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EC5539 The Romance of the Printed Word

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Nebraska
COOPERATIVE EXTENSION WORK
IN AGRICULTURE AND HOME ECONOMICS
1937 U. of N. Agr. College & U. S. Dept. of Agr. Cooperating
W. H. Brokaw, Director, Lincoln

Extension Circular 5539

Out of Print

THE ROMANCE OF THE PRINTED WORD

E. P. Chase, Atlantic, Ia.

Who have been the makers of America?

Who have been responsible for the wonderful progress of this republic of the western world, which has placed it in the forefront of all the nations and has brought to its average citizen the greatest measure of welfare ever accorded the people of any nation since time began? To whom is the credit due for such an achievement?

The answer comes readily enough to the lips of the average citizen, who immediately will say that the secret of the success of the American republic as a way of governing and a contributor to the welfare of its citizens is the foundation stone of its governmental structure, freedom, which was written into our basic law by the founding fathers. This is true. Every school boy knows that the equality of opportunity which is the basis of the American system is responsible for the achievement of its individuals. But this does not tell the whole story. So that when we inquire as to who has been responsible for the making of America, the America we know, we must go further than that in our investigations. Surveying the record, would we say that the various politicians whom succeeding generations have brought on to the scene have been responsible?

Assuming that there have been those in the American scene who have contributed to the making of the nation in large measure, such as Washington and Lincoln and Jefferson and Jackson, there is still something unanswered. Washington, it is true, led the army of the colonists in their war for freedom, and won. Jefferson laid down some great principles of representative government, cemented more solidly by Jackson, and Lincoln piloted the nation through a civil war and left the flag minus not a single star. Others who have had charge of our governmental affairs through the years have made their distinct contribution, but allowing for all of these, and giving all the credit which is their due and which history has accorded to them, we still have not named the real makers of this America of ours, whose contribution to the world and its progress has been so great.

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Among the real makers of civilization and the culture of America have been those men of genius and vision who have labored in the research laboratory and have experimented with gadgets destined to revolutionize a people's living. And I believe it is safe to say that printing has made the most widely effective contribution to man's growth and progress.

Among the neglected truths of history, few are so frequently or so flagrantly ignored as the fact that printing was not invented by the white man. What are the real truths as to the origin of printing?

Recently a small but weighty volume by the late Dr. T. C. Carter of Columbia University came from the press of that institution. Its full force has not yet been felt--nor can it be until the facts ascertained are understood by writers of both popular and technical history.

The story is exceedingly simple. About the year 1900 a Chinese priest, who dwelt among the ruins of the Caves of the Thousand Buddhas far off in the central part of China, was investigating one of the caves. Back of it he found a walled-up secret chamber. The little room was about nine feet square, and it was packed to the ceiling with old manuscripts and printed books! In 1907 a representative of the British Museum got into that room and carried off about three thousand of these. Research upon these materials began at once and the results are now made public.

From among the papers has been produced a book, in roll form, like the books of ancient Rome and Greece. It is made of rag paper. It is printed with ink upon that paper in Chinese characters and it contains in addition one wood-cut picture. The roll is sixteen feet long by one foot wide, and consists of seven sheets pasted together. Its text is that of a favorite Buddhist canonical writing, The Diamond Sutra. It bears the name of its printer, one Wang Chieh, and it has a date which corresponds in our chronology of time to May 11, 868. Gutenberg, who printed the celebrated Bible, and who is often heralded as the father of printing, never saw the light of day until more than six hundred years later.

For several hundred years authorities have argued whether Lawrence Coster of Holland or John Gutenberg of Germany, both living at the same time in the fifteenth century, was the first to employ movable printing type. But the important thing is not by which of these men it was invented, but that it WAS invented.

The invention of printing, it is well to consider, added a new element to the human race. It enlarged the sphere of the individual, and through him made possible new accretions to the common store of civilization. The introduction of printing in any community is a good index of its activity and cultural interest.

OUR NOBLE ART

And this our noble art of printing is the very foster mother of all learning; for though the few had books before Gutenberg gave us our art, not until printing came could learning, yes and wisdom, also, knock at every man's door.

