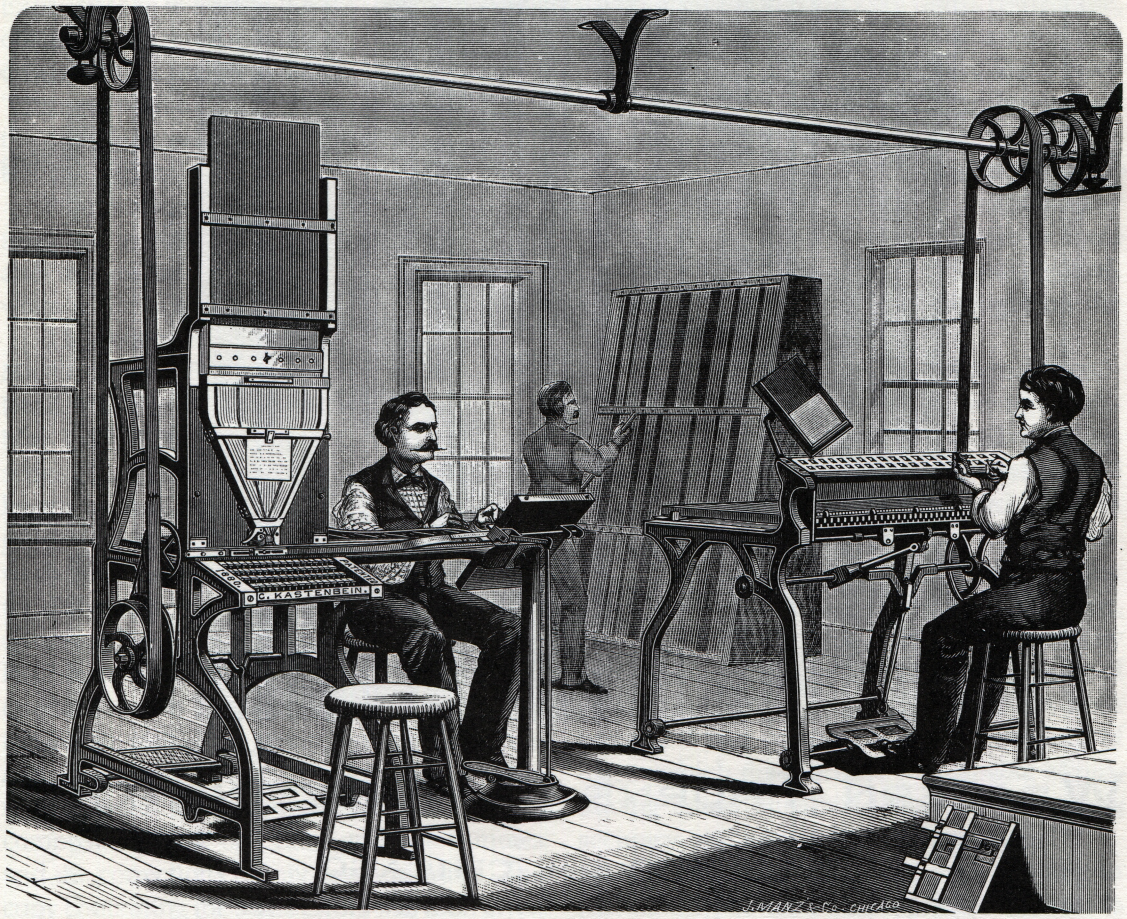
The age-old system of setting column measures by the "ems" of the type being used was slowly giving way to measures expressed in *picas* because of the introduction of the American point system (discussed on page 30). This ad, from the April, 1890, *Inland Printer* shows Golding's pica-calibrated stick. Too bad such sticks were not specified in the typesetting contest lost by Monheimer because of an improper measure being used.

". . . Purely An Inventor's Dream"

Now we could look back and say, "it's obvious the Linotype was going to succeed." But it didn't happen that easily. Printers were anxious about what the future might bring. And editors of the day were quick to discuss the systems being perpetrated and, as below, project that they might *never* succeed, especially in high-quality book work. The author quickly mentions several typesetting machines, so each is explained here in abbreviated fashion, and two are illustrated because such great original artwork has been found.

First, the Thorne, was a device invented in 1880 for composing and distributing specially nicked foundry type. "The Thorne had a long, varied and successful history," according to Dick Huss in his *The Development of Mechanical Typesetting Methods*. In 1890, it was the only machine being advertised in *The Inland Printer*—the same ad reproduced herein ran in several issues during the year. The machine evolved into the Unitype and by 1903 over 1,500 were in use throughout the country. It assembled and distributed type, but the process of justifying lines remained the duty of a human, either the operator or a second person assigned to get greater production out of a single machine.

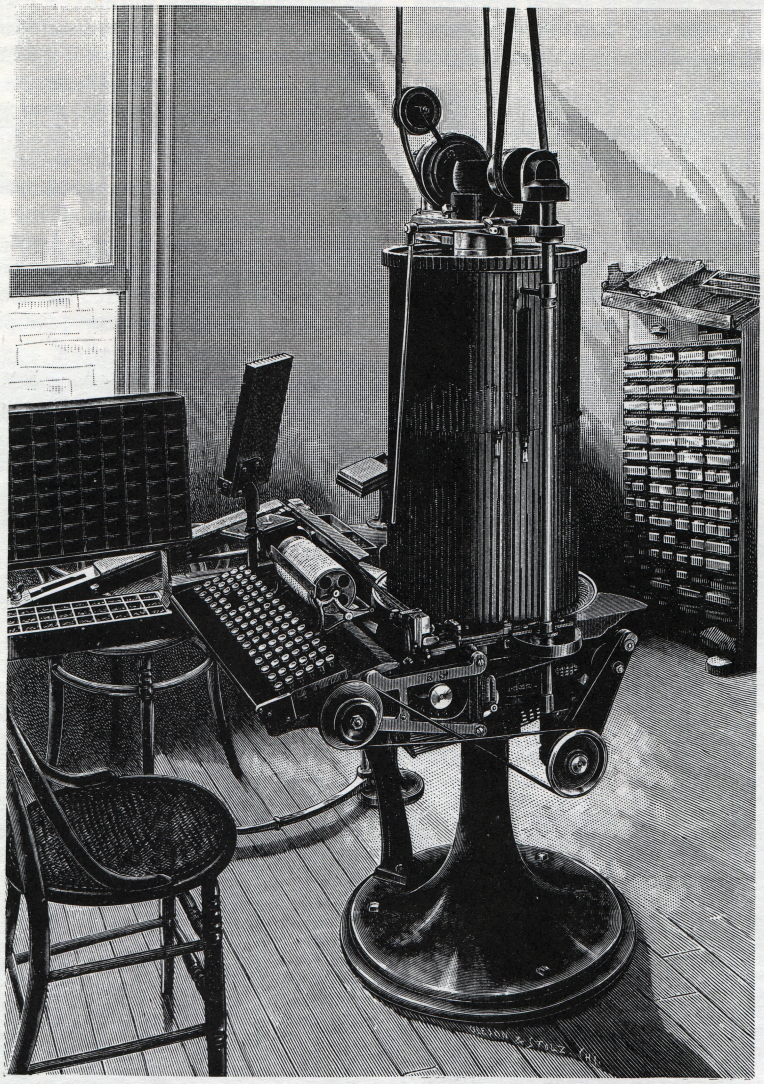
Next was the Kastenbein, invented (according to Huss) by a Frenchman in 1869 and used with greater or lesser success both in Europe and the U. S. It was driven by a foot pedal. Distribution was still by hand (partially automated) and justification was by hand. It did not require special nicking on type, and John Thompson, in his *History of Composing Machines*, says it was used with success at the *London Times* in combination with a Wicks Rotary Typecaster which provided a steady stream of new sorts and thus, eliminated the need for type distribution. I could not resist printing the illustration of this curious machine, pulled direct from the pages of *American Model Printer*, June, 1887, page 233. Therein, it was stated "In the matter of speed, when it is considered that about 200,000 ems a week is the output of one of these composing and distrib-



A beautiful woodcut rendering of the Kastenbein typesetter, taken from *The American Model Printer*, January-March, 1881. With this machine, composition was controlled by a keyboard, but distribution and justification still were largely manual operations.

THE THORNE

Typesetting and Distributing Machine.



WESTERN · THORNE · TYPESETTING · CO.

156 Lake Street, CHICAGO.

This is a slightly reduced version of the Thorne ad which ran in several editions of *The Inland Printer* during 1890. Indeed, the Thorne was the only typesetting device advertised during the year. The Thorne typesetter was, perhaps, the most successful device marketed which actually composed foundry type.

uting machines, with at least three operators, one to set, another to space out and arrange the lines, and a third to keep up with the distribution—then the actual result is not so enormous. In other words, three operators and two machines are required to do the aggregate of three good hand-compositors, with about 56,000 ems gain in favor of the machine compositors. This is not deducting from the machines their cost, wear and tear, interest on money invested, nor the damage to type by contact and fall."

The Alden Typesetter alluded to had been in a state of development since 1857. It was never fully developed, yet patents were still being taken out by its later developers as late as 1910. It was a device for assembling and distributing specially nicked foundry type. Justification was by hand.

