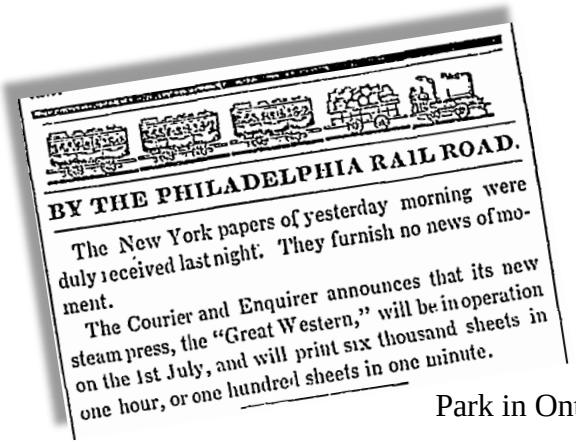
BY THE PHILADELPHIA RAIL ROAD.

The New York papers of yesterday morning were duly received last night. They furnish no news of moment.

The Courier and Enquirer announces that its new steam press, the "Great Western," will be in operation on the 1st July, and will print six thousand sheets in one hour, or one hundred sheets in one minute.

Chapter 5

A New Revolution: Technology, Social Change, and News Work

Frank E. Fee Jr.

At the eastern gate of Algonquin Provincial Park in Ontario, Canada, the Algonquin Logging Museum presents a small display dedicated to the industry that once clear cut a land comprising thousands of heavily forested large hills and small mountains dotted with ponds and small lakes. The job for these loggers was to cut the trees and get them to rivers large enough to float the logs to mills and railheads. To do this, a system of tugboat-like "Alligators" was invented in 1889. Behind each tug (ranging from 37 x 8 feet or 45 x 11 feet) was a boom whose ropes and cables rounded up the logs and pulled them across the lake or pond. At the front of each boat was a cable winch. Forestry historian Clarence Coons describes what happened next:

> When it was necessary for the tug to move from one lake to the next, and no navigable stream existed between the two, a portage route through the forest was cleared and the Alligator, by the use of its cable and winch, would skid itself across the portage to the next lake. In the meantime, the boom would be opened and the logs transferred to the next lake via a small stream, or a flume built to connect the two lakes. On reaching the next lake, the logs were collected in another bag boom and warped down it by 'the Alligator.[1]
>
> Most often, that portage was up and down a large hill or small mountain.
>
> Its manufacturers claimed the Alligator could move a boom of 60,000 logs at a time [dimensions unstated] at the speed of one mile an hour and require no more than five men to do

[1] Clarence F. Coons, "The Alligator Steam Warping Tug," *Forestry Chronicle* 68, no. 5 (October 1992): 594-597, at 595. Accessed at https://pubs.cif-ifc.org/doi/pdf/10.5558/tfc68594-5.

it. The Alligator would "climb hills and go through swamps or woods or up small streams from one lake to another. After warping a boom of logs it will return with the empty boom doing the work cheaply and thoroughly with a great saving of time and number of men."[2]

Considering the enormity of the job, the Alligator was indeed "an engineering marvel,"[3] but by the mid-nineteenth century, such marvels could be found throughout North America as "must-do" imperatives were met with "can-do" ingenuity and gumption. From the vantage of the current century, it sometimes seems as though people of the Industrial Revolution – a revolution not simply in machines, processes, and products but of needs imagined and filled – simply never met a challenge they felt they could not overcome – or at least lean into – or even thought they couldn't conquer.

At the beginning of the nineteenth century, communication was by word of mouth; letters; newspapers; and other print material carried over rutted roads and aboard sailing ships. By century's end, we had railroads, canals, steam-powered vessels; the telegraph; telephones; photography; motion pictures; and were close to having the radio. It was quite a century.

And yet, at the beginning of the nineteenth century Americans seemed daunted at every turn. The debates over "internal improvements," public works such as roads and canals, displayed great uncertainty about the ability to engineer and build the projects, much less pay for them. What happened?

[2] Quoted in Ibid., 594.

[3] Ibid.

Internal improvements

Although most Americans agreed on the need for better roads and other means of transportation, along with improved communication within the new nation, they disagreed widely on how to solve the problem. Some of the resistance was political: whether states or the federal government or any government should be involved. Others wondered whether they were up to the task. As scholar Michael Hostetler says, "At the turn of the nineteenth century, American engineers, politicians and investors were fully convinced of the need for improvements, but also painfully aware of the enormous difficulties in carrying them out."[4]

For instance, with canals, Hostetler says:

> In addition to the daunting costs of improvements were seemingly intractable technical problems: how to take an accurate level; how to dig a canal channel and remove the earth most efficiently; how best to cut through tree roots; how to use blasting powder to remove embedded rock; how to keep canal banks from leaking by "puddling"; how to mix a permanent underwater cement, to design lock gates, to make valves for gradual release of water, and to create locks and gates that could be operated easily by hand power. [5]

In part, the national problem renewed the political arguments over both the Articles of Confederation and the Constitution: whether the projects were state projects or national ones. Thus, with a focus on what was the purview of the states, a report in the *Albany (NY) Register* declared:

> Who in 1783 could have anticipated a possibility that in 1791 this state would be essentially relieved from taxes, and the effects of a destructive war. Our finances are now in a productive situation and our immense resources in waste lands which are constantly rising in value and demand, will speedily overflow our coffers with the *solid charms*. As the revenue of each state will in future be applied purely for *state purposes* – we may

[4] Michael J. Hostetler, "The Early American Quest for Internal Improvements: Distance and Debate." *Rhetorica: A Journal of the History of Rhetoric* 29, no. 1 (2011): 53-75. Accessed October 13, 2020. doi:10.1525/rh.2011.29.1.53.

[5] Ibid.

> anticipate great internal improvements in roads – canals – bridges – removing the obstructions in rivers, &c. &c.[6]

Yet the tug between state and federal claims remained. In an appeal for Congress to provide inventors and authors patent and copyright protections, Treasury Secretary Alexander Hamilton said in a report widely published in the day's newspapers:

> [T]here is cause to regret, that the competency of the authority of the national government to the *good* which might be done, is not without a question. Many aids might be given to industry; many internal improvements of primary magnitude might be promoted, by an authority operating throughout the union which cannot be effected, as well, if at all, by an authority confined within the limits of a single state."[7]

An information revolution

Although the details are far more complicated in their particulars, America's first information revolution, from 1800 to the Civil War, might be modeled as follows:

1. Greater affluence enables growth in internal improvements, including schools.
2. More schools lead to greater literacy.
3. Greater literacy creates more demand for print products (newspapers, books, pamphlets).
4. With more print products, individuals have greater incentive to become literate.
5. More print variation leads to expanded imagination of socio-economic possibilities.
6. More print products rely on better distribution (postal) system. (The telegraph comes later.)
7. Better postal system relies on better transportation systems to reach consumers.
8. With market forces, incentive for investment fuels technological innovation.

At some point in the model, aspirations should be added as motivation for expanded literacy and educational attainment. Even in the 1720s and '30s, Benjamin Franklin was joining

[6] "Albany, May 23. From every part," *Albany (NY) Register*, May 23, 1791.

[7] Alexander Hamilton, "Report of the Secretary of the Treasury, on Manufactures," *The Mail; or Claypoole's Daily Advertiser*, Philadelphia, January 16, 1792.

other young men in libraries and educational societies, and Franklin and his compatriots founded the Library Company of Philadelphia in 1731, held by some to be the first public library – definitely the first subscription library – in the colonies.[8] Early in the colonial experience, it was sometimes possible for young men to elect a trade in which to apprentice, although their fathers might have the final approval. With the onset of the Industrial Revolution, new trades were opening up, creating demand for labor in jobs never imagined before 1800 and offering the promise of social mobility unimaginable even a decade or two before. Moreover, until the end of the nineteenth century, at least, the lure of opening up lands in the West continued to draw families out of the Eastern cities and farms.[9]

In analyzing this model, one might also imagine a loop, with the eighth step returning to the third and creating a stronger, bigger print culture as the feedback loop expands and a snowball effect takes hold.

Newspapers in the new revolution

Pinpointing the start or end of the Industrial Revolutio is difficult and estimates vary, starting from about 1740 in England and 1790 in America and ending in America anywhere from 1830, 1840, or even the twentieth century. In newspaper publishing, a reasonable starting point is 1830, when significant improvements in printing technology started transforming production practices and when innovation in news gathering, editing, and marketing introduced what can be seen as rudimentary modern news work. At the same time, public and government for education

[8] "Mirror Mirror on the Wall, Who's the OLDEST of Them All …?" Sturgis Library, Barnstable, MA. Accessed at at https://www.sturgislibrary.org.

[9] See, for instance, Thomas Fuller, "'Go West, Young Man!' – An Elusive Slogan," *Indiana Magazine of History* 100, no. 3 (September 2004): 231-242; Ronald M. James, "Monk, Greeley, Ward, and Twain: The Folkloresque of a Western Legend," *Western Folklore* 76, no. 3 (Summer 2017): 293-312.

was greatly expanding literacy, leading to a vigorous print culture. For purposes of bracketing time periods, this essay begins in the second decade of 1800s and concludes with the end of the antebellum period, circa 1860.

