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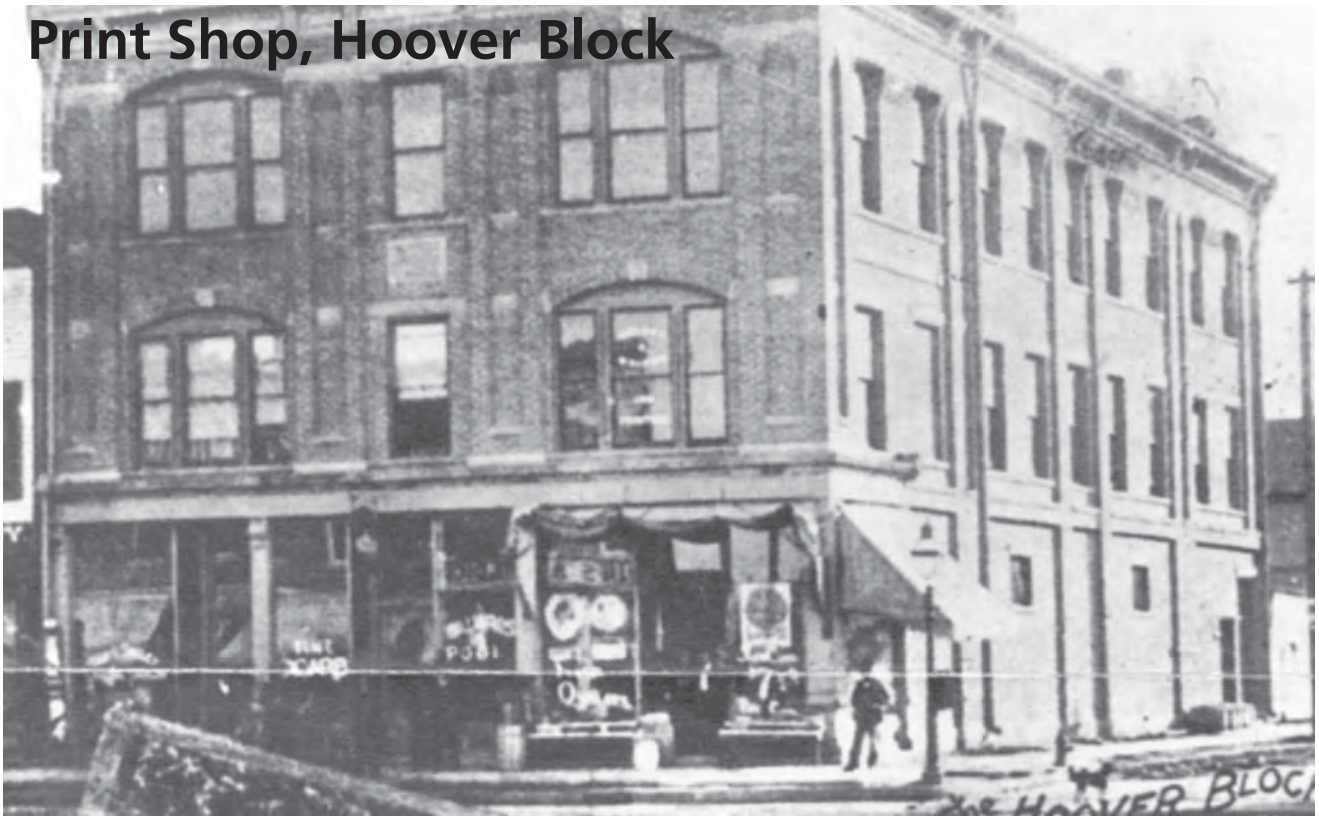
Historic Furnishings Report

Dayton Aviation Heritage National Historical Park
Dayton, Ohio

Print Shop, Hoover Block



APPROVED:
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Historic Furnishings Report

Print Shop

Dayton Aviation Heritage National
Historical Park
Dayton, Ohio

by Mary Grassick
Staff Curator

Media Services
Harpers Ferry Center
National Park Service, 2007

Cover: Exterior of the Hoover Block, c. 1893, Dayton Aviation Heritage National Historical Park.

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Administrative Information

Administrative Information

Management Background

The Hoover Block in Dayton, Ohio, was constructed by Zachary T. Hoover in 1890. Located on the southeast corner of West Third and South Williams Streets at 1042 through 1046 West Third Street, the building was typical of the commercial construction appearing in west Dayton at the time. The ground floor of the three-story brick building housed stores, the second floor contained office suites and apartments, and the third floor boasted a large meeting room with a stage and dance floor. Orville and Wilbur Wright were among the first tenants of the building, renting the three-room corner office suite on the second floor for their printing business in autumn 1890.

While operating their print shop in the Hoover Block, Orville and Wilbur Wright published *The Tattler*, a short-lived newspaper edited by Paul Laurence Dunbar, as well as *Snap Shots*, a weekly magazine featuring current events, syndicated material, and advertisements for The Wright Cycle Company.[1] The bulk of their business, however, consisted of job printing.

During their time at the Hoover Block the brothers also opened the first of their five bicycle shops. They opened the cycle shops seasonally, changing locations each season. At least once during the off-season they intended to transfer the repair portion of their business to the print shop in the Hoover Block.[2] In the spring of 1895, the Wrights opened a cycle shop at 22 South Williams Street and moved their scaled-down printing business around the corner to the new location. By this time, the bicycle business was consuming most of their combined time and energy, and the brothers were preparing to introduce their own brand of bicycle to Dayton cyclists.

The Hoover Block continued to house small businesses, offices, apartments, and meeting spaces throughout the early part of the 20th century. Renovations to the second floor may have been undertaken in response to the devastating flood of March 1913. In December 1957 a fire damaged the second and third floors of the building, and some time after that the meeting hall was rebuilt as a gymnasium. The second and third floors were vacant by 1972, but the ground floor was occupied as late as 1981.

Around 1980 Mary Anne Johnson, co-founder of Aviation Trail, Inc., a non-profit organization created to preserve and promote Dayton's aviation heritage sites, led a project mapping local sites significant to the history of aviation. Recognizing the significance of the Hoover Block, Aviation Trail, Inc. purchased the building in 1982. Aviation Trail, Inc. stabilized the building, filling in the

[1] Charlotte K. and August E. Brunsman, *Wright and Wright, Printers: The Other Career of Wilbur and Orville* (Kettering, Ohio: The Trailside Press, 1989), 13–14.

[2] Wilbur Wright to Milton Wright, October 2, 1894, Wright Papers, Library of Congress, Box 6.

windows and doors and sealing and repairing the roof.

The West Third Street Historic District was listed in the National Register of Historic Places in January 1989, with the Hoover Block and the nearby Wright Cycle Company building at 22 South Williams Street serving as contributing structures. The Wright Cycle Company building was designated a National Historic Landmark in 1990.[3]

In 1994 the 2003 Committee, a group of Dayton community leaders and activists spearheading the city's celebration of the centennial of flight and instrumental in creating Dayton Aviation Heritage National Historical Park (NHP), purchased the Hoover Block from Aviation Trail, Inc., and in 1995 donated it to the National Park Service.[4] Dayton Aviation Heritage NHP was established by Public Law 102-419 in 1992. The park comprises four noncontiguous sites: The Wright Cycle Company complex; Huffman Prairie Flying Field on Wright-Patterson Air Force Base; Wright Brothers Aviation Center at Carillon Historical Park; and the Paul Laurence Dunbar State Memorial in West Dayton. The National Park Service, Wright-Patterson Air Force Base, Carillon Historical Park, the Ohio Historical Society, and Aviation Trail, Inc., are federally mandated management partners of Dayton Aviation Heritage NHP.

General Management Plan/Interpretive Plan: Dayton Aviation Heritage National Historical Park recommends restoring the interior and exterior of the Hoover Block to the 1890–95 period, when the Wright brothers worked in the building. The building was stabilized and rehabilitated as part of the creation of the Wright-Dunbar Interpretive Center at Dayton Aviation Heritage NHP. The Hoover Block, along with the adjacent Aviation Trail Visitor Center owned by Aviation Trail, Inc., houses interpretive media such as exhibits, historic furnishings, and audio-visual presentations, as well as meeting rooms and offices for both organizations.

Interpretive Objectives

The 1997 *Interpretive Plan* for Dayton Aviation Heritage NHP outlines interpretive themes to be addressed in the Hoover Block and in other park units. Themes that can be explored in the Print Shop Suite include:

- The brothers' synergy created a whole that was greater than the sum of the parts.
- Despite racial barriers, Paul Laurence Dunbar and Wilbur and Orville Wright were friends.

The furnished print shop emphasizes Wilbur and Orville's operation of a successful printing business as well as their talent as printers. The furnished rooms emphasize the brothers' considerable mechanical skills, illustrated in part by a mock-up of the printing press they designed and built themselves. The complex and successful business operation also illustrates the brothers' ability to work successfully as a team, a skill they honed while working together as printers.

Operating Plan

The park is open from 8:30 a.m. until 5:00 p.m. daily, except for Thanksgiving, Christmas, and New Year's Day. Visitors to the Print Shop in the Wright-Dunbar Interpretive Center view historic furnishings at their own pace and choose their own visitor path.

Visitors enter Room 223 through the east door from the center hall, and pass through the furnished area to Room 221 to the south.

3 *Historic Structure Report: Hoover Block, HS-02, Dayton Aviation Heritage National Historical Park, Dayton, Ohio*, prepared by Quinn Evans/Architects for the National Park Service (United States Department of the Interior, National Park Service, October, 1998), 9–12 and 89. (Hereafter, HSR.)

4 The 2003 Committee later changed its name to Inventing Flight.

Visitors can also enter the Print Shop through Room 221, which is accessed from the hallway south of the suite, and view Room 222 through the doorway into Room 221. Interpretive panels mounted on barriers provide additional interpretation in all three rooms.

Prior Planning Documents

The following planning documents affect the use and management of the Hoover Block, HS-02, Dayton Aviation Heritage National Historical Park, Dayton, Ohio:

Draft Historic Resource Study, Dayton Aviation Heritage National Historical Park (2001)[5]

Second Floor Finish Analysis, Hoover Block (HS-02), Dayton Aviation Historical Park, Dayton, Ohio (October 2000)

Physical Evidence Report, Hoover Block, Dayton Aviation NHP, Dayton, Ohio (May 15, 2000)

Historic Structure Report, Hoover Block, (Historic Structure 02), Dayton Aviation Heritage National Historical Park, Dayton, Ohio (January 1999)

General Management Plan, Interpretive Plan, Dayton Aviation Heritage National Historical Park, Ohio (November 1997)

[5] Note that the draft Historic Resource Study was published as *What Dreams We Have: The Wright Brothers and Their Hometown of Dayton, Ohio* (Fort Washington, Pennsylvania: Eastern National, 2003.)

Historical Information

A Note on Sources

Primary sources for information on the Wright brothers' print shop suite in the Hoover Block include the Wrights' printing business ledger from 1890 through 1898 and correspondence between the brothers and other family members held in the Library of Congress. The Wright Papers at the Library of Congress also include a mortgage documenting the sale of the Wright brothers' printing outfit to Thomas and Marion Stevens in 1899, which provides a detailed inventory of their printing equipment. The Library of Congress also holds the image of Ed Sines at the imposing table, which is the only known photograph illustrating Wright printing materials.

Original Wright printing equipment is located in the collection of The Henry Ford (formerly the Henry Ford Museum and Greenfield Village) . The objects were acquired by the institution for installation in the relocated and restored Wright brothers' cycle shop building in 1937. The museum loaned original print shop equipment to the National Park Service for exhibition in the Hoover Block.

Interior photographs of other printing operations from the late 19th and early 20th centuries are also used to provide comparative evidence about contemporary print shop furnishings and practice. Period trade catalogs and trade periodicals provide additional support to furnishings documentation, providing illustrations of and details about print shop material culture.

History of the Structure

The structural history of the Hoover Block is thoroughly covered in the 1999 *Historic Structure Report: Hoover Block* and that history will be only briefly summarized in this section.

The Hoover Block was constructed by Zachary T. Hoover in 1890. The building was located at the southeast corner of West Third and South Williams in Dayton, Ohio, just west of the Great Miami River. The Wright brothers were among the first tenants, renting the second-floor corner suite from autumn 1890 until the spring of 1895. The building had three shops on the ground floor and a meeting hall on the third floor, in addition to several suites on the second floor.

When the Wright brothers moved into the Hoover Block, the other suites on the second floor were occupied by a clerk, a salesman, and Reverend M. F. Keiter, publishing agent for the *Christian Conservator*. The ground floor housed the Cincinnati Grocery Company and a barber. Various other businesses, such as a billiards hall and an ice cream parlor, were located in the storefronts during the early 1890s. One long-time tenant was Frank Hale, a grocer who opened his business in the corner store in 1900, and renovated the front of 1046 West Third Street around 1915.

The meeting hall on the top floor hosted such groups as the Knights and Ladies of Honor and the Order of United American Mechanics. In 1909 the International Dayton Aeroplane Club was founded to honor the Wright brothers and the club's meetings were held in the third-floor meeting hall of the Hoover Block.[6]

After the Wright brothers moved their printing business to 22 South Williams Street to combine it with their growing bicycle business, the Hoover Block remained largely commercial, with apartments on the second floor. Renovations to the building in 1914 may have been precipitated by the 1913 flood which devastated a portion of west Dayton. Although damage specific to the Hoover Block has not been recorded, the water was reported to have been 12 feet deep on Third Street.[7]

By 1930 two of the storefronts on the ground floor were combined to form a larger grocery; a jewelry and optical store leased the third ground floor store. A 1957 fire damaged the third

6 HSR, 9–11.

7 Tom Crouch, *The Bishop's Boys: A Life of Wilbur and Orville Wright* (New York and London: W.W. Norton and Company, 1989), 453.

floor, and after the fire the meeting hall was converted into a gymnasium with locker rooms. The second and third floors were vacant by the early 1970s, although the ground floor was eventually opened up into one unit and continued to be used as a grocery until around 1981.[8]

As noted above, the Hoover Block was recognized as a significant site in the history of aviation by Aviation Trail, Inc., and was purchased by that organization in 1982. In 1994 the 2003 Committee purchased the Hoover Block from Aviation Trail, Inc., and the next year donated it to the National Park Service. From 2001 to 2003 the Hoover Block was rehabilitated. At the same time, the façade to the adjacent Setzer Building was saved and a new structure was constructed. The combined buildings serve as a visitor center for Dayton Aviation Heritage NHP and provide an introduction to aviation sites in and around the city of Dayton. The renovated buildings also house offices and meeting space for both organizations.

