

Samuel Clemens and the Printed Word

SAM

The first surviving image of him is tiny, compared to most of the copies—retouched and reprinted, digitized and uploaded. Only about two inches wide and three high, arched at the top, this daguerreotype comes down to us still in its original pocket-sized wooden case, enameled and hinged, with a padded lining and a tiny clasp. A handwritten inscription in ink on the lining gives a date: December 1850. But behind the picture is a paper backing with the name “G. H. Jones” written in pencil (a byline, probably) and a different date, “Nov. 29th.” Sam Clemens was born on November 30, 1835, so the odds are good that this was a birthday present.¹ The cap on the boy’s head suggests a charred popover on a bush of hair; in his eyes and posture there is truculence. Elbows flared, he grips at waist level what looks to be a *SAM* belt buckle, flaunting it like a talisman. The image presents him backwards, and this device he holds is a composing stick, an adjustable clamp used for setting and holding movable type since the time of Gutenberg. When the picture was taken, Sam Clemens was an apprentice printer with about two years’ experience in the shop of Joseph C. Ament, on a scant team of men and boys who turned out the *Missouri Courier*, a four-page local weekly newspaper with a pathetically ambitious name. The composing and printing were accomplished in one room, upstairs from a drugstore on Main Street in the village of Hannibal (only thirty years old at that time, with a population of approximately three thousand white citizens and several hundred black slaves).² In that room, the craft was practiced with appa-

ratus and rituals essentially unchanged from what they had been two centuries before.

The equipment in the *Courier* office probably included one or two hand-operated bed-and-platen presses; cubbyholed upper and lower wooden cases, slant mounted, holding the lead alloy fonts and the larger wood-carved headers; a couple of imposing-stones roughly four feet long and two feet wide; cast-iron chases,³ wooden side-sticks, and quoins for holding the set type in position; and a leakproof iron inking table. To print out copies of the weekly edition, Joe Ament's crew applied ink by hand to the form (the typeset page or pages to be produced in one impression), moistened and positioned each sheet by hand, removed each from the press by hand, hung each of them up to dry, and later folded them and stacked them—everything here was done by hand. In a printer's manual from 1853, the Philadelphia typographer Thomas F. Adams describes one key ritual of the printer's craft, the actual production of the sheets on a conventional hand-press. From this headlong two-sentence paragraph, several antique terms need glossing: a *rounce* is a handle for running the press-carriage (holding the form of set type) in and out of the press; a *tympan* is a light-duty frame, covered with cloth, where the paper sheet is laid; a *frisket* is a frame of iron that is lowered onto the sheet to keep it in place and prevent smearing of the ink.

[T]he puller places his body almost straight before the near side of the tympan; but nimbly twists the upper part of his body a little backwards towards the heap, the better to see that he takes but one sheet off, which he loosens from the rest of the heap by drawing the back of the nail of his right thumb quickly over the bottom part of the heap, (but in the reiteration, care should be observed to draw the thumb on the margin, or between the gutters, that the sheet may not smear or set off,) and, receiving the near end of the sheet with his left hand fingers and thumb, catches it by the further edge with his right hand, about four inches from the upper corner of the sheet, and brings it swiftly to the tympan, and having the sheet thus in both his hands, lays the further side and two extreme corners of the sheet down even upon the further side and extreme further corners of the tympan sheet; the sheet being now properly laid on, he supports it in the centre by the fingers of the left hand, while his right hand, being disengaged, is removed to the back of the ear of the frisket, to bring it down upon the tympan, laying, at the same moment, the tympan on the form. He then, with his left hand, grasps the rounce, and with a moderate strength quickly turns it in; after pulling, he

gives a quick and strong pressure upon the rounce, to turn it back, and run the carriage out again: as soon as he has given this pressure, he disengages his left hand from the rounce, and claps the fingers of it towards the bottom of the tympan, to assist the right hand in lifting it up, and also to be ready to catch the bottom of the sheet when the frisket rises, which he conveys quick and gently to the catch; and while it is going up, he slips the thumb of his left hand under the near lower corner of the sheet, which, with the assistance of his two fore-fingers, he raises, and by so doing allows the right hand also to grasp it at the top, in the same manner, which lifts the sheet carefully and expeditiously off the points, and nimbly twisting about his body towards the paper bank, carries the sheet over the heap of white paper to the bank, and lays it down upon a waste sheet or wrapper, put there for that purpose; but while it is coming over the white paper heap, though he has the sheet between both his fore-fingers and thumbs, yet he holds it so loosely, that it may move between them as on two centres, as his body twists about from the side of the tympan towards the side of the paper bank.⁴

The result is one printed side of one sheet of paper. Repeat the entire process always exactly right, about two thousand times (for the back of each sheet must be processed this way as well), and a crew of men and boys could produce one five-hundred-copy four-page daily or weekly newspaper for a small town. In the American heartland at the end of the 1840s, the printing office of a “county paper” was a site of complex hard labor and technological entropy, a preindustrial environment whose components Benjamin Franklin, Peter Zenger, or any first-generation colonial printer would have recognized as kin to gear and procedures in their own establishments so long before.

While Sam was learning his first trade in Hannibal, however, nearly every phase in the production and distribution of printed words and images was undergoing radical reinvention in the American metropolis. About ninety miles south of Joe Ament’s shop, St. Louis newspapers were spinning off daily editions in tens of thousands of copies, using massive type-revolving presses driven by steam engines; one of these papers, the *Missouri Republican*, had been operating such a powered press as early as the spring of 1836.⁵ By May of 1853, when Sam resolved to quit working for essentially nothing at his brother Orion’s hand-pulled, half-starved *Hannibal Daily Journal* and seek a job instead where this potent technology was flourishing, the St. Louis production plants around Leclède’s Landing were also deploying automatic sheet feeders and high-speed cutting and folding machines.

And beginning in December 1847, the newsrooms there could also exploit a telegraph network to Chicago, New Orleans, and the East Coast.⁶

With St. Louis as a prime target, the American railroad system was fiercely on its way. By 1850, major cities of New England and the Middle Atlantic were webbed by a system that at the beginning of 1830 had not existed at all, and whose mileage of operational track had quadrupled in the past ten years. A franchise had been established to drive a line quickly into the West, from Cincinnati through Vincennes, Indiana, and out to the docklands of Illinoistown, now known as East St. Louis, just across the Mississippi River.⁷ A few blocks east of the St. Louis printers' row, the second-busiest port in the United States was processing hundreds of freight-laden steamboats every month, moving nearly every variety of manufactured product—including books, magazines, newspapers, lithographs—on the longest navigable river system in the world. By 1854, the city had acquired its own type foundry, which one municipal history has described as big and modern enough to supply a complete outfit for a newspaper on one day's notice. The local industries in that year also included "six lithographic, printing, and engraving establishments, four steel and copper plate engraving and three wood engraving," and "six book binderies and eight book and job offices."⁸ In 1853, on Locust Street near the harbor, the first stereotype plant west of the Mississippi had opened for business; another began operations soon after, on the now-obiterated Republican Alley, named for the city's most influential journal.⁹

By the time Sam held his breath for his first daguerreotype, the "Great Revolution in Publishing," as it was being called in the popular press, was already old news and a mainstay for economic growth in dozens of larger American cities.¹⁰ Up in Hannibal, however, the arrival of any steamboat—they stopped there about three times per week—was still a town-stopping event.¹¹ There were no telegraph lines within easy reach; no local printer worked with the aid of any power source other than human muscle, or equipment faster or more sophisticated than a Washington double medium handpress. And a railroad line to Hannibal from anywhere else was a subject for civic deliberation and collective hope only.¹²

Even so, though high-volume print technology and modern communications were absent from Marion County, fruits of this revolution were ominously abundant, literally stacking up at the landings and the post office: cheap books by the bundle from New York, Boston, Philadelphia, and

Cincinnati; lavishly illustrated mass-market national monthlies, printed only a few days before in sprawling factories hundreds of miles to the east; and genuine city newspapers, often with a dozen pages or more, eight or ten columns across, flaunting their “telegraph intelligence,” still fresh in the hour of publication. Facing competition like this, a newspaper in an American small town had a life expectancy of only months before it fell prey to its own antiquated production methods—a horse-drawn, dirt-road distribution system, too few subscribers, stale news, scant revenue, exhausting physical effort—and the owner, editor, and publisher (very often the same individual) sold the remaining assets to other dreamers.¹³ The eager-looking boy in this daguerreotype was learning printing as a traditional craft. Each day at his job, however, he bore witness to an upheaval that was giving reproduced words and pictures a dominion that had been unimaginable as recently as the year of his birth.

In January 1851, about a month after the likeness was taken, Sam and his younger brother Henry ended their apprenticeship with Joe Ament and migrated over to Orion’s shop, where the eldest Clemens brother was struggling to merge the ruins of two other local weeklies, the *Western Union* and the *Hannibal Journal*, into one viable business.¹⁴ No one knows exactly where the picture was made, but we can guess that the upside-down composing stick in the boy’s hands and the three metal or hardwood large-font type letters arranged in it were borrowed from either Orion’s inventory or Ament’s. Neither of these shops was more than a three-minute walk from anywhere in the heart of the village or from the house where the Clemens family lived and that in happier times they had owned—but that now, after the sudden untimely death of John Marshall Clemens, Sam’s respected but insolvent father, they had sold off and were leasing back. To ease the financial burden on the family, Sam himself had been boarding with Ament. “G.H. Jones,” the penciled name behind the picture, remains a mystery. Perhaps he worked at Ballard’s Daguerrean Rooms, which was advertising regularly in Ament’s paper at that time and was located on Hill Street at the corner of Bird, above the Great Western General Store, three blocks from the *Courier*. But even the shop isn’t certain: as a new technology, daguerreotypes were a national craze, and in 1850 there were several sources in the small village, including one establishment on a boat, anchored in Bear Creek near the steamboat landing.

Depending on the material, letters of movable type are either cast or



FIG. 1 The “printer’s devil” and the stick of type. Mark Twain Papers, Bancroft Library, University of California, Berkeley.

carved in reverse. Daguerreotypes, which are produced with no negative, are also by nature reversed, for a daguerreotype is essentially a stabilized mirror image. Coated with a silver emulsion, a copper plate is exposed to light for about thirty seconds, after which the likeness caught on the plate is fixed with mercury vapors, covered with a sheet of glass, and bordered with metal tape to prevent oxidation from destroying the picture. To provide clients with the corrected likeness they would probably want, a competent

daguerreotypist could arrange a good mirror in front of the subject and take the picture from the reflection.¹⁵ With this boy's likeness, however, the rectifying step was eliminated, and the reason is the type. Although capital *A*'s and *M*'s in conventional fonts look much the same in reverse as when viewed straight on, there is no way to turn an *S*, with its solid body or shank, so that it matches the letter on the printed page.¹⁶ Therefore, because the composing-stick *SAM* could not be maneuvered to read properly, the letters had to go in backwards, like a word set for type, and the image had to be made without the usual reversing, allowing the typeface to appear in the desired sequence and the right way around—which means that the human face becomes the face in a mirror. From the primordial years of photography in the American outback, a “special effect”: a trivial conspiracy among Sam Clemens, this “Ballard” or whoever operated the light trap, the English language, and the pathologies of two media, one of them stubbornly medieval and the other in its rambunctious infancy. At the beginning of the story, the truth is flipped around, in a sense, for the sake of a good illusion. So what? In the history of Sam Clemens and Mark Twain, is this a paradox with an edge to it? Maybe not—but in the encounter between this rising, ramifying information age and Mark Twain as a writer and American icon, richer and wilder anomalies would follow, and the modest headwaters of that history may rise here.

Mark Twain's involvement with the American publishing revolution, which began in earnest when he was a child, absorbed him professionally and imaginatively as a teenager and continued to obsess him as a reporter, storyteller, traveling entertainer, author of books, entrepreneur, and international celebrity. Sprawling and intense, the story ranks as a great adventure from the American industrial age, a tale of a boy from a technological nowhere, rising to the wave tops in a relentless typhoon of innovation—and later in his life nearly drowning in that storm. Mark Twain's biography has become a national literary treasure in its own right; for students of American cultural history, that narrative can be the most compelling and significant story associated with his name. Nonetheless, when attention turns to his obsessive involvement with the logistics of printing and publishing, what usually unfolds is a cautionary fable about squandered genius and lost time. Only a couple of commentaries, brief and recent, have proposed that Mark Twain's enthusiasm for big, fast machines and the possibilities of automatic production, in the publishing industries or out beyond them, might actually make some of his texts more interesting, more relevant to our own

cultural predicament, rather than drive those texts to ruin as they did his personal finances.¹⁷ Typically, when accounts of Mark Twain's life and work turn to his adult adventures in technology and the publishing business—automated typesetting, the American Publishing Company, his own Charles L. Webster & Company (a.k.a. WebsterCo), Harpers, Kaolatype, steam pulleys, bed sheet clamps, cash registers, and all the rest¹⁸—the mood turns somber: if only he had poured his energy exclusively into writing, putting out of his mind that exquisitely complicated equipment, those squabbles over rights and patents, those grandiose and quick-profit publishing schemes or corner-the-market aspirations, leaving all such bother to partners and underlings. If only a delegation of perspicacious friends had locked him up for a couple of decades in that gazebo writing-lair built for him by his in-laws Susan and Theodore Crane on their breezy hilltop east of Elmira, or in his own writing-and-billiards hideout atop the extravagant Nook Farm house in Hartford. If only Mark Twain had consented to be our American Proust, relentlessly immersed in his art, and hadn't sought also to be the Andrew Carnegie of a media revolution, and sometimes its P. T. Barnum. The bookshelves are well stocked with narratives of Mark Twain's publishing business infatuations and disasters, his self-destructive episodes of expertise and prognostication with regard to the production and marketing of printed images and words. There is no question that these enthusiasms could wreak havoc with his morale and pull him away, for long intervals, from concentration on his own writing.