Party press

Although one can find many exceptions, it is reasonable to assert that the newspapers of the 1830s were emerging from what has been called the Party Press Era. Between the rancor and vituperation of the opinion-dominated turn-of-the-century press of the Federalists of John Adams and Alexander Hamilton and the Democratic-Republicans of Thomas Jefferson, politics and the press had matured together. The 1830s, scholar Michael Schudson shows, "marked a revolution in American journalism. That revolution led to the triumph of 'news' over editorial and 'facts' over opinion, a change which was shaped by the expansion of democracy and the market."[10] Meanwhile, political parties as we would know them today took more formal shape and organization, often, though not always, oyster-like, with the grain of sand, the political imperative, giving rise to the pearl, a newspaper.

This essay focuses on the effect of technological advances and socio-political change on newspapers during the period. It will mention specifically advances in printing; papermaking; communication and distribution of news, including railroads, the post office, and the telegraph; and how education innovation and enhanced literacy changed the print culture.

Transmitting ideas

Historian Jeffrey Pasley writes that newspapers were "perhaps the primary delivery vehicles for both literature and politics in the Early Republic." They were, he says,

[10] Michael Schudson, *Discovering the News: A Social History of American Newspapers* (New York: Basic Books, 1973), 14.

> [N]ot only the arenas or environments in which political debate took place, but the central institutions of American political life from the 1790s through most of the nineteenth century. No political movement or faction or party considered itself viable unless it had a newspaper to support it, preferably a network of newspapers in as many localities as possible. Indeed, the establishment of a newspaper often preceded (and made possible) the creation of formal political organizations.[11]

The symbiotic development of parties and party presses brought about a number of changes. First, party backing gave newspapers financial stability that newspapers previously lacked, especially if they were attempted in shops that did no job printing, a rare occurrence. Another significant change was in altering the artisanal arrangement of news work, in particular at the top. Even in the earliest contentious years of journalism in the Early Republic, editors – the John Fennos, Philip Freneaus, and Benjamin Franklin Baches – had been "practical printers," editors trained in the production side of printing. They had set type, organized pages, and in most cases, pulled the press's levers.

Underscoring the centrality of the press in forming the political structures of the late 1790s and into the first decades of the 1800s, historian Andrew Robertson says that "The principal vehicle for conveying the rhetoric and practice of mass partisanship was a growing network of newspapers and expanding republic of letters.[12]

He adds:

> Newspaper editors, party organizers, and letter correspondents, the expanding postal system, and a growing readership were creating a newer and more abstract sense of community by means of the printed word. Where the deferential political culture relied on personal relationships set within a localized, physical community, the participant

[11] Jeffrey L. Pasley, "The Two National 'Gazettes': Newspapers and the Embodiment of American Political Parties," *Early American Literature* 35, no. 1 (2000), pp. 51-86, at 51.

[12] Andrew W. Robertson, "Voting Rites and Voting Acts: Electioneering Ritual, 1790-1820," in, *Beyond the Founders: New Approaches to the Political History of the Early American Republic*, Jeffrey L. Pasley, Andrew W. Robertson, and David Waldstreicher, eds. (Chapel Hill: University of North Carolina Press, 2004), 67

> political culture was sustained by a print community based on abstract relationships – ideology, interest, and common affiliation – among individuals.

Moreover, he says:

> In New England and the Middle States, the web of relationships between editors, correspondents, and readers grew and thickened. The editors of these newspapers corresponded with one another, copied one another, praised and attacked one another and formed alliances with the postmasters. The parties had only begun to develop a permanent organizational base. The print community, however, "embodied partisanship" and allowed partisans to speak of and treat the parties as real things worthy of loyalty or opposition.[13]

In Pasley's assessment, the parties were ill formed in the early part of the century and in their stead, newspapers provided the nucleus for ideological thinking and the spread of partisan doctrine:

> Despite their dominance of the political system from the mid-1790s on (with the exception of a short period of collapse after the War of 1812), the parties were not legally recognized by government and possessed no permanent institutional structures before rudimentary national committees were created in the 1840s and 1850s. Party nominating conventions and campaign committees were common after the 1830s, but these bodies were evanescent and party or campaign staffs were nonexistent. Once candidates had been nominated or initial campaign arrangements had been made, conventions and committees went dormant; they provided the party organizations with no continuing institutional presence, no day-to-day management, no ability to shape the party's responses to new issues and ongoing events, no employees or spokesmen or means of communication that belonged to the party organization itself.[14]

Instead, Pasley says, "The many gaps left by the party system's underdevelopment were filled by networks of partisan newspapers, which provided a fabric that held the parties together between elections and conventions, connected voters and activists to the larger party, and linked the different political levels and geographic regions of the country."[15] He adds:

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[13] Ibid., 67.

[14] Pasley, "Two National 'Gazettes,'" 51-52. See also, Pasley, *"The Tyranny of Printers": Newspaper Politics in the Early American Republic* (Charlottesville: University of Virginia Press, 2001).

[15] Pasley, "Two National 'Gazettes,'" 51-52.

> Newspapers thus contributed in fundamental ways to the very existence of the parties and to the creation of a sense of membership, identity, and common cause between political activists and voters. Alexis de Tocqueville argued that because democratic political associations measured their success in numbers and because such large numbers of private, working citizens could never meet together, political associations could be formed only in newspapers: "Newspapers make associations, and associations make newspapers."[16]

And yet, although some newspapers were owned or subsidized by the nascent political parties, Pasley says that "parties themselves usually did not sponsor or subsidize newspapers directly – the parties' lack of institutionalization made this impossible at most times in most places."[17] Rather, political subscriptions, advertising, party job printing, and patronage jobs created indirect support for the newspapers.

Nevertheless, throughout the first half of the nineteenth century in particular, many newspaper editors remained closely aligned with political parties and they could be found in various party offices throughout the country. At the top, President Andrew Jackson's so-called "kitchen cabinet" of advisors included current or former newspaper editors Francis Preston Blair of the *Washington Globe*, Duff Green of the *United States Telegraph*, Amos Kendall of the *Western Argus*, and Isaac Hill of the *New Hampshire Patriot*. Party leaders proliferated in newspapers at the village and town level. Even into the twentieth century, the most respected directory of newspapers and newspaper leadership, the *Editor & Publisher International Yearbook*, included political affiliation in its description of each daily and weekly newspaper in America, and even if they did not formally self-identify with a party, many newspapers did – and do – align with partisan politics.

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[16] Ibid.

[17] Pasley, *Tyranny of Printers*, 15.

Print offices and change

As the nineteenth century reached its second decade, change had occurred in the printing offices. With the rise of the party press the nature of the editorship changed. Instead of practical printers, some editors, called "political editors" or "professional editors," were hired for their thinking, writing, and political ideologies – not their typesetting skills.

Improving technology likewise was driving change in production practices that in turn were influencing news work, marketing, and the financing of newspapers.

Scholar H.A. Innis, says that in Great Britain:

> The invention of steam-driving machines inevitably led to the use of steam in printing-related processes. The Industrial Revolution had profound implications for printing and literature, in lowering the costs of paper and introducing steam power to the press. In 1799 Louis Robert at Essone in France designed a machine to make a continuous sheet of paper on an endless wire cloth turned on wheels, and a patent was taken out in England in 1804 by the Fourdinier brothers, after whom the machine was named. The length of time for the manufacturing process was reduced from five weeks to five days and inventory charges were lowered sharply. The enormous expansion of demand for rags in Great Britain and the United States and the export restrictions in continental countries stimulated a search for substitutes. Esparto gras was used in England in 1857.[18]

Innis adds that "The use of steam power in the manufacture of paper was followed by its application to the press of *The Times* on November 29, 1814. Production per hour increased from 250 to 1,000 copies. By 1853 Applegath's machine produced 200 copies per minute. The problems of the cylinder press were eventually solved by the Hoe firm in New York."[19]

[18] H.A. Innis, "The English Press in the Nineteenth Century: An Economic Approach," *University of Toronto Quarterly* 15, no 1 (October 1945): 37-53, at 37-38. Esparto gra, a grass found in Spain and North Africa, was used in making high-quality paper.

[19] Ibid., 38.

Steam press in America

In America, scholar Jason Stein says, "What is sometimes called the antebellum 'print explosion' is thought to have started when the Koenig steam press, available as a European import since the 1820s, began to be manufactured in New York in 1830, where it greatly reduced the cost and increased the potential output of any print job."[20]

For newspapers, the Industrial Revolution brought technologies that greatly increased the speed at which papers could be printed and reduced labor costs through lower manning requirements. Through faster printing, press capacity could be expanded, which meant the ability to support greater circulation, which in turn meant more revenue, both in per-copy income and in advertising rates based on the papers' ability to supply eyeballs for advertisers.

Likewise, improvements in paper manufacture and, in time, development of presses that could take the continuous-feed newsprint reels, saved money. In the late 1840s, the substitution of wood pulp for rags in paper manufacture gave papermakers a cheaper and seeming infinite supply of the key ingredient and led to further expansion of the daily press as the nineteenth century progressed.[21]

American newspapers followed developments closely, though not without some skepticism. In 1816, two years after the *Times* began steam-press printing in London, a Washington, DC, newspaper, citing "a French paper," reported that

[20] Jordan Alexander Stein, "The Whig Interpretation of Media: Sheppard Lee and Jacksonian Paperwork," *History of the Present* 3, no. 1 (Spring 2013): 29-56, at 30.

[21] David C. Smith, "Wood Pulp and Newspapers, 1867-1900," Business History Review, Autumn 38, no. 3 (Autumn, 1964): 328-345.