Another machine is mentioned as "Colt." The only hint on this name is Legros and Grant's *Typographical Printing-Surfaces,* which notes the Paige Typesetter was built by The Farnham Typesetter Company, which had works in the building of the Colt's Firearms Company. Shall we assume the editor was speaking of the Paige machine? It was first proposed in 1873 and was in a constant state of development/abandonment, helping Mark Twain waste a fortune in the process, until its very successful unveiling and test in a typesetting contest in 1894. It won against the Linotype, but by that time the investors opted to abandon the project after they determined they could not price it in competition with the already succeeding Linotype. Only two machines were built.

Interestingly, the March, 1890, edition of *The Inland Printer* reported the following (page 560):

"The Page (*sic.*) typesetting machine is finally done. The cost has been about $500,000, of which Mark Twain has spent $100,000. He is now principal owner. It is proposed to form a joint stock company for the construction of the machines on an economical scale. This plant and working capital will cost about $1,000,000. When it is ready, machines can be turned out in quantities at a cost of a little less than $6,000 each, then selling for $12,000. . . ."

The Paige was a mechanical masterpiece and anyone curious about its operation must read Legros and Grant's detailed discussion of the machine. An article also appeared in the *ATF Newsletter*, Number 8, January 1983, page 10.

The Mergenthaler machine with which the *Paper and Press* editor was familiar was the "Blower" machine (see next reprint); and the Rogers Typograph was introduced in 1890 (article herein). But for now, let's hear what the editor of *Paper and Press* thought the future held for "mechanical contrivances" designed to set type. The article appeared in the February, 1890, edition on page 106.

WHILE WE BELIEVE that labor is never injured by mechanical invention, there are many of its domains that the latter has attempted to occupy with but little success. This is especially true of the type-composing and distributing machines, of which so large a number have been invented. Each month, as the Patent Office *Gazettes* are issued, improvements appear on minor details on some one or other of these now well-known machines. Either it is the Thorne, the Mergenthaler, the Alden, or others, in which some minor part receives attention.

We have endeavored to present in past numbers a record of inventive genius in this class of mechanism, and in the present issue an illustration and description are given of perhaps the latest improvement on that ingenious assistant to the compositor proposed by Alexander Lagerman, of Sweden.

However near may be the day on which the last compositor will lay his stick down for good we cannot say, but thus far a careful examination of the various systems already perfected and in so-called practical operation discloses one and the same obstacle to their introduction, and that is the complexity of their construction which, in spite of declarations to the contrary, renders them extremely liable to derangement.

In connection with the working of the mechanical contrivances here referred to, the central difficulty in type-composing machines, and an indisputable one, is the difficulty of human ingenuity to devise a machine which will be able to space a line as accurately as a skilled compositor. Then the question of complicated parts is a weighty one, the Alden machine for instance consisting of no less than 14,625 parts, many of them of very delicate construction, weighing in all nearly 150 pounds.

It must be confessed that in plain work with one kind of type, several of the extant machines give satisfaction, but there is even a difficulty here in the absolute necessity to furnish the operator with perfectly clear and clean copy—a condition which in many cases cannot be complied with.

Some of the machines call for special type or at least modification of the existing styles, together with other conditions quite outside of a

strictly practical application, so that the machine in many instances is merely noteworthy as a curiosity of mechanical construction.

It is unquestionable that the systems known as the Kastenbein, Colt, Thorne, Mergenthaler, etc., have to a certain degree demonstrated their possibilities of practical operation, but these systems demand such skill and experience from those in charge of them, and present so many difficulties in the details of setting and distributing, that there is no ground for regarding them as yet perfect.

In the Mergenthaler system the disadvantage lies in the necessary rejection of an entire line of type when a single space or letter happens to be omitted by the operator, who cannot correct the slightest error made by him save by throwing out the casting of the whole line and beginning over again; what he would do with a piece of blind copy is difficult to say. In order to achieve the brilliant success which is claimed for the system, every line of copy must be edited, every paragraph marked, every difficult or unusual word carefully spelled out in the plainest manner possible; this, which is an expenditure of time and labor, is a legitimate charge against the system.

Of the late invention in type-setting machines the majority have been improvements upon already existing systems rather than original methods to dispense with type-setting by hand. In this category falls the Mergenthaler machine, which applies the principle of the stereotype-plate to the completed matrices of each line. To the newspaper office its possibilities are doubtless satisfactory, but for fine editions in competition with first-class hand labor it is purely an inventor's dream.

Another difficulty is that of cutting accurate and artistic dies, striking the matrices and casting perfect type. It would seem that a blind force, no matter how skillfully controlled and guided, can scarcely have intelligence enough to moderate its blow according as the metal happens to present a softer surface at one moment or another.

It is undoubtedly within the realm of possibility, and indeed it is highly probable, that some one of the systems of type-setting by machinery will in the future play an important part in ordinary book and newspaper printing, but the fine editions as well as all manner of display work will hardly be accomplished by this aid.

Another objection to the type-casting principle is the difficulty of obtaining a deep and clean stereotype-plate from such typefaces. It cannot be done for the same price, as the extra dressing and cutting away necessary to bring the plates up to standard would add to the ordinary rates.

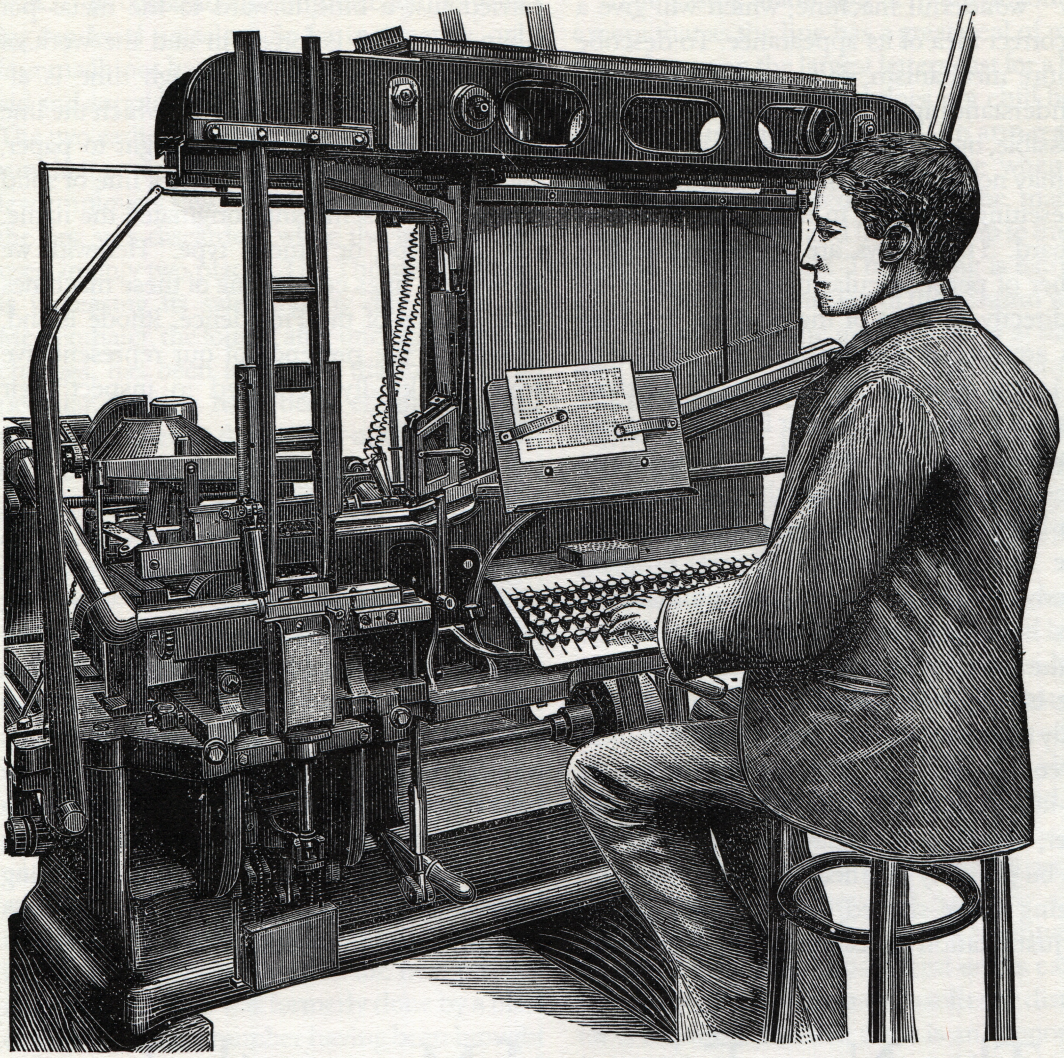
Taking as a specimen of the work the circular issued by the Mergenthaler Machine Company, the disadvantages are evident. Like the typewriter, its prototype in one sense of the word, there is a total inability to keep certain letters when they fall together from having a crowded appearance.

Of the type-setting machines proper, the Thorne is commanding the most attention at the present time as coming nearer to the realization of the inventor's claims. It is unquestionably a marvel of mechanical ingenuity and has been greatly improved since it was first exhibited. An intelligent child, it is said, may work the keyboard, but it may also be remarked that no one but a skilled mechanic could readjust any of the parts if thrown out of gear, or repair any portion of the mechanism if broken or injured. For this reason the machines are principally adapted as residents of large cities near mechanical workshops where aid may be quickly had, broken bits of mechanism replaced, etc.