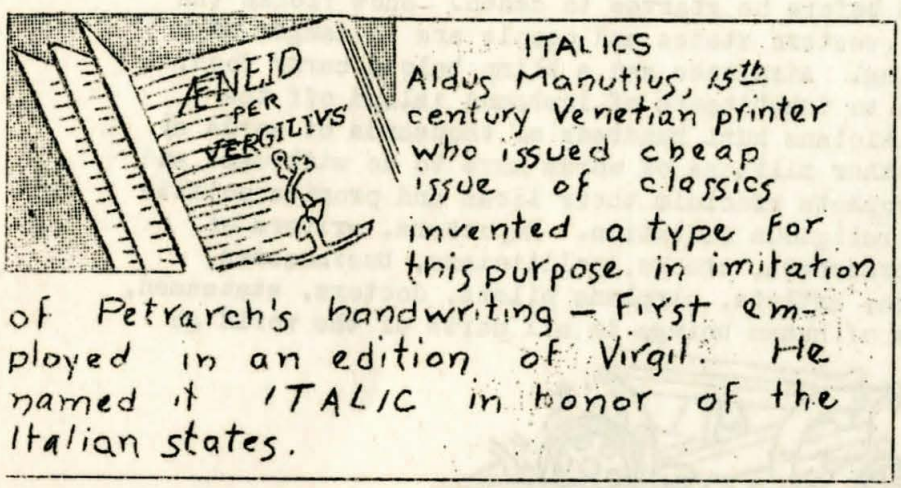
The Printer's Code

When Stephan Daye, or one of his sketchy crew pulled the first rough proof of The Freeman's Oath from the Widow Glover's primitive Cambridge press in 1638, nobody present appreciated the historic fact that there was being initiated in the United States-that-was-to-be an art and an industry which within two centries would be reproducing in an endless whirr of machinery an incalculable quantity of vehicles of the printed word. We thus obtain a new perspective on American history when we learn that a press was established at Jamestown, Va., in 1682, its operation being forbidden, however, before it got well under way; that printing began in Philadelphia in 1685; and that the press began to serve the public in New York in 1693.

From this point on, printing spread rapidly. The first regular American newspaper, the Boston News-Letter had begun publication in 1704, and the colonial newspapers which followed it rendered invaluable service in crystallizing the public sentiment which made possible the Declaration of Independence.

As the tide of colonization poured westward through the passes of the Alleghanies, printing presses were to be found in the flatboats and connestoga wagons that carried plows, surveying instruments, and other tools of empire building. Were a map to be "spotted" with colored tacks each showing the first press in given 18550r

territories, the whole would provide an organic index of the spread of culture throughout America. And the world, for that matter.

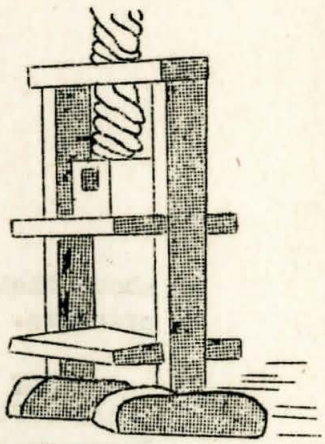


From 'This Curious World'

Among the European names which deserve a high place in the history of printing are Aldus Manutius, the creator of Italic type; the Elzevirs, distinguished Dutch family of printers and publishers, which flourished in Holland for more than a hundred years, beginning near the close of the sixteenth century; William Caxton, the English printer through whose efforts came the first book printed in English rather than in Latin; and William Morris, who with his associates brought about a complete renaissance in printing in England which was eventually reflected throughout the world.

Benjamin Franklin, the very distinguished American, was a printer--the best printer of his time. In 1728 he set up a printing office of his own in Philadelphia, printed broadsides, books, pamphlets and published a magazine, a newspaper, the Pennsylvania Gazette, and an almanac. "Poor Richard's," which had a widespread circulation and great influence. The press used by Franklin is now on exhibit in the Smithsonian Institution.

The early printing press was a hardy framework of wood posts stoutly braced against the ceiling to resist upward pressure; a bed of stone held the form of type, which could be exposed to receive ink and then be slid under the platen, the pressing surface. The mechanism, although crude produced very beautiful results.



A MEDIEVAL PRINTING PRESS

As the eighteenth century ended, many inventors grappled with the problem of further improving press construction. Patent after patent has been obtained for devices to improve the methods of printing, including modern printing presses and type composing and casting machines such as the linotype, which I believe to be one of the most important inventions in the history of mankind. This is said advisedly, for when we consider all that was entailed in the invention of the linotype, it can be justly ranked as the greatest contribution to the general welfare of the world since Gutenberg and Faust invented movable types and the printing press ushered in the twilight of the kings.