"'In England steam-presses continue to succeed, and several journals employ them. … The working of one of these presses, which dispatches as much work as twenty-four pressmen and twelve presses (an exaggeration) requires only the labor of a man and a boy, to place and take off the sheets.'"[22]

A somewhat pessimistic view was shared two years later in the *Albany (NY) Argus*: "An improvement in printing is announced in England by the use of a new constructed press, which works both sides of a sheet at one operation. We have also seen an account of a steam press, which performs the work of several presses, with the assistance of two boys. The price of the latter, if we recollect, is about 10,000£ sterling; which is an insuperable objection to its coming much into use in this country."[23]

Printing presses had been made of wood from the time of Gutenberg until 1798, when the Earl of Stanhope invented a cast iron press that could better stand the strain of larger press runs and of impressing wood cut illustrations.[24]

The next significant advancement in presses was the steam cylinder press, developed by two Germans, inventor Friederich Koenig and his partner, Andreas Bauer, working in London. For this press, the type was placed on a flat bed, as with hand presses before it, but the paper introduced to the type by a cylinder from above.[25] The test of this invention came on November

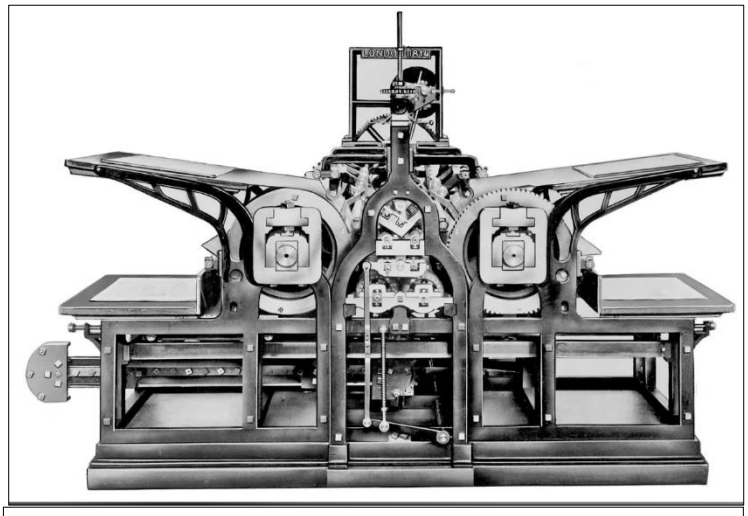
[22] "STEAM PRESS," *Washington (DC) Weekly Gazette*, November 30, 1816. Parentheses in original.

[23] "An improvement in printing," *Albany (NY) Argus*, September 22, 1818. The same item appeared in other papers, including the *Rochester (NY) Telegraph*, October 20, 1818.

[24] Robert Hoe, *A Short History of the Printing Press and of the Improvements in Printing Machinery from the Time of Gutenberg up to the Present Day* (New York: Robert Hoe, 1902), 7. Accessed at Internet Archive, https://archive.org/details/shorthistoryofpr00hoeruoft/page/n1/mode/2up.

[25] Ibid., 15-16.

29, 1814, when the *Times* of London was printed on it. It was the first newspaper ever printed on a steam-powered cylindrical press. In a day when workingmen, the Luddites, were rioting in England over losing their jobs to an increasing array of labor-saving machines, chiefly in the textiles industry, the *Times'* proprietors thought it best to assemble the press secretly and, indeed, their employees were not told of the press until the edition's run had been completed that morning.



Koenig & Bauer press prints *Times* of London, 1814.

Of several firms building presses in the United States, R. Hoe & Co., incorporated in 1822 by Robert Hoe on the death of his partner, Matthew Smith, became the principal manufacturer of presses. Histories of R. Hoe & Co. show a continuous and constant flow of improvements, inventions, and patents for the various presses the company produced. In 1843, Hoe's son and successor, Richard March Hoe, made a major breakthrough, building a steam-powered rotary cylinder press, patented in 1847, on which the type was placed on the rotating cylinders, rather than the stationary platen. It revolutionized newspaper printing. In a history of the company, Robert Hoe wrote that the "Four Feeder," [Illustration 1] sold initially to the *Philadelphia Ledger* but within a year to be found at newspapers on both sides of the Atlantic, "Journals which before

had been limited in their circulation by their inability to furnish the papers rapidly increased their issues, and many new ones were started."[26] The work of feeding paper sheets was done by boys.

In 1870, Hoe produced a rotary press printing both sides of the sheet of a continuous roll of paper purported to be five miles long,[27] a system basically in use today.

It was the 1847 press that "was so encouraging," Hoe associate Stephen Tucker recalled, "that a Four Cylinder Type-Revolving Press was at once built and early in 1847 was put in the office of the Philadelphia Public Ledger on trial. The machines operated so satisfactorily, running up to a speed of 10,000 sheets per hour, that the Ledger immediately accepted it and ordered a second one."[28] Tucker added:

> This at once demonstrated the value of the machine for fast newspaper printing, and it was followed by orders for presses from the New York *Sun, New York Herald*, *Boston Times*, and others. The capacity of the machine was gradually increased by making them with 6, 8, and 10 impression cylinders, thus giving a production of over 20,000 sheets per hour. It filled a long-felt want, and held its place until superseded a quarter of a century later by the modern web press.[29]

A picture of an extensive, vibrant newspaper culture in America at mid-eighteenth century can be gained from an excited report in 1856 by the *Manchester Guardian's* New York correspondent in which he exclaimed to his English readers:

> The largest presses ever built are the eight cylinders, which will throw off 20,000 sheets an hour, or 333 copies per minute! These presses cost 25,000 each. There are but three in existence. The first pair were built for the *Philadelphia Ledger*, a paper which circulates 80,000 daily, or more than any other daily journal in the United States. The proprietors were forced to build these fast presses in order to meet the enormous demand

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[26] Hoe, 31-32.

[27] "Hoe, Robert March," *Appletons' Cyclopaedia of American Biography*, Vol. 3, James Grant Wilson and J John Fiske, eds. (New York: D. Appleton & Co., 1887), 225.

[28] Stephen D. Tucker, "History of R. Hoe & Company, 1834-1885," Rollo G. Silver, ed. *Proceedings of the American Antiquarian* Society (Worcester, MA: American Antiquarian Society, 1973), 380.

[29] Ibid., 380-381.

> for their paper. Soon aftcrwards the *New York Sun* ordered one, which it uses in connection with a four cylinder one, and by which means it can strike off 30,000 copies every hour.

Enumerating other newspapers with the large, fast Hoe presses in action, the correspondent highlighted a competitive, dynamic environment that spoke of the urban scene as well:

> The *Herald*, of this city, uses two four and one six cylinder presses, which enables it to print hourly 40,000 papers. The *Times* and *Tribune* have each a four and six cylinder; the *Commercial Advertiser* and *Post* a four cylinder; the *Boston Journal* one six cylinder; *Traveller*, *Times*, and *Transcript*, also of Boston, one four cylinder each; the *Baltimore Sun* two four cylinders, and the *Cincinnati Commercial* one. The Messrs. Hoe are also building a four cylinder for the *Boston Herald*, and another for the *Philadelphia Sunday Despatch*. The four cylinder press will run off 10,000 sheets an hour, and costs 12,500 dollars; the six cylinder, 15,000 sheets, and costs 18,000 dollars; and the eight cylinder, 20,000 sheets, and costs 25,000 dollars.[30]

With its promise of speed, expanded press runs, and labor savings, however, American newspapers closely monitored the steam press. An 1823 item widely copied from the *New-York Evening Post* reported: "We have seen this morning a proof sheet specimen of printing, on an octavo form, pica type, by a new printing press, got up in this city, with improvements upon the London Steam Press, by Mr. Jonas Booth. The impression is perfect, and it will throw off *twenty five hundred sheets an hour*, and requires only two hands to feed it. The engine which moves the whole machinery is only one horse power."[31] Given the date of the news items, this was probably Booth's first press, built in New York in 1822, but not patented until 1829. Historians consider Booth a minor press builder but still a contributor to the press' development.[32]

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[30] Ibid., 381n31.

[31] "Printing Press," *Washington (DC) Gazette*, May 12, 1823. See also, for instance, "Printing Press," *American and Commercial Daily Advertiser*, Baltimore, May 12, 1823; "Printing Press," *Times and Hartford (CT) Advertiser*, May 13, 1823.

[32] Ralph Green, "Early American Power Printing Presses," *Studies in Bibliography* 4 (1951/1952): 143-153.

Spread of the steam press

It was news throughout the United States when a newspaper acquired a steam press. The *Baltimore Chronical* carried news from Boston on a new steam press for the *Boston Saturday Evening Gazette*, which had reported:

> Our paper is this week printed upon a new power press, invented by J.D. Treadwell, Esq., of this city, which is operated upon and worked by steam – and has recently been put up by N. Hale, Esq., editor of the Boston Daily Advertiser. It is the first steam press put in motion in this city, and will turn off ten sheets in a minute. The impressions are more perfect – and the whole process of printing newspapers much easier, and more satisfactorily done, then by the old method. By this facility we shall not only be able to present the readers of our paper with a better printed sheet, but at a much earlier hour than we have heretofore been able to accomplish.[33]

In an earlier age, an entire printing office could be housed in the printer's home, often one or two rooms at most. An indication of the need to expand facilities to accommodate the age of the steam press comes from an reprint from the *Boston Gazette* reporting the scattering of type – "pi" – as the page was being moved from the building housing the steam press back to the office: "Our neighbours of the Daily Advertiser have had a foretaste of thanksgiving. The *inside form* of yesterday's paper, while on its way from the steampress in Lindall-street to the office in Congress-street, on a small carriage invented for the purpose, was overset by a wood-cart and knocked into 'pi.' This distressing occurrence created great consternation in the neighborhood."[34]

Throughout the antebellum period, newspapers were quick to note the introduction of new typefaces ("new dress"), formats, and technology among other newspapers. An item in the

[33] *"The Boston Saturday Evening Gazette," American Mercury*, Hartford, CT, November 4, 1828.