[8] HSR, 11.

Evidence Locating Print Shop on Second Floor of Hoover Block

It was common for 19th-century print shops to be located on upper floors. *The Inland Printer*, a printing trade paper, commented in 1890, "Located as they are on the third to the thirteenth story (invariably the top floor), printing offices receive the full heat of a summer's day and the free blast of a winter's wind."[9] Another article promoting a new printing press pointed out another inconvenient aspect of the upper floors: "The fact that printing offices are usually upstairs and often in places requiring the taking of a press apart before it can be put into an office, led us to build these presses in two parts ... ."[10]

Although the brothers did not record any complaints about their quarters in one of West Dayton's newest business addresses, stray comments in their writings make it clear that they were located on one of the upper floors. In October 1894 Wilbur wrote to Milton Wright that they were giving up the current cycle shop location and would "probably move our repair shop upstairs in the printing office." Several weeks later, a light piece in their new publication, titled *Snap Shots*, mentions a shop visitor who "toiled slowly up the stairs leading to our sanctuary."[11]

The 1893 composite photograph of views of West Third Street commercial buildings shows the legend "Wright & Wright/Job Printers" on the second floor Hoover Block windows facing West Third Street. (See figure 26.) The location of the lettering supports the idea that the Wrights' business was located on the second floor. That the building was not purpose-built as a printing office was not unusual, and *The Inland Printer* continued: "It is an exception to the rule when buildings are constructed for the purposes of a newspaper office."[12] Even a catalog of specimens of electrotype cuts for printers uses the drawing of a press room clearly on an upper floor as the standard logo for a printing office.[13] (See figure 18.)

9 *The Inland Printer*, August 1890, 966. Note that *The Inland Printer* was available in Dayton at the United Brethren Job Rooms. See issue for May 1890, 497.

10 *The Inland Printer*, June 1890, 847.

11 Wilbur Wright to Milton Wright, October 2, 1894, Wright Papers, Library of Congress, Box 6 and *Snap Shots*, October 20, 1894 in Brunsman and Brunsman, *Wright and Wright, Printers*, 14.

12 *The Inland Printer*, August 1890, 966.

13 *Specimens of Electrotype Cuts, Ornamental Designs, Etc.*, Boston: Golding & Co., 1888, in TC 162, Trade Catalog Collection, Harpers Ferry Center Library.

Evidence of Room Finishes

This section is based on the *Historic Structures Report: Hoover Block* and on further investigation conducted by National Park Service Historical Architect Al O'Bright. Findings are compiled and analyzed in his "Physical Evidence Report," submitted in May 2000. Additional investigation and analysis of finishes was undertaken by Quinn Evans, Architects and presented in "Second Floor Finish Analysis," completed in October 2000.

Room 223: Composing Room. The northwest corner room was probably used by the Wrights for receiving customers and composing jobs. The north windows provide the natural light so prized by typesetters, and as one printing specialist has pointed out: "There is not enough room to spare for a separate office or show room, and there may not even have been a desk [in the composing room], as one can transact business without one."[14]

The original flooring consisted of 1-inch x 3-inch boards fastened with cut nails. A brown painted or varnished border was added later. Running completely around the room and extending 40 inches from the walls, the painted border probably surrounded an area rug.[15] A double row of tack marks near the west wall suggests use of linoleum or carpet in part of the room, but since the painted border obscures a section, it is impossible to tell whether the tacks continue around the perimeter of the room. This report recommends use of original wood floors, based on inconclusive evidence as to the use of carpet or linoleum in the Wright shop, and evidence of plain wood flooring in photographs of late 19th-century and early 20th-century print shop interiors. See figures 3, 4, 5, 8, 9, 10, 12, 13, and 15.

Gas piping remaining in the building indicates that gas heat and lighting were used in the Hoover Block during the 1890–95 period. The west wall contains thimble openings which show where the stove pipe entered the chimney. An original gas valve remained on the floor.

An even temperature in the pressroom was recommended to keep staff happy and machinery and equipment in good order and it would have been important that the Wrights' heaters worked well. A printers' periodical warned against "machinery cold as ice, ink stiff as pitch, rollers hard and shrunken," and described time lost and fires lit to quickly and dangerously warm up print offices.[16]

14 Stan Nelson, National Museum of American History, Smithsonian Institution to Mary Grassick, Harpers Ferry Center, National Park Service, January 4, 2001.

15 Al O'Bright, "Physical Evidence Report, Hoover Block, Dayton Aviation NHP, Dayton, Ohio," May 15, 2000, 5.

16 *The Inland Printer*, February 1892, 439.

It is possible that an office rail or partial wall was installed in this room during this period, parallel to the south wall and extending forty inches into the room. Physical evidence is inconclusive, however, and the office rail is not included in the historic furnishings installation. No physical evidence of furnishings or equipment placement remains on the floor boards.[17]

Wall, ceiling, and border papers were commonly used in commercial interiors at the time, and the paper used in the first several wall treatments in Room 223 was inexpensive and probably widely available. While it is not known whether the landlord or the tenants were responsible for installing wall coverings in the Hoover Block, the Wright brothers were capable of putting up their own wallpaper if the need arose. In 1892 they hung wallpaper for their friend Cord Ruse in exchange for using space in his shop to set up the press they were building: "We have arranged with him to use his shop to set up the press in. We hang some wall paper for pay." Some years later, they papered some rooms at the family home at 7 Hawthorn Street.[18]

Examples of original wall, ceiling, and border papers were located in Room 223 in the early stages of the building rehabilitation project. As part of the project, a false mantel was removed to reveal early layers of paper. The layers of wall and border papers were separated and the first or earliest papers were revealed. Samples of ceiling papers were located under a two-by-four used to partition the room. The partition was installed over existing paper and when it was removed early paper was uncovered. The layers were then disassembled to show the earliest paper.

The original wallpaper is a pattern of a wreath and bows in blue and cream, with mica highlights. The ceiling was originally papered with a staggered wreath pattern in blue and cream with mica highlights. The room was finished with a blue and cream border in an architectural pattern. All three papers were reproduced as part of the restoration of this room.

Existing woodwork in Room 223 dates to the early 20th century and is not the millwork originally installed in 1890. Evidence of original baseboards on the third floor gives an idea of the profile of the baseboards used on the second floor, although those on the third floor are wider than the 7½-inch-wide ghost documented to Room 224 and believed to have been used throughout the second floor. An original piece of window moulding was also located on the second floor and has been deposited in the park collection. It is finished in medium to dark brown stain covered with varnish.[19]

The original gas service line is present in the building and a gas ceiling fixture would have been used in this room.

Room 221: Job Press Room

The room south of the composing room would probably have contained one of the Wright brothers' presses. The original wood flooring was covered with linoleum sheets, possibly installed professionally before the Wrights moved in. Linoleum was a particularly good choice

17 Gail Winkler, "Second Floor Finish Analysis," 20 and Al O'Bright, "Physical Evidence Report," 5.

18 Wilbur Wright to Katharine Wright, September 18, 1892, Wright Papers, Library of Congress, Box 6 and Bishop Milton Wright, *Diaries,* entry for March 28, 1894, 412.

19 O'Bright, "Physical Evidence Report," 3.

for this room, as it would absorb wear and provide an easy-to-clean surface, thus protecting the landlord's floors from scrapes, marks, and ink spills.

The linoleum was eventually torn up, and replaced by a carpet in the center of the room, surrounded by a border painted to resemble wood graining. A second episode of linoleum was installed from east to west and was later replaced by 1 x 3 wood strip flooring laid directly over the original floors.[20]

Wall, ceiling, and border papers were used in this room as well, but samples original to this room are not available. The inexpensive papers widely used in the 1890s were difficult to clean and were simply replaced every few years after they became soiled. The old papers often were papered over rather than removed, creating "sandwiches" of wallpaper created by the build-up of several layers.[21] Papers used in this room are reproduced from samples of the first layer of wallpaper taken from Room 224, located across the hall from the Wright brothers' print shop suite.

The woodwork in this room is not original and is reproduced based on the original sample in the collection. The position of the original gas service line in this room indicates the placement of the original overhead gas lighting fixture and an outlet in the chimney indicates original placement of a gas heater.

Room 222: Cylinder Press Room

The interior room east of Room 221 has no windows and the only access is from Room 221. Because this room has no natural light – necessary for typesetting – it makes sense to house a press, a paper cutter, and a paper storage cabinet here. Ink stains on the original wood flooring indicate that this room was probably not carpeted during the time the Wright brothers worked there and support the assumption that a press and inks were used in the space. The room was carpeted at a later date.[22]

Wall and border papers were used in this room also, but samples original to this room are not available. Papers used in this room are reproduced from samples of the first layer of wallpaper taken from Room 217, located across the hall from the Wright brothers' print shop suite.

The woodwork in this room is not original and is reproduced based on the original sample in the collection. The position of the original gas service line in this room indicates the placement of the original overhead gas lighting fixture. See figure 14 for an example of an interior press room lighted with artificial overhead lighting.

Room 220: Hallway

The original flooring system on the second floor of the Hoover Block was 1-x 3-inch tongue and groove boards, which were cleaned and finished in the hallway as part of the building restoration. Finishes analyses outlined in the Historic Structures Report for the Hoover Block

20 O'Bright, "Physical Evidence Report," 7. See also Winkler, "Second Floor Finish Analysis," 20.
21 Winkler, "Second Floor Finish Analysis,"13.
22 Winkler, "Second Floor Finish Analysis," 20. See also O'Bright, "Physical Evidence Report," 8.

detail an emphatic green, blue, and red paint scheme applied to the ceiling and walls. The ceiling was painted a deep green and the top five and a half feet of the wall was painted the same shade of green. A decorative band located about four feet from the floor is composed of deep blue, dark red, and black stripes. The lower section of the wall was also painted dark red.[23] This painted treatment was reproduced as part of the historic furnishings project.

Two interior windows on the east side of the corridor were discovered as part of the continued investigation of the physical evidence on the second floor of the Hoover Block. These windows provided light from the window at the end of the hall and the ceiling gas fixtures to Rooms 225 and 212. The sills of these windows are 22 inches above the floor, matching the placement of other exterior windows in the print shop suite and at the end of the hallway.[24] The woodwork in the hallway is not original and has been reproduced based on the original sample in the collection.

The position of the original gas service line in this area indicates the placement of two overhead gas lighting fixtures. Two examples of harp-type hanging lamps typically used during the late 19th century in halls and corridors were located on site during finishes investigations. As part of the Hoover Block restoration, one lamp was restored and reinstalled at the junction of the center hall and the hallway south of Room 222. Note that the restored lamp includes an open-flame burner and shade appropriate to the 1890–95 interpretive period.[25]

23 O'Bright, "Physical Evidence Report," 1–2 and HSR, Appendix F. [Not paginated]

24 O'Bright, "Physical Evidence Report," 4.

25 See Dan Mattausch, "Proposal for restored and reproduction historic lighting for the Dayton Aviation Heritage National Historic Park," July 2002, in Dayton Aviation Heritage NHP files.

Analysis of Historical Use and Occupancy

Many works detail the lives and achievements of Wilbur and Orville Wright. Especially reliable sources include *The Bishop's Boys* by Tom Crouch, *The Wright Brothers* by Fred C. Kelly, *Wright and Wright, Printers* by Augustus and Charlotte Brunsman, and the draft Historic Resource Study for Dayton Aviation Heritage NHP by Chief of Education and Resources Management Ann Honious. The section below provides only a limited biographical overview of the Wright brothers and focuses on their printing activities before and during the period 1890 through 1895, when they operated their business in the Hoover Block.

Wilbur Wright, third son in the Wright family, was born in Indiana in 1867. The family later moved to Dayton, where Orville was born in 1871. Their younger sister, Katharine, was born there in 1874. After moving to Iowa in 1878, the family returned to Dayton permanently in 1884. Upon the family's return, Orville and Katharine attended Dayton public schools, while Wilbur took classes at the local high school.

Orville's interest in printing began in childhood when the family, who had moved on from Iowa, had returned to Indiana. He began by making woodcuts using the spring of an old pocket knife to engrave wooden blocks, printing from them with his father's letter press. When the family returned to Dayton, Orville renewed his friendship with childhood companion Edwin Sines, who lived just down Hawthorne Street from the Wright family and who had also developed an interest in printing.

Ed Sines owned a small press, and although it printed only one line at a time, the youthful entrepreneurs soon established their own printing business, Sines & Wright. Orville and Wilbur's father, Bishop Milton Wright, supported Orville's interest in printing and encouraged Wilbur and older brother Lorin to trade a boat they owned for a larger press for Orville. Milton donated 25 pounds of brevier type and the boys were able to develop their first newspaper, *The Midget*, aimed at their intermediate school classmates.