But Mark Twain's infatuation with the hardware and possibilities of print media deepens and complicates many important imaginative texts that he *did* manage to write. Because Sam Clemens was trained as a printer before he was professionally trained to do anything else, and because the logistics and potentialities of printing and publishing were a focus of his attention throughout his career, causing him to involve himself in nearly every phase of designing, producing, and selling books, newspapers, and national magazines, this passionate attention resonates in the structure of his narratives, the essence of the wit, the voices of the prose—and in themes that have established Mark Twain as a consummately American and “modern” author.

Printer's Devil inquires into that presence. Mark Twain thought deeply about the cultural and psychological impact of the industrializing media that began to overwhelm the United States as he was growing up. His writ-

ing is energized and informed by his response to a cataclysmic expansion and transformation of publishing, a turmoil of innovation. He wrote about the impact upon culture and public life and upon the nature of the American self.

“THE LARGEST AMOUNT OF BRAIN LABOUR
EVER UNDERTAKEN”

From the whole project, only one great specimen survives, a prototype from the middle years of a convoluted catastrophe.¹⁹ Nine feet long and about six feet high at the top of the raceway where the proprietary brass type cascaded into the forms, this version is about 7,550 pounds of steel, with roughly eighteen thousand moving parts,²⁰ most of which (contrary to some disparaging contemporary reports) functioned reliably in a sixty-day test run at the *Chicago Herald* in the autumn of 1894. About twenty years after the Paige Company’s demise, an extensive British survey of recent typographical progress included a long description, contributed by Charles E. Davis (endorsed here as a “distinguished mechanical engineer”), covering the history and capabilities of “the Paige composing, line-justifying, and distributing machine” as a technical achievement without equal in the history of printing. Summarizing the test at the *Herald*:

[T]he Paige compositor, with all delays counted against it, delivered more corrected live matter to the imposing stone, ready for the formes, per operator employed, than any one of the thirty-two Linotype machines which were in operation in the same composing department, although the latter had had several years’ use on newspaper work. This record may fairly claim never to have been equalled by any composing machine on its maiden trial: moreover, the composition which the compositor turned out was, in artistic merit, equal to the finest book work ever set by hand.

The Paige compositor has been pronounced by competent engineers to be the foremost example of cam mechanism ever produced in the United States, if not in the whole world, and to have performed by positive mechanical devices the largest amount of brain labour ever undertaken.²¹

Davis may not have been entirely impartial about all this, having created many of the blueprints for the machine himself and having supervised the

construction of every model.²² But certifiably marvelous or not, this “foremost example of cam mechanism ever produced in the United States, if not in the whole world” (381), was a commercial dead end by 1894, and its frightening complexity was only one of the reasons. While the Paige was devouring most of Sam Clemens’s personal wealth and much of his wife Olivia’s inheritance from her late father, the prosperous coal merchant Jervis Langdon,²³ the Anglo-American printing industries were leaving behind any imperative to mechanize the skilled manual work of conventional typesetting. The Paige’s most dangerous competition had abandoned that process altogether, like wooden-peg house framing or whale-oil lamps.

This one surviving iteration, which sulked for about fifty years in the brick basement of the most outlandish mansion in what was once the enclave for Hartford’s elite, has recently been hauled to a spacious new museum on the property. To move the machine a few dozen yards cost about \$30,000. The high price seems appropriate to the whole history of the Paige—and also to this dream house, which several bad investments in publishing and information technology, culminating with this disaster, ultimately forced the Clemens family to close down and sell. In more than a dozen years of the compositor’s development, Clemens had poured in at least \$150,000—an enormous personal outlay for that time, yet less than a tenth of the total cost for the project.²⁴ When staff at the Mark Twain Memorial polish up their prize, its finely finished surfaces regain their seductive glow. Certainly Clemens was seduced, and he remained in its thrall for most of those fifteen years—but not because he was naïve about this machine or the reality of its quick-evolving competition. One of his weaknesses was that he knew *too much* about such matters, that he was blinded by his own personal experience with printing, his insider’s appreciation for typesetting done right, and the great promise that this device alone was someday going to fulfill. Four centuries of hand-accomplished printing, centuries of drudgery and fallibility, would here be ended. He experimented with drafting encomiums himself, in the voice of a veteran printer:

To begin, then, the operator makes a dart at the keys with both hands; a word instantly appears in the raceway before him; it came from the channels under the glass, but too quickly for anyone to see how it was done. The machine takes the measure of that word, automatically, & then passes it

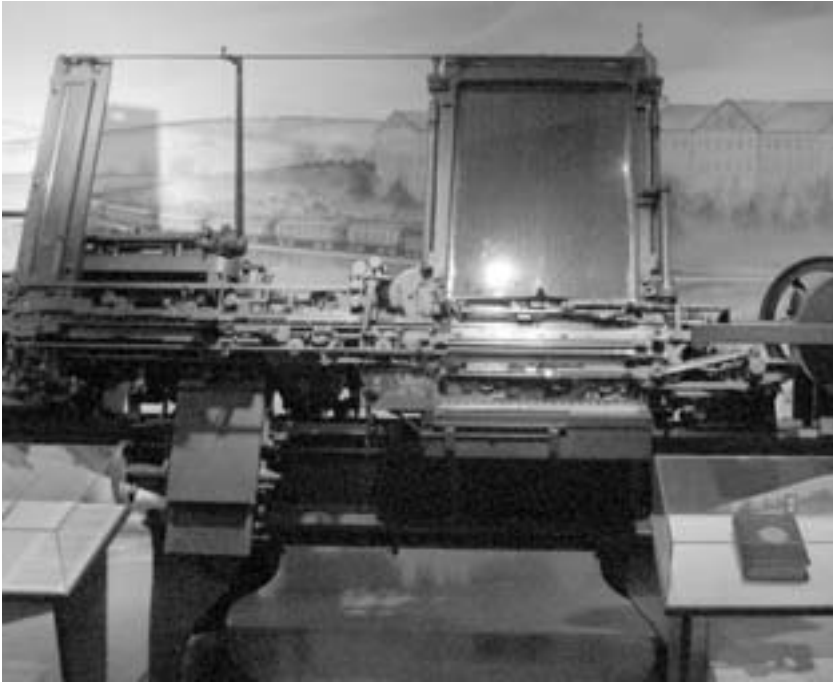


FIG. 2 The surviving prototype of the Paige compositor, in its new setting at the Mark Twain House. Courtesy of the Mark Twain House & Museum, Hartford, Connecticut.

along to the front tooth of the long comb; it measures the next word & the next, and passes them to the comb-teeth; & so on & so on, stringing the words along the raceway about three inches apart until the operator touches the justifying bar; by this time the machine has exactly determined what kind of spaces are required in that line, & as the procession moves past the space-sash, the proper spaces emerge & take their places between the words, the completed line is then gently transferred to the galley by automatic mechanisms, & the thing regarded for four centuries & a half as an impossibility is accomplished. And no spacing by hand could be so regular, no justifying by hand could be so perfect.²⁵

Compared to first-generation commercial models of Ottmar Mergenthaler's Linotypes and Tolbert Lanston's Monotypes in the 1880s and early 1890s, the Paige compositor was a leap beyond in sophistication. Casting type in slugs from a reservoir of molten lead, tin, and antimony, the first

Linotypes on the market could not justify the lines they produced; they were hot and unpleasant to work with; and also unlike the Paige, Mergenthaler's contraptions of wire rods and light-gauge tubing looked flimsy and vulnerable. They were certainly not the kind of brawny gear that had shaped the masculine aesthetic of a nineteenth-century print shop. Moreover, the Paige was designed (and incessantly redesigned) to accomplish more by itself than any other typesetting machine on the market. Not only would it collect, set, and justify its brass type perfectly for transfer to the press; its most remarkable capability—its madness, as it turned out—was its configuration to distribute the “dead matter” as well. In other words, when a form of set type was repositioned in the compositor after use on a press, the Paige would supposedly “read” and sort all of the component material—type letters, punctuation, em spacers, everything—back into correct position for immediate use on another job. No other typesetting machine in development anywhere could do such work,²⁶ which had vexed print shop apprentices, “printer's devils” like the young Sam in the daguerreotype, since the dawn of the industry and which had consumed so much of his professional time in Hannibal, Keokuk, Quincy, St. Louis, New York, Philadelphia, and other towns where as a “wandering comp” he had supported himself in the trade. Like the casting of slugs on demand, the Linotype's handling of “dead matter” was an outlandish shortcut—the used slugs were merely discarded into a melting-kettle for recasting. The Linotype was *not* intended to replicate the functions of a human typesetter—Mergenthaler's machine altered the typesetting process in its fundamentals rather than attempting to copy every traditional move. Right from the start, the Paige was meant to be the complete mechanical tradesman that Mark Twain dreamed of and that those British print historians effusively remembered. It was to be the ultimate employee, obedient, reliable, tireless, deathless; no days off, no pay, no membership in fractious unions. To Sam Clemens around 1890, as a veteran author and businessman fed up with bureaucracy, professional incompetence, wildcat strikes, and other money-gobbling expenses in getting his own books through the publishing process and out to the public, a machine like this could signify much. It was wealth and power, perpetual publication, even a kind of transcendence from the frailty and forgetfulness endemic to the culture and the flesh. From another note, apparently to himself, trying out some publicity rhetoric around 1889:

We are now ready to prove by practical test, on any day, or every day, that either of our apprentices can earn as much in a day or a week at 4 cents per 1000 ems, solid matter, corrected, as the average book-compositor can earn at 40. Proof to be corrected for nice spacing, justification, & typographical errors.

Also, that either of our apprentices can turn out as much corrected book-matter per hour or day or week, as can one man on a MacMillan, Burr, or Thorne machine in four hours or four days or four weeks.²⁷

Power this robot with one of Tesla's new electric motors—James Paige also experimented, for a while, with a competing device, running on direct current rather than alternating, and Clemens bought into that ill-fated project as well²⁸—and some dimension of Mark Twain himself might possibly continue forever—a printer liberated from toil, an author redeemed from the blundering and recalcitrance of human hirelings, an artist indemnified against oblivion and the world's caprices by an engineered embodiment of his own dreams, revolutionizing an industry on which, only in his lifetime, the cultures of the West had come to depend. In other holograph pages from around 1885 there are outbursts of anxious self-reassurance about a happy ending, just out of sight, a release from even the fallibility and mortality of other machines:

It is safe even in the awkwardest hands; it is hardly possible to get it out of order.

All its parts are made of steel; it is good for an indefinite number of years without repairs.

Anybody who can read, can *set* type with it.

And it does its own distributing, automatically, & without anybody's interference or assistance. . . .

Two persons are required; a man or a girl to *set* type by operating the keys; and a girl to justify. . . .

The machine applies a test, automatically, to every type that enters it from the distributor—with this result:

It throws out all broken type;

Also all weak type;

Also all turned letters;

Also all type turned end-for-end;

Also all "wrong font" type.

A type *cannot break* in the machine.

It does not *wear* the type, or injure it in any way.²⁹

As early as 1885, however, the competition was treacherous. By the end of the next year, Linotypes on the market were accomplishing the basics of typesetting well enough, and improved models from the Baltimore plant—the Blower Linotype (1889), which used forced air to move the cast matrices into position, and the Simplex (1890), exploiting gravity for these manipulations—also found buyers. Some of Mergenthaler's first production models were deployed at Whitelaw Reid's *New York Tribune* in 1886, when the Paige was still only blueprints;³⁰ and the wealthy and ruthless Reid, whom Clemens despised, became a major investor in the Paige's most powerful competition, eventually driving Mergenthaler himself out of the company he had created.³¹

Clemens was keeping an eye on these developments, just as he had paid attention to nearly every important innovation in printing and publishing since his days at the *Hannibal Journal*. But like many other people who knew the industry well,³² he fixed his gaze on the wrong competition, on a handful of systems configured to work with movable type of the traditional variety. He refused to recognize the significance of technology, which broke away as radically as the Linotype.³³ And looking in the wrong direction, he found plenty to worry about. In the mid-1880s, after fifty years of British, French, and American experiment with automated typesetting, there were contrivances on the market that also worked with the kind of type that Sam had known since his youth. None of these machines was anywhere near as sophisticated or complete as the Paige was going to be, but some of them did function essentially as advertised; and as affordable options for American printers they too were gnawing into the potential market. A Rogers Typograph, for example, operated only at about half the speed of a Blower Linotype, but a Rogers also cost about \$500 less—in those years not a trivial price advantage—and it performed reliably enough to win a national competition sponsored by the American Newspaper Association in 1891.³⁴ A couple of years later, Wilbur Scudder introduced the Monoline, a line-casting machine that was also slow, compared to both the hypothetical and the actual velocity of the Paige, but also cheaper and attractive to smaller publishers: \$1,000 to buy, \$250 per year to rent,³⁵ compared to the \$6,000 or even \$12,000 that the Paige would eventually need to sell for (according to Sam's jittery private calculations)³⁶ if the company was to turn a profit or merely survive.

