

MODERN PRINTING PRESSES

Facts About the Construction of the First High Speed Printing Machine.

R. HOE TELLS THE STORY OF PROGRESS

Wonderful Development in the Mechanical Necessities of Modern Journalism—Genesis of the Invention.

Were it not for the high speed perfecting press this newspaper could not be printed and placed before you in its present form...

Consider for a moment the work done by one of the great presses known to printers as "octuple" machines. To begin with, it is composed of about 18,000 separate pieces...

This press is fed from three continuous rolls of paper, each more than five feet

wide, and all feeding of the paper as fast as it will run without tearing. At its highest speed the press will use up over two miles of this paper in an hour...

In terms of capacity, this machine readily grasped, this indicates a capacity of 96,000 four, six or eight-page papers per hour. Not only are these papers printed at this astounding rate, but they are also cut, folded and counted...

Most of the larger newspapers have in their ordinary issues ten or twelve pages. Of these the press will turn out 72,000 in an hour, 1,200 to the minute, or twenty every second.

The machine weighs over sixty tons and is as massive in its proportions. Yet its touch is as deft as that of human fingers. It handles the papers accurately, cuts them precisely and folds them up evenly...

Its operation is easy and restles. A man throws back levers, the many shafts and cylinders begin to revolve, going faster and faster until the streams of white paper are pouring into the machine too rapidly for the eye to measure.

The operation of the press at its highest rate of speed means that each paper receives its impression in less than one-fifth of a second. How a permanent imprint can be made in this space of time is a marvel difficult to comprehend.

The work of this grand "Discovery" is through, it gives the health that is all health, the strength that is solid and substantial and lasting, not flabby fat, not false stimulus, but genuine, complete, renewed vitality and life-force.

"I had been a sufferer for fifteen years nearly all the time," says Mrs. Sarah E. Taylor, of Eureka, Greenwood Co., Kans. in a friendly letter to Dr. Pierce. "In August, 1896, was taken with severe cramping pain in my stomach. The doctor here said it was due to gallstones. He relieved me for a short time, and then there was a hard lump about the size of a goose egg formed in my right side, and I had no appetite. I consulted the best doctors in town and they said medicine would do me no good. I was told to take your Golden Medical Discovery, and I did so. Now I am a well person and I can do my own work. I am stronger than I have been for five years."

Expert mechanics were set to work on

different phases of the problem. Time, money and effort were expended without stint in the study of existing models, in creating experimental machines and trying all manner of devices suggested to meet the requirements of the situation.

New Ink and New Paper. The difficulties were not wholly of a mechanical nature. One was in the soft-put of the first side of the sheet printed. This was avoided by the co-operation of the ink-makers, who were induced to devise special rapid-drying inks.

Another drawback was in obtaining paper in the roll of uniform perfection and strength. The paper-makers were led to make a study of producing large rolls of paper meeting these requirements.

While these improvements were being wrought out, the press manufacturers were working on the problem of a rapid severing of the sheets after printing and the reliable and accurate delivery of the printed papers.

The most important device relating to this matter was the patent of Stephen D. Tucker, a member of the firm of R. Hoe & Co. It was called a "gathering and delivering cylinder," and was able to handle the papers as fast as they were printed.

Thus it will be seen the rapid-working web press is a composite for which no one man deserves the entire credit. It is one of the most notable examples of a really wonderful mechanism constructed in response to a specific demand.

In 1845 the firm of R. Hoe & Co., which had already been for many years engaged in the manufacture of printing presses, attacked this problem. A number of experimental

machines were erected, and finally it occurred to the experimenters that by placing the type instead of the paper on the cylinder greater speed could be obtained.

The result was the construction of a press known as the "Hoe type revolving machine," as the revolving patents taken out by Richard M. Hoe. The first one of these was placed in the Ledger office in Philadelphia in 1846.

The sheets were not entirely covered by the cutters, but were simply perforated at the printing. They were drawn by accelerating tapes, which completely separated them, into a gathering cylinder so constructed that six or any desired number of perfect papers could be gathered one over the other.

This press for the first time did away completely with hand labor in the process of printing. It was, therefore, the beginning of rapid printing as we understand it today. The only duties men were required to perform in connection with it were the starting of the press, watching to see that its work was performed properly and taking away the papers after they were piled flat on the receiving board.

