

MODERN PRINTING METHODS.

THE ECONOMIC SIDE OF THE INDUSTRY.



THE development of the "art preservative of all arts" has been very rapid during the last decade, and many of the changes have been revolutionary, resulting in enormously increased product, manufactured in quicker time and at a much lower cost. The quality of the work has also improved. The far more general dissemination of intelligence, the rapid and efficient means

of intercommunication between all parts of the world, with the cheapening and broadening of educational facilities, constitute one of the most notable features in the progress of the world during the past fifty years; and the one most vitally contributing to all our great industries is the printing press. Some idea of the volume of business may be gained when it is stated that in 1900, the census year, the value of the finished product was \$347,055,050. This sum was almost equally divided between newspapers on the one hand and book and job printing on the other. In the United States there are 22,312 establishments, 15,305 of which publish or print newspapers. The total capital invested is \$292,517,072. A large clerical force is necessary to transact this amount of business; 37,799 salaried officials, clerks, etc. draw \$36,090,719 in salaries, while the actual work is done by 162,992 persons, drawing \$84,249,954 in wages. Miscellaneous expenses of these establishments were \$55,897,529, and the cost of materials used was \$86,856,990.

Of the total value of products, advertising forms 43 per cent, subscriptions and sales 35.3 per cent, and book and job printing, including miscellaneous products, 21.2 per cent. The total circulation of daily papers is enough to supply one for every five inhabitants, and the total circulation per issue of weeklies and monthlies is one to each two inhabitants. Ninety-four per cent of all the publications are printed in the English language. One and a quarter billion pounds of paper were used in the census year. Of this amount 77.6 per cent was consumed for newspapers and 16.4 per cent for books and periodicals, and only 6 per cent for job printing. On analyzing the total circulation of each State it is found that the ten leading States supply four-fifths of the circulation per issue of all publications, thus indicating the concentration of circulation in certain populous States. Weekly publications are more numerous in proportion to the inhabitants in the West and Northwest. New England ranks high in dailies but low in circulation, suggesting that in that densely settled region the daily has to some extent supplanted the weekly.

There were 18,226 publications reported to the census authorities, while 3,046 publications failed to report. This would give a remarkable total of 21,272 periodicals, and the aggregate circulation of those reporting was 114,229,334 per issue, while the aggregate number of copies issued during the census year was 8,168,148,749.

The average capital of those engaged in the printing business is \$12,574; the average value of their products is \$14,569. These figures compared with those of a previous decade show that in a period of ten years an increased capital is required to produce the same or even a smaller value of products; this is largely caused by an increase in wages and a decrease in working hours. In 1850 a compositor in New York received \$9 per week; ordinary job compositors now receive \$19.50 per week, and operators on machines from \$24 to \$27, depending on the time of day or night they take their shift. In the opinion of many large operators, the number of wage earners has actually increased rather than diminished. The introduction of machine composition has been of decided benefit to the employe, offering a new field for endeavor. There are few unemployed men in the printing trade, as is shown by the fact that when in 1900 the Typographical Union was called upon to supply 150 men for a special job of city printing, only 100 could be obtained, and these with difficulty.

A classified list of periodicals is given below, showing how the list is divided: Period of issue:

Daily	2,226
Triweekly	62
Semiweekly	637
Weekly	12,979
Monthly	1,817
Quarterly	237
All other classes	268
Total	18,226

Character of publication:

News, politics, and family reading	14,867
Religion	952

Agriculture, horticulture, dairying, and stock raising	307
Commerce, finance, insurance, railroads, and trade	710
General literature, including magazines	239
Medicine and surgery	111
Law	62
Science and mechanics	66
Fraternal organizations	200
Education and history	259
Society, art, music, and fashion	88
Miscellaneous	365

The average number of inhabitants to each publication is 4,170. News, politics, and family reading form the bulk of all publications, 81.6 per cent being taken up by them; religious periodicals come next with 5.2 per cent; finance, railroad, insurance, and kindred topics follow with 3.9 per cent; agriculture and allied subjects follow with 1.7 per cent; and the other subjects while most important, follow with very small percentages, which can practically be neglected, as none of them exceeds 2 per cent, and most of them come nearer 1 per cent or below. The publications devoted to specialties have been steadily superseded by the large dailies, which have invaded every field of journalism. The Sunday edition has become a most important factor in journalism, which when aided by the linotype or other composing machines have done the work of four to nine men. The line cut and the tint cut, called "half-tone," have made the rapid production of a counterfeit presentation of a photograph possible.

Mechanical composition put an entirely new aspect on affairs. The New York Herald, for example, has no less than fifty-six linotype machines, doing the work of hundreds of compositors in far less time and with a new dress of type each time. The daily press has seized with avidity on these improvements, and has thus worked a revolution in the printing trade, causing a vast increase in the number of printed pages, and instead of 24 pages in 1890, we have occasionally 120 pages of a Sunday in 1903, the departments and supplements being well segregated. The reading matter now presented in even one metropolitan newspaper is not only satisfying to the reader, but in amount is often far beyond his capacity to assimilate. We get all this for five cents, which reflects credit on the management and the "city" and "Sunday" editors of our great dailies. Such excellent news-gathering and presentation is not, however, limited to New York; even Seattle, in far-away Washington, does practically the same thing on a reduced scale.