Women are slowly but steadily pressing into the composing room, in England more than here; this means a great reduction in the price of composition and a consequent lessening of the advantages achieved by the type-composing machine.

We hope at some time to see the objections we have stated overcome and will receive with pleasure the announcement of a perfectly practicable machine, where simplicity is achieved and fewer working parts embodied, and where the cost is not such as to prevent any but the largest and richest offices from possessing them.

The "Blower" Linotype



Before 1890, Ottmar Mergenthaler was having difficulty with the consortium of newspaper owners which had taken control of his company. At first they encouraged him but once most of them had their machines in their plants, there was some thought to restricting manufacture, discrediting it, and thus hiding the obvious production advantages they were enjoying so they alone could reap all benefits. We're speaking of the "Blower" machine, which was Mergenthaler's first production model. The name stemmed from the machine's use of compressed air to carry matrices from their compartments into the assembler section. As production on these machines ensued, Mergenthaler was constantly finding better ways of doing things and he wanted to incorporate improvements into subsequent machines produced. Such changes were hindering production and thus, he was given specific orders to stop his innovation and concentrate on production. Mergenthaler would not do this so he was removed from production activities. A complete account of these events is provided in Carl Schlesinger's book, *The Biography of Ottmar Mergenthaler, Inventor of the Linotype.*

An operational model of the "Blower" is on display at the Smithsonian and a retrospective study of the machine will reveal its many shortcomings. Even still, it was successfully operated in many plants—about 200 were manufactured. The article on the next page was printed just one month before our magical year of 1890. It is reproduced both to supply information on the machine actually in use in 1890, and to display a very good wood engraving of the machine itself. The article is from *The Inland Printer*, December, 1889, page 272.

THE INLAND PRINTER herewith presents to its readers a cut of this wonderful machine, which will give a very correct idea of its appearance. To describe its entire mechanism, so as to give the reader an understanding of it, is almost, if not quite impossible, but a short description, in a general way, may not be devoid of interest. It resembles a typesetting machine, in that it has a lettered keyboard. These keys are connected with a number of perpendicular tubes, shown in the cut, directly in front of the operator. In these tubes are placed the matrices, no type being used in this machine, representing all the characters of a book or newspaper font. When a key is touched one of these matrices drops into an inclined channel, along which it is carried by an air-blast to its proper place in the line-gauge where the line is formed. Spaces, or more properly speaking, spacers are automatically placed between the words simply by touching a key, the same as for a matrix. When the line-gauge is full, or as nearly so as a line of type usually comes to proper justification in an ordinary composing stick, the operator touches a lever-key, shown just to the left of the keyboard proper, and the line of matrices is then carried off to be properly justified and cast. The spacers being wedge-shaped, perfectly even spacing and justification is accomplished by these being pushed up between the words until the line-gauge is filled. The line of matrices is then carried just a little forward to the metal pot when the metal is forced in and the work of casting is accomplished. Enough time is allowed for the metal to cool, after which the line is trimmed to thickness and height to paper, and when completed resembles a line of solid type. In this resemblance originated the name, i. e., Linotype, or "line o' type." Herewith we show three lines cast on one of these machines in the office of the Providence, Rhode Island, *Journal*, in the presence of our representative who was kindly permitted to inspect their machines.

THE INLAND PRINTER
Leading Trade Journal of the World in the Printing Industry.

After the casting of each line has been accomplished, the matrices are sent back mechanically and distributed into their respective tubes with unerring correctness. All these operations are performed automatically, without in any way detracting the attention of the operator from his work at the keyboard, this work consisting of manipulating the keys and pressing down the lever, at the completion of setting each line of matrices, to set the various mechanisms into motion.

The New Form of Mergenthaler

A critique of the "Blower" Linotype, in Ottmar Mergenthaler's own words, was as follows: "The 1886 machine required an air blast for propelling the matrices and for heating the gas, which was found to be very noisy and objectionable in a number of ways. The keyboard touch was hard and not uniform, it took some practice to operate the keyboard without causing matrices to fly out of the channel, the locking up and alignment features were rather unreliable, the distributor was not as strong as it could be, and the machine as a whole lacked that ease of accessibility which is so necessary to keep machines in their proper condition." This is a quote from his biography, included in Carl Schlesinger's book as already noted.

Being removed from the manufacturing operation and with nothing else on his mind (a status Mergenthaler deplored and resented), he set out to correct problems and come up with an even better Linotype. The end result was a machine which served as the basis for virtually all future Linotype development.

The Linotype as we knew it for so many years was introduced in—you guessed it—1890! Here's a preliminary review of the machine. A more detailed discuss illustrated with a superb wood engraving of the sq base machine, also follows. The article below is from *The Superior Printer*, March-April, 1890, page 270. It had been lifted from *American Bookmaker*, something frequently done by editors in those days.

THE MERGENTHALER type bar casting machine has recently been much altered, its construction simplified and its working rendered noiseless. So far in America, only four machines have been put to extensive use to aid and supplement the work of the compositor. The two earliest, the Mitchel and the Burr, have run their course. Their work was well done, but few employers saw any advantage in them, and the first was discarded, while the latter is now used in only two places. The Thorne, the third, is increasing its sales day by day, while the Mergenthaler, the fourth, after undergoing many changes, has been altered so that many of its peculiar features have been eliminated, and those who knew it thoroughly once will be unable to recognize its movements.

The machine is about 4 feet wide, 5 feet deep and 7 feet high. In front is a keyboard, somewhat like that of a type-writer, but longer and larger. The lower case letters are at the left, the figures in the center and the captials at the right hand side. The impulse required to move these keys is very slight. When they are struck, a catch in the upper part of the machine releases a brass die, in size similar to a bit of long primer column rule two-thirds of an inch long, but cut away in grooves at the sides and ends. This has on its edge the character to be cast, but hollow, and not in relief. When this matrix is dislodged it falls down a groove till it strikes against an incline which forces it against the next preceding character. This was formerly done by a blast of air. A sufficient number having been brought together for a line, the characters are placed on their feet; when the blanks or thin wedges are introduced, which spread apart the words as far as necessary to justify the line; the characters are still further straightened, so that each one is exactly on a line with all others, and the slug is then cast, a perfect reproduction of a stereotype line with high spaces. Before casting takes place the letters can be examined by the compositor to see if any error has been committed, as they are in a convenient position for this to be done.

The cast is made as it is in a type foundry, except that as the line has a great deal of metal, more than even the largest letters cast for a book office, it ought not to and does not chill before every letter is perfectly formed. An arm reaches down to this part of the machine when this operation is completed, catches the matrixes that have been used and lifts them up to the top, there to be distributed. The casting is extruded at the front and forms part of the column which is being set. When the matrixes arrive at the top they are moved along in a channel and are distributed by the notches and hollows on their edges. If these perfectly match projections which they meet, as the key meets the wards of a lock, they drop and are back again in the places from which they originally came. The operation is complete.

The alignment of the characters seems to be perfect. There are not many imperfect letters, and the slugs appear to be perfectly true and square. It is claimed by the managers that there is very little stoppage and that very few repairs are needed. The blast of air and the electric communicator are no longer required, and there is no difficulty in seeing the progress of the work at any time. It is asserted that 5,000 ems per hour can be set by an expert and 4,000 by a slow operator; that in a week or two a beginner can become expert; that most literal errors can not take place; that no separate justifier or distributor is required, and that there is an economy of from 60 to 80 per cent achieved by using this apparatus. A statement has been made by the Providence *Journal* to the effect that $250 a week is saved on its bills, the workmen making as much as before and all of the expenses of repairs, gas and power being included, which were not included in the New York *Tribune* statement previously circulated.

—American Bookmaker.

The Mergenthaler Linotype Printing-Machine

Here's a very detailed discussion of Mergenthaler's new machine of 1889, accompanied by one of the very best illustrations (a wood engraving) of the Square Based machine already mentioned. As the article indicates, the actual copy was composed on the Linotype and the original piece was printed direct from Lino slugs. Curiously, the article would serve well to explain the process to folks today who are not familiar with how the machine worked.

A very cursory study of the typeset article reveals the machine at this stage of development did not yet have two-letter matrices and therefore, italics were not available for the names of publications and/or emphasis, notwithstanding the third claim listed in the article. Some of the general rules relating to punctuation (quotes within quotes) were not followed and I have chosen not to attempt to correct these obvious problems.

The piece comes from *Paper and Press* for December, 1890, pages 357-359. Illustrated here is the so-called "Square Based" Linotype, which actually was introduced in 1889. The "Simplex" Linotype followed in 1890 and Mergenthaler explained the differences in his biography.

Having been removed from manufacturing activities (and literally from the original company), Mergenthaler found time on his hands so he went to work improving the machine's defects. The result was a radically changed device introduced in 1889, called the "Square Based" machine. It was brought to trial and proved to be an unqualified success. However, "it was entirely too heavy, a fault brought about by the draughtsman's general inclination from which he could hardly ever free himself entirely." It was decided to lighten the patterns as much as possible and to build from them a second machine which was to serve as the pattern for large numbers to be built thereafter. This "Improved Model 1" (or "Simplex") served as the basis for virtually all future Linotype machines until the Electrons of the 1960s.