For the purposes of this romantic and colorful story which, perforce must be told briefly here, I am quoting a bit from a history of this marvelous mechanical contraption issued by the company manufacturing the machine on the occasion of the recent observance of the fiftieth anniversary of the advent of that almost human mechanism into the affairs of men.

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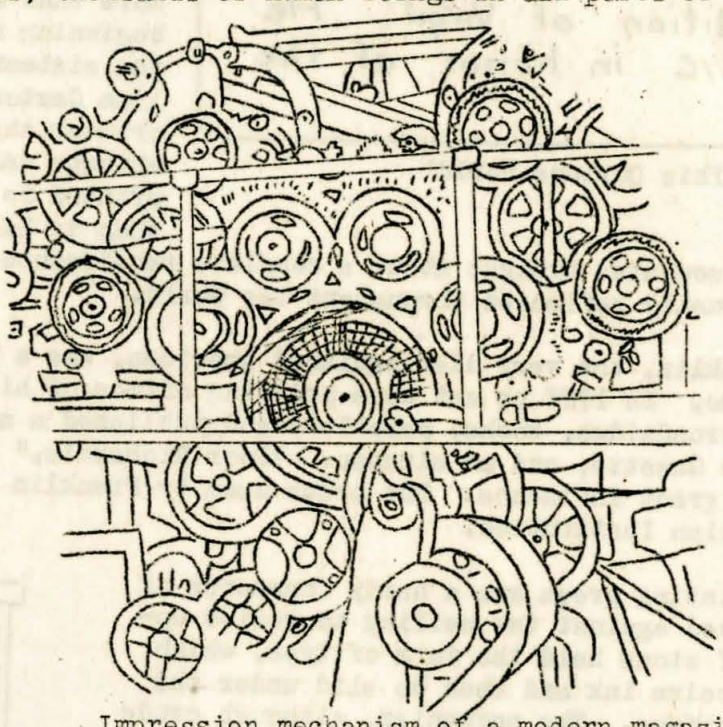
"A king dies. Four boys are caught on an ice floe, and drift out to sea. A little dog is caught between rocks at the entrance of a cave and men work night and day in the freezing weather to free him before he starves to death. Snow flocks the roadways of central western states and people are in danger of freezing and starving. Airplanes and a blimp baloon carry food, mail and newspapers to inhabitants of icebound island off the coast. Heated politicians hurl hundreds of thousands of words at their opponents. Other millions of words have to do with wars and rumors of wars. Prophets proclaim their ideas and promise political, economic, and religious salvation. Reporters, writers of letters, orators, preachers, crooks, politicians, businessmen, taxi drivers, gunmen, artists, airplane pilots, doctors, statesmen, teachers, thousands of human beings in all parts of the world go



Impression mechanism of a modern magazine press printing four colors at one time.

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about their business of living, all of them creating copy for printers.

"Day and night the millions of words pour into the newspaper offices of the world. Men take them almost angrily. Throw most of them onto floors or into wastebaskets and crowd the rest at breakneck speed into tubes from which they are hurled into the composing rooms. Blase linotype operators reach for them, look at them with unsympathetic eyes, and begin fingering gently but swiftly upon a keyboard. Brass things called matrices slide down from their hiding places and take their position in line. A touch of a lever, the whirling wheels,

* Sketched from an illustration in A History of Printing, by J. C. Oswald

the flowing hot metal against the faces of the matrices, and in an instant out slides a shining line of type. Then another. And another. Hour after hour. Hundreds of them. Thousands of them. Paper words turn into metal words. And the metal words, quickly locked into chases, are rushed to the stereotypers, from them to the presses, great giants with cogs and wheels and cylinders and gadgets, that seem to snort with impatience as they wait, and then, to the noise of imprisoned thunder, the daily newspaper leaps forth, pages of papers, no limit to the number. There may be eight. There may be eighty or a hundred and eighty. What does it matter? There is type enough for all of them. Fresh type always, like the manna that fell in the desert. No limit to the numbers of letters, all instantly available. One operator does the work of several old-time compositors. He just sits there and touches keys of a machine whose speed possibilities have never actually been reached. The type-setting machines in the composing room of a metropolitan daily newspaper do the work which would have required from one hundred to five hundred setters of individual types fifty or a hundred years ago.