Most of the competing equipment weighed hundreds of pounds less than the Paige; mechanically simpler, it could be shipped and maintained at remote locations with less trouble and expense—and worst of all, by the beginning of the 1890s it was in production. By the close of 1892, when after seven years of development the Paige was still not ready for a serious commercial trial, even the *Helena Daily Journal* (Montana), the *Idaho Statesman* (Boise), the *Astoria* on the Oregon coast, and South Dakota's *Pioneer Times* had Linotypes or other automated typesetting machinery in their workrooms.³⁷ Moreover, because Linotypes and Monotypes cast matrices as needed, they effectively ended a dependency upon type foundries to supply replacement inventories of fonts, a dependency that had troubled printers since the advent of metal type in the Renaissance.³⁸ From that perspective, the Paige was again a long safari in a wrong direction, requiring a permanent chattel relationship between the machine's operators and whatever foundry could produce the special brass type with the intricate scoring required for the distribution process. The financial panic of 1893 was a concluding stroke of dismal luck.

With these other contraptions, however, there was no intimation of personal immortality. They assisted only; they did not presume to construct in steel a human being. Only the Paige could signify the kind of redemption Mark Twain wanted, a postponed bonanza that would turn the impatient, aging writer into a media tycoon, a peer at last with plutocrats of the steel industry, oil, and publishing, men whose hospitality and friendship Clemens had come to relish. If the Paige succeeded as he had dreamed it would, it would make Mark Twain a commanding figure in the greatest information technology upheaval since the advent of movable type and handpresses in Mainz in the fifteenth century. And when the final failure of the Paige, along with the ignominious end of the Kaolatype illustration process and red-ink publishing projects of his Charles L. Webster & Company, led to bankruptcy, he was sixty years old.

The financial fall of Mark Twain was a mess of misfires and disasters, including a "Memory Builder" game for the daily newspapers, the direct-current electric motor, a lavishly illustrated subscription book that would supposedly sell for a thousand dollars a copy,³⁹ and the *Library of American Literature*, more comprehensive (and more expensive) than any anthology before it in the history of American publishing. The Paige was only Mark Twain's Vicksburg siege in a fiscal terrain so baffling that charting it in detail would require a Corps of Engineers. The root of the defeat, however, was

the way that technological and business possibilities related to printing and publishing ramified in his imagination.

The Kaolatype Company, which Clemens founded, and into which he eventually poured more than \$50,000 of his own money, centered on a new process for printing illustrations. The patents had been controlled by Dan Slote, former companion on the 1867 *Quaker City* trip that led to *The Innocents Abroad*. Using a matrix of fine clay as a step in transferring images to printable plates—as a shortcut and a cost savings—Kaolatype was only one new and dubious trick in a range of fresh strategies to replace conventional wood and steel engraving in the late 1870s.⁴⁰ Enthralled by what Slote had shown him, Clemens purchased a four-fifths share of the patented process in February 1880, keeping Slote as treasurer of the company. As Sam described its future in a euphoric letter to Orion, Kaolatype (with Clemens's money and personal influence backing it) would “utterly annihilate & sweep out of existence one of the minor industries of civilization, & take its place—an industry which has existed for 300 years—& doubtless many attempts have been made to knock the bottom out of its costliness before. Perchance I am mistaken in this calculation, but I am not able to see how I can be.”⁴¹ By autumn of that year, Clemens was imagining himself smarter than all the competition:

I wrote to you last March that I believed I had invented an idea that would increase the value of Kaolatype a hundred fold. It was to apply it to the *moulding* of bookbinders' brass stamps, in place of *engraving* them. Ever since then I have been trying to find somebody who could invent a flux that would enable a body to mould hard brass with sharp-cut lines & perfect surfaces.

But every brass-expert laughed at the idea & said the thing was absolutely impossible. But at last I struck a young German who believed he could do it. I have had him under wages for 3 months, now, night & day, & at last he has worked the miracle. . . . His flux, & his method of using it, are marvelously original & ingenious, & are patentable by themselves. He & Slote came up yesterday, bringing six specimens of moulded brass stamps, & I contracted to pay him \$5,000 when he is able to put his patents into my hands and assign me a one-third ownership in them for America and Europe, & pay him \$150 a month to go on & perfect his methods, & also the attendant expenses. I never saw people so wild over anything.⁴²

Early in his health-wrecking business relationship with his obsessive uncle, Charles Webster was drafted into overseeing this project when Clemens and

Slote quarreled over money and management, and through much of 1881 Clemens's letters to Webster clang with prognostications about brass. Eventually Sam succeeded in pressuring James Osgood into trying the process for the embossed binding of *The Prince and the Pauper*—but its viability for the original purpose, reproducing illustrations quickly and inexpensively for high-volume printing on a powered press, remained a matter of uncertainty. By the spring of 1881, Clemens's suspicions had been aroused as he received conflicting advice from outside experts, scrutinized details of the technology, and wondered what it could really do.⁴³ Artists hired by Osgood to illustrate in *Life on the Mississippi* rebelled against its use; the Kaolatype production shop burned down under suspicious circumstances shortly before Clemens was to inspect it firsthand; and Dan Slote, who died in 1882, went to his grave maligned by Clemens as a thief. And while he fulminated about a succession of real and imagined infringements on the patent, the technological upheaval in book and magazine illustration refused to let up. Whether or not it actually worked as advertised, Kaolatype vanished in a sea of viable alternatives.

One more Gilded Age dream that came to nothing—and Sam's high hopes and volatility in pursuing them may suggest a deficit of good sense. But in the turbulent world of American publishing, other heretical ideas had already made Mark Twain into a genuine international star. Sam Clemens did not invent subscription bookselling, and as a young writer in Nevada and California he had not actively sought a pact with it. This rambunctious new industry found *him*, and in subsequent years it was crucial in keeping Mark Twain connected to a huge audience and making money for him at levels never reached before by American writers. As one of seven subscription-trade houses in Hartford (in 1869 there were five more in Chicago, four in Philadelphia, three in Cincinnati, and at least nine more scattered in other major cities),⁴⁴ the American Publishing Company was popular entertainment and fast profit, with no serious aspirations to become a dignified imprint. Elisha Bliss and his son Frank favored hefty, gilt-embossed volumes, stuffed with pictures and written in styles appropriate to the tastes and reading skills of ordinary villagers and farmers. Right after the Civil War, thanks to a new railroad network hurried into the hinterlands to link up the Union states and territories, subscription publishers could contract out a massive first printing, with duplicate electroplates, to firms at scattered locations, bind the book at one plant or several, and do a synchronized, stunning national release through a system of

affiliates. When *Roughing It* was released in the United States in 1872, for example, it was shipped out from regional warehouses in Chicago, Toledo, Cincinnati, Philadelphia, Boston, and San Francisco, as well as Hartford, where most of the production was done.⁴⁵ The APC and the other major subscription houses could saturate the continental United States with editions and print runs that would have astounded a Boston Brahmin before the Civil War—fifty thousand, seventy thousand copies or more, gaudily adorned, jammed with pictures, and vended nationwide in a matter of months.⁴⁶

After the success of *The Innocents Abroad*, which had sold more than eighty thousand copies through Elisha Bliss's door-to-door sales force in a year and a half, Mark Twain wrote most of his books until about 1895 with this format and market in mind, sometimes insisting that his publishers secure advance sales in the tens of thousands before he completed the manuscript.⁴⁷ When his work also proved popular in England and other far-off places, and when pirate editions elsewhere cut into his profits, he made himself a storm center of international copyright disputes and negotiations, mastering intricate maneuvers for protecting his rights and royalties in the Commonwealth.⁴⁸ As a world-famous writer he was willing at times to market a different identity abroad than at home, to bowdlerize his books for overseas sensibilities, or to downplay, in advertising campaigns, the satiric heat of his own volumes even in the United States.⁴⁹ By the mid-1890s, when some of the illustration technologies that ended Kaolatype simplified the printing of photographs in newspapers and magazines,⁵⁰ Mark Twain began posturing for the cameras as frequently and effectively as any other American author of his day.

Mark Twain adored the toys and the potent inventions of this new age in communications. He bragged about being the first American author to have a manuscript typed up before he revised it and the first citizen in Hartford to have a telephone in a private residence. But while he was infatuated with this revolution, he was also wary of its consequences for American cultural life and for personal identity. He configured his artistic aspirations and writing strategies to exploit new possibilities and predicaments of an age of print, inflecting some of his narratives to ponder the impact of publishing on a massive scale and the disruptive presence of printed texts from afar in a naïve cultural context. Though he could be catastrophically wrong in guessing the technological and economic future of this print rev-

olution, his errors were rooted in his own extraordinary experience of its past and present, and one book can only begin to explore the influence upon his literary work. To do so, a tight focus must be maintained to avoid floating away into enigma variations on “Mark Twain and Modernity.” I want to stay with the following objectives.

The first is to review briefly how the life of Sam Clemens, and the career and public identity of Mark Twain, took shape under the pressure of this revolution. The technological skills that Clemens learned in his youth, the radical innovations that he encountered firsthand and that as an author and celebrity he exploited with enthusiasm and skill, bringing down financial disaster and personal anguish when he tried to become a major force in the industry—these are landmarks in the life and a recurring presence in the literary texts. What happens if we think about “Mark Twain” as a cultural phenomenon in which the latest technologies of publishing and the art of the writer are conjoined? As American literature and culture have achieved respectability as academic subjects, the incentive has been strong to imagine our major authors as somehow escaping contamination by the publishing systems of their own moment unless the artist consciously chose to make the world of smokestacks, presses, and business deals a significant subject. In popularized stories of our own cultural history, the impression is conveyed that the corporate and technological embroilment, or outright seduction, of good American authors is a disaster of only recent vintage. From our survey courses and from the general histories and the introductions in big-selling literary anthologies, many thousands of intelligent Americans come away every year assuming that a manuscript accumulating on the ting table of Fitzgerald, Cather, Hemingway, Ellison, or anyone else from about 1865 to the advent of the desktop computer was essentially the same kind of project as a sheaf of pages quilled out for local handpress printers by Rawson, Equiano, Irving, or Cooper. The innovations that reconstructed American publishing after 1840, changes that only increased in scope and fury through the end of the nineteenth century, altered nearly everything that a “book” was and could be—not only its physical construction, demographic reach, and economic value but also its potential as a cultural artifact and even its epistemology. Every decade of Clemens’s life from 1850 through 1900 brought radical disruptions in that reality, and in every one of those decades he re-created himself as an author to respond to that new world.

The second objective is to observe how these technological transformations manifest themselves in Mark Twain's texts—not only in their embellishment but also in how they are written and structured as prose—and how this print revolution is engaged as a *subject* in these texts. Enthusiastic about innovations cascading into the industry, Mark Twain was also sensitive to their impact upon culture, upon personal and collective conduct, the contingencies of seeing and telling, the aesthetic tastes and political sentiments of a vast public, the reach and authenticity of fame, and the thematic stability and cultural longevity of printed discourse and literary art. The compounding strangeness of reporting and reading in such a context turns up early in his work—even before there was a Mark Twain. And when he achieved international celebrity, he wrote about that too, the intoxication of launching printed discourses and images across thousands of miles at unknowable audiences, the intensifying rivalries between image and word and also between mediated and the direct experience. As a boy in Hannibal and as a reporter in the West, Clemens played exuberantly with the paradoxical authority of the printed page; as an aging eminence in American culture, he understood the new world of print as a darker dilemma, connected to mysteries of knowing and being.

Third, there is the abiding, metamorphic presence of the Mark Twain legacy, and its special importance now, in the midst of another media revolution, an exponential intensification and complication of the crisis that broke out in Mark Twain's childhood. When Clemens died in 1910, "Mark Twain" had already become a global entity, uncannily versatile, rising from the printed page to slip away on projected light and electromagnetic frequencies whose exploitation had begun only in the final years of his life. No other "great author" from the American nineteenth century enjoys such all-weather vogue as a mass culture icon in the twenty-first—in part, perhaps, because our own century continues to construct "author" and "celebrity" in configurations that Sam Clemens played a role in pioneering. He poured his energies into establishing the rules of games we still play. He invented a new kind of immortality, a protean omnipresence suited to a new age with little faith in the divine, yet much veneration for supposedly human media contrivances. As we search for not-so-distant mirrors of our own cultural predicament, for precedents or guidance in re-creating "literature" and the American author as subjects that are somehow still consequential to our cultural life, the evolving phenomenon of Mark Twain is an excellent place to begin.

HANNIBAL, ST. LOUIS, AND NEW YORK, 1849–1853

The patronage of a county newspaper is too frequently the most pitiful, beggarly thing in the world.

Fulton Telegraph, February 2, 1849

WILL PEOPLE WHO OWE US

PLEASE CALL AND PAY UP?