Out of the 18,226 publications, 2,226 are dailies, with a circulation of 15,102,156; 62 are tri-weekly, with a circulation of 228,610; 637 are semi-weekly, with a circulation of 2,832,868; 12,979 papers are issued weekly, with a circulation of 39,852,052; there are 1,817 monthly publications, whose circulation is 39,519,897. The quarterly publications are mostly devoted to special subjects, and only number 237, but their circulation is very respectable, as they issue 11,217,422 per issue. Semi-monthly, semi-annual and yearly publications number 268, and have a circulation of 5,541,329. Out of 18,226 publications, 17,194 were printed in English.

The production of monthlies is centralized in a few States, ten producing 92.5 per cent of the aggregate circulation. The circulation of periodicals is not governed by local consumption, but is distributed regardless of State lines. The whole question of newspapers is admirably discussed in the Census Bulletin No. 216, by Mr. W. S. Rossiter, and we are largely indebted to it.

In 1900, cities of 201,000 inhabitants and over contained 79 per cent of the separate job-printing establishments of the country, and 97.7 per cent of the total job product emanated from them.

QUANTITY AND COST OF PAPER USED.

Our figures show the quantity and cost of paper used and the average cost per pound, in 1900.

Kinds.	Pounds.	Cost.	Average cost per pound, Cent.
News	956,335,921	\$22,197,060	2.3
Book and periodical	202,296,263	9,356,490	4.6
Job printing	74,510,064	6,270,306	8.4
Total	1,233,142,248	\$37,823,856	3.1

In this table is presented a division of the paper used in 1900, according to the several classes of products which, combined, produced the total value of products of newspaper and periodical establishments. About one and a quarter billions of pounds were used during the census year. This large quantity was utilized in the following proportions:

News	77.6
Book and periodical	16.4
Job printing	6.0

It is important, however, to observe that these proportions in weight do not by any means hold good in cost. The latter shows the following proportions:

	Per cent.
News	58.7
Book and periodical	24.7
Job printing	16.6

It is clear that while the quantity of paper used for newspapers far exceeds that consumed in the other branches of the industry, it is proportionately much less expensive.

The average cost per pound shown adds confirmation to deductions drawn that the cost of materials for book and job work was over 40 per cent greater than that for newspapers and periodicals. If the item of paper alone were considered, this per cent would be increased. The average cost per pound of paper consumed by newspapers and periodicals combined was 2.3 cents. The average cost per pound of paper for books and periodicals and job printing combined was 5.6 cents.

The invention of printing is usually ascribed to Gutenberg, although there are strong claims for others. But the consensus of opinion of close students of typography is almost unanimous in giving him credit for the improvement over block printing by the introduction of movable types. The subject has been discussed *pro* and *con*, scores of books have been written on the subject, but still Gutenberg remains as the sole figure around which the typographic art centralizes and is crystallized into concrete and usable form. We may depart from his idea, we may assemble matrices instead of individual types, but the principles involved are the same. His press was of the crudest description, yet almost perfect work was produced on it—work which makes even the millionaire-collector sigh to possess.

HOW A NEWSPAPER IS PRODUCED.*

Nowhere in the world is the value of time so thoroughly appreciated as in the modern newspaper office. There every minute counts, and if everything isn't done on the scheduled minute there are a hundred thousand or more readers asking why, and there is a managing editor and a publisher ready to make things interesting for those who are to blame.

There is no harum-scarum rush and bustle. Behind the noise and scurrying and the apparent confusion there is a system and a mass of rules and schedules as inviolable as the laws of the Medes and Persians.

The city editor has an assistant who reads all of the newspapers, and in a diary, called an assignment book, makes a memorandum, and when the time comes the reporter is given the story to get. So suggestions as to what may happen are noted, and as the time comes the event is covered. Each reporter who leaves the office has something definite to do. Everything is foreseen.

The day's work began, as was the case with the Pope's death, perhaps years before. But the real work of the twenty-four hours begins at 3:15 A. M., when the city edition of the paper is placed on the managing editor's desk, followed a few minutes later by the other papers. Everybody else has gone home in the editorial end except a reporter and a telegraph editor. In the composing-room and the stereotyping-room are a few men in reserve for extras. In the basement the huge presses are grinding out the paper and a score of delivery wagons and a hundred men are distributing the paper after a night spent in preparation for this final hour.

Then the managing editor is reading the morning papers. He dictates to a stenographer suggestions for covering the news of the dawning day, incidentally criticising the work of the past day as shown in the newspaper before him by comparison with its rivals. He really makes news, for he suggests stories that otherwise might not be gotten. Telegrams are sent to correspondents telling them what to do with impending news. Orders are given for pictures. But all of this is tentative. The managing editor is working as if nothing unforeseen would happen. Twenty hours later something may happen that may spoil all his plans. His instructions given, the managing editor goes home at 4:30 A. M., or later, while the presses are still running off the city edition.

At 9 A. M. the work of the local department begins. An assistant to the city editor comes on duty and begins his day's work of reading the city papers. His duty is chiefly to get tips for assignments for the reporters. The day city editor arrives at 11 A. M. He maps out the day's work of the reporters and the photographers in accordance with the news in sight and instructions from the managing editor and city editor the night before.

Each newspaper must have its own story of anything of any consequence. Each has a certain individuality of its own and a style of treatment which gives each newspaper a following just as each breakfast food has its devotees. The assistant city editor goes ahead as if there were no city editor, deciding things as they happen. This style is followed throughout the office, and every man thus has his share of responsibility. A certain number of pictures are need-

* Abstract of article by William M. Handy, Sunday editor of the Chicago Tribune, in *Mahin's Magazine*.