"The old-fashioned hand compositors could not set enough type, no matter how many were employed on the daily newspapers of a half century ago, to make any kind of an approach to the daily newspaper as we know it today. Before the advent of the linotype machine and its companion machines now in use all the type which went into a newspaper had to be set by hand, one letter at a time, from a case containing the various letters of the alphabet and their characters used in printing and then had to be distributed back into the cases after the newspapers had been printed, of necessity a laborious and slow process. This process went on in hundreds of printing offices everywhere, in the small country shop and in the plant of the metropolitan daily newspaper. Everywhere production was limited. Types wore out, and their battered faces smudged the sheets of paper. Limitation was the ruling god. But nothing could be done about it. Hadn't inventors been trying for more than a hundred years to do something? Hadn't governments backed experiments? Hadn't one scheme after another been tossed aside? But the problem of changing spoken words into printed words efficiently and quickly remained unsolved."

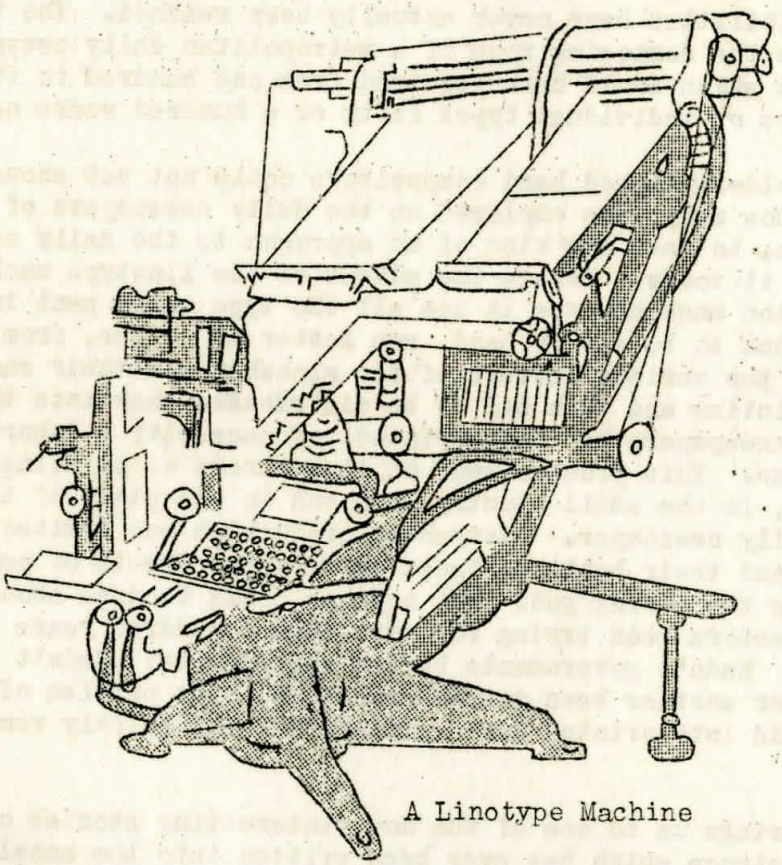
And that brings us to one of the most interesting stories of American ingenuity and persistence which has ever been written into the annals of our country. Strange to relate, neither of the two men more responsible than any others for the invention of the modern type-setting machine was a printer. One, James O. Clephane of Washington, D. C., was a public stenographer. The other, Ottmar Mergenthaler, was a fashioner of fine mechanisms.

No one knows with any degree of accuracy how many millions of dollars were lost in different countires by men in an effort to find a faster way of setting type. The late Samuel Clemens, "Mark Twain," was one who lost a fortune trying to perfect a machine that would set the foundry type formerly in use. Type founders, feeling that eventually someone would devise such a machine, had spent hundreds of thousands of dollars, hoping that when such a machine was devised they might be fortunate enough to control it. Clephane, the public

stenographer in Washington, D. C., who was a court reporter in the law courts of the capital city and private secretary to Secretary of State Seward during the stirring days of the Civil War, was not a mechanic in any sense, but he was the man who refused to acknowledge defeat and promoted the successful invention of the linotype machine.

After many failures experimenting on the idea of a machine which should set individual type, success came when that theory was discarded and the casting of type in lines was the principle adopted. This success actually was made possible when Clephane and others whom he had interested found Mergenthaler, the young German machinist in a Baltimore machine shop. He had been born in the village of Hachtel, in Wurttemberg in 1854.