WE NEED THE MONEY AND HAVE NO TIME TO COLLECT IT.

Hannibal Daily Journal, August 24, 1853

Not a single literary work of genuine originality published in book form before 1850 had any commercial value to speak of until much later, and most of our classics were financial failures—Poe's and Hawthorne's tales, Emerson's essays and poems, Melville's *Mardi*, Thoreau's *Week*.

WILLIAM CHARVAT,
Literary Publishing in America

Sam Clemens had his first collisions with this new information age in Joe Ament's shop, setting type and printing the sheets according to the old ways, while depending on stories that by the end of 1847 were reaching St. Louis on telegraph lines and churning up to Hannibal by steamboat days later.⁵¹ When Sam and his brother Henry left the *Missouri Courier* in 1851 to help Orion (ten years older, and freshly returned from years of work as a printer in the newspaper-publishing business of St. Louis) in turning out a four-pager variously called the *Western Union*,⁵² the *Hannibal Journal and Western Union*, the *Hannibal Weekly Journal*, and the *Hannibal Daily Journal*, the three Clemens brothers probably had nothing more modern to work with than two serviceable handpresses and no direct or reliable access to the electronically transmitted "intelligence" that filled the St. Louis papers, feeding and intensifying a public appetite for news speeding in from afar. As late as May 1853, as Sam was getting ready to flee his brother's enterprise and head for St. Louis, Orion's paper was still publishing pleas for a basic telegraph hookup to Hannibal.⁵³

As for the actual presses on which Sam mastered the craft, published his own first experiments as a writer, and experienced (literally hands on) the paradoxical transient permanence of printed words, we can close in tighter. About two years before Orion bought the *Journal* and merged its equipment and subscription base into his struggling *Western Union*, Robert Buchanan, one of the *Journal's* previous owners (the masthead's list of pub-

lishers and partners shifted frequently in the late 1840s), was advertising his shop's availability for job-printing work, listing "two excellent presses" and embellishing the ad with a small off-the-shelf illustration, called by printers a "dingbat," showing what might be a version of a Washington hand-press, which by that time was established as a machine of choice for small American printing operations.⁵⁴ A better clue turns up in the *Journal* a year before. In February 1848, citing health problems and seeking buyers for his paper and shop, Buchanan published a list of the assets:

This Establishment has been in successful operation for the last six years and upwards, and enjoys, at this time, the most profitable run of Job Work and Advertising of any other paper in the State, out of St. Louis, with a flattering promise of a large increase of subscription, job work, and Advertising.

The materials of the office consist of a first rate new Double Medium "Washington" Press; an elegant second hand "Imperial" Press; (both Iron;) and Plain, Fancy, and Ornamental Type, from Nonpareil up to the largest size Wooden Type, suitable for all descriptions of printing, from a *visiting card* to the *largest sized poster*, with all other fixtures required about a city Printing Office.

All the Ornamental, and most of the large Job Type, is entirely new, having been recently purchased at the "Cincinnati Type Foundry." A Practical Printer, wishing to go into business, could not do better than to embrace this opportunity. Application should be made early, post-paid, to J. S. BUCHANAN.

Hannibal February 3, 1848

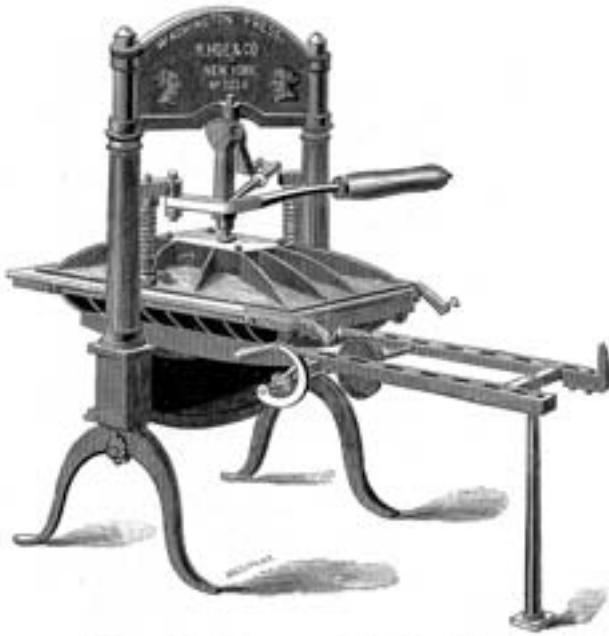
Shortly afterwards, instead of selling the paper and the inventory outright, Buchanan transferred his share of the business to his son and a partner named Joseph G. Easton, and the *Journal's* "Prospectus," published regularly afterwards in the summer of 1848, boasts of the freshness of its gear and the improving speed with which news from afar was now coming in—by steamboat from St. Louis, where the papers were getting it by wire:

Not more than a year since, the office was thoroughly refurnished with a first rate new Press, and full supply of new type, and since that time, the "Journal" has issued upon a neatly printed double medium sheet; and we are not afraid to say, will compare, under all the circumstances, with any paper in the State. . . .

Whatever transpires in St. Louis on one day, we receive the next by 3 o'clock, P.M.—from all the prominent cities of the East, on the wings of lightning and

steam, we receive the most important news in three days—it has even come to our hands in thirty hours from Philadelphia. We know the transactions of New Orleans in seven days from the time they transpire; and that time will soon be reduced by Telegraph, more than half, between these points.⁵⁵

With regard to commerce and the circulation of news in the later 1840s, the “wings of steam” were figuring in Hannibal’s commercial and cultural life, but “wings of lightning” were a prerogative of larger places. About these presses: “double medium” signifies the maximum size of the sheet that this configuration⁵⁶ of the Washington press could accommodate. By the middle of the nineteenth century, paper dimensions had been standardized by large-scale manufacturers, and the smallest sheet suitable for conventional printing press use, “medium,” was nineteen by twenty-four inches. “medium-and-half” was twenty-four by thirty; “double medium,” a preferred size for a folded four-page newspaper, measured twenty-four by thirty-eight.⁵⁷ With a Washington double-medium handpress, therefore, a printer could produce one impression of two newspaper pages with a single pull.⁵⁸ A print run of four hundred four-page newspapers would require eight hundred impressions, one for each side of each sheet—with an interval for the first-side impressions to dry. If an experienced crew working at full speed in optimal conditions could be expected to produce about 160 to 200 impressions in one hour,⁵⁹ then a complete run, allowing time for changing forms and drying and folding the sheets, would require at least half a working day. A heavier London-made machine standing on ornate cast-iron legs with animal-paw feet, the Imperial handpress had a platen that was operated with a leaf spring, making it exceptionally powerful for impressions.⁶⁰ But the Imperial was configured to take a much smaller sheet: on extant models in the United States and Australia, the chase is only about fifteen inches by twenty, making it unsuitable for turning out a newspaper with the sheet dimensions of either the *Western Union* or the *Journal*.⁶¹ A standard outfit, then, for a small-town printer. For comparison: by 1848, with multicylinder, type-revolving presses, also manufactured by the Hoe Company or one of its several competitors, a newspaper in a large American city could count on producing six thousand to ten thousand double-sided impressions in a single hour. If Orion Clemens was so cash-strapped in his Hannibal printing days that he could never pay his brothers for their work, it seems doubtful that he could have financed major improvements on the equipment he acquired with the *Journal*.



Patent Washington Printing Press.

THE celebrity which our Patent Washington and Smith Hand Presses have obtained during the last forty years, renders any remarks upon their superiority unnecessary. They are elegant in appearance, simple, quick and powerful in operation, and combine every facility for the production of superior printing. Each press is tried at the manufactory, and warranted for one year.

Sizes and Prices.

| | Platen. | Bed. | Weight loaded. | Price. |
|-----------------|------------------|----------------|----------------|-----------|
| Footscap..... | 14½ × 19½ inches | 18 × 24 inches | 710 lbs. | \$250.00. |
| Medium..... | 19 × 25 " | 22½ × 29½ " | 1,310 " | 300.00. |
| Super Royal.... | 22½ × 28 " | 26 × 32½ " | 1,475 " | 330.00. |
| No. 1..... | 21 × 30 " | 24½ × 34½ " | 1,510 " | 345.00. |
| " 2..... | 22 × 32½ " | 25½ × 37 " | 1,540 " | 360.00. |
| " 3..... | 23 × 35 " | 26½ × 39½ " | 1,870 " | 375.00. |
| " 4..... | 24 × 37 " | 27½ × 41½ " | 1,980 " | 390.00. |
| " 5..... | 25 × 39 " | 28½ × 43½ " | 2,150 " | 415.00. |
| " 6..... | 26 × 41½ " | 29½ × 46 " | 2,270 " | 435.00. |
| Mammoth..... | 34½ × 43½ " | 38½ × 48 " | " " | 575.00. |

Above price includes two pairs of Points, 1 Screw Wrench, 1 Brayer, 1 Slice and 1 extra Frisket.

Boxing and Carting or Carting and Putting-up, \$7.50. If the frame is made to be taken to pieces, \$15 extra.

TERMS OF PAYMENT—Cash at manufactory in New-York.

FIG. 3 Various configurations of the Washington press, from an 1867 catalog of the Hoe Company. Rare Books and Special Collections Library, University of Illinois at Urbana-Champaign.

Until inventory lists turn up from the 1853 sale of the *Journal's* remains to another rival paper, the *Hannibal Tri-Weekly Messenger* (the number of newspapers that sprouted and perished quickly in American small towns before the Civil War is astounding), the best assumption is that much of Sam's education in the printer's craft, and most of his time as the stand-in boss of this county paper's work crew (when Orion was out of town, which happened frequently, Sam was left in charge of all phases of production), centered on this Washington double-medium press—and that when he escaped to St. Louis in his eighteenth year, and subsequently rambled around for months as a journeyman printer in publishing centers on the East Coast, he crossed a technological great divide, encountering and participating in production processes whose complexity and scale were truly in another dimension.

Among the letters that survive from these first adventures in high-speed automated printing, one stands out, sent by Sam from Washington, D.C., for publication in the *Muscatine Journal*, and dated February 17 and 18, 1854. Orion had moved upriver to publish this paper after his failure in Hannibal. Eighteen years old now, the younger brother muses on the sight of Ben Franklin's handpress, conserved in the Museum of the Patent Office, and on the radical transformation of printing in Sam's own lifetime: "The bed is of wood and is not unlike a very shallow box. The platen is only half the size of the bed, thus requiring two pulls of the lever to each full-size sheet. What vast progress has been made in the art of printing! The press is capable of printing about 125 sheets per hour; and after seeing it, I have watched Hoe's great machine throwing off its 20,000 sheets in the same space of time, with an interest I never before felt."⁶²

Before the Washington encounter with Franklin's press, Sam had worked for several weeks at a printing establishment on Cliff Street in lower Manhattan, very near the mighty Harper establishment, while an "Exhibition of the Industry of All Nations" was in full swing in an American "Crystal Palace" on Reservoir Square, at Sixth Avenue between Fortieth and Forty-Second Streets, where the New York Public Library stands now. Strongly promoted by the publishing magnate George Palmer Putnam, this world's fair was housed in a domed, cruciform pavilion of glass, five acres under one roof. It was New York's architectural and industrial answer to the other Crystal Palace across the sea, which had housed Prince Albert's 1851 "Great Exhibition" in Hyde Park. In the grand concourses of the Manhattan show, along with a colossal statue of George Washington on horseback and smaller

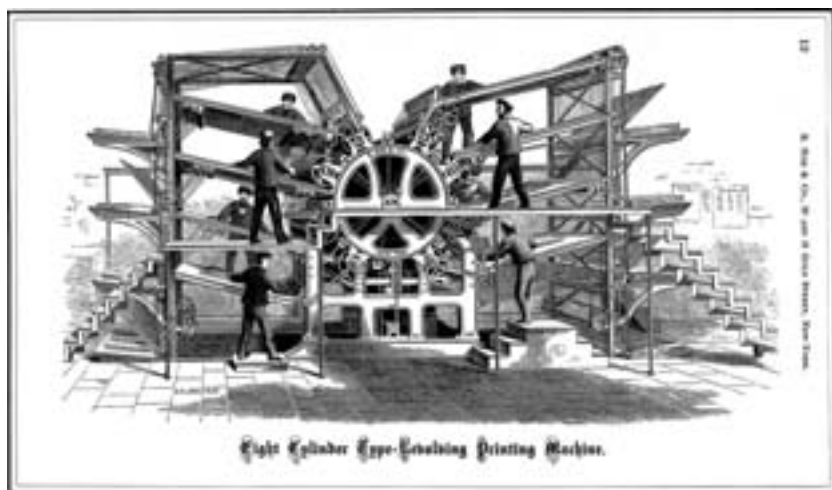


FIG. 4 One of Hoe’s “great machines,” commercially available in the early 1850s: sixteen thousand printed sides per hour, from the Hoe Company catalog. By 1856, ten-cylinder models were being advertised as reaching twenty thousand sides per hour. Rare Books and Special Collections Library, University of Illinois at Urbana-Champaign.