[34] "Our Neighbours of the Daily Advertiser," *Salem (MA) Gazette*, November 28, 1828. In printing terminology, type that is "pi" or "pi'd" has been dropped and scrambled. In an age of handset type with individual letters in the form, setting things right was a formidable task.

Rhode-Island American and Providence Gazette saluted improvements in the *New-York Mercantile Advertiser*, but also warned against fads:

> The New-York Mercantile Advertiser, makes a very respectable appearance in its new dress, and without losing any of its Commercial character, conforms to the taste for literary and miscellaneous selections. The call for large newspaper sheets, however, is rather on the decline. A surface of an acre presents too laborious a task for the eye to travel over, or the arms to extend, and we believe after all, the moderate sheet will wear best. We advice [sic] the editor of the N.Y. Commercial, who stands well in public opinion, to profit by this hint and stick to his present dimensions, though his contemporaries should print on elephant [sic] paper with a 40 power steams press.[35]

When fire in 1835 destroyed nearly 23 blocks and 700 buildings in the city's prosperous mercantile district, the estimates of damage that ranged from $18 million to $20 million ($529 million to $588 million today),[36] the *New-York American* lost its offices and equipment. The paper continued printing in new quarters, however, with thanks to the *Mercantile Advertiser*, "whose press … we use for the present" and "to the editors of the *Transcript*, and of the *Evening Post*, who kindly offered us every assistance."[37] The report added, "Our chief loss, and one which unfortunately will require some time to remedy, was in a double cylinder steam press, which printed both sides of the sheet at once, and which was just perfected and in successful operation. Our ingenious townsman, R. Hoe, will however, supply a substitute, until we can have a similar one replaced."[38]

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[35] "The New-York Mercantile Advertiser," *Rhode-Island American and Providence Gazette*, May 5, 1829.

[36] "The Great New York Fire of 1835 and the Marketing of Disaster," *From the Stacks*, New-York Historical Society. Accessed at http://blog.nyhistory.org/the-great-new-york-fire-of-1835-and-the-marketing-of-disaster/.

[37] "From the N.Y. American of Friday Afternoon," *American and Commercial Daily Advertiser*, Baltimore, December 22, 1835.

[38] Ibid.

An item in *Lyford's Baltimore Price Current*, gave insight into the economics of press work:

> A Printing Press has arrived at, or is on its way, from London to New York, which it is said, will strike off 6000 sheets per hour The New York Star says: -- There are several papers in London of large circulation having no Press attached to their offices, and which have their forms and paper wheeled to a Steam Press where the number required is struck off and the whole wheeled back to the office for distribution. In this way a large and costly steam press is made profitable to the owner. As many of our mails and vessels arrive in the night, early intelligence cannot be conveyed throughout the city by papers of large circulation unless by a Press of this kind on a great scale.[39]

Technological convergence

In 1838, a Baltimore paper made an important, if off-hand, confluence to two essential features of the Industrial Revolution in the print culture. Under a standing headline, "By the Philadelphia Rail Road," the paper reported "The New York papers of yesterday morning were duly received last night. They furnish no news of moment." But the paper also reported, "The Courier and Enquirer announces that its new steam press, the 'Great Western,' will be in operation on the 1st July, and will print six thousand sheets in one hour, or one hundred sheets in one minutes."[40]

The column featured a wood cut illustration showing a locomotive, a tender, and three passenger carriages, all over a headline "BY THE PHILADELPHIA RAIL ROAD," clearly a standing package of illustration and headline that would be used over and over again. In other words, eight years after trains became operational in America,[41] the newspaper had routinized

[39] "A Printing Press Has Arrived," *Lyford's Baltimore Price Current*, Baltimore, June 9, 1838.

[40] "By the Philadelphia Rail Road," *American and Commercial Daily Advertiser*, Baltimore, June 21, 1838.

[41] "The Beginnings of American Railroads and Mapping," Library of Congress. Accessed at https://www.loc.gov/collections/railroad-maps-1828-to-1900/articles-and-essays/history-of-railroads-and-maps/the-beginnings-of-american-railroads-and-mapping/.

one of the marvels of the day, incorporating the railroad into its graphic news presentation and employing it – even if it brought "no news of moment" – as a regular news conduit. The railroad by this time had become an essential part of newspaper distribution and newspapers throughout the growing nation depended on it. The text below affirmed that New York papers publishing in the morning could be in Philadelphia by evening, a feat never possible in the days of horse and wagon delivery.

The *Advertiser's* column also reported (as did many other papers) on another triumph of the Industrial Revolution, the startup of a huge new steam press at James Watson Webb's *Morning Courier and New York Enquirer*. Webb, an early adopter of much the Industrial Revolution had to offer, including steam presses, the rotary press, improved type, and high-(rag) quality newsprint; "was one of the few editors in the country who presented a very complete coverage of international news, and he organized one of the first networks of European correspondents."[42]

Whether there were delays in New York or other factors, the July 1 deadline was missed, but the *Advertiser* breathlessly reported the big day when it did happen: "The New York Courier came to us yesterday [July 17] in a handsome new dress, on a sheet of greatly enlarged dimensions. The Courier is now the largest daily newspaper in the world. It is printed on the steam-press *Great Western,* made by Mr. D. Napier, of London – the power of which is declared to be adequate to print *six thousand copies in one hour!*"[43]

[42] James L. Crouthamel, "James Watson Webb: Mercantile Editor," *New York History* 41, no. 4 (October 1960): 400-422, at 400.

[43] "The New York Courier," *American and Daily Advertiser*, Baltimore, July 18, 1838. Italics in original.

For all the cheers at the continuing march of new and improved presses, they were not for everyone. An obituary reprinted in the *New-York Times* from the *Philadelphia North American* reported the death at 91 of Lydia R. Bailey, who took over her husband's printing business – mostly books and job work – when he died and ran it successfully from 1830 to 1860. Noting that Bailey was a "practical printer" – one who had set type and worked in other aspects of production – the item concluded by saying, "Steam presses were fatal to her courage and she surrendered to an instrumentality she could neither understand nor compete with."[44]

Unintended consequences

For all the benefits from expanded print options, lower costs, and greater circulation possibilities, some scholars have identified downsides to the print revolution, often in terms of the reorganization of work processes and labor in the printing establishments.

Nor did the technology instantly engross the nation. Johanna Nicol Shields, in looking at rural communities – even states – notes that outside large urban areas, smaller and more remote communities and their newspapers were unable – or late – to participate fully in the benefits:

> As late as 1860, only three Alabama towns outside of Mobile contained more than a few hundred adult readers. Only crude roads linked the northern and southern parts of the state, while, south of the fall line, rivers moved goods in and out of but not around the region. It was impossible to go from one of the larger towns to another by rail. Lacking viable markets, local publishers could not afford new technologies; the steam press did not appear till the 1850s. Newspaper publishers imported paper, type, and machinery on credit through brokers or friends in port cities, and they struggled to find skilled labor. Their small papers might have helped in expanding the audience for a speech, a poem, or a very short story, but they were useless for longer works. Besides, not every local editor even catered to the local literati."[45]

[44] "Death of a Lady Printer in Philadelphia," *New-York Times*, February 26, 1869.

[45] Johanna Nicol Shields, "Writers in the Old Southwest and the Commercialization of American Letters." *Journal of the Early Republic* 27, no. 3 (Fall 2007): 471-505, at 478-479.

In the larger organizations, the changes in labor relations were significant as the artisanal model for print operations gave way to an industrial model that tended to depersonalize relations and, through the improved machines, deskill the labor force.

Industrial Revolution

Besides speeding up newspaper printing and greatly providing opportunities to expand the size of newspapers, the steam press brought about major changes in the organization of labor. Although scholars have focused more on how workers and work processes were reordered in book publishing,[46] newspapers, too, reallocated the division of labor as printing moved from the traditional artisanal offices with a master printer at the head, journeymen employed by him, and apprentices contracted with the master to learn the craft.[47] Continuing the practice of the Party Press in putting a professional editor at the top, newspapers divided the editorial labor into subeditors, writers (reporters and correspondents), and in the back shop (production) typographers (though called printers until electronic typesetting replaced them in the second half of the twentieth century), and pressmen. With the development of stereoplating in the early 1830s, these workers too joined the production departments and would remain there until the mid- to late twentieth century.

[46] See, for instance, Ronald J. Zboray, "Antebellum Reading and the Ironies of Technological Innovation," *American Quarterly* 40, no. 1 (March 1988): 65-82.

[47] See, for instance, John Nerone and Kevin G. Barnhurst, "US Newspaper Types, the Newsroom, and the Division of Labor," *Journalism Studies* 4, no. 4 (2003): 435-499); Frank E. Fee Jr., "'To Exalt the Profession'" Association, Ethics, and Editors in the Early Republic," *American Journalism* 31, no. 3 (September 2014): 3329-357.