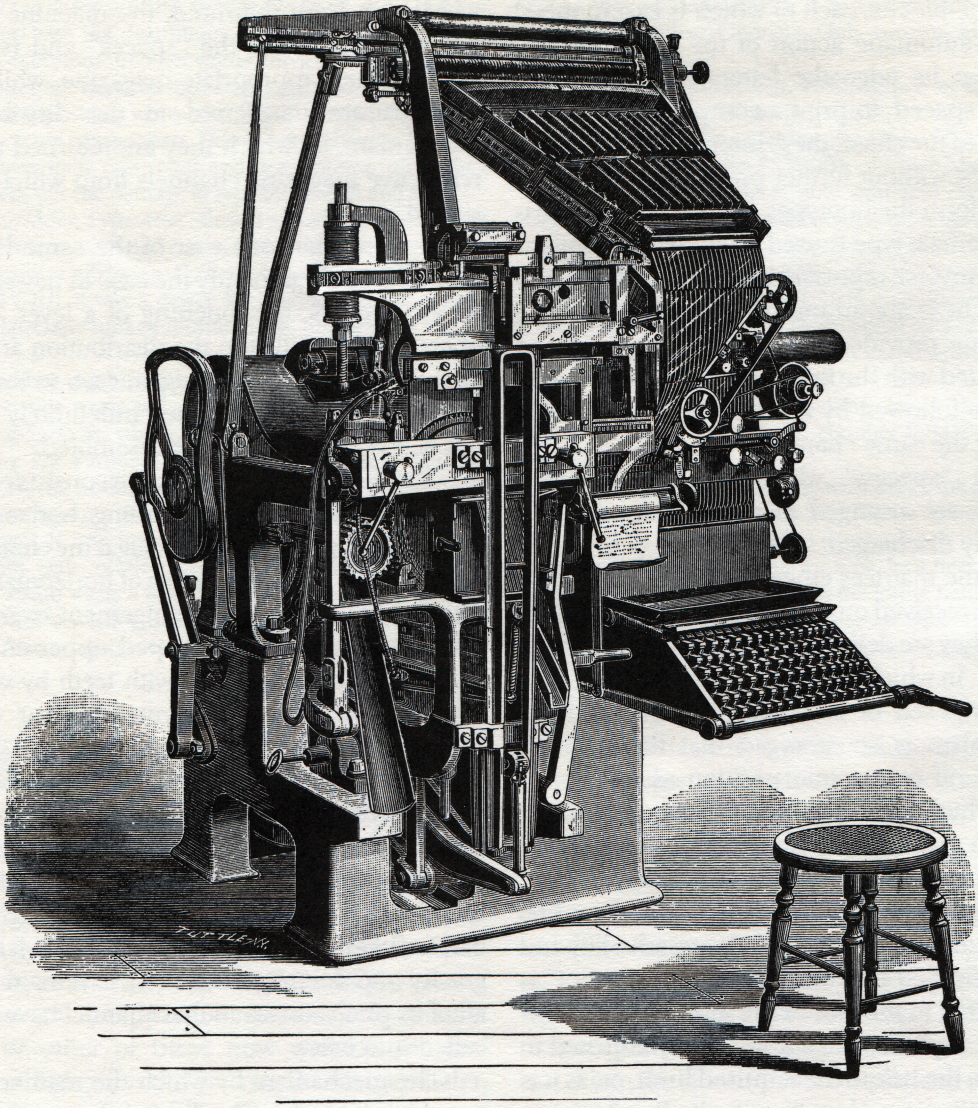
WHEN in July, 1886, the first Linotype machine was placed in the composing-room of the "New York Tribune," to be used in the regular daily work of that paper, the first practical step was taken in revolutionizing the art of printing by raising the unit of composition from a single letter or character to an entire line of type. The "Tribune" was rapidly followed in this innovation by the "Louisville Courier-Journal" and the "Chicago News," and some time thereafter by the "Providence Journal." Notwithstanding the predictions of failure on all sides, the machines have never failed to perform the task allotted to them and the daily appearance of those journals before the public has been entirely dependent upon the work of this wonderful automation. To-day over 150 of them are in regular operation in various offices in the United States and Great Britain, doing substantially all the work of composition which had been previously done by hand, with great economy of time, labor, and cost, as will appear from the following:

The foreman of the "New York Tribune," in an affidavit under date of November 14, 1890, states that "during the past twelve months there have been produced in the "Tribune" Office by the Mergenthaler machines about 274,472,000 ems of matter, which cost about $80,000 less than it would have cost if set by hand in movable type in the usual manner;" and in this he does not include the savings effected by dispensing with the purchase of type.

Walter N. Halderman, publisher of the "Louisville Courier-Journal," in an affidavit under date of November 17, 1890, states that "during the past year the machines (Linotype) used by me have produced about 184,102,800 ems of matter at a cost of about $35,000 less than it would have cost at the prevailing rates if composed in the ordinary manner from movable type."

Victor F. Lawson, publisher of the "Chicago News," in an affidavit under date of November 20, 1890, states that: "My long practical use of the machines (Linotype) has demonstrated the fact that they reduce the cost of composition in the "News" office from fifty to sixty per cent, as compared with the methods previously in use."

Similar testimony is furnished by the proprietors of other establishments as to the value of the old Linotype. It is claimed that the New Linotype, which is now presented to the attention of the trade, is more compact and simple in its construction, more certain in its action, and



less liable to derangements in its working than its predecessor.

The main changes in the new machine consist in the substitution of a delivery belt for a blast of air to transfer the matrices to the point of assembling; in the more certain and simple arrangement of the magazine for receiving, holding, and delivering the matrices; and, especially, in the simplification of the distributing mechanism.

The machine is styled the Linotype for the reason that it casts solid lines or type-blocks to be used in printing, instead of individual type "set up" and "spaced" to make the required measure, the object being to dispense with the employment of movable type and the necessity for "distribution," which attends their use, and thus to reduce the labor and expense of composition.

A series of finger-keys, similar to and as easy of touch as those of a typewriter, control the operation of the machine, each key representing a letter or character to be printed. The manipulation of the keys results in the production and

assembling of an indefinite number of single-line type-blocks, each of which is cast in metal by the automatic action of the machine, and bears on its edge the letters and characters, evenly spaced, to print a complete line. When locked in the chase, these linotypes are ready for the press without further preparation.

To form the linotypes, a collection of matrices or female type is used, each matrix containing the inverse representation of a letter or character. These are arranged in the channels of a magazine, provided with escapement devices so connected with the finger-keys that the touch of a key is followed by the discharge of a matrix bearing the same character.

The "spaces," which are long, tapered wedges, are arranged in a magazine, and are similarly discharged.

As the matrices emerge from the magazine, they are received on an inclined traveling belt, by which they are delivered, one after another, into a receiver, in which together with the "spaces" they are composed or assembled in line; and the mechanism is so arranged that the matrices furthest off comes into position as quickly as those which are nearest, and all danger of transposition of the letters, even when the machine is worked at its greatest speed, is avoided.

When all the characters to appear in a line are assembled, the operator depresses a key and the assembled line of matrices and "spaces" is transferred to the face of the mold. In this position the "spaces" are automatically adjusted to elongate the line to the required limit, or, as it is technically termed, to "justify the line."

A melting-pot, containing an abundant supply of molten type-metal and provided with a force-pump, is connected with the mold. As soon as the line of matrices is presented to the front, the pump causes the molten metal to flow into and fill the mold, where it solidifies in the form of a bar or linotype, bearing on its edge the impress of the matrices, which are, for the time being, assembled in the front.

The machine then automatically withdraws the matrices, moves the mold, planes the cast metal line, ejects it, and deposits it on a galley in proper order with those which preceded it. As soon as the line of matrices and "spaces" is withdrawn from the mold, the machine automatically picks out the "spaces" and returns them to their appropriate magazine, while the matrices are transferred to the distributing mechanism, by which they are returned to the respective magazine channels from which they started.

If more than one cast of the same line is required, as is frequently the case in newspaper advertisements, the touching of a lever at the operator's left will stop the distribution and return the line intact, to be again cast; so that the same line may be multiplied indefinitely without being again "set up" or assembled.

The distribution mechanism consists essentially of a single bar extending horizontally above the upper ends of the magazine channels, having along its sides a series of horizontal ribs, differing in number and arrangement, over each matrix channel. The V-shaped upper ends of the matrices are provided with teeth by which they may be suspended from this bar while being moved lengthwise thereunder.

As each matrix is propelled along the bar, its teeth may engage and disengage certain of the ribs. When the matrix reaches the point directly over its appropriate channel, all of its teeth are, for the first time, disengaged from the ribs of the bar, and being no longer supported, it falls by gravity into the magazine, there to remain until all of its predecessors in that channel have been called into use.

The mechanism by which the matrices are transferred to the distributing bar and then carried along the bar in the manner above described is simple and effective, and the distribution is accomplished with great rapidity and absolute accuracy.

The number and variety of the automatic functions which the machine performs is most astonishing, and they proceed in due order with the precision and regularity of clock-work. The only thing the operator is required to do is to manipulate the finger-keys; the machine does the rest.

Recognizing the fact that the machines are to be used largely under the hurry and severe pres-

sure of getting out great newspapers, the inventor has caused them to be constructed in the strongest and most substantial manner. They are operated by a small expenditure of power, and are free from excessive strain and wear.