effigies of Ethan Allen and Daniel Webster (on their own two feet), there was another equestrian work, a real crowd pleaser in bronze by a sculptor named Kiss, purporting to show the Queen of the Amazons attacked by a lion. Amid such company, which also included three fountains, a baptismal font, and a solid iron palmetto tree, Putnam had arranged for two state-of-the-art, steam-driven automatic presses—each operated by only one human being—to print the exposition’s weekly journal, the *Illustrated Record*, every day before the eyes of the visiting multitudes.⁶³ But Putnam did not choose “Hoe’s great machine” for this center-stage demonstration of printing prowess, opting instead for a current model of the steam-driven Adams bed-and-platen press, which was revolutionizing book production (more about the importance of the Adams equipment later in this chapter), and a “steam cylinder printing machine” from the New York firm of A. B. Taylor and Sons, especially for printing illustrations.⁶⁴ Preferring a spectacle of sheer Yankee productivity rather than finesse, an issue of the *Scientific American* grumbled that these exhibits in the east nave of the palace were not appropriately up to date:

Two printing presses have been introduced into the Palace, and are kept at work on the Illustrated Catalogue. We have been informed that Messrs. Hoe are not going to have one of their large lightning presses on exhibition. The reason given is, they could not get the requisite quantity of room to erect and work it. We regret this, because we are sure that this press would command the admiration of all. It would especially arrest and rivet the attention of all our foreign brethren. Applegarth's great press was at the London Exhibition; why should not Hoe's be at the American? A working model of Wilkinson's new press is to be on exhibition, but that is not enough, in justice to *our country*; we want to see the biggest and fastest press in America at the Exhibition.⁶⁵

Sam must therefore have had his first encounters with Hoe's behemoth somewhere else on his East Coast ramble, possibly at more than one location in Washington or Philadelphia, or nearby in New York City, where the Hoe Company had its headquarters on Gold Street, about two blocks from where Sam was working (Hoe's three New York factories at that time were several blocks farther uptown, on Broome, Sheriff, and Columbia).⁶⁶ But on the young Missourian the Exhibition certainly made an impression of its own; he wrote about it to his sister Pamela Moffett in St. Louis, probably in early September 1853—the earliest surviving manuscript of a personal letter from Samuel Clemens:

From the gallery (second floor) you have a glorious sight—the flags of the different countries represented, the lofty dome, glittering jewelry, gaudy tapestry, &c., with the busy crowd passing to and fro—tis a perfect fairy palace—beautiful beyond description.

The Machinery department is on the main floor, but I cannot enumerate any of it on account of the lateness of the hour (past 1 o'clock). It would take more than a week to examine everything on exhibition; and as I was only in a little over two hours to-night, I only glanced at about one-third of the articles; and having a poor memory, I have enumerated scarcely any of even the principal objects. The visitors to the Palace average 6,000 daily—double the population of Hannibal. The price of admission being 50 cents, they take in about \$3,000.⁶⁷

Even if he had wandered the palace only on that evening, Sam would have rolled through one “gallery” and “court” after another, featuring innovations in typography, inks, bookbinding, papermaking, every modern aspect of the printing industry. The U.S. exhibits included at least three different displays

of new electrotype and stereotype technology; seven printing presses other than the featured Adams and Taylor equipment; and new machines for cutting and folding newspapers, turning out lithographs, manufacturing paper, and “paging the sheets of blank books.” From Saxony there was a new process for casting type; the British sent a “slide-lever improved lithographic press-registering machine for chromo or color printing” and many specimens of the latest in book production; and French participants sent a new design for an iron lithographic press and eighteen other exhibits under the general category of “Paper and Stationery; Types, Printing, and Book-binding.” There were thousands of innovations here to catch the imagination of an ambitious young man, far more fresh and professionally relevant technology than Sam had ever encountered elsewhere in a single place.⁶⁸

In the spring of the year before, while Sam was still in Missouri, slipping jokes, poems, and pseudonymous comic letters and even giddy woodcuts into the news-starved columns of the *Hannibal Journal*, he was in the midst of a contradictory education—in the volatility and mortality of words and the hard rituals of handpresses and movable type—not unlike what Franklin had learned two centuries before, or what William Dean Howells, only two years younger than Sam, was facing as an apprentice in similar shops in rural Ohio. When the “author” must also edit his copy, set the type, check proofs, position forms, operate the press, sort dead matter back into the cases, and clean up for the next day’s work, “writing” can be understood as a process with more attendant complexities and responsibilities than are knowable from merely generating manuscript for others to decode and publish.

About the literary dimensions of an education in a traditional print shop, that much is a commonplace; but other anomalies were here to be faced as well, also related to the strangeness of setting your own words in type for their mayfly life on a page of a county paper. Loaded into a composing stick, written words acquire heft; a conscientiously corrected form, ready for the press, is a weighty object with tedious work invested in its making, a construction with physicality that the same discourse scrawled on a piece of paper cannot come near. And a stack of printed, folded journals, each containing its replica of one’s own discourse, might intimate that something consequential, or even permanent, had been achieved in that effort. Even in a place as small as Hannibal, however, tomorrow’s flurry of newspapers from your own workroom, from other shops in town, or from enormous establishments far away smothers the verbal spark and banality

of yesterday, and every hand-set, copyedited and hand-printed page of local discourse is fated to fall fast into oblivion. From the colonial period through the early years of nineteenth century, there were conscientious American private citizens who made a practice of sewing and binding local newspapers into books for preservation⁶⁹ because in those earlier times the printed word could seem so dear. The Columbia *Morning Intelligencer*, a Tennessee contemporary of Orion's *Daily Journal*, lamented the decline of the practice: "It is much to be regretted that it is not more generally customary to preserve and bind for future use the newspaper of the day. . . . In a few years, the newspaper now so lightly esteemed, would become the most interesting and accurate daguerreotype of the past, and every year would add to its value."⁷⁰ By the time Sam entered the trade, however, the sheer volume of American periodical discourse was reducing such conservation into an eccentric hobby for shut-ins or a chore for professional archivists. If his Hannibal experience as a teenaged writer-editor-printer conditioned Sam Clemens to involve himself, throughout his later life as an author, in all the processes through which imaginative effort becomes a published artifact in a national and international market, that early experience may have also have taught him lessons in the treacherous epistemology, and the dubious cultural value, of the printed word.

With the peculiar dynamics and interconnections of byline, public identity, and private self, Sam Clemens had youthful adventures as well. When he began to set and print his own writings in the *Journal* he did so anonymously, with cryptic or comic pseudonyms or no name on the piece at all. He slipped in one-sentence gags, poems, and counterfeit letters from the public. He even produced and printed clumsy woodcuts, satirizing (and also envying) the large and fancy illustrations that had lately become features in national weeklies and monthlies.⁷¹ His bogus bylines—"Rambler," "Grumbler," "A Son of Hannibal," "Saverton," and "Josh"—might indicate conflict in the *Journal's* office—Orion trying to rein in his frisky younger brother, and Sam in insurrection—or perhaps a deception they conspired in together, a workroom pretense that there were more contributors to this newspaper, more readers of it, and more to provoke those readers than was actually the case. On his own, Sam would continue these quirky experiments in self-effacing self-exhibition after he left Orion's employ, publishing here and there as Thomas Jefferson Snodgrass, Soleleather,⁷² Sargent Fathom, and W. Epaminondas Adrastus Blab. Later, from the Nevada Territory, his first sketch to win national attention was an anony-

mous hoax news report about a petrified man discovered in the desert near Virginia City, where Sam was reporting and fabricating “intelligence” for the *Territorial Enterprise*. To reach a wide audience and keep it entertained, Sam Clemens wrote as nobody many times before he ever wrote as Mark Twain.

In that Hannibal shop, however, what was the relationship between this flamboyant self-erasure and the physical work of setting and printing these sheets of news? The skills and labor of the apprentice can alienate: every handwritten word, whether by your own or some other hand, becomes a work order for the multistage production of a different kind of artifact. Each word becomes a professional challenge of mechanical assembly: pull the right type from the cases; set each letter in the chase, tight, justified, watching the spelling (always backwards), and doing this carefully, lest the whole assemblage crash into “pi”—a professional humiliation, and grounds for dismissal in shops where efficiency is required. Later you will operate the press with main strength, in another compound process to be repeated carefully for every impression. If imaginative and humorous writing requires an increment of caprice, there is very little of that in the toil of carrying the results through these rituals of publication. And when your own words occupy only small space on an ephemeral sheet of local gossip and advertisements, or at most a column or two in a daily journal that will be kindling and wrappings tomorrow—what then? Which alternative is the riskier: signing your true name to your own words and launching them into brief circuits of ridicule and guaranteed oblivion? Or preempting such a quick journey into the dark by obliterating yourself *before* the diurnal or weekly futility of small-town publishing can do that service for you?

A different path of speculation leads to essentially the same omega point: in the middle of the American nineteenth century, daily and weekly newspapers, even these four-pagers, were an incantation of names, an exposition of identities that in a strict sense were fraudulent. Such-and-such a person, probably unknown to most readers as anything more than this name, reportedly did this or that notorious thing, and in its particulars the report that followed was possibly wrong; another name on the page was said to have died yesterday, or to have been arrested, or elected to something, or to have jumped or been pushed through some other ordinary portal that counts as a significant passage in American village life. To glance over stale sheets of published local news is to bear witness to fruitless clamoring for the instant of recognition—tomorrow morning’s lesson in the vanity of

today's byline—or for some species of transcendence, some kind of escape from utterance and identity as these ephemeral configurations of ink. And when one of the names associated here with setting the type and printing the sheets is the same as the one taking credit for the story? This is disturbance of the hierarchies, the “printer's devils” usurping what little dignity and authority there is in backcountry editorial Pandemonium. No glory accrues to a journal for having its apprentices write the copy, as well as set it in type and run it through the press: journalism requires genuine or affected demarcations between the authors of the words and the folk who blacken their hands with the chases and the machines. Because Franklin understood that, in his own printer days he concocted a succession of contributors—Poor Richard, Silence Dogood, Polly Baker—to take responsibility for wit and heresy coming from himself. According to the rituals of movable type, discourse is supposed to run gauntlets of review: you edit me, I copyedit you, and from these exchanges of labor printed texts emerge that are implicitly certified as worth reading. Paltry authorial “me” inflates into editorial “us.” One modern paradox, of course, is that the editorial inflation of celebrity “me's,” synthetic personalities pumped up and floated sky-high with published words and pictures, is a high-profit business of globalized media. Round and round it goes. Even in a place like Hannibal, however, on the periphery of this Great Revolution, allowing the lowly printers to write the words—or rather, allowing word to circulate that the printers are *also* writing the words—is putting the small mammals in charge of the zoo, compromising whatever dignity might be aspired to by a struggling county paper.

After Orion purchased the *Hannibal Journal* in the fall of 1850, merged it with his *Western Union*, and persuaded his two brothers to leave Joe Ament's *Courier* and join this new enterprise, Orion's enterprise continued for another eighteen months, surviving an office fire in January 1852 and removals to other work spaces, perhaps including a temporary setup in the parlor of the Clemens family house.⁷³ In March 1853, still without a telegraph news service, or reporters, or most of the other amenities of a modern metropolitan newspaper, and straining to hold his audience against other local journals and the St. Louis and national competition, Orion resolved to produce the village's first *Daily Journal* in addition to the *Weekly*.⁷⁴ It is not surprising that Sam took leave from this exhausting experiment only a few weeks after it got underway. About six months later, Orion himself had reached the end, and by the middle of September he had

sold off the remains of the *Journal* and moved away to try again in Muscatine.⁷⁵ The surviving numbers of the *Daily Journal* tell much about the predicament of small-scale regional publishers as national media powered up and spread out. For the opening six weeks of its operation, Orion published almost nothing on his front and back pages except advertisements for much grander periodicals. With automated production plants, these new periodicals, packed with words and pictures, could charge less for a year's subscription than either the *Daily Journal* or the *Weekly* because of a plunge in the cost of serviceable paper (another story of rapid technological change), advantages in other production costs, and a sharp cut in federal postal rates for printed matter.⁷⁶

For two or three dollars per year, a Marion County family could immerse itself in pictures and competent prose. The *Southern Literary Messenger*, *Blackwood's*, *Arthur's Home Magazine*, *Harper's New Monthly Magazine*, *Godey's Lady's Book*, *De Bow's Review*, the *Dollar Newspaper*, *Peterson's Magazine*—in effusive advertisements they are all here, promising a much better reading experience, in content and production values, than these desperate village imprints that carried their notices. Published in Philadelphia, *Scott's Weekly Paper* credited its success to the fact “that it presents more reading matter, of a better quality, in a more elegant style, and at a cheaper rate than any other publication; and that its literary and news contents have met the wants of the great mass of the American people, by combining interest, instruction, and amusement to a degree hitherto unparalleled.” All this for two dollars a year. An annual subscription to *Scott's Weekly* had run as high as nine dollars only three years before. As the strongest-selling of the American “women's magazines,” *Godey's Magazine and Lady's Book* was claiming a monthly circulation of sixty-eight thousand copies as early as the spring of 1850.⁷⁷ And founded by America's largest publishing house in June 1850, *Harper's New Monthly Magazine*, published on Franklin Square in Manhattan, was already boasting “a regular monthly issue of more than 100,000 COPIES, and . . . still steadily and rapidly increasing.” For only thirty-six cents per year, Hannibal subscribers were promised “the most attractive and most useful Magazine for popular reading in the world; and the extent to which their efforts have been successful is indicated by the fact, that it has attained a greater circulation than any similar periodical ever issued.” The *Knickerbocker Magazine*, the *Home Journal* (another national weekly), and the *Musical World and Times* (also a weekly) were advertised as a set, available at a package price:

These three publications will post a family up in regard to everything worth knowing:—Art, Science, Literature; music, painting, sculpture; inventions, discoveries; wit, humor, fancy, sentiment; the newest fashions and other attractions for ladies; choice new music for the Sabbath, the church, and the firesides; reviews and criticisms of Musical Works, Performers and Performances; in short, the very pick and cream of Novelty, Incident, History, Biography, Art, Literature and Science; including whatever can be given in periodicals to promote Healthy Amusement and Solid Instruction in the family, and help make it Better, Wiser, and Happier, may now be obtained for FIVE DOLLARS.