Media historian Ronald Zboray argues that it was not so much the labor-saving equipment that changed everything.

> "The modern industrialization of printing began not with the technological innovations of the antebellum years, but with the reorganization of labor in the workplace throughout the eighteenth and early nineteenth centuries, a reorganization which for the most part destroyed traditional work rhythms and relationships. … Work became more specialized as journeymen split into compositors and pressmen, with the latter receiving much lower wages. The ranks of pressmen, who only needed the strength to pull the press bar, overflowed with runaway apprentices, known derisively as 'halfway journeymen.' The relatively unskilled pressmen glutted the market and drove down wages."[48]

By 1830, the artisanal model of newspapering, in which the writer might very well have set the type for his articles, had moved to a more professional system. In part, this was a product of the party press, in which what were called "professional editors," men who were not printers but hired because of their writing and thinking skills, changed the complexion of the news office. Editorial employees occupied the highest echelon of the newspaper, while printers – compositors, pressmen, and others of what Benjamin Franklin would proudly have identified with as the "leather-apron men"[49] – occupied a lower and increasingly fragmented position, even as in the 1820s "demand for printed materials and newspapers lured printers from around the country to New York."[50]

Unions

Unions were not new in 1830, there had been organizations of journeyman printers since shortly after the Revolutionary War. What distinguished these associations from the unions that

[48] Zboray, "Antebellum Reading," 71.

[49] See, for instance, Allan Kulikoff, "Silence Dogood and the Leather-Apron Men," Author(s): Source: *Pennsylvania History: A Journal of Mid-Atlantic Studies* 81, no. 3 (Summer 2014): 364-374.

[50] Sean Wilentz, *Chants Democratic: New York City and the Rise of the American Working Class, 1788-1850* (New York: Oxford University Press, 2004), 30.

would begin to take shape in the 1830s is that the prototypical groups tended to form around a single issue and, once that had been resolved, they dissolved. The new unions were meant to last.

Although editorial employees would remain resistant to unionizing right into the twenty-first century, production workers increasing saw a new identity as blue collar workers. As Wilentz says:

> [B]etween 1829 … and 1850, both a process and a strain of consciousness emerged in numerous ways from the swirl of popular politics, in which people came at various points to interpret social order and the decline of the Republic at least partly in terms of class divisions between capitalist employers and employees. More specifically, workers and radicals elaborated a notion of labor in a form of personal property, in direct opposition to capitalist conceptions of wage labor as a market commodity. For much of the period, this consciousness of class appeared within a broader defense of the "producing classes," an amalgam of "honorable" anticapitalist small masters and wage earners; in moments of particularly acute crisis, however, as in the mid-1830s and in 1850, critiques of wage relations came to the fore, usually (but not exclusively) in trade-union movements.[51]

Wilentz examined the changes that were occurring in New York during the 1820s and 1830s, observing that the apprentice system basic to the old artisanal model was breaking down. Wilentz found apprenticed boys were not being trained to the standards that once adhered and in the process were being used as cheap wage labor. "The printers were … notorious for luring half-trained apprentices and substituting them for journeymen."[52]

Scholar Deborah Brandt, notes another effect of the steam press on the labor force. Since the earliest days, boys apprenticed to print shops worked in "small, decentralized print shops" where, "because printers also were the solicitors and editors of what they published, their

[51] Ibid., 16-17.

[52] Wilentz, *Chants Democratic*, 33.

workshops served as lively incubators for literacy and political discourse."[53] From such incubators arose men able not only to capture and disseminate ideas but to propound them, to be the nuclei of the political and social thought shared in their newspapers.

> By the mid-nineteenth century, however, this learning space was disrupted when the invention of the steam press reorganized the economy of the print industry. Steam presses were so expensive that they required capital outlays beyond the means of many printers. As a result, print jobs were outsourced, the processes of editing and printing were split, and, in tight competition, print apprentices became low-paid mechanics with no more access to the multi-skilled environment of the craft-shop.[54]

Brandt adds:

> While this shift in working conditions may be evidence of the deskilling of workers induced by the Industrial Revolution, it also offers a site for reflecting upon the dynamic sources of literacy and literacy learning. The reading and writing skills of print apprentices in this period were the achievements not simply of teachers and learners nor of the discourse practices of the printer community. Rather, these skills existed fragilely, contingently within an economic moment. The pre-steam press economy enabled some of the most basic aspects of the apprentices' literacy, especially their access to material production and the public meaning or worth of their skills. Paradoxically, even as the steam-powered penny press made print more accessible (by making publishing more profitable), it brought an end to a particular form of literacy sponsorship and a drop in literate potential."[55]

Media historian Ronald Zboray further details the skills traditionally required and now lost as the artisan model and apprentice system broke down:

> In the artisan print shops of the last half of the eighteenth century, "the printer had to master many tasks through six years of apprenticeship and a few more as a journeyman to become the master of his shop. He had to educate himself in order to correct the often semiliterate manuscripts authors handed him. He disciplined his hands and eyes to master the considerable skills needed to set type. The printer required a thorough knowledge of arithmetic to conduct business and to collage page numbers on the signatures. His tasks might include stitching and binding, selling books and stationery, making contacts, picking up and delivering orders, sweeping floors, cleaning presses, and rolling the balls

[53] Deborah Brandt, "Sponsors of Literacy," *College Composition and Communication* 49, no. 2 (May 1998): 165-185, at 165.

[54] Ibid.

[55] Ibid.

> necessary for inking the type. He pulled the lever which brought the type in contact with the paper, a task so arduous that pressmen often displayed a characteristic gain, due to the overdevelopment of the right side of the body.[56]

Implicit in the disruption of the artisanal system was changes in the workplace relationships, chiefly, Zboray argues, "the emergence of the manager. One of the key signs of the transformation of work not only in printing but in any trade occurred when the owner of a shop hired a manager or a 'boss,' to intensify the labor performed on the job."[57]

The situation had deep roots in the colonial period, Zboray says:

> The wage system, the manager, and the intensification of labor heralded by both had been adopted by most major printing shops by the beginning of the nineteenth century. Franklin, for example, became a manager in 1727 for Samuel Keimer, certainly not the most advanced printer of his time. As early as 1786 twenty-six Philadelphia journeyman printers went on strike against widespread wage reductions from $6.00 to $5.83 1/3 a week. So firmly in place was the new organization of labor that by the first quarter of the nineteenth century, journeymen founded more than a dozen 'typographical societies,' concerned not only with wage scales but also with labor conditions, the halfway journeyman problem, and, most prominently, sickness, death, and unemployment benefits – the rudiments of security.[58]

Women at the presses

The role of women in the production departments was another flashpoint. Not infrequently in colonial America, women had taken control of printshops left to them when their husbands died. In some cases they actually worked the press, arduous as pulling the lever time after time each day might be. In other cases, they "simply" set type or handled the business side, more often both.[59]

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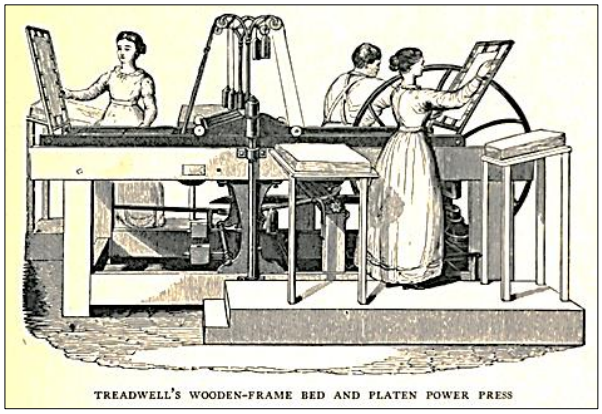
[56] Zboray, "Antebellum Reading," 69-70.

[57] Ibid., 71.

[58] Ibid., 71.

[59] See, for instance, Martin Schultz and Herman R. Lantz, "Occupational Pursuits of Free Women in Early America: An Examination of Eighteenth-Century Newspapers," *Sociological Forum* 3, no. 1 (Winter 1988): 89-109; Mary Biggs, "Neither Printer's Wife nor Widow: American Women in Typesetting, 1630-1950," *Library Quarterly:*

In 1819, Bostonian Daniel Treadwell, while abroad, observed presses in England and France before returning to invent the first power printing press in the United States in 1821.[60] Yet finding Boston book printers averse to buying his press, Treadwell entered the book printing business himself, hiring women to operate his press – "the saving of expense was important."[61] In a contemporaneous illustration for an 1822 Treadwell power press, two of the three people pictured working at it are women.[62]



TREADWELL'S WOODEN-FRAME BED AND PLATEN POWER PRESS

Treadwell's colleague in later years at Harvard College, Morrill Wyman, observed that:

> It must have required much boldness and perseverance on the part of the inventor to embark in a trade to which he was not educated, with doubts of pecuniary success, the opposition of the printers, and something worse among the journey men ; for his warehouse once took fire and his presses were damaged, not without grave suspicion of those who supposed their livelihood in danger from this innovation. It may be also that the employment – not for the first time, probably – of young women and girls in press-work may have added to their fears.[63]

Elsewhere and at various times, the economy of employing women in the printing trade was extolled. An item sourced to the *Philadelphia Bulletin* and carried by a paper outside of Boston showed no hint of questioning gender inequality in the workplace:

Information, Community, Policy 50, no. 1 (Oct. 1980): 431-452; Mary Dane Barlow, *Notes on Women Printers in Colonial America and the United States* (Charlottesville, VA: Hroswitha Club, 1976).