The small company operated out of the Sines family kitchen initially, but with the acquisition of the larger press which could print materials up to three by four and a half inches, Sines & Wright moved into the Wrights' little-used summer kitchen at Hawthorne Street. They received small commissions from local businesses and even hired a "printer's devil," or boy of all work. After one transaction in which a customer paid with popping corn, the friends disagreed over whether to enjoy the profits themselves or sell them and invest the cash in the

business. It was eventually agreed that they would split the profits and that Wright, who already owned most of the assets, would buy out Sines.[26]

Around this time Orville, who was now operating the business out of the second floor of the Wright home, decided to build himself a new and larger press. The new press, its bed made out of an old grave marker, could print an 11" x 16" sheet. With larger printing projects now possible, Orville found himself running out of type. He consulted an encyclopedia to determine how to make stereotype plates and, making up plates out of the type he had, was able to redistribute his existing type to accommodate larger jobs.[27]

Orville was interested in mechanical subjects beyond printing, however, and at the age of nine built a small wood turning lathe. With Wilbur's help, Orville next built a much larger lathe, eight feet long and "powered by a foot treadle and made entirely of wood and scrap." This was the brothers' first joint project. Soon thereafter Wilbur designed and, with Orville's help, constructed a treadle-operated folding machine which increased four-fold the speed with which newspapers could be folded.[28]

Orville was serious about learning the printing trade and during the summers of 1886 and 1887 he worked 60-hour weeks for Jacob K. Graybill, who printed *The Christian Conservator*. The *Conservator* was the newspaper of the conservative faction of the Church of the United Brethren in Christ. A bi-monthly publication created by the 1885 combination of two independent United Brethren publications, in 1886 the paper became a weekly publication and the offices moved from Pennsylvania to Dayton. In 1887 Wilbur and Orville's oldest brother, Reuchlin, was elected publishing agent, or editor, of the paper and served in that capacity until August 1888.

In 1889 the United Brethren in Christ split, and *The Christian Conservator* became the official publication of the Church of the United Brethren in Christ (Old Constitution), also known as the Radicals. Orville and Wilburs' father, Milton Wright, was elected bishop and publishing agent within this branch of the church, which, although called "Radical," was actually the more conservative of the two factions. Milton served as agent until 1893 and the second Wright son, Lorin, also worked for the publishing house as bookkeeper or "assistant agent."[29]

The Wright family had a history of involvement with United Brethren publishing. The publishing house was an important financial and evangelical support to the church, which considered it "a shield and pledge, as well as an arm of power."[30] Milton Wright was elected editor of *The Religious Telescope*, the United Brethren publication, "devoted to the religious, moral

26 Fred C. Kelly, *The Wright Brothers* (New York: Ballantine Books, 1943, reprint 1966), 16–18. Note that Fred C. Kelly and Orville Wright corresponded frequently during the writing of Kelly's biography, and Kelly's text was reviewed by Wright. See Kelly and Wright correspondence, Wright Brothers Papers, Box 32, Library of Congress.

27 Kelly, *Wright Brothers*, 19.

28 Attachment to Orville Wright to Charles F. Rand, Secretary, The John Fritz Medal Board of Award, May 12, 1921, and attachment to Anna Rothe, Editor, Current Biography to Orville Wright, October 3, 1946; [Mabel Beck, Secretary] to Anna Rothe, December 21, 1946 and attachments, Wright Brothers Papers, Box 60, Library of Congress and Kelly, *The Wright Brothers*, 5–6.

29 Brunsman and Brunsman, *Wright and Wright, Printers*, 6.

30 William A. Shuey, *Manual of the United Brethren Publishing House; Historical and Descriptive* (Dayton, Ohio: United Brethren Publishing House, 1893), xix.

and literary intelligence," in 1869 and again to the position of co-editor in 1873, which he retained until May 1877. He later served as editor and publisher of the United Brethren publication, the *Richmond Star,* from 1882 until 1885.[31]

In the spring of 1888 Orville and Wilbur built a new and larger press. Originally Orville's project, the press was built of four-foot lengths of firewood, cast-off iron, and disused buggy parts and as one biographer puts it, the completed machine: "seemed to violate all mechanical rules and could not possibly be expected to work."[32] It worked well, however, and was "large enough to print two pages of the 'Conservator' at once."[33] Two pages of the *Christian Conservator* measured 19 x 26 inches, indicating that the brothers had constructed a fairly large press.

The new press enabled Orville to accept his first large commission, the printing of his brother's 1888 tract, "Scenes in the Church Commission During the Last Day of Its Session." This work, the first published under the imprint "Wright Bros., Job Printers," is Wilbur's accounting of the discrepancy between the changes to the church Constitution and Confession of Faith agreed to in the 1885 Church Commission meeting, and the version presented to the church body in 1887 by the *Religious Telescope*. It seemed to Radicals as if the Liberal faction had altered the documents approved at the 1885 meeting, and Wilbur, supporting his father's Radical beliefs, outlined the situation in a coherently written and widely distributed tract.[34]

By July 1888 the brothers' new press was not quite finished but could even then print 500 tracts an hour. Orville expected that it could eventually print as many as 1,000 tracts an hour. The increased speed would be welcome, since by that point they had already sold 3,000 copies. They were trying to improve their stereotyping skills as well, and were hopeful that "before long we can make ones good enough for tracts."[35]

The brothers had run off more than 5,000 tracts by the beginning of August, and anticipated distributing as many as 15,000, noting: "as the excitement caused by them is becoming so great I think we can use to advantage eight or ten thousand more." The distribution of Wilbur's tracts seemed to be a combination of a matter of principle, a show of support for Bishop Wright, and an interesting printing challenge, rather than a money-making proposition. Although some of the tracts were sold, many were given away and Wilbur wrote to his father with some anticipation: "Reuch[lin] has 1100 at the convention. When we begin to circulate them for free, there will be fun."[36]

Orville next determined to make use of the capacity of his new press. In what a biographer has called "probably the first time a paper was ever started just to use a press," Orville at age 17 began publication of the *West Side News*, a paper "to be published in the interests of the people and business institutions of the West Side."[37] The first number of the *West Side News* was published on March 1, 1889, with Orville listed as publisher.

31 Shuey, *Manual of the United Brethren Publishing House*, 115–20 and 296.
32 Kelly, *The Wright Brothers*, 20.
33 Orville Wright to Milton Wright, July 20, 1888, Wright Brothers Papers, Box 6, Library of Congress.
34 Crouch, *The Bishop's Boys*, 78–79. See also Honious, draft HRS, 13–14.
35 Orville Wright to Milton Wright, July 20, 1888, Wright Brothers Papers, Box 6, Library of Congress.
36 Wilbur Wright to Milton Wright, August 5, 1888, Wright Brothers Papers, Box 6, Library of Congress. See also draft HRS, 13 and Brunsman and Brunsman, *Wright and Wright, Printers*, 7.
37 Kelly, *The Wright Brothers*, 20.

The next month Orville rented business premises for the first time, establishing a "neat little office" near the corner of West Third Street and Broadway, at 1210 West Third Street. The first number of the *West Side News* issued from the new office also included Wilbur as editor for the first time.[38] With the new location, the *West Side News* also took on a new format. Introduced as a three-column, four-page weekly measuring roughly 12 inches long by nearly nine inches wide, by the April move to West Third Street the paper had changed in format to four columns of text on pages nearly 16 inches long and 11 inches wide.[39]

Two months into publication, the *West Side News* was greeted with approval and "kind notice" by "the most widely circulated paper in this city", the *Religious Telescope*, which wished Bishop Wright's sons success and commented on the "neatness, taste, and pleasing mechanical construction" of the small paper produced on the brothers' own press.[40] Business was fair and in addition to Orville and Wilbur, Ed Sines and several other employees worked on the paper. Wilbur continued as editor, while Paul Laurence Dunbar, local poet and a school friend of Orville's, may also have contributed to the paper.[41]

The last issue of the *West Side News* was printed on April 5, 1890, and Orville and Wilbur began promoting *The Evening Item*, their new daily paper, which debuted on April 30, 1890. Although maintaining the detailed local reporting found in the *West Side News*, the *Item* included more national and international news items. This news was supplied by a news syndicate either on matrices to be cast into stereotype plates or as cast metal plates known as "boiler plates."[42] *The Evening Item* was a short-lived enterprise and its last issue was distributed July 30, 1890. Orville and Wilbur made it clear that they had no wish to go into debt to finance the newspaper, and succinctly explained their reasoning: "in a few words: More money can be made with less work in other kinds of printing, such as job printing ..." [43]

Dayton printers were plentiful during this period, and although trade representatives usually reported that the state of trade was fair to good with prospects ranging from good to excellent, itinerant printers – called "tourists" – were discouraged and competition was brisk. Typographical Union No. 57 of Dayton boasted 105 members in the spring of 1890, and in July of that year, as the brothers were no doubt coming to the decision to rent new premises, *The Inland Printer* reported that summer trade had been very good, "in fact, unexcelled for this time of year." [44]

The following month the paper reported that "the hot season is on us" and trade had slacked, though the outlook for the fall season was "bright."[45] Trade was on the upswing in autumn, but business tapered off in 1891. In February of that year the paper noted good trade but "an abundance of printers – some idle."[46] Prospects remained poor during the year and the

38 *West Side News*, April 13, 1889, in Brunsman and Brunsman, *Wright and Wright, Printers*, 8.

39 Brunsman and Brunsman, *Wright and Wright, Printers*, 7–8. See also *West Side News*, March 23, 1889 and May 11, 1889, Wright Papers, Box 101, Library of Congress.

40 *West Side News*, May 5, 1889, in Brunsman and Brunsman, *Wright and Wright, Printers*, 8.

41 Kelly, *The Wright Brothers*, 20–21; draft HRS, 15–17, and Brunsman and Brunsman, *Wright and Wright, Printers*, 8–9.

42 Brunsman and Brunsman, *Wright and Wright, Printers*, 9.

43 Draft HRS, 22 and *The Evening Item,* July 30, 1890, microfilm edition, vol. 1, F201, Ohio Historical Society, in Brunsman and Brunsman, *Wright and Wright, Printers*, 10–11.

44 *The Inland Printer*, April 1890 and July 1890.

45 *The Inland Printer*, August 1890.

46 *The Inland Printer*, September 1890 through February 1891.

August report commented on the "home printers" sitting idle, although tourists continued to come to Dayton "in squads."[47] Regardless of season and economic outlook, the publication reports that job printers continued to average $15 per week from 1890 through 1892. In 1892 Orville reported that the brothers had cleared $40 on two weeks of work, indicating that during that period their earnings were average, if not above.[48]

The construction of Zachary T. Hoover's commercial building at the southeast corner of West Third and Williams Streets was covered first by the *West Side News*, and later by *The Evening Item*. Completed in July 1890, the building was divided into three stores on the ground floor, with suites on the second floor and a meeting hall on the third. Although the earliest surviving publication to show the address of the new location of "Wright and Wright, Printers" is the Thanksgiving number of the advertising booklet *Tid-Bits*, it is generally assumed that the Wright brothers were among the first tenants of the second-floor suites, and so may have moved their business in late summer or early autumn.[49]

Shortly after the move to the new offices, Wright and Wright, Printers, although newly committed to job printing, took on the printing of yet another weekly newspaper. Paul Laurence Dunbar, a classmate and friend of Orville's, determined to publish a paper directed at Dayton's black community. Dunbar, who would soon be recognized as a poet of international renown, had probably contributed poetry to the brothers' earlier papers. Having friends in the newspaper business may have inspired Dunbar in his venture, and the Wright brothers published the first, and only, three issues of *The Tattler* on credit. They probably used the press they made themselves in 1888, as the sheets of the five column four-page paper measured around 20 x 13 inches. As Orville later summed up: "We published it as long as our financial resources permitted of it, which was not for long!"[50]

The three-room suite, although not large, was sufficient to house a press capable of printing pages as large as 20 x 26 (two pages of *The Tattler* printed together), as well as an imposing table, type stands and other tools of the printing trade. Before 1893, the brothers had the inscription "Wright and Wright Job Printers" painted on the front window of the Hoover Block, perhaps indicating that they were firmly out of the newspaper business. See figure 26.

During one visit to the printing office their friend Dunbar offered his own inscription, a testimony to Orville's prowess as a printer, jotted on the office wall. Dunbar is said to have written:

> Orville Wright is out of sight
> In the printing business.
> No other mind is half so bright
> As his'n is.[51]

47 *The Inland Printer*, April, June, and August 1891.

48 *The Inland Printer*, April 1890 through May 1892 issues and Lorin Wright to Milton Wright, September 29, 1891, Wright Papers, Library of Congress, Box 5.

49 Draft HRS, 23–24 and Brunsman and Brunsman, *Wright and Wright, Printers*, 10–11.

50 Crouch, *The Bishop's Boys*, 101; Brunsman and Brunsman, *Wright and Wright, Printers*, 11; and Marvin W. McFarland, editor, *The Papers of Wilbur and Orville Wright*, volume II (New York: McGraw-Hill Book Company, Inc, 1953; reprint edition by Arno Press, Inc, 1972), 1162.

51 McFarland, *The Papers of Wilbur and Orville Wright,* volume II, 696.

If the lines were indeed written during the Wright brothers' tenure in the second-floor suite, they have long since disappeared.

The brothers completed a wide range of printing jobs for a variety of West Dayton businesses, as well as for family, church, and neighbors. Their output included cards, circulars, tickets, envelopes, labels, ribbons, sacks, and shirt strips for a local laundry. In addition to printing just about anything, the office corrected mailing lists for the *Conservator*, allowed the use of their paper cutter for a fee, and sold paper and blank books.

In 1892 the printers Mathews and Light ordered a new printing press from the brothers, no doubt after seeing the one they had built for themselves operating in the office at the Hoover Block. Mathews and Light, who printed *The Reporter* and did job printing on West Third Street, also happened to be the sons of Brethren preachers.[52] Aside from commissioning the press, Mathews and Light hired Wright and Wright to print cards, circulars, and minutes, and occasionally purchased supplies from them. *The Reporter* company itself used Wright and Wright for small printing jobs.[53]

Orville and Wilbur received a great deal of business from their father, who kept them busy printing large quantities of briefs, tracts, and depositions. As a man who was continually involved in legal disputes over the direction and destiny of his branch of the church, Milton was responsible for a considerable amount of printed literature in support of his cases.[54]

Wilbur and Orville assisted Lorin in the *Conservator* office when necessary. Wilbur wrote to Milton: "Orville has been helping Lorin in the printing office for three weeks past and I have helped them two days. They are crowded with work."[55] By 1893 Lorin was working in Orville and Wilbur's office, Millard Keiter having been elected to the position of church publishing agent and presumably hiring his own assistant in the publishing house. The *Williams Dayton City Directories* list Lorin as a bookkeeper in the Hoover Block in the 1892–93 edition and an employee of Wright and Wright, Job Printers, in the next two editions.[56] In September 1894 Wilbur commended the work Lorin was doing in the printing office, noting that he made a profit of $30 on some Labor Day programs and had more work on hand.[57]

By this time Orville and Wilbur would have needed extra help, as they had also begun pursuing an altogether different line of business. They opened their first cycle shop in the spring of 1893 at 1005 West Third Street. The brothers sold new bicycles and parts as well as doing repairs, and the shop was soon successful. They moved the business to several other locations in West Dayton before combining their printing and cycle businesses under one roof after leaving the Hoover Block in 1895.