Celebrating the cut in postal rates (thanks to the expanding, competitive rail and steamboat networks and a long fight in Congress), *Blackwood's* was also offering a package deal, five substantial journals for one rock-bottom price: “The postage on Blackwood and the Four Reviews is now but 72 cents a year. Prior to 1843, it was \$6.80; the subscription price of Blackwood at the same time was five dollars a year. It is now but three dollars, and when taken with any of the four Reviews, but two dollars a year!!” Against all this, Orion’s *Daily Journal* was trying to charge two dollars, in advance, for a three-month subscription—essentially three months of additional repetitious advertisements for these superior alternatives.

The rise of high-volume national periodicals in the 1840s had been paralleled by the exponential expansion of American book publishing. With the standard handpress and clumsy technology for creating printable copies of forms, it is no surprise that as late as Sam’s childhood the total annual output of new book titles by publishers in the United States could be stacked on one library table. Addressing the New York Book Publishers Association at a banquet in the Crystal Palace on September 27, 1855, George Palmer Putnam, a presiding elder in the industry now (though he had lost a fortune producing the *Illustrated Record* at the Exhibition)⁷⁸ spoke proudly about the growth of the industry between Sam’s infancy and his adventures as a young “jour printer” on the East Coast. Between 1830 and 1842, Putnam noted, 623 original books had been published in America, an average of fifty per year. In 1853 alone, the total was 420, an increase of more than 800 percent in the annual output. But what had really skyrocketed were the print runs: “for 20 years ago,” he said, “who *imagined* editions of 100,000 or 75,000, or 30,000, or even now the common number of 10,000.”⁷⁹

Other changes in Boston, New York, and Philadelphia book publishing

from the year of Sam's birth through the end of his Hannibal apprenticeship will underscore how rapidly the American industry had expanded. In 1835, a typical print run for a new book was five hundred to one thousand copies, commonly subsidized by the author and produced by a local publishing house that also operated as printer, wholesaler, and retailer.⁸⁰ The national circulation of books was a haphazard negotiation of auctions and bulk sales.⁸¹ To ship a box or bale of printed material from New York only as far as Buffalo in 1835 required about nine days of transport by boat, and news about books, authors, or anything else still traveled only as paper documents at comparable speeds, either floating the water courses or moving overland by horse or mule at an average speed well under ten miles per hour. The first railroad line in the United States, a thirty-mile connection within eastern Massachusetts, had gone into service only five years before Sam was born; Morse's first operational long-distance telegraph line, a forty-mile run between Baltimore and Washington, D.C., was not accomplished until Sam was five years old. From the middle 1830s until his majority, the radical inventions, upgrades, and successful implementations that transformed American printing and publishing came on in such profusion that a full survey would require several chapters.

Even so, these transformations have remained a sideline interest in the teaching and narrating of American literary history. About the unprecedented best-sellers that hit America hard at midcentury, including Susan Warner's *The Wide, Wide World* and Stowe's *Uncle Tom's Cabin*, much is said about "popularity" and compelling or timely content and surprisingly little about technological developments that made possible these gigantic print runs and nationwide sales and the dramatic increase of print as a presence in American cultural and political life.⁸² In 1826, Cooper's *The Last of the Mohicans* achieved best-seller status with a total sale of about 5,700 copies; in 1842 his novel *Wing-and-Wing* was also a notable success, at fewer than thirteen thousand produced for the year.⁸³ About a dozen years after, *Uncle Tom's Cabin* overwhelmed the American reading public with combined print runs that were forty times greater, and neither critical acclaim nor moral timeliness can account for that scale of popular success.⁸⁴

What else lay behind it? One year before the serialization of *Uncle Tom's Cabin* began in the *National Era*, the Boston quarterly *Littell's Living Age* surveyed the industrial power that was amassing in American publishing. Recognizing the importance of Longman's, Putnam's, Lea and Blanchard, and the "four or five large bookselling and publishing firms . . . in full

operation” in Cincinnati, the account culminated with a tour of the mighty Harpers plants along Cliff Street in lower Manhattan:

Within their own establishment, all the details and machinery of publishing are carried on, with the exception of paper-making and type-founding. Their extensive range of buildings, equal to six or seven five story houses, they divide into the several departments of composing rooms, stereotype foundry, press rooms, warehouses, bindery, &c. Nineteen double medium power presses, besides Napier presses, are constantly throwing off printed sheets, to the extent of some 70 reams per diem; while in the bindery 50 barrels of flour are required for making paste every year, as well as 1,200 dozen sheepskins. . . . Over 40,000 lbs. of metal are used per annum for casting stereotype plates, of which their vaults contain about \$300,000 worth; they also have about 70,000 lbs. of various founts of type in their composing rooms. . . . Their annual sales have been estimated in round numbers at 2,000,000 volumes, including pamphlets.⁸⁵

In December 1853, these Harpers plants were all destroyed in a huge fire that burned two other nearby publishing houses as well. The Harpers Company rebuilt on a grander scale;⁸⁶ and in 1857, when the company launched *Harper's Weekly*, national sales above 120,000 copies for that journal were quickly achieved and sustained.⁸⁷ The production and transshipment of the printed word had modernized so rapidly, and in so many ways, that after more than three hundred years of comparative stasis a new era for the cultures of the West had begun. The right published text could now be a momentous national event and a financial bonanza. To exploit these new possibilities, a new kind of American author would emerge, an author who understood the industry to the core, who was enthralled by its dynamics, and who would dedicate his or her career to being a leader within it.

FIVE INNOVATIONS

Between 1830 and 1855, there were at least seventy decisive inventions and patents related directly to American printing and publishing. While many of these changes pertained to the automation and powering of presses, nearly every apparatus and process for producing and transporting the printed word was also significantly enhanced. Even Sam's composing stick, the traditional implement of the apprentice, underwent several overhauls

before he grew into a full-time writer, with five American patents recorded to improve it between 1855 and 1860.⁸⁸ More important than any cavalcade of patents, obviously, was the widespread commercial adoption of new and faster production equipment, and trade journals like the *Inland Printer* (founded in 1883 as a national journal dedicated to this technology) prospered for decades on illustrated advertisements for the latest gear.⁸⁹ Mechanized sheet feeders and page cutters; machines for sewing signatures, for embossing and gluing covers, for applying the ink—each of these developments had an impact, and sorting them out and assessing their relative importance is an ongoing project in American technological history. Between 1840 and the end of the Civil War, however, when Mark Twain emerged as a writer for this newly accessible national public, five developments loom large in expanding and reinventing the American publishing industry. Each of them attracted Clemens's attention early and held it long; each permanently altered the economic and cultural power of the printed page.

Stereotype and electrotype For accomplishing large-scale print runs on multiple presses, the optimal process in the United States between about 1820 and 1840 was the stereotype. Before 1820, printing in England and North America nearly always meant printing from movable type set in a form and locked in the iron matrix called a chase; and for multiple presses to be engaged in producing the same document (Thomas Paine's widely circulated *Common Sense* is a classic example), the text had to be reset for each machine from scratch. The process was not only time consuming and expensive but also temporary, for very few shops could afford to keep their movable type locked indefinitely in heavy forms, which were also susceptible to collapse if transported out of the shop. A subsequent printing therefore usually required another round of labor at the composing stones and copyediting tables.

Developed first in England around 1820, the first viable stereotype processes allowed printers to acquire serviceable casts of their forms of set and justified type, but with some compromise in register (print quality) and durability. To create a stereotype before 1840, the form was covered with plaster to create a mold, which was then filled in with molten lead or some other soft metal. When this casting was cooled and put through a polishing process, the result was a printable duplicate of the original form. Though there were improvements to stereotyping over the period between the advent of this process and the mid-1840s, stereotypes wore out quickly; they were bulky and liable to breakage, and they commonly produced impressions of

inferior register compared with competent printing from the original form. One other major drawback of stereotypes was their unsuitability for duplicating engraved illustrations. With woodcuts and intaglio steel engraving (dominant processes for printing illustrations before 1860), detail and subtlety were lost in a transfer to a stereotype—which is a reason why in books from American publishers before 1850, including Putnam's, Harper's, and Ticknor and Fields, high-quality images were often printed on a different press from the letter text and tipped in, and pictures of any sort were scarce, compared to the content of national publications only a few years after.

As a dramatic improvement upon the first generation of stereotypes, the electrotype was also pioneered in London,⁹⁰ but the American engraver Joseph A. Adams is credited with making the process commercially viable around 1845. Compared to conventional stereotyping, electrotyping was a technical and economic breakthrough not only for publishers of books and large-circulation journals but also eventually for shrewd authors. To produce an electrotype by the Adams method, a mold of wax was taken from the form and coated in black lead. This mold was immersed in a radical apparatus, a lead-acid battery that resembled a large, low wooden chest. Within the battery, an electric current applied thin, even layers of copper to the lead surface. The resulting electrotype was a lightweight, sharp, robust facsimile of the form. When backed with tin and polished, it could produce thousands of high-quality impressions without showing significant wear. Moreover, the electrotype facilitated a profusion of book and periodical illustration, for relief wood engravings and steel engravings could now be reworked into “electros” with high resolution and at low cost.⁹¹ When *Godey's Lady's Book*, climbing toward a national monthly circulation of 150,000 by the end of the 1850s,⁹² promised its subscribers “splendid engravings on steel,” and “four times as many steel engravings . . . as any other magazine,”⁹³ and when *The Innocents Abroad*, in 1869, was announced to America as a new Mark Twain book with “over two hundred illustrations!”⁹⁴ electrotypes were making possible that flood of images.⁹⁵

For publishers and authors, the electrotype process offered additional advantages: because they were tougher than stereotypes they could be shipped safely, facilitating simultaneous publication in dispersed locations; and because they were thin and durable they could be stored much more conveniently,⁹⁶ retrieved for later editions, leased or sold to other publishers, transferred to the author if he or she could negotiate a reprinting with another house, or owned by the author from the outset in contractual

arrangements for the first edition. No matter who owned them, the publishing industry had never before achieved such easy, durable conservation of the typesetter's handiwork. Because of "electros" or "plates," tens of thousands of nearly identical, lavishly illustrated APC copies of *The Innocents Abroad*, *A Tramp Abroad*, and *Adventures of Huckleberry Finn* could be ready to go, all across the country, on publication day;⁹⁷ subsequent print runs, years later, required no resetting of the text. Some of the British editions of Mark Twain's work were published by the distinguished London house of Chatto and Windus from the same electros used by his American publishers. And in Mark Twain's incessant and spirited interactions with his publishers—the APC, Chatto and Windus, Osgood, Harpers, and his own Webster Company—the whereabouts and control of the "plates" is frequently, and with good reason, a focus of his concern.

Something more should be said about the cultural impact of the process from which the electrotype derived, this use of induced electric current to apply an exquisitely thin, smooth façade of one metal or alloy upon some other. Beyond the production of high-quality replicas of set type and engravings, electroplating processes played havoc with the Western decorative arts and rituals of status display by multiplying and deepening the confusion on the streets about authenticity and intrinsic value. In the American and European metropolis after about 1857, it was suddenly harder to distinguish the real thing from the imitation, a precious object from a plausible low-priced knock-off. Households of moderate means could now serve tea from a silver service, and if that silver were only a slick coating upon a casting of tin, guests in the parlor would have trouble telling the difference. Daughters of ordinary families could be sent to soirées with affordable golden finery on the wrist, the office clerk could sport a gaudy watch in the waistcoat pocket—and middle-class life acquired a luster that only twenty years before had been exclusive to the rich.

For artists and craftsmen who lived by catering to those elites, a new and easy technology for deception was no happy development. In the Paris journals of the 1840s and 1850s, August Luchet, a versatile artist, dramatist, and critic, and also one of the livelier curmudgeons of his time, raged that these new shortcuts to flash were bringing French culture to ruin. "The fraudulent has taken us captive and governs us all," he said, referring to all the paste jewelry and plated inventories in the Boulevard *magasin*; "fraudulence is everything and everywhere; it feeds us, it dresses us, it adorns us, it houses us; it provides our pleasures and our education, our literature and

our arts!”⁹⁸ With less hyperbole but greater effect on the tastes of English and American educated classes, John Ruskin and William Morris also bemoaned the industrialized dominion of the superficial and the bogus. Ruskin’s recompense was that the main museum dedicated to his life, and to his crusade for authenticity and good taste, eventually rose in Sheffield, the same city that in his lifetime became synonymous with the production of silver plate, and where Ruskin had tried so hard to lift the British worker out of ignorance and confusion with free public lectures and gallery collections paid for out of his own pocket.