[60] Jeremy Norman, "Daniel Treadwell Invents the First American Power Press, Operated by Women, 1821 – 1826," *Jeremy Norman's History of Information.*com. Accessed at https://www.historyofinformation.com/detail.php?id=4405.

[61] Daniel Treadwell, quoted in Morrill Wyman, "Memoir of Daniel Treadwell," *Memoirs of the American Academy of Arts and Sciences* 11, no. 6, (1888): 325-524, at 345.

[62] "Treadwell's Wooden Frame Bed," in Hoe, *A Short History of the Printing Press*, 10-11.

[63] Wyman, "Memoir of Daniel Treadwell," 345.

> A writer in the Philadelphia Bulletin recommends females to learn the art of printing. And indeed we do not see why they might not make excellent compositors, their delicate tapering fingers being exceedingly well calculated for picking up types – particularly the smaller kinds, such as nonpareil and minion – and certainly no lady could object to handling *pearl* and *diamond*. It would be altogether a very profitable affair both for the master and the journeyman, for the female printer could work for less wages than the male, and at the same time make more money than females generally do at other employments.[64]

The pay disparity, taken for granted in most of the public comments on men's and women's incomes in the early nineteenth century, is represented significantly in an 1849 report of the Boston printers union that also give hints at the overall state of the profession:

> An address of the Printers Union, of Boston, says there are 156 journeyman printers in the city who work 12 hours a day on every day of the week, whose average wages is $9.25 per week; 325 journeymen who work 10 hours on six days, averaging $6 per week; 58 female printers who average $3 per week; and 166 apprentices – nearly all the work in some offices being done by this latter class. … The printers of Boston, the address says, are more miserably paid than in any other city of the Union.[65]

Whether it was truly championing women in printing or simply sniping at a rival, the *Pittsburgh Post* took after the *Gazette* over equal pay in 1853, claiming, "We have forced the Gazette into a position that he dislikes in regard to female printers We asked him if he would pay women men's wages if they performed men's labor That was an unkind question, and the Gazette had but one way to answer it; but he adds to his answer that he will employ men if he can get them instead of women. To be sure he will, at the same price."[66]

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[64] "Female Printers," *New-Bedford (MA) Mercury*, April 17, 1829. The same item ran in a Baltimore paper, although the sourcing was the *Philadelphia Bulletin* "says the Berkshire Mass. American." "Female Printers," *Baltimore Patriot & Mercantile Advertiser*, July 10, 1829. Pearl, Diamond, Minion, and Nonpareil typefaces of specific – and small -- sizes.

[65] "Boston Printers," *Sun*, Baltimore, February 4, 1849.

[66] "Gazette," *Daily Morning Post*, Pittsburgh, PA, *September 24, 1853*.

When they were acknowledged at all, women in the printing craft frequently were objects of fun, if not derision. They were not exalted and never treated as equals. For instance, a mention of women printers came with a skeletal report of a state fair in the *Louisville (KY) Courier* and a deliberate misspelling of "corps": "Editorial corpse well represented from a distance. Chronicle, Despatch and Visitor, continue to employ girls in the day time as compositors. The experiment is completely successful."[67]

For instance, an item that made the rounds of the exchange press in the 1850s, offered overly gendered "Rules for Lady Printers":

> 1. Must be at the office whenever required. 2. No reading of motto papers and love stories during working hours. 3. No "hand" shall be allowed to have her beau in the office to see her set type, at any time. 4. No matter how gifted a "hand" may be at making pies at home, if she makes pi in the office she shall be compelled to assort it. 5. No "hand" shall sit in the sanctum longer than to procure copy, unless requested by the editer. [sic] 6. No attempting to kiss the editor for the sake of "clean copy." He will use his prerogative to kiss or scold all "hands," as occasion may require. 7. Ladies who bring their dinner shall not make a dining saloon of the sanctum, nor use proof paper for a table cloth. 8. Any lady "hand" about to emigrate to the state of Matrimony, shall give at least one month's notice that her place may be supplied by another. 9. No married woman will be allowed to work in this office, provided it be known. 10. No lady shall be allowed to laugh at the motion of another while engaged at the case. 11. No smoking, chewing, or dramdrinking allowed in this office. 12. No gossiping, quarreling, pulling of hair, scratching of faces, or singing of love songs during working hours; and no lady shall have free admission to, or order for the theater, opera, or other places of amusement, unless accompanied by a gentleman."[68]

To this list, the *Mississippi Free Trader*, which indicated its copy came from the *New Orleans True Delta*, appended, "A bachelor friend of ours remarked after reading the above, that

[67] "Pennsylvania State Fair – Female Printers," *Louisville (KY) Courier*, September 29, 1853.

[68] "Female Printers," *American and Commercial Daily Advertiser*, Baltimore, October 20, 1852.

he would like to meet with a lady printer who had obeyed the rules for six months, for such a one would be an excellent mother to a few little (printers) devils."[69]

Mary Biggs, notes that "As the [eighteenth] century wore on, women continued to enter printing shops, but their symbolic significance in the labor movement, as the threat most commonly flung at rebellious journeymen by employing printers, overshadowed their real importance in the trade. As the typographical union gained strength, it naturally moved to neutralize the threat of cheap female labor."[70]

In some quarters women – and half-trained apprentice boys – were seen – and used – as cheap labor. Their presence – actual or threatened – was intended to defuse the threat that unions posed to the publishers. According to Biggs:

> It is clear that the conflict between men and women compositors in the 1800s was a product, on the one hand, of management's opposition to unionization and, on the other, of an economic and social system which declared most paid labor unsuitable for women, proffered employed women the lowest possible wages, and assumed that all women toiled only temporarily before finding their permanent occupation as wives. Union policies, though ultimately exclusionary, were founded not in sexism but in the workingman's need to survive.[71]

The tension occasionally broke out in print. In 1853, the *Daily Evening Star* in Washington, DC, in 1853, reprinted a letter by an anonymous "Printer" in the *Rochester (NY) Union* assailing proposals to hire women in the production departments "because *female labor can, and of course will, be obtained at a lower rate than male labor*."[72]

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[69] "Rules for Lady Printers," *Mississippi Free Trader*, Natchez, November 29, 1853.

[70] Biggs, "Neither Printer's Wife nor Widow," 432.

[71] Ibid.

[72] "Female Compositors," *Daily Evening Star*, Washington, DC, April 21, 1853. Italics in original.

The letter-writer went on, "We live and learn – but I have yet to learn that type-setting is 'peculiarly adapted' to females, especially in extensive daily establishments, where eight and nine hours' labor by gas-light is necessary."[73]

On the other hand, women's rights activist Amelia Bloomer, whose *Lily* was the first newspaper edited by and for women, argued the case, "We now have women printers, women engravers, women daguerreotypists, women telegraph operators, and women priests – and we know not what else. – May their numbers increase."[74]

Telegraph

The introduction of the telegraph in 1845 offered one of the first new technologies to challenge ideas about how government should respond to them. Historian Richard John notes that although "Electric telegraphy was new in the 1840s, and it was by no means obvious to contemporaries how it was going to be commercialized, or even whether it would promote the public good. … [Although] From the outset, newspaper editors, merchants, and public figures from almost every corner of the United States hailed the new technology as the greatest invention of the age."[75]

[73] Ibid.

[74] "Our Sister Bloomer," *Windham County Democrat*, Brattleboro, VT, January 26, 1853.

[75] Richard R. John, "Private Enterprise, Public Good?: Communications Deregulation as a National Political Issue, 1839-1851," in, *Beyond the Founders: New Approaches to the Political History of the Early American Republic*, Jeffrey L. Pasley, Andrew W. Robertson, and David Waldstreicher, eds. (Chapel Hill: University of North Carolina Press, 2004), 349.

But who should own the lines, however, was another matter. "The new technology was so powerful, its critics warned, that were it not properly regulated, it might well prove less a blessing than a curse."[76] Yet Congress resisted.

The liberating possibilities of Morse's invention notwithstanding, according to historian William Huntzicker, "Editors and their critics both greeted the telegraph with ambivalence. Believing that newspapers controlled public opinion, some editors feared that instantaneous telegraphy could put newspapers out of business and give dangerous power directly to the people. If readers could get news instantly from a wire, would they wait for newspapers to be edited, printed and distributed?"[77] For reasons that included cost of transmission, this fear was never realized in the 1840s and '50s (though it is being revisited in the age of home computing and social media). On the other hand, historian Paul Starr points out that the telegraph "represented …an opportunity if telegraph dispatches could be used to stir excitement and sell more papers."[78]

Inventor Samuel F.B. Morse tried on several occasions to persuade Congress to acquire his telegraph operations,[79] but Congress demurred, leaving it to private entrepreneurs to maximize its potential. "By the 1840s," Starr writes, "the political development of American communications had created a distinctive organizational legacy in two institutions, the postal

[76] Ibid., 349.

[77] William E. Huntzicker, *The Popular Press, 1833-1865* (Westport, CT: Greenwood Press, 1999), 96.

[78] Paul Starr, *The Creation of the Media: Political Origins of Modern Communication* (New York: Basic Books, 2004), 170.