52 Brunsman and Brunsman, *Wright and Wright, Printers*, 13 and Orville Wright to Carl M. Sisk, May 11, 1940, Wright Papers, Library of Congress, Box 47.
53 Ledger 1, Wright Papers, Library of Congress, Box 62.
54 Ibid.
55 Wilbur Wright to Milton Wright, October 4, 1892, Wright Papers, Library of Congress, Box 6.
56 Brunsman and Brunsman, *Wright and Wright, Printers*, 11.
57 Wilbur Wright to Milton Wright, September 12, 1894, Wright Papers, Library of Congress, Box 6.

It is possible that Lorin worked on the *Conservator* from the offices of Wright and Wright, Printers; the *Williams Dayton City Directory* also shows the paper's office located in the Hoover Block from 1892 through 1894.[58] By 1894 the *Conservator* had its own printing office, with Jacob K. Graybill, an experienced Brethren printer in charge, and editor Charles H. Kiracofe also working for newly appointed publishing agent Millard Keiter.

If the *Conservator* was published from the Hoover Block before 1894, then Bishop Milton Wright as publishing agent would have spent a great deal of time in the print shop as well. His diary notes a variety of calls and visits, but it is sometimes difficult to determine exactly where he has been. For instance in 1892 he notes that he "Called at Printing office ... and Kiracofe's in the evening." When the *Conservator* acquired its own offices, Bishop Wright notes visits to the "Conservator Office" several times a week, probably having to do with the frequent articles he contributed.[59]

The arrangement between Dayton printers associated with the Brethren church appears to have been fairly fluid. Not only did Mathews and Light commission a new printing press from Wright and Wright, who were their competitors to some extent, but they also hired the firm to do some of their printing. Although his own shop did not print the paper, Orville went to work in the *Conservator* office when two of the paper's typesetters, "Anna Wells and the girl they call Orpha," went on strike.[60]

Not surprisingly, the Church of the United Brethren in Christ (Old Constitution) itself also provided the Wright brothers with printing work. The church had no printing facility of its own until 1894, and Milton as bishop and publishing agent directed church work to his sons. Some of Orville and Wilburs' largest jobs were from the various conferences who hired them to publish the minutes of their meetings. Wright and Wright, Printers regularly printed the Auglaize Conference minutes, as well as minutes for the North Ohio and Scioto Conferences. The booklets were roughly five inches wide and eight inches long, and contained as many as 116 pages.[61] Orville estimated that they worked about two weeks on each set and made around $40 profit; in 1892 they charged $48 for printing 600 copies for the North Ohio group and $47 for 450 copies for Auglaize.[62]

Paul Laurence Dunbar continued to come to Wilbur and Orville for his printing needs, as did Ed Sines, Charles Webbert (the Wrights' future landlord), the West Side Building Association, United Brethren churches and local business owners. Dunbar ordered programs, tickets, show cards and "dodgers" from the Wrights, giving them fairly regular business until early 1893. Church leaders such as John Dodds, trustee of Oak Street Church and director of the Dayton YMCA; Samuel L. Herr, trustee of Union Biblical Seminary and member of the

58 Brunsman and Brunsman, *Wright and Wright, Printers*, 6.

59 Bishop Milton Wright, *Diaries, 1857–1917* (Dayton, Ohio: The Wright State University Libraries, 1999),385 (November 1, 1892) and 410 (February 20, 22, and 27, 1894).

60 Ledger 1 and Wilbur Wright to Milton Wright, October 2, 1894, Wright Papers, Library of Congress, Box 6.

61 Brunsman and Brunsman,*Wright and Wright, Printers*, 11.

62 Lorin Wright to Milton Wright, September 29, 1891, Wright Papers, Library of Congress, Box 5; Orville Wright to Milton Wright, October 16, 1891, Wright papers, Library of Congress, Box 6 and Ledger 1, Wright Papers, Library of Congress, Box 62.

executive committee of the Publishing House, and Reverend Josiah P. Landis, religious author, professor and editor, also came to Wright and Wright for printing work. [63]

Aside from Ed Sines, the Wright brothers may have had other employees in the office in the Hoover Block, if only a boy, or "printer's devil," to assist with the dirty work. It has been estimated that *The Evening Item* would have required at least three full-time compositors to set type, proof work, make up forms, and redistribute type for each issue.[64] It is clear then, that the brothers had hired help in the past. Jobbing required less continuous work, though, and the business ledgers which start in December 1890 do not indicate payments to any employees. In the absence of a record of wages paid or any other evidence about employees it is difficult to determine how many employees worked in the print shop, or if anyone at all worked there aside from the Wright brothers and Ed Sines.

On October 20, 1894, Wilbur and Orville introduced one last weekly publication. Not exactly a newspaper, *Snap-Shots at Current Events* was a light magazine available by subscription. The magazine usually included 16 pages of jokes, editorials, essays, and a question-and-answer column. Some editions carried syndicated news and most contained articles about, or advertisements for, bicycles.

The format of the magazine changed in February 1896, by which time Orville and Wilbur had combined their printing and cycle businesses in one location at 22 South Williams Street. The new magazine, titled *Snap-Shots*, was smaller and the quality of the printing had improved. It was also distributed for free or mailed in receipt of postage, and heavily promoted bicycling and their own brand of cycles.[65]

In the spring of 1895, Orville and Wilbur gave up their lease on the Hoover Block suite and moved around the corner to 22 South Williams Street. At this location their cycle business also housed their printing operation, although by this time the brothers' interest in bicycle making and repairing had outstripped their interest in printing. *Snap-Shots* was discontinued in April 1896, but the Wrights continued to operate their printing business with the help of Ed Sines until 1899. When Sines left that year for another job, they sold their equipment to local printing firm Stevens and Stevens.

During the 1895 cycling season, the Wright brothers opened two new stores, one in downtown Dayton and one at 22 South Williams, just around the corner from the Hoover Block and down the street from their home at 7 Hawthorne Street. At the West Dayton shop they began manufacturing their own brand of cycles, and by 1897 enjoyed moderate success selling, repairing, and manufacturing bicycles, as well as continuing to do job printing. In the spring of 1897 they moved the cycle company and the printing operation to 1127 West Third

63 Ledger 1, Wright Papers, Library of Congress, Box 62 and Shuey, *Manual of the United Brethren Publishing House,* 253, 262–63, 270–71. Dodgers are printed sheets "usually relating to a star actor.... or a new sensation" inserted in a program. J. Luther Ringwalt, ed., *American Encyclopaedia of Printing* (Philadelphia: Menamin & Ringwalt and J. B. Lippincott & Co., 1871; 1981 reprint), 148.

64 Brunsman and Brunsman, *Wright and Wright, Printers*, 13, and Shuey, *Manual of the United Brethren Publishing House,* 176–77.

65 Brunsman and Brunsman, *Wright and Wright, Printers*, 13–14.

Street, and in 1901 added a light machine shop to the rear of the building. They used the machinery in this shop to make and repair bicycles and eventually to build the first practical flying machine.

By around 1899 both brothers were interested in the idea of human flight and as early as the summer of that year Wilbur began constructing kites to experiment with aerodynamic principles. The following summer Orville and Wilbur began work on a full-size glider and tested it on the sand dunes at Kitty Hawk, North Carolina, in the autumn of 1900. For several more years the brothers revised established tables of aerodynamic values and tested and improved their designs. In the autumn of 1903, they shipped the motorized aircraft they had designed and built in their shop in west Dayton to Kitty Hawk, and on December 17, 1903, Orville successfully flew their aircraft for the first time.

After their achievement in North Carolina, the Wright brothers returned home and began working on improving the flyer. They practiced at Huffman Prairie, a field located just outside Dayton, and within two years developed the Wright Flyer III, a machine they could safely fly, control, and land. The brothers secured their first patent on the airplane in 1906, incorporated their company in 1909, and constructed their own factory which provided planes for the United States government.

Wilbur died of typhoid fever in May 1912 and Orville continued their business until 1915, when he sold the Wright Company. The sale of the company left him a wealthy man, and he built himself a laboratory close to the cycle company building on West Third Street.

Orville also continued building the new house the brothers were planning before Wilbur's death, and moved into it with his father and sister in 1913. The new house, called Hawthorn Hill, was located in Oakwood, a community south of Dayton. Orville remained there until his death in January 1948.

Evidence of Room Use and Furnishings

Printing Presses

The Wright brothers used two presses in the Hoover Block. The largest was one they constructed themselves and used to print their newspapers, although it is unclear whether they used the press they constructed in 1888 or a later press. The press Orville started in the spring of 1888 was constructed out of scrap lumber and discarded scraps of metal. The framework was made out of four-foot-long pieces of firewood, supplemented by longer pieces purchased at the lumberyard. Iron and steel parts were scavenged from local junkyards. In later years Orville clarified one biographer's attempt at describing the press: "This paper [*The West Side News*] was printed on a press which Wilbur and I had built mostly out of wood. It was not 'repaired with odd pieces of string and wood' – it was originally built that way."[66]

Orville was only 16 at the time and the project was a complicated one; older brother Wilbur soon offered to lend a hand. One of the most remarked-upon elements of the new press was its use of buggy parts. The incorporation of the buggy's "steel bars hinged in the middle ... designed to force the top just so far and no farther" into the press design seems far-fetched, but it appears in Fred C. Kelly's biography of the Wrights, which was scrutinized for accuracy throughout the writing and eventually authorized by Orville.[67]

Another biography, likewise closely reviewed by Orville or his secretary, Mabel Beck, noted that "he and his brother built in a few months a large printing press which turned out up to fifteen hundred copies an hour."[68] While both biographies go on to describe the newspapers and other matter the brothers printed, neither mentions the construction of a later press.

Orville wrote to his father that the new press was "large enough to print two pages of the 'Conservator' at once." A single sheet of the *Christian Conservator* measured 18-3/8"x12-5/8" in 1888, which indicates that the press had a bed at least 19"x26" to accommodate printing one sheet of the newspaper, or two pages open flat. Orville also pointed out that: "[t]he new press works in an entirely new way." In fact, the Wrights' 1888 press was widely known within the community and occasioned some comment. In May 1889 Dayton's *Religious Telescope* noted that the Wright brothers had constructed their own press with a capacity of 1,200 impressions per hour. The new press also attracted the attention of a pressroom foreman

66 Orville Wright to Alexander Klemin, New York University, April 11, 1924, Library of Congress, Wright Papers, Box 101.

67 Kelly, *The Wright Brothers*, 19, and Crouch, *The Bishop's Boys*, 519.

68 Anna Rothe, Editor, *Current Biography* to Orville Wright, October 3, 1946, and attachments, Library of Congress, Wright Papers, Box 60.

from Denver, who inspected it and expressed his surprise: "It works all right, but I still don't understand *why* it works."[69]

The Wright brothers' press prompted local curiosity, in part because it was unusual for printers to be involved with press construction. *The Inland Printer*, a Chicago trade journal, commented in a section on "Practical Talks on Presswork": "There is really no more sense in having the pressman make his own rollers in these days than there would be in requiring him to build his own press, make his own paper or ink, all of those things being much better done by those whose special vocation lies in that direction than any pressman can possibly do it."[70]

While it is clear that the Wright brothers printed their newspapers on their own press, neither Orville nor Wilbur leave much description of the press or presses, except to say that "the work we can do on this press, is much better than that done on the old one." The new press could print more than 1,000 impressions per hour, which was a "respectable" speed.[71] A biographical sketch of Orville prepared in 1921 by his sister Katharine and no doubt reviewed by Orville himself, notes that the brothers "made the printing presses on which their papers were printed," without further detail.[72]

The *Evening Item*, introduced in April 1890, measured almost 20 by 13 inches and was considerably larger than the 16"x 11" *West Side News*. The Wrights could have used the 1888 *Conservator* press to print the *Item* and to print Paul Laurence Dunbar's *The Tattler*, the pages of which measured 20" by 13" each. If the brothers had indeed constructed another press for themselves after 1888, they did not mention it in their newspaper or in their correspondence.

A bit more information is available about the press the brothers built in 1892 for local printers Mathews and Light. If we assume, as one printing specialist has suggested, that Mathews and Light would not buy a "pig in a poke" from the Wright brothers, but would order a version of a press they had seen in the Wright & Wright shop, then either the 1888 press or a conjectural later press was a cylinder press. The descriptions the brothers left of the press they were constructing in 1892 indicate that they were building a cylinder press of some sort. It is likely that the cylinder traveled over the type and the bed was stationary, such as in a Prouty "Standard" newspaper press, which was a light and relatively uncomplicated machine.[73] (See figure 25.)

The brothers agreed to construct the press for Mathews and Light in June 1892, and by the end of September Orville hoped that the job would be finished within several weeks. They had "sent the patterns for the cylinder off to the foundry" and already had the castings for the frame and bed on hand. They expected the total cost of materials to be a little over $50, and charged $250 for the new machine. Their friend Cordy Ruse, or C. J., loaned them shop space

69 Orville Wright to Milton Wright, July 20, 1888, Library of Congress, Wright Papers, Box 6, and Kelly, *The Wright Brothers*, 20. *Christian Conservator* size confirmed through the United Methodist Commission on Archives and History, Madison, New Jersey, and United Brethren Archives, Huntington College, Indiana.

70 *The Inland Printer*, May 1891, 7.