The Boston Advertiser says: "Justice Baldwin of the Connecticut supreme court, who has lately expressed himself so vigorously in favor of the whipping-post, is personally well known to the leading Boston lawyers. He was here very often during the long proceedings before our supreme court, and the referee appointed by the court (ex-Governor Robinson), growing out of the Andover heresy hunt, Prof. Caldwell, as he was called on, on account of his connection with the Yale law school, is exceptionally gentle in all his language and manners and appearance, about the last man in the world from whom one would expect to hear a suggestion of giving a criminal thirty lashes on the bare back, well known to the public as used to say in England in the good old days."

One of the secrets of the success of Robert P. Porter, editor, tariff expert, superintendent of the United States census of 1890, and recently United States diplomatic agent in Germany, is his wonderful memory for figures. He fairly revels in statistics. In his home in New York there are several rooms filled with volumes upon volumes of industrial statistics.

"We have 2,660,000 inhabitants now. You gave us 1,166,000 in 1850," he said. "Not as much as that," replied Mr. Porter. "The figures were 1,090,550. Your school census of 1852 gave 1,400,000."

"You underestimated that also." "Yes, we gave New York 1,515,201, and the state census of 1892 gave 1,961,730." "There were 1,475,040," replied the statistician without a second's hesitation; "and there were 197,475 Chinese."

"I believe I can repeat from memory the best part of the important figures in my census," returned Mr. Porter. "Can you tell me how many negroes there were in this country in 1890?" asked the visitor with a surprised expression. "There were 7,476,040," replied the statistician without a second's hesitation; "and there were 197,475 Chinese."

The visitor took down the census report from the book shelf and found that Mr. Porter had not made a single mistake.

The Carnegie company alone produces nearly 2,000,000 tons of pig iron per annum, which is almost as much as the total joint output of Germany, France and Belgium three years ago, and more than the total output of the United States up to the year 1872.

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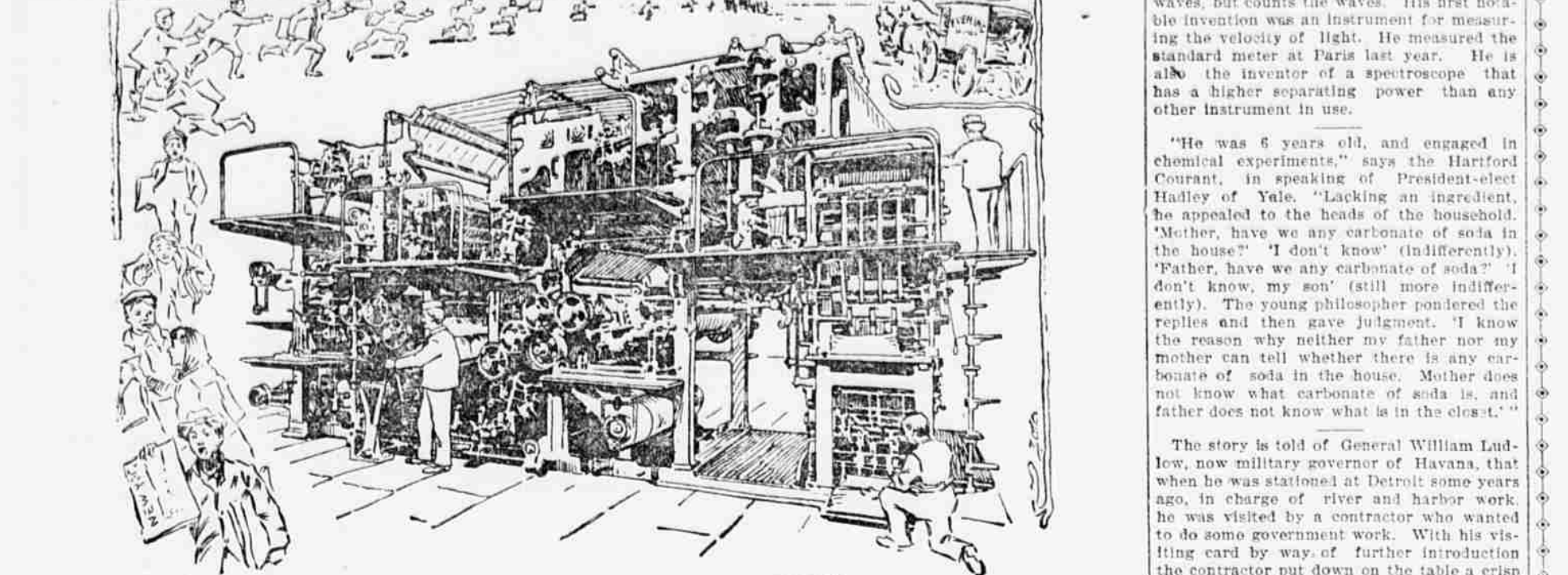
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ORCHARD & WILHELM CARPET CO. 1414-16-18 Douglas Street.