[79] As would happen in Great Britain, where the telegraph is a branch of the Post Office. See Starr, *Creation of the Media*.

system and the popular press, and it was from these that the first telegraph enterprises chiefly drew their top leadership."[80]

Moreover, besides drawing on current and former newspapermen to fill top positions in the developing telegraph business, several major newspapermen, including William Swain, owner of the Philadelphia *Public Ledger* and in New York, Horace Greely of the *Tribune* and the *Herald's* James Gordon Bennett, were significant investors in the earliest days.[81]

Unchecked by government and with state legislatures and Congress eager to encourage development, the expansion of the telegraph became an entrepreneurial "wild west" and "2,000 miles of line in 1848" leaped to 23,000 miles in 1852 with similar growth throughout the next decade.[82]

By early 1845, various experiments and uses for the telegraph were being reported around the country. In New York, an item in the *National Intelligencer* was referenced, reporting that a writer "passing down the Bowery," noticed:

> [W]ires at the corner of Broome street, crossing each other overhead, and darting on in the direction of the upper part of the city. These are connected with the Magnetic Telegraph at the new Post Office, and led to the house of Mr. Graham, the postmaster, in Eighth street, who can thus sit in his library and communicate his orders to his clerks, who are three miles off, with almost as much celerity as if they were personally present."[83]

A Washington correspondent for the *New-York Herald* reported on another feature of the telegraph that the writer said the government should act upon:

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[80] Starr, *Creation of the Media*, 169.

[81] Ibid., 170.

[82] Starr, *Creation of the Media*, 171.

[83] "Telegraphic," *Baltimore Saturday Visiter* [sic], January 11, 1845.

> Experiments were made at the capitol to-day [December 29, 1844], by Samuel Colt, through the aid of Morse's Telegraph, by which powder and other combustibles were ignited in this city from Baltimore, by signals given here, the explosion following the signal almost instantaneously; thus showing conclusively, that the principles of Colt's sub-marine battery combine the same celerity and certainty for fifties or hundreds of miles, as they do for a hundred yards.[84]

A correspondent of the *New-York Courier and Enquirer*, reporting on a report Morse submitted to Congress in January 1845, observed that after seven months' operation the forty miles between Washington and Baltimore, "The possibility of making important news known *simultaneously* and *instantaneously*, in *every* principal section of the United States, seems to have been clearly demonstrated and the expediency of doing so is the only point which remains to be considered."[85]

During the seven months, the report said, "intelligence of great importance" had been sent along the wires, and "a deserter from the United States ship Pennsylvania at New York, was also arrested on his arrival at Baltimore, intelligence having been set by the telegraph that he was on his way there." There was even a chess game "played through the telegraph – one company being in the city of Washington and the other at Baltimore, during a storm of unusual severity."[86]

In what was one of the earliest telegraphic uses for news reporting, the *Daily National Intelligencer* in Washington, DC, told readers "We were informed through Professor Morse's Telegraph" about the arrest of a murder suspect who was caught in New York after fleeing the scene in Baltimore.[87]

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[84] "By the Southern Mail," *New-York Herald*, January 1, 1845.

[85] "The Magnetic Telegraph," *Barre (MA) Patriot*, January 17. 1845.

[86] Ibid.

[87] "Arrest of a Murderer," *Daily National Intelligencer*, Washington, DC, January 18, 1845.

Before long, the telegraph was internalized and routinized as a news-transmitting tool, and standing headlines and columns labeled "By Telegraph" became staples of the news columns.

Associated Press

Studies suggest that of the traditionally acknowledged criteria that guide journalists in determining whether something is newsworthy – prominence, timeliness, unusualness, proximity, conflict, impact, and human interest, – the telegraph, because of its perceived instantaneity, significantly raised the importance of timeliness to editors.[88] While there is evidence of that, it is also true that editors had become increasingly mindful of speed and timeliness as the nineteenth century advanced. Well before the telegraph era, mercantile newspapers raced one another to get the news and print it first. "To meet incoming ships and to relay the news first, editors hired fast boats, special trains, horseback messengers, and carrier pigeons," according to historian William Huntziker.[89]

And while the telegraph was not solely or even primarily responsible for the formation of the news organization that exists today, the wires and the Associated Press were instrumental in the each other's importance and growth, in part because the news cooperative helped cut costs.

Often, when people think about the Pony Express, it's the Russell, Majors, & Waddell overland route that operated April 3, 1860, to October 24, 1861, between St. Joseph, MO, and Sacramento, CA, that comes to mind. The concept, however, goes back at least as far as the

[88] See, for instance, Frank E. Fee Jr., "Change on Tap for Nashville: The Telegraph and News Content, 1860," paper presented to the History Division of the Association for Education in Journalism and Mass Communication annual meeting, July 30-Aug. 2, 1997, Chicago, Ill. Available in Class Notes at Weebly site, https://olli-newspapers-in-america.weebly.com.

[89] Huntzicker, *Popular Press,* 95.

Mexican-American War (1846 to 1848) and no doubt can be traced in America to the post riders of the colonial era.

The Mexican War was the first in America's history to feature true war correspondents,[90] but getting news back from the front involved ships, horsemen, and mail coaches; was very slow; and was very expensive. In an attempt to circumvent the mail delays and reduce the cost of obtaining war news, in 1846 representatives of five New York newspapers – the *Journal of Commerce*, the *Courier and Enquirer*, the *Sun*, the *Herald*, and the *Express* – formed the Harbor News Association, which "hired special high-speed news boats to beat reporters from other newspapers to incoming ships." This association in turn led to the New York Associated Press, an idea that was quickly emulated by newspapers from other hubs and by 1846, the various press associations became the Associated Press.[91]

The value of their association was apparent not only to its members in New York but to newspapers outside the loop as well. On August 16, 1848, the *Daily National Tribune* of Washington, DC, told its readers at the top of its Foreign news roundup, As our correspondence cannot reach here until this morning, we copy below the details of the news from IRELAND as transmitted by telegraph to the associated Press of New York."[92]

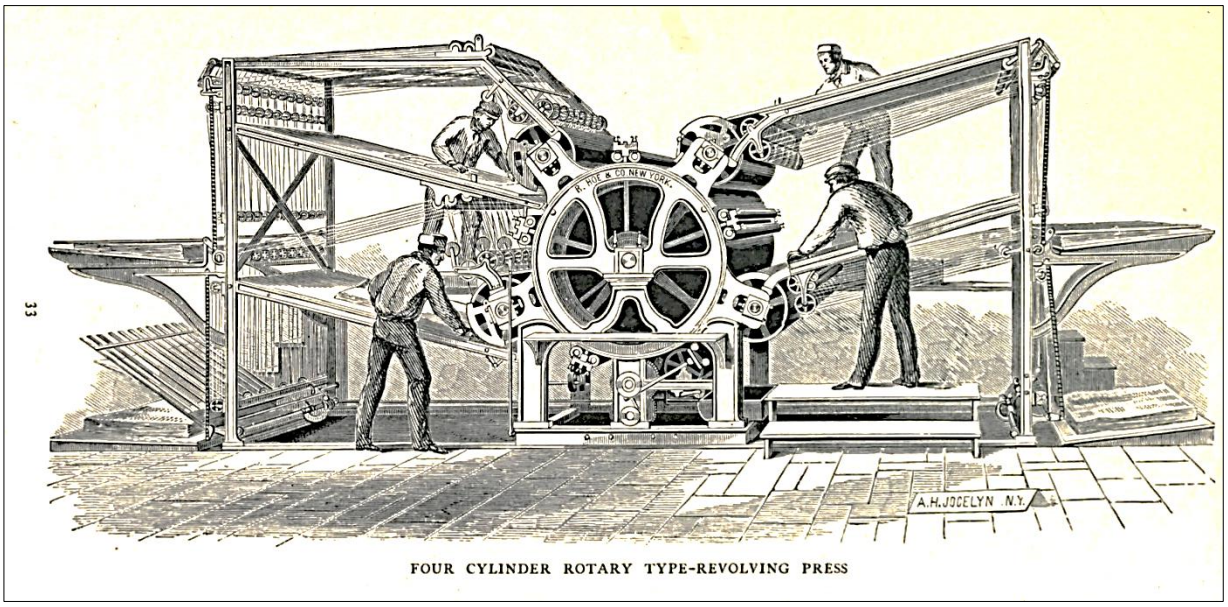
[90] Historians, focusing on the correspondents covering the Crimean War (October 1853-February 1856), often overlook that the Mexican-American War was covered by correspondents even earlier. See, for instance, Clay Mountcastle, "Early Acrimony: The Military and the Press in the Nineteenth Century,: *Army History* 96 (Summer 2015): pp. 6-21; Douglas Porch, "'NO BAD STORIES': The American Media-Military Relationship" *Naval War College Review* 55, no. 1 (Winter 2002): 85-107.

[91] Huntzicker, *Popular Press*, 95.

[92] "Foreign," *Daily National Intelligencer*, Washington, DC, August 16, 1848.