71 Orville Wright to Milton Wright, Wright Papers, Library of Congress, Box 6, and Stan Nelson to Mary Grassick, January 4, 2001.

72 *West Side News*, May 5, 1889 in Brunsman and Brunsman, *Wright and Wright, Printers*, 8, and Orville Wright to Charles F. Rand, May 12, 1921 and attachments.

73 Stan Nelson to Mary Grassick, January 4, 2001. See Harold E. Sterne, *Catalogue of Nineteenth Century Printing Presses* (Cincinnati: Ye Olde Printery, 1978), plates 170 and 171.

and machinery with which to construct and set up the press, and in return they hung wallpaper for him.[74]

It is not known whether the press was powered by an engine or by a hand-cranked flywheel. Wilbur and Orville are known to have been working on a pneumatic engine in the winter of 1892. They were also familiar with the gas engine used to power the *Conservator* presses, although it had apparently been discarded by 1897.[75] Physical evidence of line shafting has not been located in any rooms within the print shop suite, and written sources give no evidence as to the power source for the presses. Room 221 is large enough to contain a modest-size press and the window provides natural light. The list of furnishings does not recommend that conjectural line shafting or belting be installed in the room.

Room 222 contains a tarp-draped object fabricated to imply that the Wright-built press, which cannot be reproduced due to lack of evidence, lies underneath. Interior wayside panels explain that research has not uncovered specific evidence as to the appearance or operation of the Wrights' press. The use of the shrouded press is particularly appropriate here because it is very possible that the Wright brothers did not use their large press frequently once they established themselves in the Hoover Block. Paul Laurence Dunbar's paper, *The Tattler*, is the only job they took on that was physically large enough to require using a press of this size. The paper was published only in December 1890, which was the very beginning of the Wrights' tenure in the Hoover Block. Orville and Wilbur retained the suite of rooms for more than four more years and during this time would have used a job press to complete all the other work they produced there.

The job press, or platen press, was extremely popular during the late 19th century and almost every printing operation used one. It was used to print work such as cards, billheads, and circulars – all the small printing jobs that the Wright brothers turned out at the Hoover Block. The patent for the platen press was awarded to George Gordon in 1850 and many makers manufactured their presses under the name "Gordon," or "Gordon-style." The press was simple and inexpensive and could produce between 1,000 and 1,500 impressions per hour. Job presses were powered by a foot treadle, which made them ideal for small printing businesses and print shops located where there was no power source. To further simplify its use, the job press printed on dry paper, in contrast to the cylinder press which required dampened paper.[76]

In 1899 the Wright brothers sold their job press, made by George W. Prouty and Company of Boston, to Thomas and Marion Stevens, printers. (See figure 24.) They also sold an Acme paper cutter, a "Boston window cabinet with cases," a lead cutter, their imposing stone, type, and other printing equipment.[77]

74 Wilbur Wright to Milton Wright, September 12, 1892; Wilbur Wright to Katharine Wright, September 18, 1892; Orville Wright to Milton Wright, September 27, 1892; and Wilbur Wright to Milton Wright, October 4, 1892, Wright Papers, Library of Congress, Box 6.

75 Stan Nelson to Mary Grassick [no date] 2002; Milton Wright Diaries, entry for February 24, 1892, 374; and Wilbur Wright to Milton Wright, June 2, 1897, Library of Congress, Wright Papers, Box 6.

76 Sterne, *Catalogue of Nineteenth Century Printing Presses*, 217–18.

77 Wright Cycle Co. and Stevens and Stevens mortgage, April 20, 1899, Library of Congress, Wright Papers.

Original Wright Objects

Imposing Table

The Wright brothers' imposing table is in the collection of The Henry Ford. The museum purchased the imposing table from Stevens and Stevens, a Dayton printing company, when it acquired and relocated the 1127 West Third Street Wright Cycle Shop building and the Wright family home to Dearborn, Michigan, in 1937. The purchase was part of a project to historically furnish both the house and the cycle shop to the period when they were used by the Wright brothers. At that time Orville Wright donated many furnishings from the family home at 7 Hawthorn Street and from the Wright Cycle Shop to the museum.

The Wright brothers' printing materials had been sold to Stevens and Stevens in 1899 when Ed Sines, who was operating the printing business at the time, took a new job. The museum purchase included the imposing table with its marble stone, a double type case stand, a single type case stand, galleys, metal furniture, leads, job cases, and type.[78] The Henry Ford is loaning the imposing table to the National Park Service for exhibit in the historically furnished Print Shop suite in the Hoover Block.

The imposing table shown in figure 1, the photograph of Ed Sines at the table, appears to be the same one that Stevens and Stevens sold to the museum, although the table has been painted and a lead rack has been built into the area underneath the stone. The imposing stone was used as a base for locking up the type into forms and for correcting forms. The Wrights probably made their own imposing table – certainly they had the skills and inclination to complete such a simple project. The stone overlaps the table base in the Wrights' version, while the stone is typically set into a "coffin," or wooden frame, in manufactured tables. The frame protected the edges of the stone and served as a place for printers to rest galleys when sliding off type. Larger imposing tables such as this one commonly had two drawers, one at each end.[79]

Type Stands and Type Cases

The Henry Ford collection includes a double type stand and 20 type cases owned by the Wright brothers. The museum is loaning these objects to the National Park Service for exhibit in the restored Hoover Block. The museum acquired the double type stand, a type cabinet, and the cases from Stevens and Stevens in 1937.[80] The type cabinet is an enclosed cabinet that stores and protects full type cases. (See figure 19.) The double type stand is exhibited in the Composing Room (Room 223) along with a second double stand similar to the original. The Wright brothers would have needed at least two double type stands to support the amount of work their shop generated.

Type stands were available in double, single, or quadruple styles and in several configurations. A single stand held from eight to 15 cases. Compositors placed two or four cases filled with type on the top shelf (two for a single stand and four on a double stand), and stored the rest in

78 Fred Black to Orville Wright, January 27, 1937, and attachments, The Henry Ford Research Center, EI 186, Wright Cycle Shop Correspondence. See also Wright Cycle Co. and Stevens and Stevens mortgage, April 20, 1899, Library of Congress, Wright Papers.

79 American Type Founders Company catalog [year unknown], 838.

80 Fred Black to Orville Wright, January 27, 1937, and attachments, The Henry Ford Research Center, EI 186, Wright Cycle Shop Correspondence.

the slots in the base of the stand. According to one printers' periodical, "Cases may be arranged, as to position, to suit the convenience of the compositors, so that each case may be readily found and easily used."[81] Proximity to a window was very important, as a good source of light was critical to produce quick and accurate work.

The compositor, also called the typesetter, either sat on a stool or stood at the stand, selected type from cases, and inserted the type in a composing stick. The type was then inserted in the galley. Often the text of the print job was propped on the top cases. (See figures 2, 3, 4, 5, and 8.) The double stand the Wrights owned had a galley rest between the top cases to prevent the galley from resting on the type cases.

The type cases themselves were large frames partitioned into many compartments in which type was stored. The Henry Ford acquired 40 cases from Stevens and Stevens, Printers in 1937. Most of the cases are job cases in which upper case and lower case fonts are combined.[82] A shop the size of the Wright brothers' would probably have contained as many as 75 cases to accommodate different type fonts and ornaments.

The Wright brothers owned large quantities of Brevier Roman, Nonpareil Roman, and Long Primer Roman type, and smaller amounts of Poster Ionic and Gothic Italic. They also had samples of Gothic, Menu, Luray Gothic, Pisa, Tudor, Hazel Script, Armoric, Euclid, Dante, Light face expanded, Karnac, Skeleton Antique, Rembrandt, and Celtic.[83] Trade journals advised those starting out in business to buy "a full selection of gothics, light, medium, and black, condensed, and regular faces . . .. The plain types *always* look well in a job – the fancy ones only now and then."[84] In an 1891 letter, Orville mentioned adding "several new fonts of type to the office, which we find very handy."[85] Type originally owned by the Wright brothers is included in the collection at The Henry Ford and has been loaned to the National Park Service for exhibition.

Other Wright Materials

Aside from type, cases might contain "labor-saving rules" or brass rules cut to various lengths and organized to a standard format within the case. Rules were the height of the type and might also be made of wood. They printed on the page as lines of various thickness. Leads – thin pieces of metal placed between lines of type to open up the composition – were commonly stored with slugs – a term for thick leads – in racks that sorted the materials by length and width. Square or rectangular pieces of metal or wood, called furniture, were also used to fill up blank space within the chase. These were commonly stored in a small standing cabinet with or without a door. (See figures 4, 7, and 9.)

The print shop composing room was characterized by one printing journal author as "a bottomless pit, into which you can pour material forever with no visible effect." The writer

81 *The Inland Printer*, March 1890, 482.
82 Wright Brothers Papers, Library of Congress, Box 21.
83 Mortgage between Wright brothers and Thomas and Marion Stevens, April 20, 1899, Wright Brothers Papers, Library of Congress.
84 *The Inland Printer,* May 1891, 679.
85 Orville Wright to Milton Wright, October 16, 1891, Wright Brothers Papers, Library of Congress, Box 6.

encouraged printers to build their own lead racks, furniture cases, and other storage units to save money.[86] The Wright brothers' lead and slug racks are homemade, and they probably built all storage pieces used in their composing room, just as they built the press and imposing table. These lead and slug racks are in the collections of The Henry Ford and were loaned for use in the historic furnishings installation, along with original Wright leads and furniture

An ink brayer, used to spread ink on the inking table and apply it to press plates or rollers, was also among the Wright items loaned by The Henry Ford. The Wright brothers owned a shop-made paper cabinet, with two hinged beaded doors. (See figure 21.) This cabinet was reproduced by the National Park Service and is exhibited in Room 222.

Other Printing Materials

The Wright brothers would have had many other printing tools in their shop, and period pieces acquired for the project fill out the historic scene and create an accurate representation of an 1890–95 print shop. Among the items that would have commonly been found in print shops of this period is a proof press, which was a simple press used to make proofs from copy locked up in galleys. The proof was made by passing a heavy felt-covered inked roller over the galley. *The Inland Printer* called the purchase of a proof press "one of the best investments that can be made" and recommended that each compositor take proofs of his or her own work. The accompanying ink slab, for spreading ink and applying to the roller, was made from stone, glass, or iron. The roller should be kept clean, as should the ink itself, and hung up "out of the way of falling dust and dirt." The benzine can and brush, employed in place of the commonly used rag to clean ink from forms, were to be kept "handy."[87]

Ink was stored in cans, jars, kegs, or casks, but the black job ink commonly used in an office such as the Wright brothers' was put up in cans. There were many varieties of ink, the use of which depended on the type of printing being done, and the type of paper being used. Once a can of ink was opened with a knife, it was spread with an ink knife or ink slice onto an ink block, stone or table where it was distributed over the roller or brayer, or put into the ink fountain on the press.[88]

Pressmen were cautioned to keep ink cans covered, because aside from the "shiftless appearance of a number of ink cans without covers, dirt and dust drop in and the consequence is ... a source of annoyance to the pressman and employer alike, and a general dissatisfaction on the part of customers." Ink cupboards were also recommended to organize the various containers of inks, so that "the motley display of old ink cans of every shape, size and color need not offend the eye as they too frequently do."[89] (See figure 22.) Ink stains are located on flooring original to Room 222, so it is possible that the Wrights stored their inks in a cabinet in this room.

86 *The Inland Printer*, June 1891, 866.

87 *The Inland Printer*, October 1891, 4 and J. Luther Ringwalt, ed., *American Encyclopedia of Printing* (Philadelphia: Menamin & Ringwalt and J. B. Lippincott & Co., 1871), 373.

88 Ringwalt, *American Encyclopedia of Printing*, 217–20.

89 *The Inland Printer*, October 1891, 3, and November 1891, 122.

Another tool common to the print shop was the paper cutter, described in the 1871 *Encyclopedia of American Printing* as "a necessary implement in all job-offices in which a considerable amount of work is done ...."[90] They were available in both floor or table models with knife length varying from 12 inches to 32 inches. An office the size of the Wrights' would have required a paper cutter with a blade of about 19 inches. A table model would have been the most versatile choice and would have saved the construction or purchase of a stand.