Errors can be corrected by the operator as he proceeds with the assembling of the line. Each matrix has stamped on the edge facing the operator the character which it represents; so that he has constantly in view the matrices "set up," and any mistake can be rectified before casting the line. The liability to make mistakes is by this method reduced to the minimum; for, in the first place, the operator has to touch a key on which the character he desires to "set" is plainly represented, and, in the next place, the entire line of characters assembled is before his eyes just as it would appear on the printed page. Experience in the use of the Linotype in various offices for the past three or four years has demonstrated that proofs by this process are much "cleaner" than by the hand system, as none of the errors of careless distribution or turned letters can occur.

Proof corrections and authors' changes are made by recasting the lines, where necessary, and require far less time to accomplish than when made in a galley of type.

This statement is fully verified by the letter of Mr. William H. Rand, of the printing house of Rand, McNally & Co., of Chicago, under date of May 3, 1890, in which he gives the results of a series of experiments to determine the relative length of time required in the correction of a galley of the Linotype as compared with hand work. In some 4,600 ems of matter, taken from the daily press, there were introduced numerous errors of all sorts, including "outs" and "doublets." In this condition the matter was given to an operator on the Linotype as copy. After setting the matter with all its errors, a proof was taken, and the galley corrected by him. An accurate record of the time occupied showed that the composition took one hour and five minutes and the corrections twenty-seven minutes. The copy containing the same errors was then given to a first-class hand compositor in the office of Smith & Porter, of Boston, who occupied five and one-half hours in the composition, and one and one-half hours in correcting the galley. In the latter case, the type yet remained to be distributed, which would certainly require an hour and a half's work, while the Linotype distribution is automatic.

The capacity of the Linotype is the capacity of the most expert operator who may be employed upon it, for there is no touch, however rapid, to which it will not instantly and certainly respond.

A compositor will ordinarily "set up" about one thousand ems an hour, and one-third of his time, in addition thereto, is required to "distribute" his type, or return them to the case. The machine performs both these operations simultaneously, and at a speed equal to that of a typewriter. The ordinary typewriter operator makes a speed of about forty words per minute, which is equivalent to 6,316 ems an hour; and this amount should be set, after a few weeks' experience upon the New Linotype, by any one competent to operate it. There are no stops or waits and the operator goes on continuously, for, when once discharged from the magazine, by the simple touch of a key, the matrices perform the rest of their mission and the line is justified, cast, and distributed, without thought on the part of the operator.

The most intelligent and influential members of the Typographical Union are now satisfied that the Linotype is a success and that it has come to stay. Whatever hostility was mainfested towards it originally has disappeared or is fast disappearing. The president of the Typographical Union No. 6, New York City, thus writes: "After a careful examination of the Linotype, and after witnessing an exhibition of its capacity by a skilled operator, I conclude that the acme of perfection in a type-setting machine has been reached. I was convinced that the amount of matter which the machine was capable of producing could be limited only by the speed, accuracy, and endurance of the operator."

The International Union, at its meeting in Kansas City, advised Union printers to learn to operate the Linotype machine; and at the convention in Denver a resolution was passed that

in all offices where type-setting machines are used practical printers should be employed to run them.

It is the universal testimony of the publishers in this country and in Great Britain who use the Linotype that the machines attract and keep bright men, who make good wages, with shorter hours, and that the work is less tiresome than hand type-setting.

The following are among the advantages claimed for the Linotype machine:

1. A saving of from fifty to seventy-five per cent in the cost of composition, in addition to the saving in the cost of replacing old and worn out type.

2. Matrices representing fonts of type from agate to pica can be used in the same machine; which matrices are practically indestructible.

3. Small caps, italics, and arbitrary characters of any font, may be cast in the same line with ordinary matrices.

4. The appearance of fresh type with each issue of a newspaper, pamphlet or book.

5. The ease and rapidity of handling matter and making up forms, facility of distribution by means of the melting-pot, and impossibility of "pi-ing."

6. The facility of getting up at short notice a large amount of extra matter.

7. The same line may be cast any number of times where necessary, without "setting up" the line more than once.

8. The length of line can be changed in about ten minutes.

9. The justification is automatic and perfect.

10. The bars or slugs, which can be cast at the rate of six per minute, are automatically shaved and freed from burrs and ready to go immediately into the form.

11. Matter can be kept standing at the cost of old metal, and, when no longer desired, re-melted and used over and over again.

12. Rapidity with which corrections can be made.

13. An editor or author can dictate to the operator with as great comfort and ease and with as much rapidity as to a typewriter.

14. Assembling, justifying, casting, delivery of slugs in galley, and distribution accomplished by the single process of touching keys.

The inventor of the Linotype is Mr. Ottmar Mergenthaler, a native of Wurtemburg, Germany, but for many years a citizen of Baltimore, Md. Mr. Mergenthaler began his studies and labors to improve upon the old system of manual type-setting in the latter part of 1876, or early 1877, his attention being directed thereto by Mr. James O. Clephane and Mr. Andrew Devine, two pioneers in this enterprise. His researches led him to see the futility of attempting to deal with single type, as in the case of type-setting machines, and he boldly launched out in an untried and novel field. He has produced five different systems for accomplishing the object which he sought, the New Linotype being the last of these, which he declares meets every requirement. It cannot be denied that he was the first inventor to produce a machine which could assemble matrices and cast a perfectly "justified" line of type. As a recognition of his labors in this line, the Franklin Institute, of Philadelphia, awarded to Mr. Mergenthaler the Elliott Cresson Gold Medal, an honor only accorded for the most meritorious invention.

(This article was first dictated to the Phonograph from which it was immediately reproduced in Linotype bars upon the Mergenthaler Linotype Printing Machine at the rate of over 7,200 ems per hour.)

COLOPHON

This issue of the *ATF Newsletter* is produced for members of the American Typecasting Fellowship, an informal group of amateurs and professionals concerned with the preservation of the equipment and technology of hot-metal typecasting and design.

This particular issue, the fourteenth, was done as a special keepsake for the 1990 ATF Conference at Nevada City, California, July 19-21, 1990. The cover is produced by letterpress and hot metal. All inside pages are by offset, typeset and printed at the Pioneer Press of W. Va., Inc., Terra Alta, West Virginia.

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Additional copies of this issue are available at $5.00 each.

The Rogers Typograph

The Rogers Typograph cast lines of type very similar in appearance to those from the Linotype. It was a truly successful machine everywhere *except* in the United States. It was introduced in—you guessed it—1890!

John R. Rogers was the inventor and the machine gained quick acceptance in the U. S. But there were problems on the horizon, evidenced by the ad reproduced herewith from the Mergenthaler company, appearing in *The Inland Printer*, September, 1890, page 1143. They contended The Typograph infringed upon many of their patents and eventually won an injunction which prevented manufacture and sale of the Typograph in the United States.

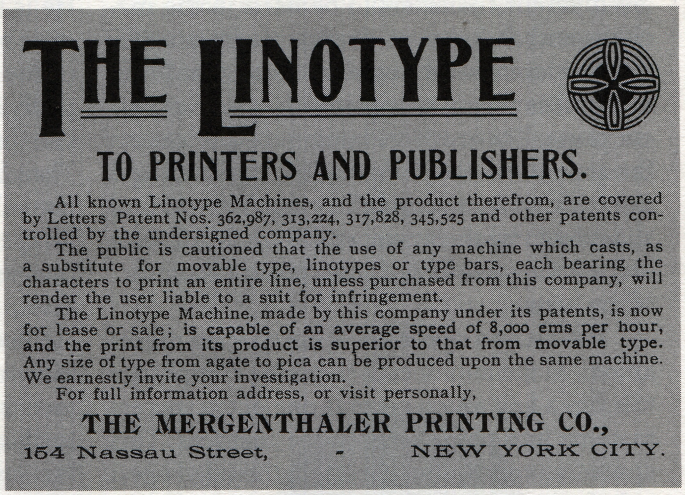
That did not stop its manufacture in Canada, England, and in Germany. Indeed, it flourished in those countries and across Europe. The German factory was bombed out during World War II, but it came back in 1960. After certain Mergenthaler patents expired in 1904, some Typographs again were built in the United States, too.

Prior to 1890, a man named J. W. Schuckers had invented a spacer device we all know today as being the precursor of the spaceband used in the Linotype machine. Schuckers didn't have a machine to use it in, so he sold his patent to the Rogers company. Ironically, Rogers did not use it in his machine, but since the Schuckers spaceband patents preceded (by only a few months) Mergenthaler's own patent application, Rogers had infringement claims against Mergenthaler too.

The entire matter was settled when the Mergenthaler organization bought the Rogers Typograph Company for $416,000. Mergenthaler lament this deal greatly, for he had already devised a new spacing apparatus which avoided the infringement claims (and manufactured over 200 machines with these stepping bands). Mergenthaler also noted the sum of money far exceeded anything he had ever received from the company himself.

As part of the deal, John R. Rogers joined the Mergenthaler organization. Many patents for improvement of the machine—primarily in the area of matrix handling including the adding of more magazines and "mixers"—were taken out in his name. He remained with the company until his death in 1934.