ILLUSTRATIONS:

Illustration 1:

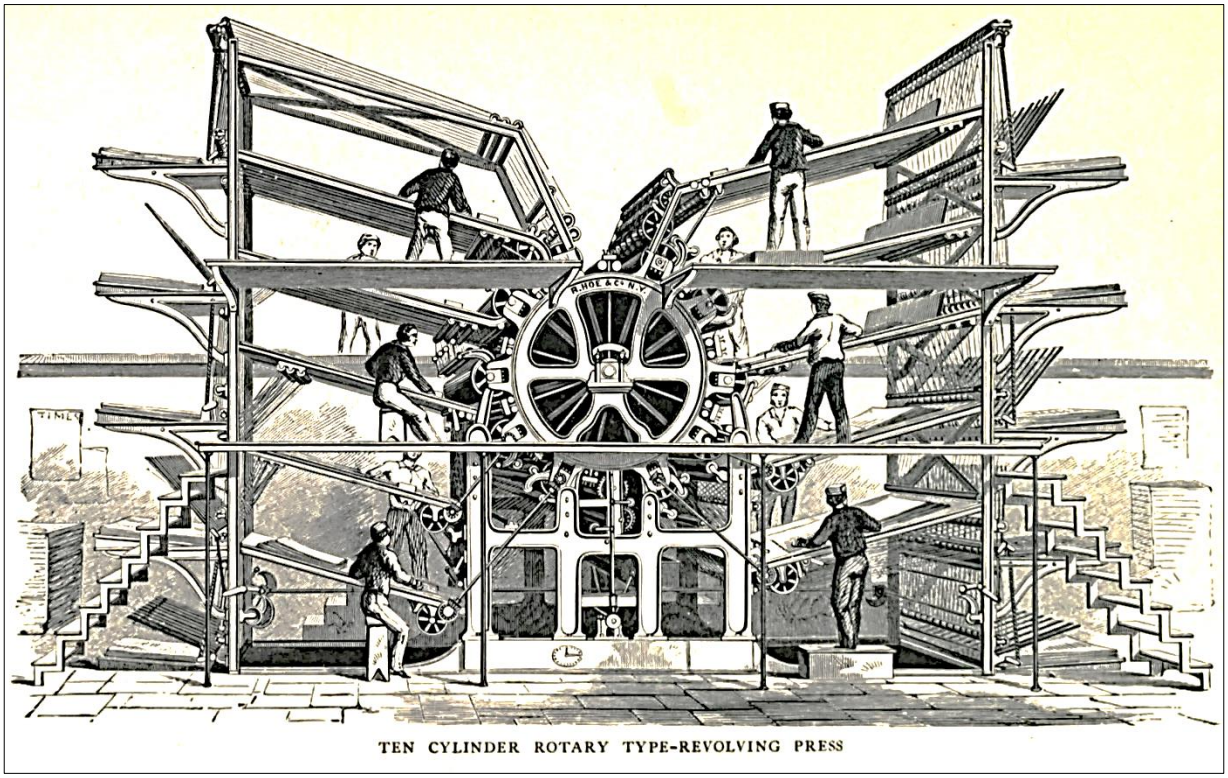


FOUR CYLINDER ROTARY TYPE-REVOLVING PRESS

Hoe Four Cylinder Rotary Type-Revolving Press, first sold to the *Philadelphia Ledger*, 1846.[93]

[93] Hoe, *Short History of the Printing Press*, 33.

Illustration 2:

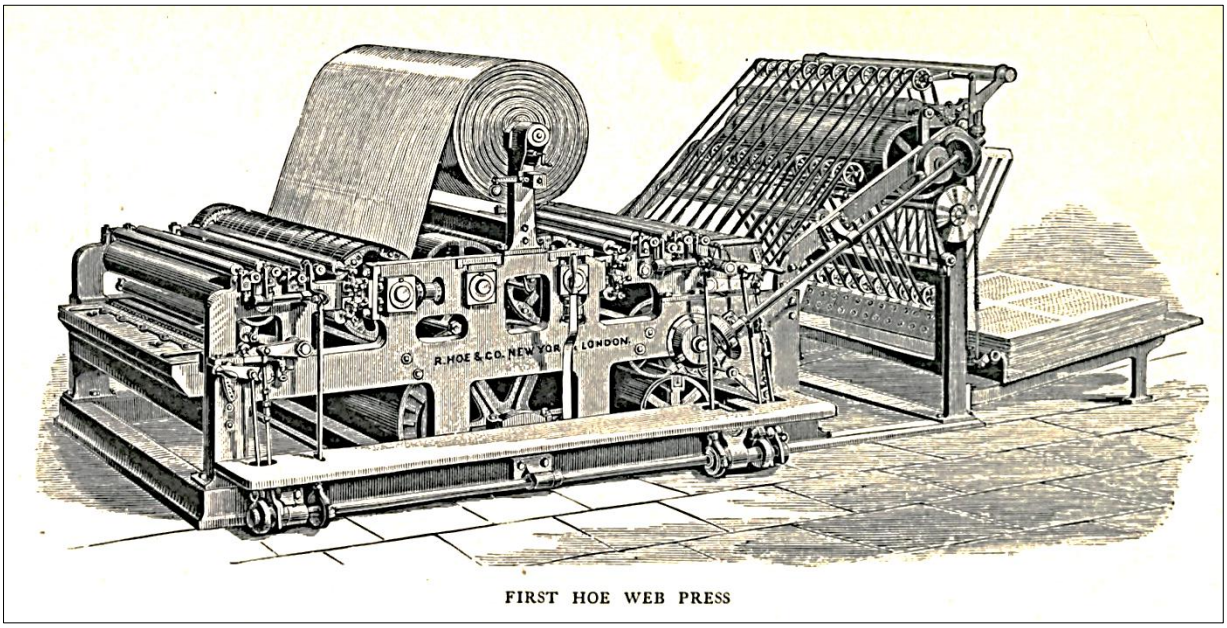


TEN CYLINDER ROTARY TYPE-REVOLVING PRESS

Hoe Ten Cylinder Rotary Type-Revolving Press, an improvement on the "Four Feeder" [Illustration 1], in the mid-1850s this press was sold to newspapers in France, Great Britain, and Ireland as well as in the United States.[94]

[94] Ibid., 37.

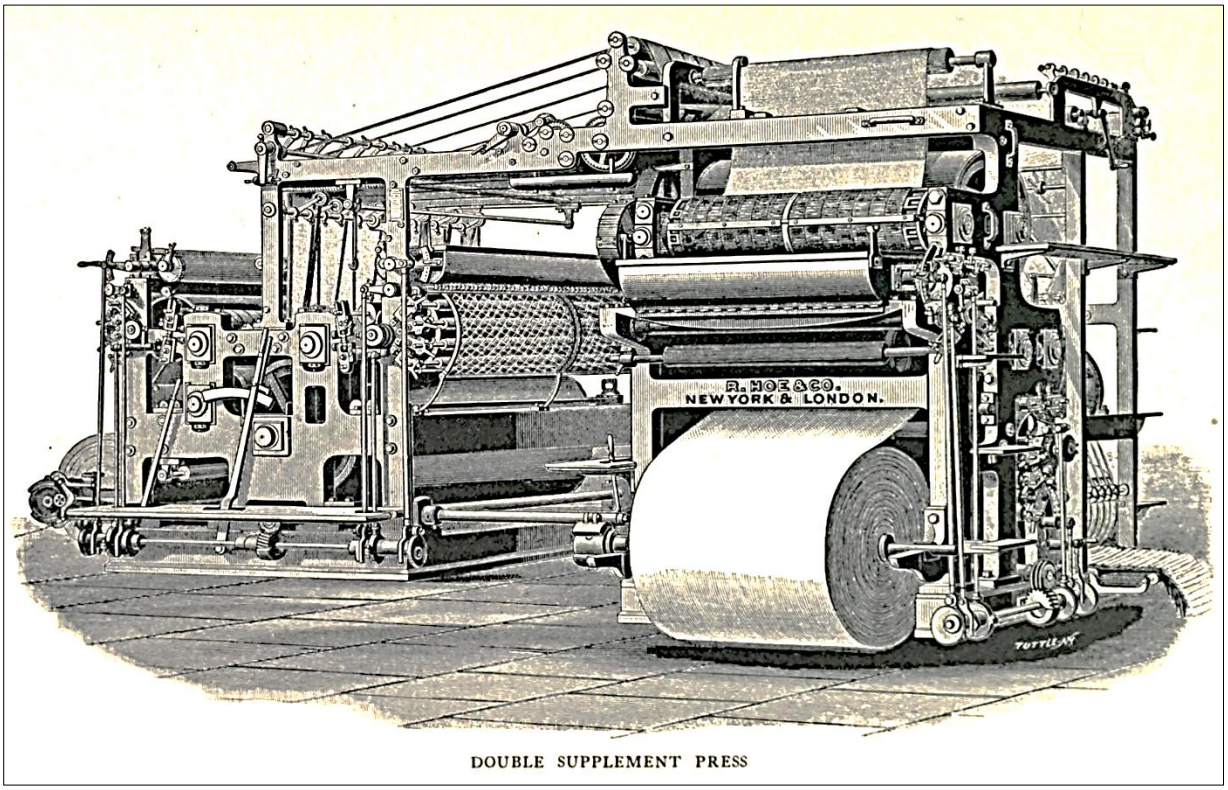
Illustration 3:



FIRST HOE WEB PRESS

First web press.

Illustration 4:



DOUBLE SUPPLEMENT PRESS

Hoe's Double Supplement Press, 1882. In 1887, Englishman Edward Lloyd installed eight of these, each producing two copies at a rate of 24,000 an hour. In 1892, *Lloyd's Weekly* had 20 pages and *Daily Chronicle*, 10 pages — by then, the Hoe machines could insert and gum a single page.[95]

[95] "Rotary Web Press," *Edward Lloyd: Victorian Newspaper Proprietor, Publisher and Entrepreneur*. Accessed at https://edwardlloyd.org/rotary.php.