Items such as shears, twine, paste, and card and paper stock would also be found around the shop, and printers were cautioned to "keep the floor well cleaned and paper well sacked and have a regular call from the man who takes your waste, even if you have to give it to him to take it away." Ideally, waste paper could be re-sold, and trimmings "help out with the rent." [91]

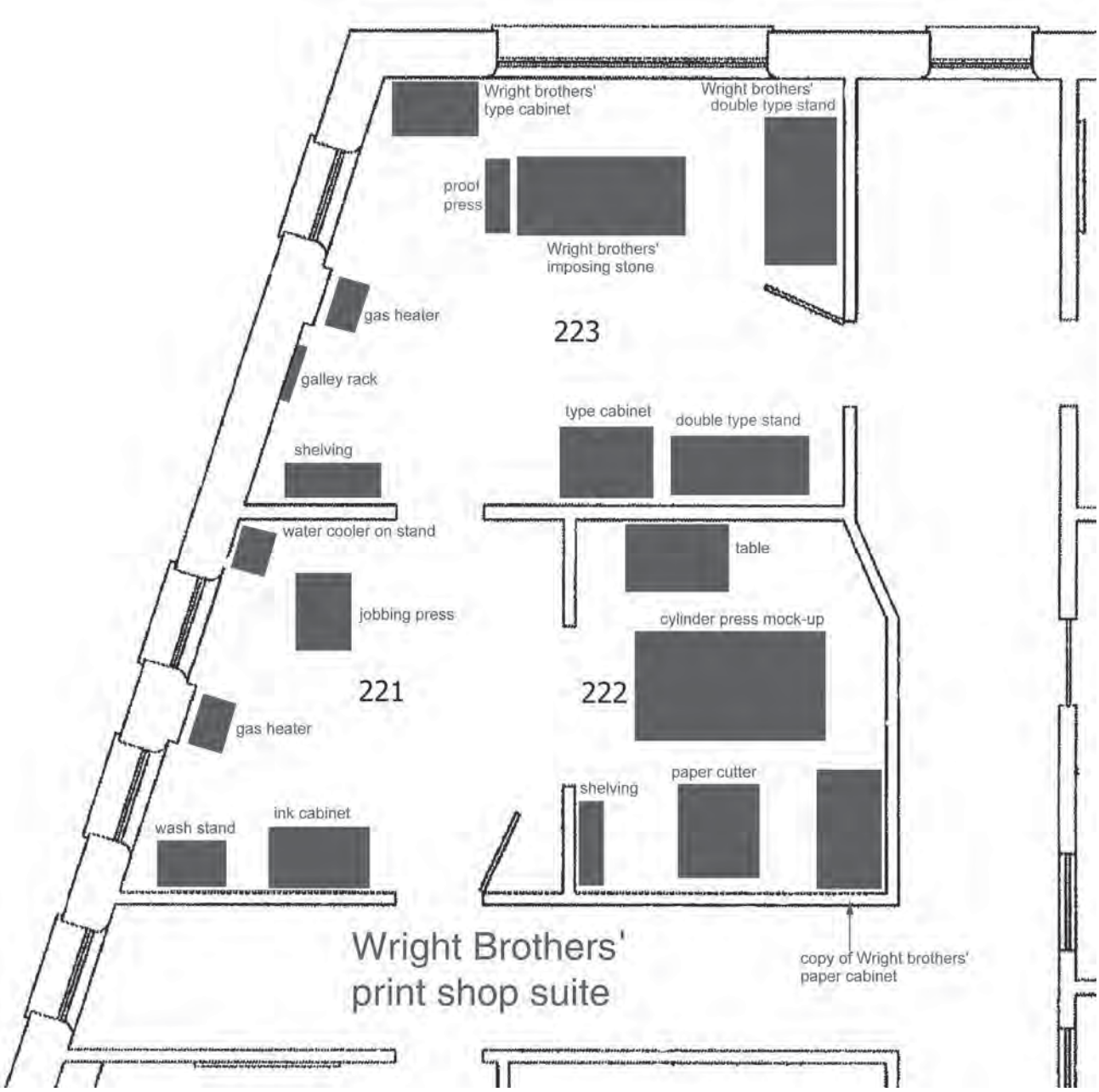
More dangerous, however, were the oily rags used to lubricate the presses, and the benzine-soaked rags used to clean type face. Insurance companies required that "an iron can, sufficiently isolated to prevent danger" be used for the rags, and noted that if the rule was "more rigidly enforced the rate of insurance on printing offices would no doubt be materially reduced."[92]

The "free and frequent use" of a sink or wash-trough liberally supplied with soap and towels was also encouraged. Printers who kept themselves and their premises tidy would benefit from a general pride in the work place, as well as "fewer soiled sheets of stock in the pressroom."[93]

90 Ringwalt, *American Encyclopedia of Printing*, 342.
91 *The Inland Printer*, November 1891, 122.
92 *The Inland Printer,* May 1891, 680.
93 *The Inland Printer*, June 1891, 864.

Furnishings Plan

Print Shop Suite Floor Plan



List of Recommended Furnishings

Room 223: Composing Room

This room was used for composing, or setting type. The north-facing windows, supplemented by an overhead gas fixture, provided the light needed for typesetting. Since this room is the brightest and the largest, it is likely that the Wrights received customers here.

Visitors enter from the hallway, pass through the south end of the room and then into Room 221 south of the Composing Room. A barrier with an interpretive label separates visitors from the furnished section of the room.

OBJECT AND LOCATION	EVIDENCE	RECOMMENDATION
Type stand, double (east wall, to right of entrance door)	Original Wright object. See also figures 2 through 11 and examples in trade catalog. In this location, the light source is at the compositor's left, which enables him to work without shadowing his type.	Use original on loan from The Henry Ford, 37.813.2.
Type cases, 4 (on type stand)	The Wright brothers owned type cases. See also figures 3 through 11 and examples in trade catalog.	Acquire.
Type, Modern #8, 8 pt., 10 pt., 12 pt., 75 pounds each Leads and slugs, 20 pounds Spaces and quads, 3 pounds each (in cases)	Figures 2 and 3	Acquire. Determine additional fonts from original Wright printed material and reproduce.
Cigar boxes, 2, with sorts (on type cases)	Figures 2, 3, and 5	Acquire period cigar boxes and reproduction type.
Lead with two strings attached (on type case)	Figures 8 and 10	To hold sample job on type case. Strings are tied to nail on case.
Composing stick, news (on type case)	See examples in trade catalog.	Acquire.
Hell box (near type stand)	For worn out or damaged type	Acquire.
Stools, 2 (in front of type stand)	Figures 3, 4, 5, 6, 8, 9, and 10	Acquire.
Hook, with jobs (on wall next to stand)	Figures 4, 6, 8, 9, 12, 16, and 17	Acquire hook. Reproduce original Wright brothers' printing samples and hang on hook.
Imposing table with marble stone (in center of room, across from window)	Original Wright object. See figures 1 and 17 and examples in trade catalog.	Use original on loan from the Henry Ford, 37.813.6.

OBJECT AND LOCATION	EVIDENCE	RECOMMENDATION
Furniture cabinet, with door (door closed, cabinet on imposing table)	Figure 4 (cabinet without door), figure 7 (with door open), figure 9 (cabinet with door closed), and figure 23. See examples in trade catalog.	Acquire.
Galleys, brass lined, 2, with *Snapshots* form made up (on imposing table)	Original Wright galleys. See examples of *Snapshots* in Dayton & Montgomery County Library. See also figures 3, 8, 9, 10, 11,13, and 17.	Use originals in The Henry Ford collection (37.813.7, 37.813.9 or others on loan, depending on condition.). Acquire period chase, reglet, furniture, and type as necessary.
Quoins, several different sizes, 8 pairs, and quoin wrench (on imposing table)	Common practice. See examples in trade catalog.	Acquire.
Bodkins, wood handle, steel needle, two, (on imposing table)	See examples in trade catalog.	Acquire.
Tweezers, nickelplated (2) (on imposing table)	See examples in trade catalog.	Acquire.
Combination tweezer and bodkin, nickel-plated, 2 (on imposing table)	See example in trade catalog.	Acquire.
Composing stick, jobbing (on imposing table)	See examples in trade catalog.	Acquire.
News stick (on imposing table)	Figure 8. See examples in trade catalog.	Acquire.
Composing rules, 1 set, steel (on imposing table)	See examples in trade catalog.	Acquire.
Make-up rules, 2 (on imposing table)	See example in trade catalog.	Acquire.
Planer (on imposing table)	Figure 11. See examples in trade catalog.	Acquire.
Mallet, wooden (on imposing table)	Figures 8 and 12. See examples in trade catalog.	Acquire.
Type cleaning brush (on imposing table)	Figure 15. See examples in trade catalog. See also use of sponge in figure 10.	Acquire.
Rags (on imposing table)	Figures 1, 8, and 9.	Acquire.
Galley proofing press (at west end of imposing table, on stand)	See example in trade catalog.	Acquire.
Stand, wooden (at west end of imposing table)	Common practice.	Fabricate.
Ink brayer (hanging on stand)	Original Wright object. See example in trade catalog.	Use original in The Henry Ford collection, 37.813.19.
Rag can, covered (next to galley press)	Figures 9, 10, and 15	Acquire.
String holder, with string (on or near imposing table)	To tie up galleys after type set	Acquire period cast-iron string holder. Acquire string.
Saws, 2 (hanging on window frame, north wall)	Figure 14. Saws are used for cutting furniture.	Acquire.

OBJECT AND LOCATION	EVIDENCE	RECOMMENDATION
Galley rack, 10 sets of galley brackets with sockets attached to wood frame (mounted on west wall)	Figure 17. See example in trade catalog.	Acquire.
Galleys, brass-lined, 7 (on galley rack)	Figures 10 and 11. See examples in trade catalog.	Acquire.
Clock, drop octagon (on west wall)	Figures 3, 6, and 14.	Acquire.
Stove, gas (on west wall)	Physical evidence of gas pipe on floor. Natural gas lines along Third Street were installed and operable by September 1889. See figures 3, 4, 5, 6, 8, 9, 10, 12, 13, and 17 for examples of stove placement in print shops. See also trade catalog illustration of gas stove.	Acquire.
Match holder, tin (mounted on west wall next to stove)	Used with stove	Acquire.
Shelf, 3′ wide, 4 shelves (on south wall, right of doorway)	Figures 3, 4, 8, 9, 11, 12, 14, 15, 16, and 17.	Fabricate.
Lead and slug cutter (on shelves)	See examples in trade catalog.	Acquire.
Cigar boxes (on shelves)	Figures 2, 3, and 5	Acquire.
Miscellaneous tools (on shelves)	Figures 9 and 12.	Acquire.
Solvent bottles (on shelves)	Figures 9 and 15	Acquire.
Kerosene can (on shelves)	Holds fuel for lamp	Acquire.
Wrapped packages, stock, various sizes, 10 or more (on shelves)	Figures 3, 4, 11, 12, 14, 15, 16, and 17	Acquire.
Type cabinet (to hold cases) (on north wall)	Original Wright object. Figure 10. See example in trade catalog.	Use original in The Henry Ford collection.
Type cases, 15 or more, brass and wood (in cabinet)	See examples in trade catalog.	Acquire.
Lead cutter (secured to top of cabinet)	See examples in trade catalog	Acquire.
Mitre box (on cabinet)	See example in trade catalog.	Acquire.
Lead and slug rack (on cabinet)	Original Wright object. See figure 13 and examples in trade catalog.	Use original in The Henry Ford collection (37.813.4 or 37.813.5).
Pocket dictionary (on cabinet)	Figure 2	Acquire.
Type specimen book, *Barnhart's Big Blue Book* (on cabinet)	Used in composing	Acquire.
Type cabinet (to hold cases) (on south wall, to left of doorway)	Figure 19. See examples in trade catalog.	Acquire.
Type cases, 10 or 12 (secured in cabinet)	Figures 2 through 12. See examples in trade catalog.	Acquire.
Type stand, double (on south wall, to left of entrance door)	The Wright brothers owned a double type stand. See figures 2 though 11 and examples in trade catalog.	Acquire.

OBJECT AND LOCATION	EVIDENCE	RECOMMENDATION
Type cases, 20 (4 secured on top of type stand, and remainder secured below)	The Wright brothers owned type cases. See figures 2 through 11 and examples in trade catalog.	Acquire.
Type, Modern #8, 8 pt., 10 pt., 12 pt. (in cases)	Figures 2 and 3	Reproduce.
Prints, 2, framed colored engravings of domestic interiors (hanging on south wall)	Figure 1	Reproduce.
Calendar, 1890 (on north wall)	Figures 3, 4, 6, 13, and 16	Acquire.
Printed work, various samples (attached to walls)	Figures 2, 3, 4, 5, 9–14, 16, and 17	Reproduce Wright printing samples.
Light fixture, gas, with globe and metal shade (Place in center of room, using physical evidence.)	Physical evidence. Figure 14	Acquire or reproduce.
Lamp, kerosene (on north wall on window sill)	See figure 9 for this arrangement. Supplemental lighting was typically provided for type frames without natural lighting. See figures 3, 4, 7, 9, 10, 11, 12, and 16.	Acquire or reproduce.
Window shades, 5 (in windows)	Figures 2 and 26	Acquire or reproduce.
Wallpaper, ceiling, border and side wall	Figure 1 shows the Wright brothers used wallpaper in another print shop location. Physical evidence	Reproduce original wallpapers located in February 2001 finishes investigation.
Barrier, wood and tempered glass (to create visitor path through room from entrance door to doorway to Room 221)		Fabricate.

Room 222: Cylinder Press Room

This interior room has no windows and the only access is from the west doorway to Room 221. The room has no natural light; natural light is necessary for typesetting. It contains the draped cylinder press, a paper cutter, and a paper storage cabinet. Ink stains on the original wood flooring in this room indicate that this space was probably not carpeted or covered in linoleum during the time the Wright brothers worked here.

The draped mock press implies that the press the Wright brothers built is underneath the tarp. An interpretive panel mounted on a barrier across the doorway explains that specific evidence about the appearance of the Wright press is not available. As noted above, the use of the covered press is particularly appropriate because it is likely that the Wright brothers did not use the large press frequently while they were working in the Hoover Block. With the exception of Paul Laurence Dunbar's *The Tattler*, they took on no projects requiring a press of this size.

OBJECT AND LOCATION	EVIDENCE	RECOMMENDATION
Model, shrouded, of "country-type" cylinder printing press, base approximately 4 feet wide by 6 feet long (in center of room)	The exact type of printing press used by the Wright brothers is not known. They had a press large enough to print a 20" x 26" newspaper sheet. It is likely they built their own press, similar to a Prouty Grasshopper or Adams, in which the cylinder moves over the bed. See cylinder press in figures 17 and 25.	Fabricate a model of the rough shape of a simple "country" style cylinder press. Cover the entire model with a tarp, and tie down with rope.
Table (on north wall)	Figure 1 shows Ed Sines using the Wrights' imposing stone as a work table. See figures 3, 4, 5, 6, 8, 9, 12, 13, and 17.	Acquire.
File box, wooden (on table)	Figure 1	Acquire.
Rag (on table)	Figure 1	Acquire.
Paper, in stacks, various sizes (on or under table)	Figures 3, 4, 11, 12, 14, 15, 16, and 17	Acquire.
Card stock, boxed and stacked, various sizes, 4 or 5 boxes (on or under table)	Figures 3, 4, 11, 12, 14, 15, and 16	Acquire.
Packages, wrapped and tied (on or under table)	To illustrate completed jobs. Figures 3, 7, and 17.	Fabricate.
Paste pot, with brush (on table)	Figure 13	Acquire.
String holder, with string (on table)	Figure 17	Acquire period string holder and new string.
Shears (on table)	To wrap completed jobs. Figures 3, 4, 9	Acquire.
Chair (near table)	Figures 3, 4, 13, and 16	Acquire.
Paper cabinet, wood (east wall)	Original Wright object. Figure 21	Copy original Wright cabinet in collection of The Henry Ford.
Hanging cabinet, with doors (on paper cabinet)	See figure 17 for hanging cabinets.	Acquire.
Solvent bottle (on paper cabinet)	Figures 9 and 15	Acquire.
Paper, stack (on paper cabinet)	Figures 1, 5, 7, 12, 14, and 17	Acquire.