It was electroplating technology, in other words, that actually gilded the “Gilded Age” that Mark Twain and Charles Dudley Warner named and satirized but also exploited in their collaborative novel by that name. In several dimensions, an age of electrochemical imposture had arrived—and though it did not bring what Luchet had feared, the obliteration of discernible difference between the genuine and the bogus, it did make discrimination more of a challenge, and aesthetics in the West acquired interesting new problems to wrestle with. In the *literary* arts, a fresh legion of avowed or serendipitous American “Realists,” relishing the writer’s antique game of revealing truth behind deceptive facades, could now wander all day in cultural settings with ingenious counterfeiting on every side. This Gilded Age in which Clemens reached his prime was a funhouse of shiny surfaces—including the realms of creativity and fame where he sustained his own career. In an unsent letter, drafted in 1887, he mused that “[r]eputation is a hall-mark: it can remove doubt from pure silver, and it can also make the plated article pass for pure.”⁹⁹ “Illusion and reality” is a very old literary theme, but in Mark Twain’s prime the illusions were better made, and more treacherous, because electroplating made possible the deception and the dazzle, and also the enhanced power of print to address these lies.

The rapid development and deployment of powered type-revolving and automated bed-and-platen presses Distinctions are important here: through much of the nineteenth century after about 1835, the type-revolving or rotary press played a major role in the cultural conquest of America by national circulation newspapers and magazines, and daily or weekly print runs of tens of thousands of copies had become routine in major cities as early as 1845.¹⁰⁰ A different kind of automation, however, was required for book work, where the quality of the printing was expected to be higher. For book production, the crucial development in Mark Twain’s lifetime was the Adams press, which

first reached the American market in 1836. The Adams was a powered¹⁰¹ bed-and-platen press, which means that its impressions were achieved by forcing two flat surfaces together rather than by moving the sheet under or over a revolving cylinder. This bed-and-platen system remained preeminent for book publishers into the 1870s, when the electrotpe achieved dominion throughout American publishing, overcoming a concern that rotary press systems could damage stereotypes produced by older technologies.¹⁰² In the bed-and-platen arrangement, the accuracy of a well-operated handpress was conserved; with the Adams, the inking, sheet positioning, and sheet removal were automated and synchronized with other steps in the printing process. One crucial component of the Adams, a major reason for its success in the marketplace, was its proprietary mechanized *fly*, an apparatus for delivering sheets from the press without stopping or slowing the operation. With a corresponding mechanism for positioning blank sheets, the Adams could perform an intricate production ballet—with no human intervention—a wonder that the 1848 patent renewal describes as follows:

The nippers will then immediately be made to draw said sheet from the tympan.—Said sheet as it slides from said tympan, and as the frisket is carried along under it, drops down upon the frisket as herein before described.—Thus the sheet will be introduced between the platen and the forme of types, and when the motion of the frisket carriage is arrested, the sheet will have been brought into a proper position to receive an impression. —A little before this happens the bed . . . will begin to rise, and immediately after said sheet has become stationary, will be forced up by the continued action of said alternator, and other parts of the mechanism, until the forme of types is carried into contact with the said sheet and against the platen with sufficient force to produce an impression.¹⁰³

With the widespread adoption of the Adams press, much of the expensive physical labor of book printing was eliminated, and publicity illustrations of the Adams and its various imitators often included the figure of a young woman tending the machine, apparently alone, a reassurance to prospective buyers that less muscle (and lower pay) could now suffice on the production floor. As the Hoe Company was swelling into national dominance in press design and manufacture, it bought out Isaac Adams's patents and operations in 1857 (after a decade of patent infringement);¹⁰⁴ and by 1870 Hoe was offering the Adams in more than fifty configurations.¹⁰⁵ After the Civil War, however, competition came on strongly, most notably in the

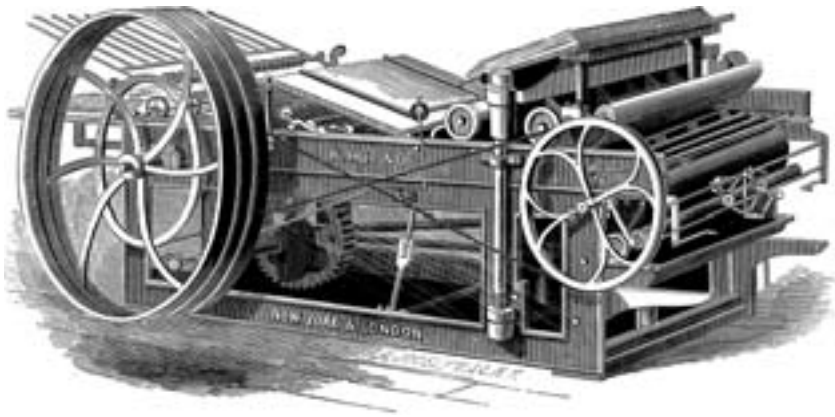


FIG. 5 An Adams press from 1867, the year of Mark Twain's voyage on the *Quaker City*. From *A Short History of the Printing Press, And of the Improvements in Printing Machinery from the Time of Gutenberg up to the Present Day* (New York: Printed and published for Robert Hoe, 1907), 13.

form of the Napier (another bed-and-platen press), and rotary “perfecting” presses, including new models of the Bullock, capable of printing both sides of a sheet in one motion, and at a level of quality suitable for book production. When Mark Twain turned to writing books, these were the favored machines in large-scale American book publishing. And when he became a book publisher himself, the speed and quality of the available equipment loomed often in this thinking. In a notebook entry from 1884–85, Clemens smolders about the production of the Webster Company's first great success, the *Personal Memoirs of U.S. Grant*, and contrives a brusque message to Charles Webster:

I ordered 6 sets of plates—and think I remember your taking the responsibility on yourself of disobeying it. . . .

How many presses?

37 Bullocks?

Then they can do the 300,000 in a single day of 24 hours.

1 Bullock can do it in 40 days.

2 Adams in 40.

Your printers have been using 1 press, & that not all the time.

These 300,000 should all have been ready Sept 1, using a single bullock press.

Lot of presses?—You only needed 1.¹⁰⁶

Though the sheets-per-hour production rate of an Adams or a Bullock never approached the velocities of the multicylinder Hoes in the largest newspaper plants, a reliable pace of five hundred to a thousand sheets per hour, for book-quality production, left modern handpresses in the dust.

The mechanized manufacture of low-cost paper This innovation proved as important to the expansion of American publishing as the developments in the technologies for printing words. In Sam's youth, the major component of this transformation was the adoption in North America of the Fourdrinier and Gilpin processes, which had begun to revolutionize production in England in the first two decades of the nineteenth century. Manufacturing paper in continuous lengths—to accomplish this, some of the early Fourdrinier models were almost a thousand feet long—the mechanization ended the cottage-industry practice of producing paper in individual sheets, each fabricated and dried on separate frame.¹⁰⁷ The raw material utilized in the Fourdrinier process was a radical improvement, an emulsion called “stuff,” produced in a high-pressure boiler with induced alkali. Unlike the recipes it replaced, “stuff” did not require protracted fermentation, and its principal component could be cotton fiber rather than the perennially scarce commodity of washed and sorted rags.¹⁰⁸ As the most efficient cotton producer in the world, the United States was eminently ready for this kind of innovation. As Fourdrinier equipment came to dominate the North American paper market, other modifications and shortcuts arrived in a stream; and though the quality of much of the paper on the market declined, so did the price. By 1850, especially at publishing houses in proximity to paper manufacturers, the raw material costs, even for very large print runs, were no longer a serious financial concern. As for paper manufactured entirely from wood pulp, 1843 is a date assigned to the advent of that technology; however, newsprint and serviceable cellulose paper for book production would not become significant in American publishing for another thirty years.¹⁰⁹ It was the mechanization of papermaking, rather than radical alteration of its basic materials, that fed the powered presses and slashed the cost of publication in the decades before 1880.

The rapid expansion of railroad and telegraph networks The importance of both railroad and telegraph systems to every dimension of American history has been so thoroughly documented that there is no reason to delve into it

here, beyond observing that with regard to refurbishing and contextualizing the history of American literature some catching up still needs to be done. Before 1830 neither system existed at all. In the early 1840s, by connecting to the Great Lakes and river traffic, the rails had cut the required time for freight shipment from major East Coast cities to the Mississippi River from weeks or even months to seven days or less; by 1852 six rail lines had penetrated the Appalachians; and two years later, an important branch of the network reached Chicago, thereby connecting systems on the East Coast with fleets on the Illinois and upper Mississippi rivers.¹¹⁰ Lading fees and long shipping delays for cargo, and consequently for postal service, no longer obstructed the growth of national-market periodicals; a heartland was open as a publishing marketplace. The drop in federal postal rates for printed matter, as celebrated in the *Blackwood's* advertisements in Orion's paper, had been a matter of contention in Congress as awareness spread that a new and threatening era in communications had dawned. The Jackson administration had resisted the cutting of mail rates for newspapers and publications, fearing that the industrializing American cities of the Northeast would soon call the cultural and political tune for much of the republic. The Jacksonians were not wrong about this; *Adventures of Huckleberry Finn* addresses the cultural shock wave they saw coming.

Often using the same right-of-way as the rails, and stretching westward in tandem with that system or even ahead of it, the Western Union Company's telegraph network was transcontinental by the end of 1856, moving news, publicity, business arrangements, and printable discourse across the nation within hours. Soon these systems were selling or transporting not only printed matter but also the publisher's agents and sometimes the authors themselves as drummers for their own writing. When Mark Twain took his one-man stage-show "The American Vandal Abroad" on a criss-cross through the upper Midwest in 1869, playing meeting halls and opera houses, building a constituency for his first real book, rails and wires made that campaign possible. And when the APC and other big subscription houses succumbed at the end of the nineteenth century, they were killed off by the same rail and telegraph systems that had fostered the door-to-door selling: the transport and communications network was so complete by 1900 that the canvassers could no longer stay ahead of the retailers.¹¹¹ The Hoe Company's enormous powered presses moved by rail, as did the juggernaut "webs," or rolls, of newsprint that they consumed. Rails and tele-

graph lines created the American publishing industry as a national presence, and they also created Mark Twain.

Technical advances and cost-reductions in printing illustrations These advances have been mentioned with regard to the electrotpe process and the failure of Kaolatype. From Sam's adolescence onward through the establishment of Mark Twain as a figure known across the world, this information age was pictorial as well as verbal. As a massive dissemination of printed images in periodicals and books transformed the American experience of reading,¹¹² the new imperative for visual experience transformed Mark Twain's thinking about the books that he intended to write, the subjects he wrote *about*, his rhetorical style, and the tastes and values of the audience he was writing to. By the time he contracted with Elisha Bliss and the American Publishing Company for a travel book about the 1867 *Quaker City* excursion, the APC was already America's most successful producer of volumes packed to the boards with pictures and sold directly to the public.¹¹³ As a selling point in the subscription-book trade, the quantity and diversity of visual experience mattered more than quality or taste in design or execution, or originality, or ethical conduct with regard to the use of images belonging to others. In building *The Innocents Abroad*, with 234 ILLUSTRATIONS touted on its title page, the APC staff followed strategies they had used with Albert Deane Richardson's *Beyond the Mississippi* (1867), which sold over one hundred thousand copies, and other tomes they had produced before Mark Twain signed on. Buying pictures from several artists of varying stature and skill, the APC also republished pictures from their own previous editions, along with copies of work by other artists, doing all this with an unsteady concern for provenance and copyright.¹¹⁴ When *The Innocents Abroad* established Mark Twain as an author of picture-laden books, he began to play a central role in designing books that followed, hiring his illustrators, vetting their pictures, doing images himself—and collaborating, now and then, in the piracy of other people's work.

In April 1867, as Mark Twain's first slim collection of comic sketches was at press, he wrote to the *Alta California* that the gilt picture embossed on the cover might prove as commercially and artistically important as the prose inside. Another self-deprecating joke, to be sure—but also another hint that this aspiring author cared much about images and appearances, especially in work published under his new name:

Webb . . . has fixed up a volume of my sketches, and he and the American News Company will publish it on Thursday, the 25th of the present month. He has gotten it up in elegant style, and has done everything to suit his own taste, which is excellent. I have made no suggestions. . . . Its price is \$1.50 a copy. It will have a truly gorgeous gold frog on the back of it, and that frog alone will be worth the money. I don't know but what it would be well to publish the frog and leave the book out.¹¹⁵

Mark Twain's involvement in the illustration and design of his own books between 1871 and the end of the 1890s is being skillfully chronicled by others, and his professional and financial involvement with new technologies for reproducing pictures will be a theme in this book. These technological and cultural upheavals related to the reproduction and distribution of visual experience are important not just to understanding Mark Twain's work but also to recognizing the larger predicament of imaginative literature in the American Gilded Age. The imperative and challenge of the published image shadows nearly everything that Mark Twain and the publishers of his books attempted in their quest for a national audience. Colorful lithographs (chromos) on the walls refreshed the imaginative environment of the private home; steel engravings, heliotypes, and published photographs altered the nature of American celebrity and public deportment; a profusion of illustrations in books and magazines transformed the American reading experience and the imaginative process of writing.