Paper and Press seemed to advocate use of the Typograph and during 1890 carried several stories relating to its successful use in various plants across the country. It ended the year with a full discussion of the machine, typeset on the Typograph and accompanied by excellent line drawings (wood engravings?) in the November, 1890, edition, pages 293-295.



FOR MANY YEARS past inventors have been trying to produce a machine to do the work of the compositor. Their efforts have taken three directions.

1—Machines which set and distribute the actual type. These machines are by necessity complex and delicate in their parts. The justification of the lines and the distribution has to be done by separate operators, and there is a very large percentage of broken type. On account of these difficulties, none of the many type-setting machines invented have obtained more than a very limited success.

2—Another set of inventors have endeavored to make a simple machine by stamping a single die or a line of dies into a papier-mache, or similar matrix. The workers in this line have met with apparently insuperable difficulties. These are: The great difficulty of corrections, the want of a dry matrix in which the impression can be made, uniform depth, good alignment and the necessity of two stereotyping operations before the product can be used on a cylinder press.

3—There is still another line upon which inventors have worked. In this class of machines the types are cast singly or in lines, as wanted and are re-melted after each use. To this class the Rogers Typograph belongs. The former machines in this class, however, have been open to

the same objections—of great complexity, and delicacy—making them unreliable, especially for newspaper use. The Rogers Typograph seems to be the only machine which combines great simplicity in its construction, while avoiding or overcoming the difficulties encountered in all other machines.

The machine performs four operations. In the first the type, or rather the matrices are assembled. These type are long bars having a matrix or female type impressed or stamped in a small notch in one edge near its lower extremity. The matrix is strung upon a rod by an eye at its upper extremity. This wire is inclined at an angle of about 30 degrees and is supported in a frame. There are as many of these wires as there are different characters to be used in the machine and these wires diverge in their upper extremities to an arch or bow; while at the lower extremities they converge into a common vertical plane. The matrices hang normally next to the arch at the upper extremity of the wire and are released by a simple key mechanism and slide down by their own weight upon the wire, and are thus assembled at the lower extremities of the wires.

The second operation is the spacing mechanism. At the end of each word the compositor touches a key which permits one of the spacers to come into place between the matrices. This spacer is a composite cam and is threaded upon a shaft a little back of the line of matrices. When revolved these spacers spread the line to a predetermined limit, justifying the line instantly, evenly and absolutely correct.

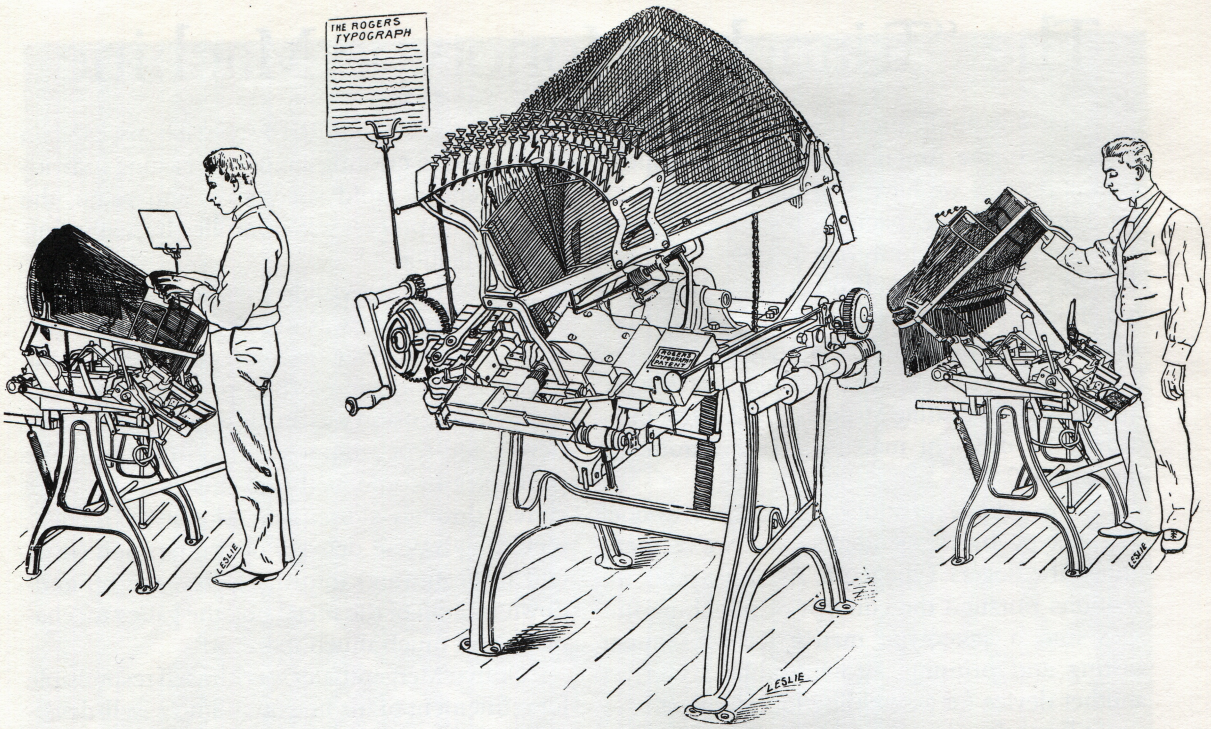
In the third place the mold moves up to the now justified line of matrices, a spout connected with a reservoir of molten metal comes into the mold, and a force pump in the reservoir drives a jet of the liquid type metal into the mold filling it and the matrices. The liquid metal cools instantly and becomes a solid slug or line of type having the printed characters upon its edge. The operations of justifying and casting are performed in less than two seconds.

The frame supporting the wires is then tipped by a motion similar to that of raising the carriage of a Remington Typewriter. The types slide back upon the same wires upon which they came down, falling to their places instantly and without the possibility of their getting wrong. These operations setting the line, justifying, casting and distributing are repeated until the form of slugs or type bars is filled, when it is ready to be printed from, or stereotyped, or electrotyped just as any ordinary form of type.

The simplicity, accuracy and beautiful working of this machine has held the admiration of all who have seen it. Almost everyone of the leading newspapers of New York and Philadelphia, together with many others throughout the country, have given orders for this machine. The inventor, Mr. John Raphael Rogers, was born in Roseville, Illinois, thirty-four years ago. He is the son of a clergyman, who was during most of his life a college professor. The boyhood of the inventor was spent partly in Ohio and partly in Kentucky. Mr. Rogers graduated from Oberlin College, Ohio, at the age of eighteen. The plans of his parents and his whole training naturally fitted him for a professional life, and he spent thirteen years as a teacher, ten of that time as superintendent of the public schools of Lorain, Ohio.

But the inventive instinct was so strong in him that he was continually turning his mind to mechanics. During about twelve years of his teaching, in the intervals of his professional life, he was working upon a machine to take the place of the slow method of composition now in use. During this time he showed his plans to Joshua Rose, the great English mechanical engineer, and it was his encouragement and approval which finally determined Mr. Rogers to abandon teaching and give his entire attention to the development of the machine. He found a firm in Cleveland ready to undertake with him the development of his plans, and in two years from that time the machine as it stands, owned and controlled by The Rogers Typograph Company, has been produced.

As Mr. Rogers possessed no practical knowledge of mechanics he early felt the necessity of associating with him a mechanical engineer who could give shape to his ideas. He was fortunate in finding such a man in Mr. F. E. Bright of



Cleveland, who has given to the machine his earnest thought and mechanical skill for the period of two years past. Many details and the general design of the working parts of the machine have been suggested by him and are covered by patents which are also owned by the Rogers Typograph Company. He is now superintendent of the company's factory, and is devoting his energy to the rapid production of the Typograph. Mr. Bright is a native of Wisconsin, but has spent almost the whole of his life in Ohio. He received his education at Mount Union College, Ohio, but having a very dedicated taste and genius for mechanics he determined to give his life to that work. Beginning at the bottom and learning his trade thoroughly, in a few years by his own exertions alone he acquired a machine shop of his own, where he manufactured his own inventions and built and designed many machines of various kinds for others, and acquired an enviable reputation, which has gone far beyond the limits of Cleveland. He sold his business to The Rogers Typograph Company, and became their superintendent about a year ago. Mr. Bright, like Mr. Rogers, is a comparatively young man being now in his thirty-fourth year. He is a man of fine personal appearance and has hosts of friends.

The general management of the Rogers Typograph Company has been conducted by Mr. C. C. Ruthrauff since the enterprise was first started. Mr. Ruthrauff was for many years a journalist, having been connected with newspapers in all capacities from reporter to owner. He was the first one to foresee the magnitude of the invention and to secure the cooperation of other capitalists in its development. Under his management the policy of the company has been very conservative, and no statements have been allowed to go out regarding the enterprise, that could not be substantiated by the facts. The public was not made acquainted with the invention until it was about ready for the market. The business has been conducted in a thoroughly business-like manner by business men, who have laid broad foundations for its future.

Originally composed, justified and cast upon a "Typograph" in the offices of The Rogers Typograph Company, Pulitzer Building, New York, as a practical demonstration of quality of work, etc.

The "Triangle" Monotype Machine

Since this publication is written primarily for members of the American Typecasting Fellowship and since we have a strong inclination toward the Monotype machine, it's only natural to ask where this machine was in 1890. We know Tolbert Lanston got his first patents in 1887, but his "Embossing Type-Maker" was a far cry from what eventually became the Monotype.