OBJECT AND LOCATION	EVIDENCE	RECOMMENDATION
Paper cutter, 19", on wooden stand (blade secured, near south wall)	Figures 8, 13, and 20 See example in trade catalog.	Acquire.
Waste box (near paper cutter)	Figure 15	Fabricate or acquire.
Shelves, wood, 4 (west wall)	Figures 3, 4, 8, 9, 11, 12, 14, 15, 16, and 17	Fabricate.
Solvent bottles, several (on shelves)	Figures 9 and 15	Acquire.
Miscellaneous tools and supplies **Cigar boxes** (on shelves)	Figures 3, 4, 5, 7, 9, 11, 12, 14, 15, 16, and 17	Acquire.
Printed work, various samples (attached to walls)	See figures 2, 3, 4, 5, 9–14, 16, and 17	Reproduce Wright printing samples.
Light fixture, gas, with shade (place in center of room, using physical evidence)	Physical evidence: gas pipes still in place. See figure 14.	Acquire period piece or reproduction.
Wallpaper, border and side wall	Figure 1 shows the Wright brothers used wallpaper in another print shop location. Physical evidence shows that this room was originally papered, but document papers do not survive. See figures 3, 13, 14, and 17 for examples of wallpapers in print shops.	Reproduce document papers located in Room 217.
Barrier, wood and tempered glass (across doorway)		Fabricate.

Room 221: Job Press Room

This room houses one of the Wrights' two presses. Linoleum on the floor absorbed wear and protected the wood floors. The washstand and ink cabinet are also exhibited in this room.

Visitors enter from the Composing Room to the north or from the hallway to the south. A barrier across the west side of the room includes an interpretive panel.

OBJECT AND LOCATION	EVIDENCE	RECOMMENDATION
Printing press, platen or jobbing, Prouty, 12" x 18" (to left of entrance door, on north side of room)	Wright brothers and Stevens and Stevens mortgage, April 20, 1899. Figure 24. See figures 4, 5, 6, 7, 9, 10, 11, 12, 14, and 15 for examples of job presses. See examples of gauge pins in trade catalog.	Acquire. Exhibit with timpan paper attached to press board with gauge pins. Acquire timpan paper and gauge pins.
Washstand (against south wall, near window)	Common print shop practice. See figure 12, basin on stand in rear of room. A wash stand next to the stove would provide warm water in cold weather.	Acquire period table or washstand.
Wash basin (on table or stand)	Figure 12	Acquire.
Towel and soap (on table or stand)	"Have plenty of washing facilities – soap, towels, etc ...," *The Inland Printer*, June 1891, p. 864.	Acquire period towel and reproduction soap.
Wastebasket (next to washstand)	Common practice	Acquire.
Mirror, wooden frame (on south wall over washstand)	Common practice	Acquire.
Ink cabinet (against south wall)	Figures 15 and 22	Acquire.
Rollers, 3 (inside ink cabinet)	Figures 14 and 22	Acquire.
Ink knife (on cabinet)	See example in trade catalog.	Acquire.
Ink slice (on cabinet)	See example in trade catalog.	Acquire.
Ink, black and colored, in cans and packages (on and in cabinet)	For printing. Figures 15, 17, and 22	Acquire.
Bronzing powder (on or in cabinet)	For printing. Figures 15 and 22	Acquire.
Marble slab (on cabinet)	To mix ink. Figure 22	Acquire.
Rags (on cabinet)	Figures 1, 8, and 9	Acquire.
Benzine can, brass (west window sill)	Figures 15 and 16. See example in trade catalog.	Acquire.
Oil can (west window sill)	For press	Acquire.
Tin, with clips (west window sill)	Common shop practice	Acquire.
Benzine brush (hanging on west wall)	Figure 15. See example in trade catalog.	Acquire.
Lamp, oil (west window sill)	Figures 9 and 12	Acquire.
Stove, gas (against west wall)	Physical evidence. See figures 3, 4, 5, 6, 8, 9, 10, 12, and 13 for stoves and placement.	Acquire.
Table, small (in northwest corner)	Figures 5, 12, and 17	Acquire.

OBJECT AND LOCATION	EVIDENCE	RECOMMENDATION
Water cooler, stoneware, and cup, ironstone (on table)	Common shop practice	Acquire.
Calendar, 1890 (on west wall)	Figures 3, 4, 6, 13, and 16	Acquire or reproduce.
Broom (in northwest corner)	Figures 4 and 16	Acquire.
Hats, 3, fedora, derby and plush cap (hanging on rack)	Figures 1, 2, 3, 4, and 10	Acquire.
Hat rack, expanding, wood with porcelain ends (on north wall)	Common practice	Acquire.
Printed work, various samples (attached to walls)	See figures 2–7 and 9–17.	Reproduce Wright printing samples.
Light fixture, gas, with shade (place in center of room, using physical evidence)	Physical evidence; gas pipes still in place. See figure 14.	Acquire or reproduce.
Window shades, 2 (in windows)	Figure 26. See also figures 6 and 17 for window shades used in print shop interior.	Reproduce.
Linoleum (on floor)	Physical evidence	Reproduce.
Wallpaper, ceiling, border and side wall	Figure 1 shows the Wright brothers used wallpaper in another print shop location. Physical evidence shows that this room was originally papered, but document papers do not survive. See figures 3, 13, 14, and 17 for examples of wallpapers in print shops.	Reproduce document papers located in Room 224.
Barrier, wood and tempered glass (between doorways, across west side of room)		Fabricate.

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Figure 11. *National City News* Plant in Rear of Grange Building, A. B. Kimball, Owner and Publisher, Kule W. Alexander, Assistant, c. 1911, San Diego Historical Society, Photograph Collection, 10722.

Figure 12. Interior of the *Maysville News*, 1917, Western History Collections, University of Oklahoma Libraries, Showen Collection, #18.

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Figure 21. Wright brothers' paper cabinet, The Henry Ford, National Park Service photograph.

Figure 22. Ink and roller cabinet, *American Type Founders Company*, no date, Division of Graphic Arts, National Museum of American History, Smithsonian Institution.

Figure 23. Furniture case, *The Inland Printer*, March 1890.

Figure 24. Prouty jobber, c. 1880, *Catalogue of Nineteenth Century Printing Presses*, Harold E. Sterne.

Figure 25. Prouty "Standard" cylinder press, *Catalogue of Nineteenth Century Printing Presses*, Harold E. Sterne.

Figure 26 Exterior of the Hoover Block, Dayton, Ohio, c. 1893, in *New Dayton Illustrated* (Dayton: National Coupon Publishing Company, 1893). Photograph in collection of Dayton Aviation Heritage National Historical Park.

Figure 1 Ed Sines at imposing table in printing office, c. 1897, Library of Congress, LC-W851-79.

Figure 2 Unidentified man setting type at the *Russell Record* Office, Russell, KS, October 12, 1910, The Kansas State Historical Society, Topeka, Kansas, Halbe #17.

PRINT SHOP, HOOVER BLOCK

Figure 3 Shop of *Blair Tribune*, no date, Washington County Historical Association, Calhoun, Nebraska.

Figure 4 Interior view of the Woods Co. *Enterprise Newspaper*, Waynoka, Oklahoma, c. 1912, Archives and Manuscripts Division of the Oklahoma Historical Society, 10295.

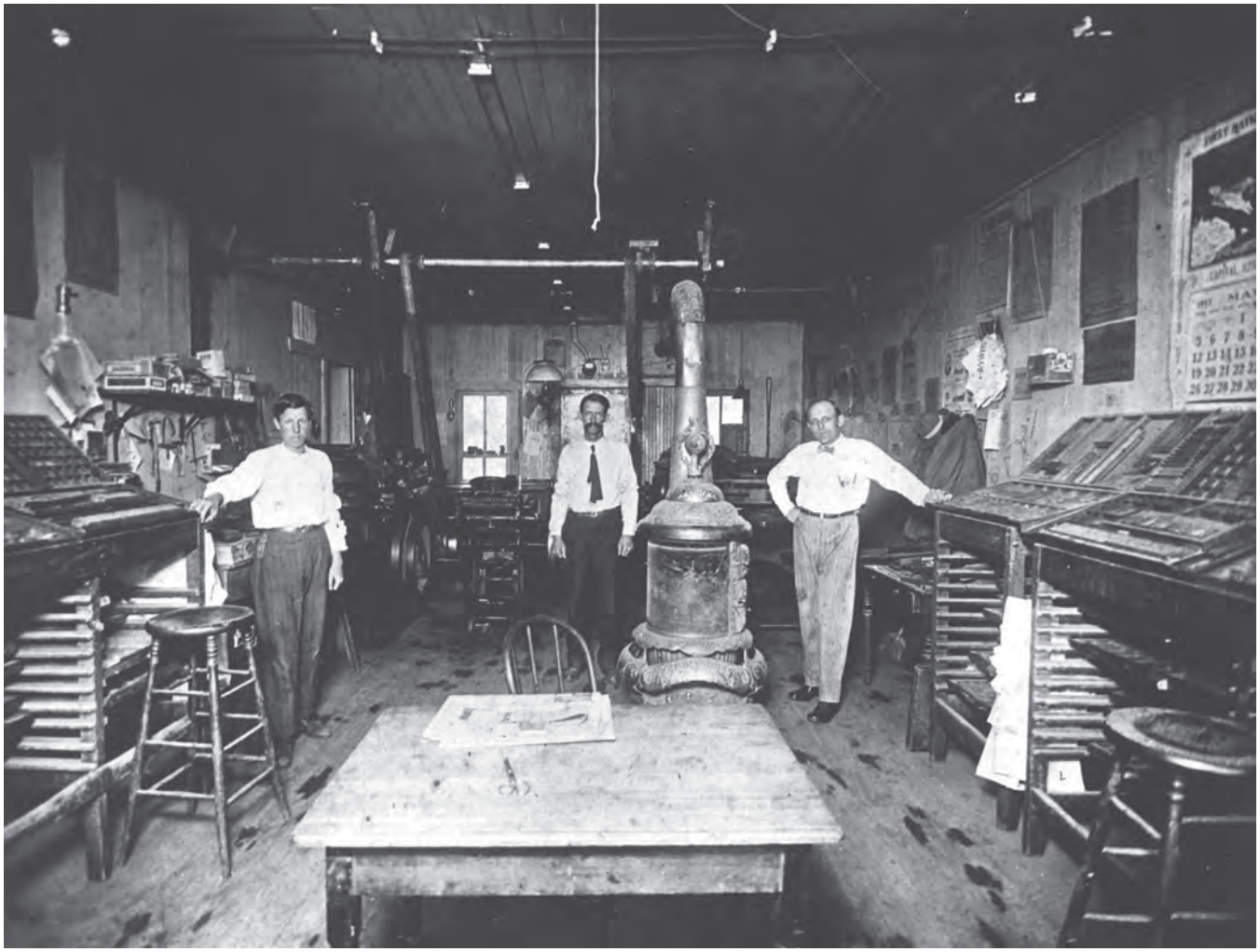


Figure 5 A One-room Plant at the *Blair Tribune*, no date, Washington County Historical Association, Calhoun, Nebraska.

Figure 6 Larimore *Pioneer Press*, no date, State Historical Society of North Dakota, B340.

PRINT SHOP, HOOVER BLOCK

Figure 7 Bicycle and print shop interior, no date, private collection. Courtesy Russell Mamone, Wheelmen.

Figure 8 The Brethren Publishing Company, Ashland, Ohio, Division of Graphic Arts, no date, National Museum of American History, Smithsonian Institution, 2000-8891.

PRINT SHOP, HOOVER BLOCK

Figure 9 Interior of the *Minco Minstrel*, W. E. Showen, owner and Hattie Griffen, typesetter, no date, Western History Collections, University of Oklahoma Libraries, W. E. Showen Collection, #15.

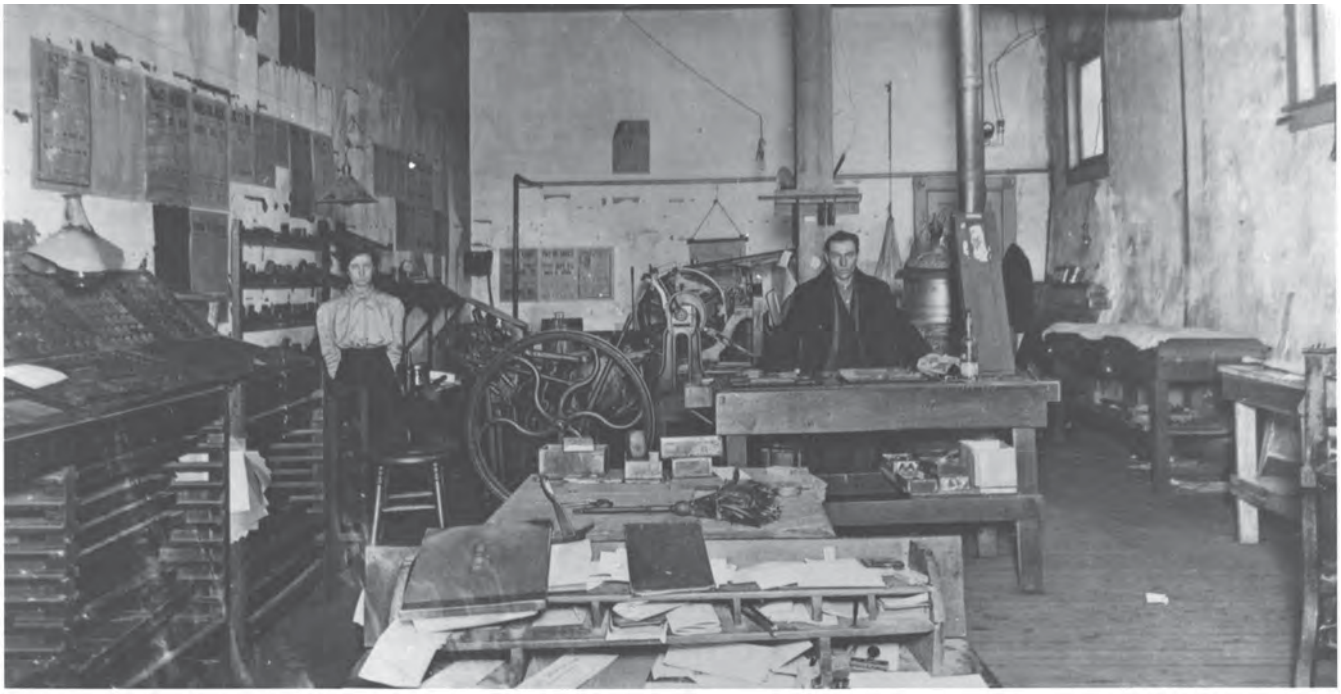


Figure 10 A. E. R. Richards, Hailey, Idaho [proprietor], no date, Division of Graphic Arts, National Museum of American History, 2000-8888.