FOR SCIENTIFIC EXPLORATION. Most Important Expedition to Alaska Under E. H. Harriman's Auspices. CO-OPERATION OF ACADEMY OF SCIENCES.

MAGNET CHEMICAL Co. Gentlemen:—It has now been over six years since being cured of a severe case of piles, by your Magnet Pile Killer. I can also cite several other cases where the users have been permanently cured.



STEREOTYPE PERFECTING PRESS AND FOLDER.

more impression cylinders were added, until these machines were made with as many as ten grouped around the central cylinder, giving an aggregate speed of about 20,000 papers per hour printed upon one side.

The type-revolving machine, marked a great advance in rapid printing. It was believed that the problem had been settled, at least for a long time to come. It was scarcely conceivable that any paper would want to print more than 20,000 copies per hour.

The type-revolving presses had scarcely been put into general operation in this country and Europe before the constant growth in circulation figures demanded still further improvements.

First Curved Stereotype Plates. Various experiments had demonstrated the feasibility of existing stereotyp plates on a curve. The process was brought to perfection by the use of flexible paper matrices, upon which the metal was cast in curved moulds to any circle desired.

The demand was for a press which would print from a continuous roll of paper, leaving the sheets to be cut and folded after they had passed through the machine.

It was necessary, too, to insure satisfactory results, that the machine should perform all these operations itself. It was found that human hands could not work fast enough to keep up with the requirements of the modern newspaper.

In 1871 R. Hoe & Co. set to work to study this problem in a comprehensive manner and to solve the difficulties in the way of attaining much higher speed than had ever before been attempted.

Expert mechanics were set to work on different phases of the problem. Time, money and effort were expended without stint in the study of existing models, in creating experimental machines and trying all manner of devices suggested to meet the requirements of the situation.

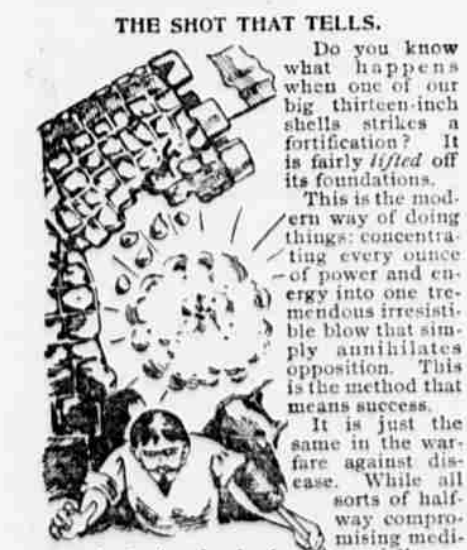
New Ink and New Paper. The difficulties were not wholly of a mechanical nature. One was in the soft-put of the first side of the sheet printed. This was avoided by the co-operation of the ink-makers, who were induced to devise special rapid-drying inks.

Another drawback was in obtaining paper in the roll of uniform perfection and strength. The paper-makers were led to make a study of producing large rolls of paper meeting these requirements.

While these improvements were being wrought out, the press manufacturers were working on the problem of a rapid severing of the sheets after printing and the reliable and accurate delivery of the printed papers.

The most important device relating to this matter was the patent of Stephen D. Tucker, a member of the firm of R. Hoe & Co. It was called a "gathering and delivering cylinder," and was able to handle the papers as fast as they were printed.

Thus it will be seen the rapid-working web press is a composite for which no one man deserves the entire credit. It is one of the most notable examples of a really wonderful mechanism constructed in response to a specific demand.



THE SHOT THAT TELLS.

Do you know what happens when one of our shells strikes a fortification? It is fairly lifted off its foundations.

This is the modern way of doing things. It is a matter of power and energy into one tremendous irresistible blow that simply annihilates opposition.

It is just the same in the fare against disease. While all sorts of half-way compromise medicines in the hands of only partially experienced doctors make a feeble, ineffective sort of resistance, Dr. Pierce's magnificent Golden Medical Discovery, with its splendid blood purifying, liver-toning, stomachic power, hurls the fortress of disease from its very foundations, and searches and drives out the lurking symptoms of weakness and debility from every place in the entire physical system of mankind.