Dick Huss's book, *The Development of Printers' Mechanical Typesetting Methods, 1822-1925,* indicates nine different machines were introduced during 1890.

We've already mentioned the Simplex (Model 1) Linotype by Mergenthaler, and we've mentioned the Rogers Typograph. A couple other inventions pursued the concept of punching images into a stereotype matrix for subsequent casting and printing; also introduced was yet another device for assembling foundry type.

Still another device was the St. John Typobar, which stamped images into cold metal (very soft metal) which was to be milled into slugs much like Linotype slugs. The metal was too soft for direct printing and thus, the slugs could be used only to make stereotype printing plates.

This 1890 invention by St. John is mentioned because it pursued the idea of cold metal stamping. This was the process Lanston incorporated into his first invention three years earlier, in 1887. Lanston's machine formed individual types (not lines) by literally stamping cold metal into preformed dies. The cold stamping process did work, but was judged detrimental because it was too slow. Two important aspects of this 1887 invention were (1) Lanston's introduction of the concept of line justification through mathematical calculation, and (2) the idea of controlling an apparatus through the use of tapes punched separately.

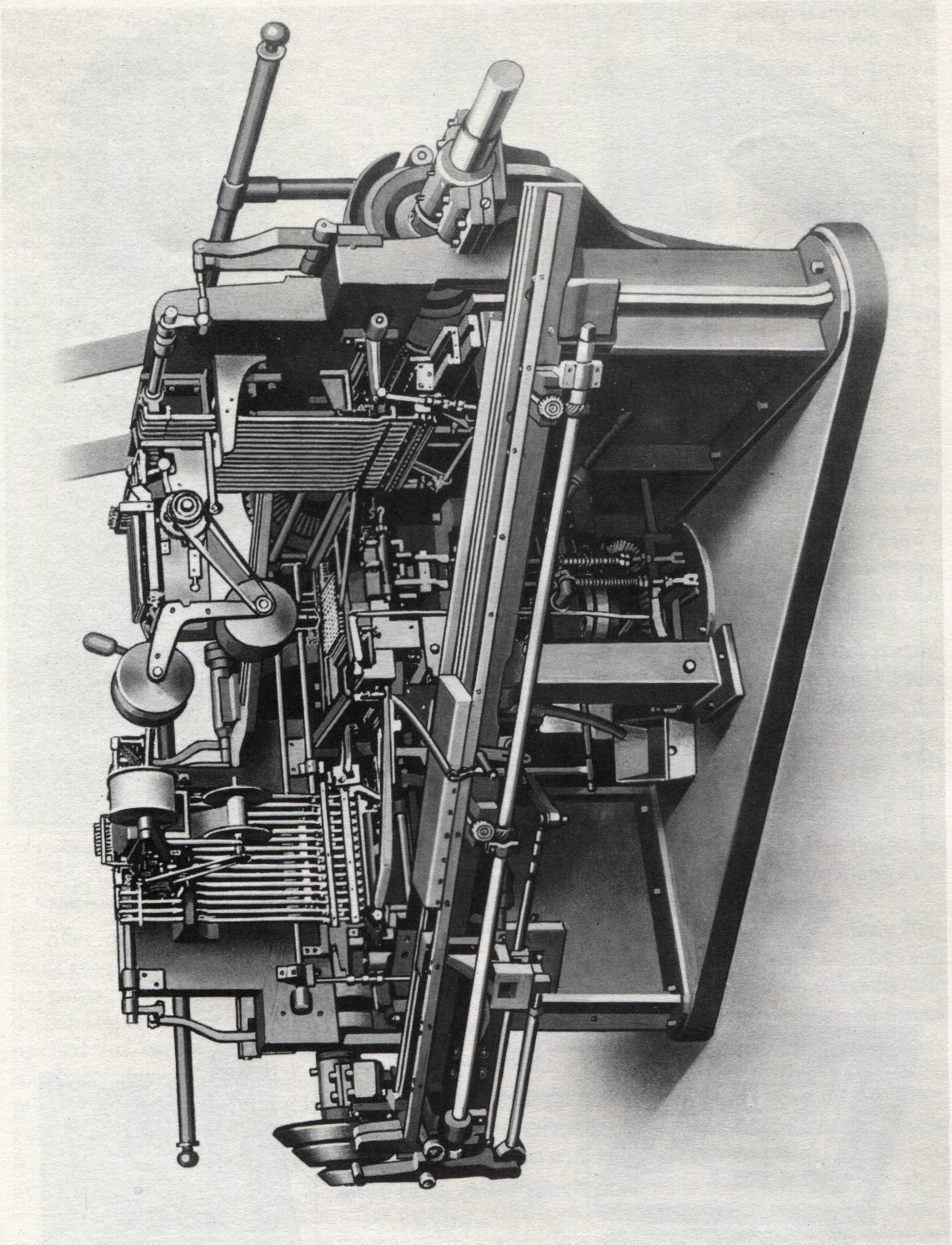
Both these ideas were carried forward to Lanston's next experimental machine, introduced in—you guessed it—1890. This was when Lanston introduced his "Triangle Monotype," his first *hot metal* machine. Again, the machine was a success—it did cast and justify type. Just as his first device was controlled by two separate ribbons punched on a separate keyboard, the Triangle Monotype was controlled by two ribbons. Lanston succeeded in creating a mold for casting individual letters in rapid succession and again, the justification process was controlled by mathematical calculation.

There was no visible press coverage of this new machine for it was still largely experimental. Apparently, only one machine was made. But the Triangle Monotype of 1890 provides clear evidence that Lanston was on his way toward a viable device for type composition. Virtually all the principles incorporated into this machine were carred through subsequent Monotype models, including reverse delivery of composition (from end to beginning) into the galley, the up-and-down motion of the metal pot, the galley mechanism, and much much more.

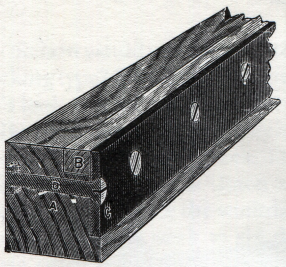
Ottmar Mergenthaler was himself responsible for refinement of his invention into a well-developed production machine. Tolbert Lanston was not nearly as well equipped in mechanics, and thus, the various machines he developed tended to be ever larger, more bulky, extremely complex and therefore, undesirable. He even developed a machine (in 1893) which had four paper towers and four molds, capable of casting four different jobs at the same time, or four copies of a single job. All of Lanston's machines *worked*, but it took the creative genius of J. Sellers Bancroft, an accomplished mechanical engineer, to reduce Lanston's ideas to a compact, smoothly running and commercially successful machine. Bancroft, whose firm was first employed to build machines for Lanston, completely redesigned Lanston's models, coming up with his version of the Monotype in 1897. He eventually became general manager of Lanston Monotype Company.

The illustration which accompanies this piece is a true rarity. The halftone is direct from an historic photograph, miraculously salvaged from the residue of Lanston Monotype by Richard Hartzell when the company was liquidated in 1969.

Photographs of eight experimental Monotype machines were saved by Dick Hartzell, and all will be reproduced in the future as the opportunities present themselves.



Here's clear depiction of Lanston's "Triangle Monotype." Although operation cannot be defined by looking at this photo, the horizontal and vertical control devices for the differing rows (it looks like 15 x 15, doesn't it?), the two paper spools (later merged into one by Bancroft) and the die case all can be identified.



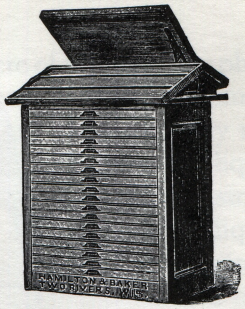
HAMILTON'S PATENT CUTTING STICK.

◆ ◆ ◆

: HOLLY WOOD TYPE :
: : END WOOD TYPE : :
BORDERS, ORNAMENTS
: : : : RULE, ETC. : : : :

◆ ◆ ◆

THE HAMILTON-BOSS LOWER CASE.
HAMILTON'S BRASS LEADER CASE.



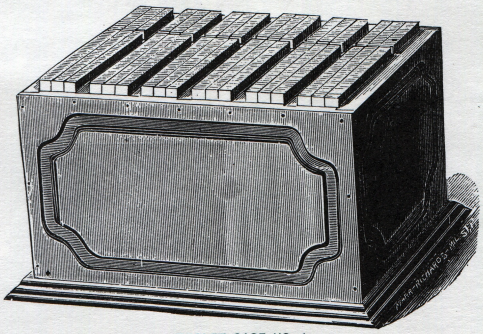
SINGLE POLHEMUS CABINET.

THE HAMILTON MANUFACTURING CO.

259 DEARBORN STREET,

CHICAGO.

- - CASES, CABINETS - -
- - - - STANDS - - - -
GALLEYS, GALLEY RACKS
- - GALLEY CABINETS - -
- - SORT CABINETS - -
- - CUTTING STICKS - -
- STANDING GALLEYS -



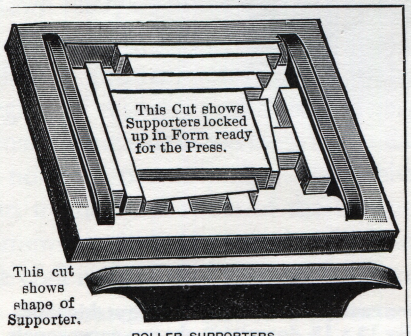
REGLET CASE NO. 1.