Mergenthaler was the son of a village schoolmaster and was the third of five children. His mother also came of a family of teachers. His parents wanted



A Linotype Machine

him to teach. But the boy was not interested in the teaching profession. He wanted to deal with mechanisms, delicate, intricate and elaborate mechanisms, such as watches, clocks, mathematical instruments and the like. He devoted his boyhood to work.

When wealthier boys were considering going to college, young Mergenthaler was apprenticed to a brother of his stepmother, a maker of watches and clocks in a small town twenty miles south of Stuttgart. He was to serve four years without wages, receive board and lodging, pay a small premium, and furnish his own tools. He began work in May of 1868. He worked so faithfully and showed so much promise

that his employer paid him his wages for a year before his apprenticeship expired. In the meantime, he had gone to night school, studied mechanical drawing, and gradually became a skilled workman with a mind trained to recognize the essentials.

When his apprenticeship expired in 1872 he determined to see the world and applied to August Hahl, a son of his uncle and employer, a maker of electrical instruments at Washington, D. C., for a position and the loan of passage money to America. The cash was sent and Mergenthaler landed in Baltimore in October of 1872. From there he went directly to the Hahl shop in Washington. He was eighteen years old at the time.

The panic of 1873 destroyed business and the shop where young Mergenthaler was employed suffered along with many others. Mr. Hahl thought the fault was with Washington and decided to move to Baltimore. Business did not improve. The shop struggled along. Then in 1876 fate brought together the men who were destined to make the greatest contribution to the art of printing since the invention of movable types. In that year Charles T. Moore, of White Sulphur Springs, West Virginia, called at the Hahl establishment in Baltimore. Moore said he was the inventor of a writing machine whose failure at the time he attributed to poor workmanship. Moore was one man James O. Clephane had found who had something to enable public stenographers to get their work out faster.

Up to that time, stenographers could take down words in shorthand, but the only method of transcribing them was the slow and laborious one of long-hand writing. It is not known to many that the man who had so much to do with the invention of the linotype also played a most active part in the development of the typewriter. Mr. Clephane's office in Washington was the testing laboratory of the early Densmore-Sholes typewriting machine. Each of those early machines was built by hand and Clephane offered to pay $150 for each one delivered. The result of this was that Mr. Densmore, who had helped make the typewriter a practical machine, took it to the factory of Remington and Sons at Ilion, New York, where quantities could be made. Thus the typewriter came into being.

There is not space here to recount the heartbreaking succession of failures which confronted those trying to work out a type-setting machine. It was not until young Mergenthaler, clear-headed genius, familiarizing himself with the printing art, of which he had known nothing previously, decided that all of the previous attempts to set individual type by machinery were impractical, that the light began to break in the work of devising the present type-setting machine. It was the young German, Mergenthaler, who finally had the inspiration of assembling lines of brass matrices into which moulten metal should be forced, thus producing the type-setting machine of today. The rest of the story is practically current history. Credit for the final result must go to Mr. Clephane, too, who all along the line was the promoter and the one who interested others and secured funds to continue the experiment. And while Mergenthaler did not live to see the ultimate improvements which have been made in type-setting machinery, it was his genius which gave the machine to the world.

The story of the many ideas which were tried out, the many experiments which failed, the many problems which seemed impossible of solution in the development of this wonderful twentieth century device is too long to permit of recital here. But with true American ingenuity all of these problems were met and solved. Today the type-setting machine stands as the Number One agent for the diffusion of knowledge. It enters into the life of every individual. It is the heart and soul of the art of printing.

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The press has, not without justification, become the symbol of increasingly free men and of the interchange of opinion and fact that unfetters minds. As it was said of the invention of the printing press, when it became possible to set type of machinery the cause of liberty and equality and justice received a greater impetus than had been given it by all the wars and all the heroes in the history of mankind. It became possible then to in fact preach the truth to all mankind, to diffuse the principles of justice and to make effective the most powerful weapon in the armament of modern man, the printed word. As mechanical improvements have facilitated printing, its potentialities of service have expanded until today, supported by telegraph, telephoto, radio, and television, it has, perhaps, become mankind's most trusted servant.

They who developed the printed word--of such are the makers of America!

* ** *

(This circular has been adapted from a radio broadcast given by Mr. Chase over Radio Station KOIL on February 7, 1937.)

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