As lithography caught on in the United States, and especially with the advent and popularity of chromolithography, much of the American public achieved, by the middle of the nineteenth century, unprecedented access to seductive visual experience, including easy access to "fine art." Opening for business in the early 1820s, the first commercial lithographic presses in the United States produced black-and-white images with more and better detail than standard woodblock engraving. About thirty years later, the chromolithograph enhanced that appeal by adding a minimum of three colors to the print and often many more, sometimes achieving subtle gradations by the use of twenty to forty separate stones to produce a single image. Taking an early lead in the mass production of "chromos," Cincinnati for two decades was the center of the trade,¹¹⁶ but strong competition arose in Chicago, Buffalo, Philadelphia, Boston (where Prang and Mayer, ancestor of the prolific Louis Prang and Company, opened for business in

1856),¹¹⁷ and New York, where the now-legendary Currier and Ives would enter the industry in 1857.

By 1870, the American home or office could be cheaply adorned with panoramas of the Hudson River, the ivied tomb of George Washington, vistas of the Rocky Mountains or the Bernese Oberland, battle scenes and tableau moments from popular plays and epic poems; portraits of statesmen, generals, and Parnassian authors. As chromos took hold as a national fad, the array of color pictures for sale on Main Street grew to fabulous dimensions; and when steam-powered production came to chromolithography around the end of the Civil War, it multiplied an established system of large-scale manufacture. Images in color had never before played such a role in ordinary life. This was spectacle and visual companionship for the millions, and as early as the end of the 1850s, as refinements in the technology were enhancing the complexity of color and register (reproduction of fine detail), even the *London Art Journal* conceded that the mass-produced chromo could now offer the world a plausible replica of “the artist’s own best style.”¹¹⁸

In North America, however, industrialized duplication of gallery-level art in the mid- and later nineteenth century was a sideline, as a constellation of large companies produced nearly every variety of polychrome image that could be sold openly without breaking the law. By 1890 there were seven hundred establishments producing chromos in the United States,¹¹⁹ and as early as 1870, the single firm of Currier and Ives had to be long-winded merely to list the categories of pictures they offered: “Juvenile, Domestic, Love Scenes, Kittens and Puppies, Ladies Heads, Catholic Religious, Patriotic, Landscapes, Vessels, Comic, School Rewards and Drawing Studies, Flowers and Fruits, Motto Cards, Horses, Family Registers, Memory Pieces and Miscellaneous in great variety. . . .”¹²⁰ Six years later, “Prang’s Chromo,” as the company called itself in one of its “Popular Art” circulars, was offering faithful copies of western landscapes by Albert Bierstadt and Thomas Moran, paintings by Correggio and Landseer, Civil War sketches by Winslow Homer, dozens of botanicals, motto cards, friendship cards, moralizing schoolroom decorations, and dozens and dozens of portraits: Gilbert Stuart paintings of George and Martha Washington, transcribed fine-art and photographic likenesses of Beethoven, Chopin, Booker T. Washington, William Cullen Bryant; Ulysses S. Grant and a host of Union generals living and dead, Longfellow, Sumner, Stowe, Andrew Johnson, Daniel Webster, and of course Abraham Lincoln.¹²¹ To a scatter-

ing nation, you could now be known everywhere by your face—and known only or primarily *for* that face if you were lucky or savvy enough to achieve a visually arresting personal style.

Lithographs and chromos, steel engravings and woodcuts: a dozen years after the Civil War, these popular methods for illustrating on paper would be joined by what Mark Twain, writing from Paris, touted to his publishers as “the new photo processes,” cutting-edge technologies for transferring drawn or painted images onto electroplates for printing in magazines and books. As early as 1860, however, to gaze at faces of American “notables” a citizen was no longer required to queue up at the galleries or purchase a costly volume with the occasional tipped-in steel engraving or a frontispiece portrait beneath an onionskin shroud. When the Civil War began, subscribers to *Harper’s Weekly* could leaf through many vivid representations of current events and heroes of the hour. By the time the Confederacy collapsed, printed images were an abundant cultural fodder that ordinary Americans knew and craved. In the two decades after the war, the “photo processes” came on in a rush: heliotype, stipple, mezzotint, half-tone, photoengraving, rotogravure, photo-electrotypes, zinc-etching, photo-zincographs. As Mark Twain achieved stardom in American public and literary life, the technological sophistication of printed pictures grew complex and protean, with competing nomenclatures, ephemeral tricks, and fundamental changes. Around the time that Mark Twain finished *Huckleberry Finn*, several strategies could produce electrotype-ready illustrations with techniques involving a coating of gelatin reactive to light, generating a relief surface on a flat matrix of copper, zinc, or stone. Though printed photographs in newspapers and magazines would not become common until about 1890, almost every year between 1875 and 1900 brought an improvement in the production of pictures, exploited by major publishers of books and well-financed national journals.

Fast production, cheap materials, lavish illustration, a blitz of selling—when Mark Twain was in his prime as a writer, the machinery of American publishing could get a new book into final shape by hustling forward on several tracks at once. In July of 1889, when Fred J. Hall (who had replaced the ailing, exhausted Charles Webster as chief of operations at Sam Clemens’s company) wrote to “Mr. Clemens” about production plans for *A Connecticut Yankee*, his prose matched the breathless pace at which they both wanted to proceed:

Mr. Beard is to begin work at once, in fact is at work now, and the first thing to make is the cover for the book, so we can have the die cut. In illustrating the book he is to take it up *chapter by chapter*. I have made arrangements with the Electrotyper so that all drawings delivered to him in the morning he will give us plates of the same day, that all drawings delivered to him in the afternoon, he will give us plates of the next morning. Now as fast as these drawings are completed and plates made they can be put into the printers hands.

Of course the printer will begin to set up in galley-proofs and as fast as the cuts are completed they will be put in their proper places and he can go ahead and make up the pages and cast plates, and when he has plates enough cast to make a form up, it can be put on the press and the work of printing it commenced. In this way the drawings, setting up in galley-proof, the composition, electrotyping and printing can all be going on at the same time. Then as soon as we have enough of the book set up to be absolutely sure that our calculation as to the pages is correct, we can have a dummy made and Russell (the binder) can be making covers, so that while the book is being printed the most elaborate part of the binding can be going on. As fast as the signatures are printed that can be turned over to the binder and he can be folding them, in this way the entire process of book making can be going on, at the same time, from the binding down to the illustrating.¹²²

Five developments, then, among hundreds that transformed the publishing of words and pictures in America during Mark Twain's lifetime. For theorizing the cultural impact of all this change in the media of the West, there is no shortage of available guidance. First published in 1936, Walter Benjamin's celebrated commentary on the general subject, "The Work of Art in the Age of Mechanical Reproduction,"¹²³ is a standard point of embarkation: in an age of industrialized copying and disseminating, "that which withers," says Benjamin, "is the aura of the work of art" (221), by which he means its uniqueness, its centrality to a "secular cult of beauty" dating from the Renaissance (224). He posits that around 1900 lithography, photography, and other methods of duplication had achieved "a standard that not only permitted it to reproduce all transmitted works of art and thus to cause the most profound change in their impact upon the public" but also gave the duplicate "a place of its own among the artistic processes" (219–20). In a profusion of replicas, the excitement and meaning of the

direct encounter are diminished, along with the feeling of immediacy and innocence; and the artist, excluded or liberated from the old rituals of authenticity, is eventually absorbed into politics.

These are useful, canonical perceptions, but as time passes their limitations become clearer. What does an age of manufactured images signify for a different species of artist, sharing that predicament and striving to understand it, yet also exploiting it: an artist like Mark Twain, whose medium and livelihood were mechanically reproduced verbal discourse—literary art created to be experienced as a downpour of reproduction, as an adventure in the inauthentic, and usually accompanied by duplicated pictures, often by unknown hands? What can the experience be for us, in our own moment, as we reopen these books, reading the words and gazing at the printed images? Writing from the confines of the Stalinist Soviet Union, Benjamin (like most of his contemporaries) also could not foresee the global triumph, at the end of his own century, of varieties of art with no aura of the sort he described, no implicit artist to connect with imaginatively, and no “original,” no text or physical artifact to discover and venerate beneath the reprints, remixes, morphs, and on-screen wholesale reinventions perpetrated with ordinary software and a few touches on a keyboard. Mark Twain was the first American author to embrace and shudder at a new chaos of high-volume, high-resolution duplication, and over the course of his career in writing and publishing, his speculations about the consequences, for culture and literary art, sometimes ventured farther into the darkness than Benjamin’s.

Systematic aesthetic and cultural theorizing has had a hard time with Mark Twain. For that reason, a wilder work on the modern pressure of the verbal and the visual, something like Guy Debord’s *La société du spectacle* (1967),¹²⁴ seems a livelier springboard for speculations about the strangeness of Mark Twain’s artistic predicament in his own time, a heyday of printed images, and also about the strangeness of our own situation as we try to negotiate his picture-laden books in our own moment, amid a daily assault of media beyond anything that he or Benjamin imagined. As mid-1960s Paris contended with the cultural imperialism of Hollywood, with Panavision projectors in the Boulevard cinemas and the Gaullist ORTF erupting in three-gun color from the television sets at home, Debord raged against a future addicted to the artificial and the vicarious. His France, his world, was degenerating into a lonely collectivity of submission to on-slaughts of manufactured images, of gazing fixedly at counterfeits and

impersonations—and consuming, and thinking, as dictated by “*le spectacle*.” For Debord, the real menace was not mass distraction and wasted mental energies but rather what he called a “permanent opium war” (44) against individual sobriety, against the basic capacity to tell the actual from the non-sense or sort out one’s own personal identity from lurid accumulations of prescribed adulation and desire. *La société du spectacle* is a series of quick tirades, unexpected opportunistic incursions into Marx, strange *aperçus* about Gallic anarchism and also about an unstoppable (and opaque) cultural conspiracy that Debord refers to as “pseudo-cyclical time.” Like his forebear Luchet, amid the ramifying fraudulence of the Second Empire, Debord as a public intellectual did not favor modulated pronouncements. The spectacle triumphant, he declares, “grasped in its totality is both the result and the project of the existing mode of production. It is not a supplement to the real world, an additional decoration. It is the heart of the unrealism of the real society. In all its specific forms, as information or propaganda, as advertisement or direct entertainment consumption, the spectacle is the present model of socially dominant life” (6).

If this Situationist polemic hasn’t kept all of its freshness, there are provocations here worth mulling over with regard to the international success of Mark Twain as both author and “image” and also to the complications (for the artist and the private self) of jostling for top position in a volatile marketplace of international fame. In 1902, the Houston Ice and Brewery Company of Houston, Texas, selling “Reputation Beer,” used brightly colored metal signs featuring lithographed portraits of six American men of “Reputation,” with only brief monikers below the pictures. “Barnum” is here, and “Buffalo Bill,” and “Grant,” and “Jefferson,” referring to the actor Joe Jefferson—and here also is “Mark Twain.” Other than the faces and these terse labels, there are no cues as to who these people are or what these “Reputations” are founded on. There are no testimonials for the beer either.¹²⁵ For these Houston brewers, what was required to sell the product was fame itself, pure and simple—or more precisely, the fame of a few human faces that most adult Americans around 1900 knew from other published images. “Known to Everyone—Liked by All” was a slogan on a Wolf Brothers cigar box, also from the turn of the century, featuring Mark Twain’s portrait and his name in block red letters, a signature, and again no endorsement for the product and neither an image nor a mention of cigars. When your words reach millions and your likeness, liberally positioned among those printed words, grows larger and more vivid from one best-

seller to the next, and when the full growth of this new kind of celebrity means that a likeness can fly free of the printed words and the deeds, becoming an icon in its own right in popular culture, then “identity” grows problematic in at least two dimensions: for the culture seeking to imagine and understand you and for whoever it is that you think you really are. Debord on the ontological and psychological predicament of modern celebrity, as a collateral contrivance of *le spectacle*:

Being a star means specializing in the *seemingly lived*; the star is the object of identification with the shallow seeming life that has to compensate for the fragmented productive specializations which are actually lived. Celebrities exist to act out various styles of living and viewing society unfettered, free to express themselves *globally*. They embody the inaccessible result of social *labor* by dramatizing its by-products magically projected above it as its goal: *power* and *vacations*, decision and consumption, which are the beginning and end of an undiscussed process. In one case state power personalizes itself as a pseudo-star; in another a star of consumption gets elected as a pseudo-power over the lived. But just as the activities of the star are not really global, they are not really varied. (60)

This is also *enragé*, and in applying any fraction of this to Mark Twain one might recall that the primordial “photo op” did not become technologically possible until the last twenty years of his life and that in his final decade the motion picture was still only a curiosity. From his adolescence onward, however, Sam Clemens wrote and lived with an industry that had suddenly achieved a power to saturate nations with printed discourse and mediated visual experience. Along with everything else that transpired in the production and marketing of printed pages from 1840 onward, this combination plunged Mark Twain into a world’s fair of imaginative and artistic challenge.