- NEWSPAPER FILES -
IMPOSING STONE FRAMES
- - DRYING RACKS - -
ROLLER FRAMES & STOCKS
- ELECTROTYPE BACKING -
- MAIL LIST CABINETS -
- - - JOB STICKS - - -

MANUFACTURERS OF

WOOD TYPE

PRINTERS' WOOD GOODS,



ROLLER SUPPORTERS.

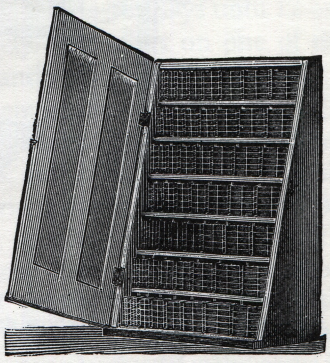
☞ Send for Specimen Book of Wood Type and Catalogue of Wood Goods.

Engravers' Wood,
Reglet and Furniture,
Labor-Saving Furniture Cases,
Labor-Saving Reglet Cases,
Bookbinders' Cabinets,
Press Boards, Wood Quoins.

. . . DEALERS IN . . .

PRINTERS' SUPPLIES.

FACTORY: Two Rivers, Wis.



FURNITURE CASE.

Related Activity in the Industry in 1890

There were many other forces in play during 1890 which we probably should touch upon. For example, there was serious discussion relating to the merits of various means of powering equipment, lighting the shop, illustrating printed material—and some familiar names were among the advertising pages.

Lighting. No, electricity had not become undeniably established as *the* way of lighting the shop—or any other facilities—by 1890. There were articles suggesting that electric lights would cause health problems for people working under them, and there was suggestion that electric light would seriously damage books and publications kept in libraries lit by electricity. Alternatives? Gas lights, for one. They were praised in some articles, and also comments were put forth claiming gas fumes were damaging to books and to humans.

Powering equipment. The individual electric motor was not yet considered by most persons seeking to power the heavier equipment as it was being introduced. First we went through a phase where a single "motor" was installed in conjunction with overhead shafts and belts extending down to drive individual machines. It was earlier mentioned that one typesetting machine was driven with a foot pedal. Several presses were driven by foot treadles too. The source of power was very much unsettled. Gas engines, gasoline engines, steam engines, and electric engines all were heavily advertised and all were suggested for use in conjunction with belt and pulley systems.

One interesting sidelight involved a press which somehow became entangled in its own belt, lifting it from the floor to the ceiling and then crashing back to the floor in several broken pieces. Rather than questioning the validity of this preposterous claim, the article speculated as to whether the "boy" went up with the press, how many impressions he pulled on the way up, and whether he spilled the printed stock as all fell to the floor.

The point system. Everyone has read my book, right? (*Origin of The American Point System for Printers' Type Measurement*, back in print and available, if you want one.) So we all know about the American point system and that it was first introduced about 1877. But the issue remained a topic for heated debate for many years thereafter. It's significant to note that a fairly comprehensive study of the issue was conducted and published in the October, 1890, *Inland Printer* (page 71), prepared for the United Typothetae of America. This study endorsed the system as it had evolved, and in general closed all arguments to its further modification.

Familiar names. The April, 1890, issue of *The Inland Printer* contained this business notice:

"We are pleased to note the rapid advancement made during the past year by the Hamilton Manufacturing Company in the wood type and printers' furniture line. Although the youngest house of the kind in the country, it has, by its enterprise and careful attention to the wants of the trade, taken the lead, and is prepared to hold it. It claims that its end wood type, made from thoroughly seasoned rock maple, is unequaled, and always recommends its customers to order it in the small sizes. Its holly wood type, owing to its improved method of manufacturing it, is undoubtedly preferable for large size, for the reason that there is absolutely no chance for it to warp or twist."

Another familiar name in use in 1890, *Samuel Bingham's Son*, roller manufacturers. Their revolutionary manufacturing process, "A Gatling gun battery" for casting several rollers at once, was highly touted in a two-page ad in April, 1890, with this curious footnote: "The accompanying illustrations of the methods by which these results are secured, are taken from *photographs;* and *photographs* won't lie; if circulars or advertisements of lying *fakirs* do. These machines are protected by letters patent, consequently no one but the Binghams' can use them."

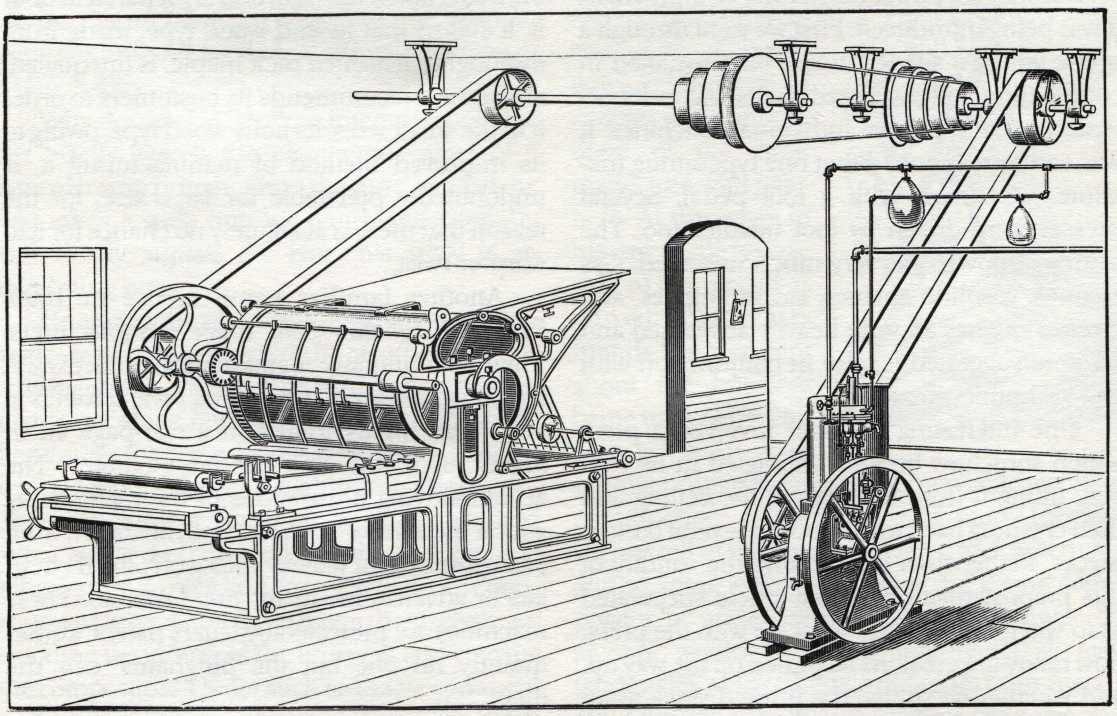
One wonders whether the Rosback perforator advertised frequently in 1890, was from the company that now makes Rosback equipment

including automatic collator-stitcher-trimmers. The name's right—F. P. Rosback.

Methods of illustration. Many of the articles herein are illustrated with wood engravings, a popular but threatened medium in 1890. Newer process were being examined with virtually every issue of the various trade publications. There were zincotypes, various kinds of halftone processes, and all sorts of other ideas were proffered for engraving, such as on plaster of paris and then electrotyping, engraving on wood *photographically*, etc. Many of the photos reproduced via these new processes were exceptional. The June, 1890, *Inland Printer* contained this brief article under the heading "The Decay of An Industry."

"An illustration of the effect of improved methods of production upon a particular industry has been brought very forcibly to public attention by the announcement that the trustees of the Cooper Union, New York, will probably discontinue the wood engraving classes in that institution at the close of the present school year. In explanation thereof the statement is made that the mechanical processes of pictorial reproduction have virtually destroyed the wood engraving industry. This result has long been recognized as inevitable by those most familiar with the subject."

Typefounding. The variety of type styles offered in 1890 would make the frenzy for added type designs in desktop publishing today look like child's play. Keep in mind, cut-throat competition was underway. The big merger of 1892 (American Type Founders) was still in the future. And where do you think "The Gay 90s" typography came from? The *Inland Printer*'s business directory generally listed 18 different founders (which was evidence these foundries were advertising in the publication), and we all know there were many more foundries in operation at the time. Type designs ranged from the absolutely elegant (I love the French Script shown by MacKellar, Smiths & Jordan), to the grossly bizarre (too many to mention). By far, the bizarre were the most heavily advertised.



This illustration was intended to reveal a new gas engine, but also serves to illustrate overhead drive shafts in a plant. Several machines were often driven by a single engine, be it gas-, electric-, gasoline-, or even steam-driven. (May, 1890, *Inland Printer*)

French Script.



The MacKellar, Smiths & Jordan Co., Philadelphia. Shniedewend & Lee Co., Agents, Chicago, Ill.

STIPPLE

REGISTERED, No. 141,360.

PATENTED FEB. 18, 1890.

THREE-LINE PICA. 36 POINT STIPPLE. 7 A, $5.35.

GRAPHIC DELINEATION

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