PRINT SHOP, HOOVER BLOCK

Figure 11 *National City News* Plant in Rear of Grange Building, A. B. Kimball, Owner and Publisher, Kule W. Alexander, Assistant, c. 1911, San Diego Historical Society, Photograph Collection, 10722.

Figure 12 Interior of the *Maysville News*, 1917, Western History Collections, University of Oklahoma Libraries, Showen Collection, #18.

Figure 13 Interior view of the *Cheney Sentinel* newspaper office, Cheney, KS, no date, The Kansas State Historical Society, Topeka, KS, FK2.53, Ch.73, N. Sen #1.

PRINT SHOP, HOOVER BLOCK

Figure 14 Interior of unidentified printing office, no date, Division of Graphic Arts, National Museum of American History, Smithsonian Institution, 2000-8889.

PRINT SHOP, HOOVER BLOCK

Figure 15 Interior of unidentified printing office, no date, Division of Graphic Arts, National Museum of American History, Smithsonian Institution, 2000-8890.

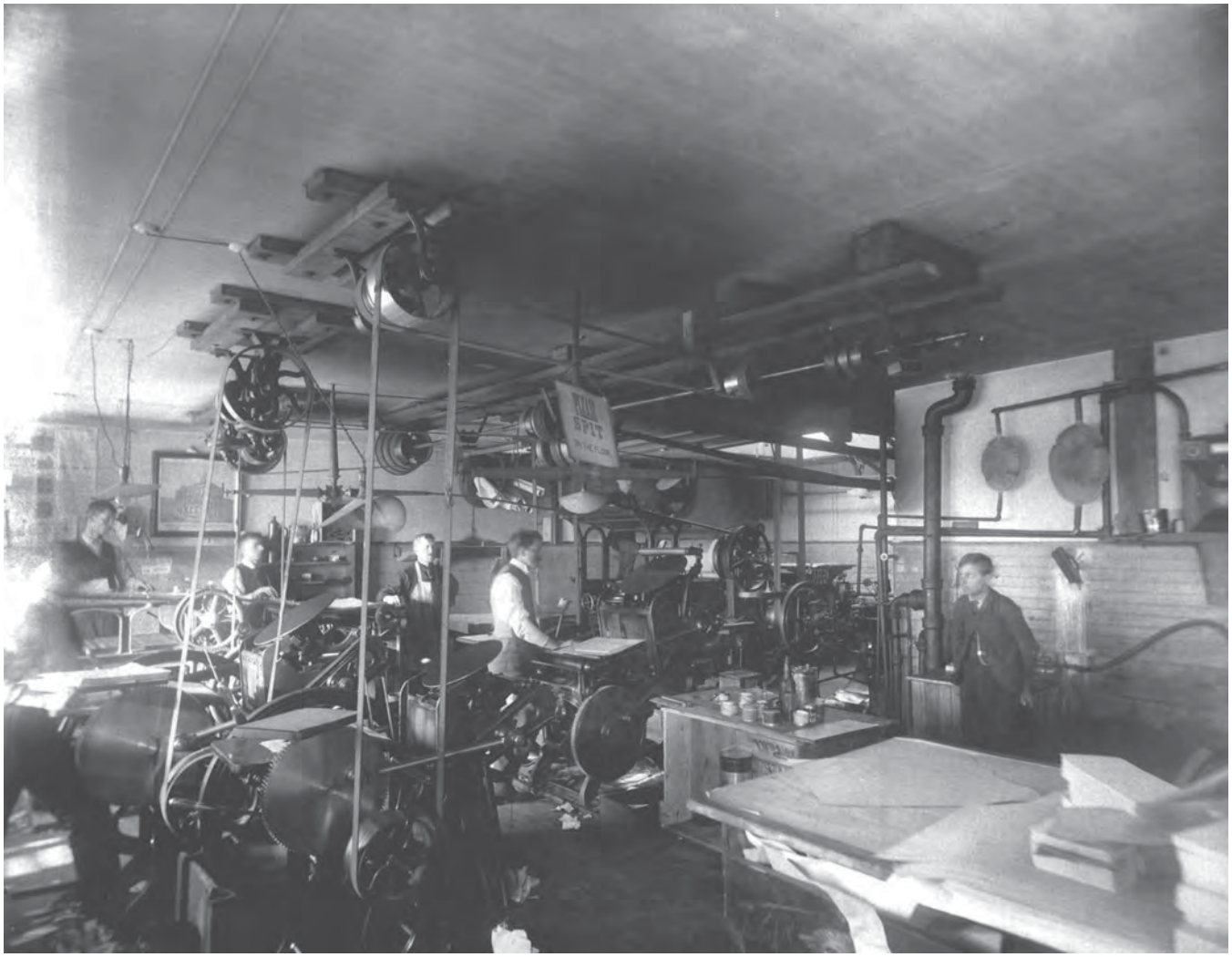
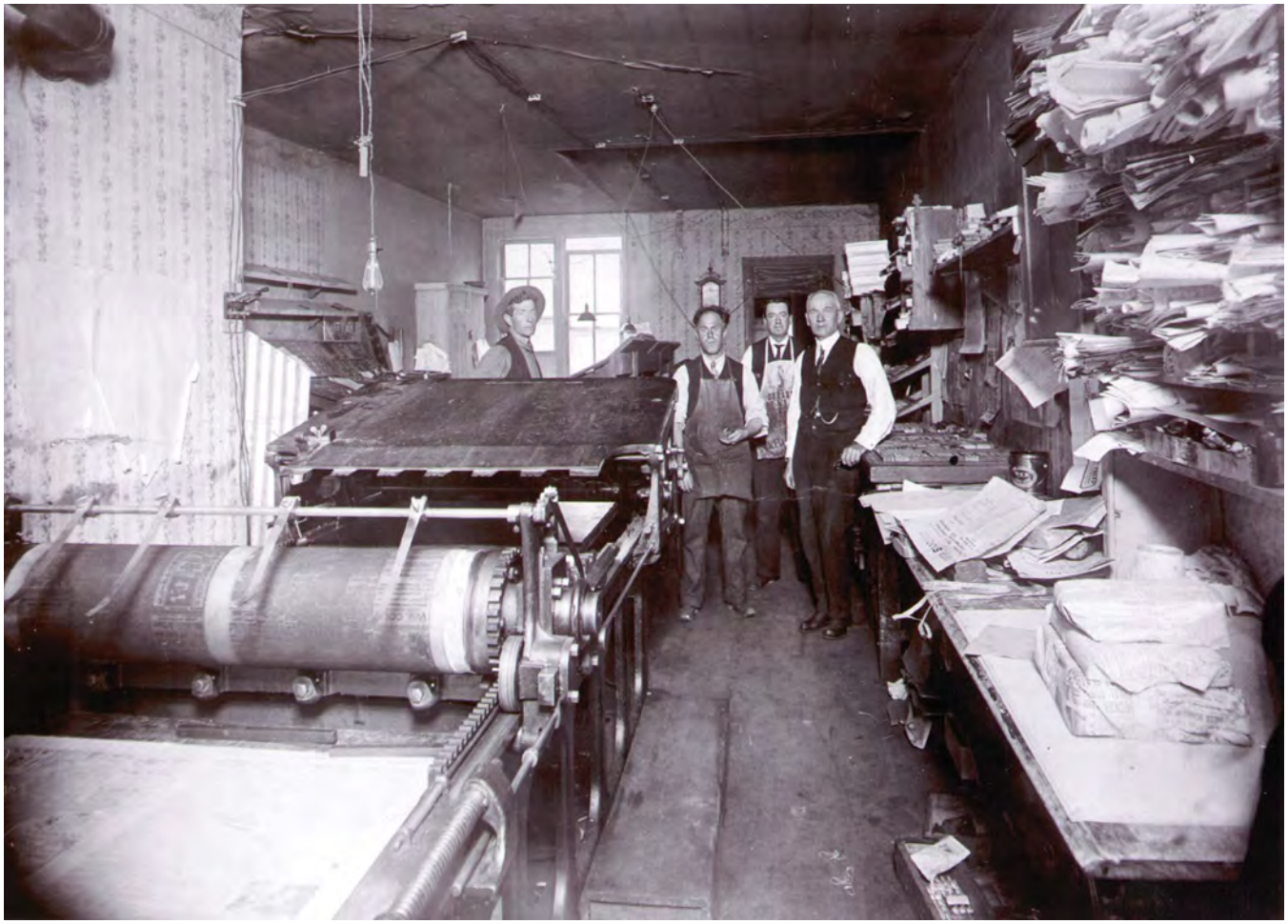


Figure 16 John Klibba printing shop, no date, Library of Congress, LC-D419-149.

Figure 17 Interior view of the press room of the *Silverton Standard* newspaper, no date, Western History Department, Denver Public Library, X1762.



PRINT SHOP, HOOVER BLOCK

Figure 18 Printers' cut, *Specimens of Electrotype Cuts*, Golding & Co., Boston, Massachusetts, 1888.

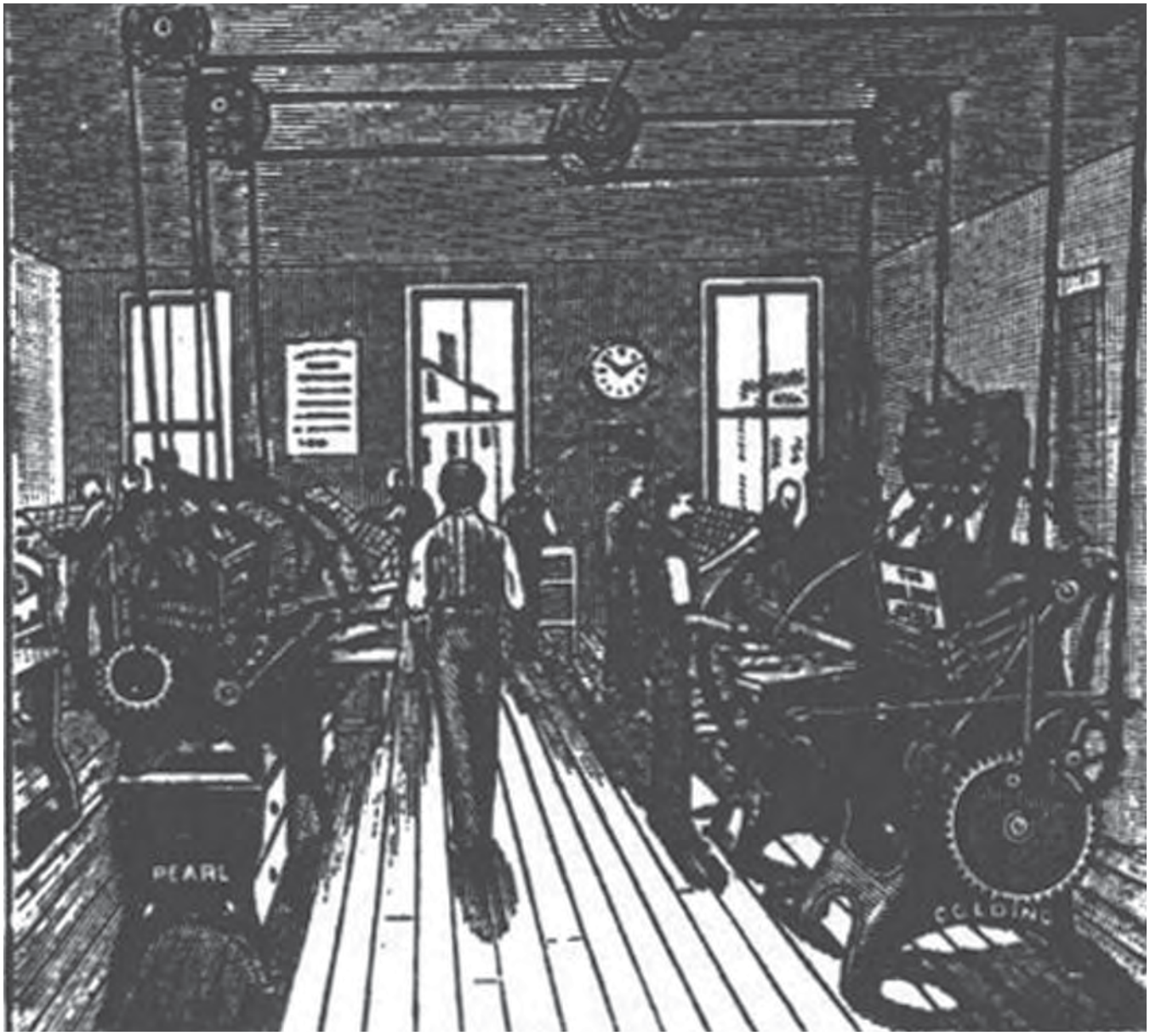
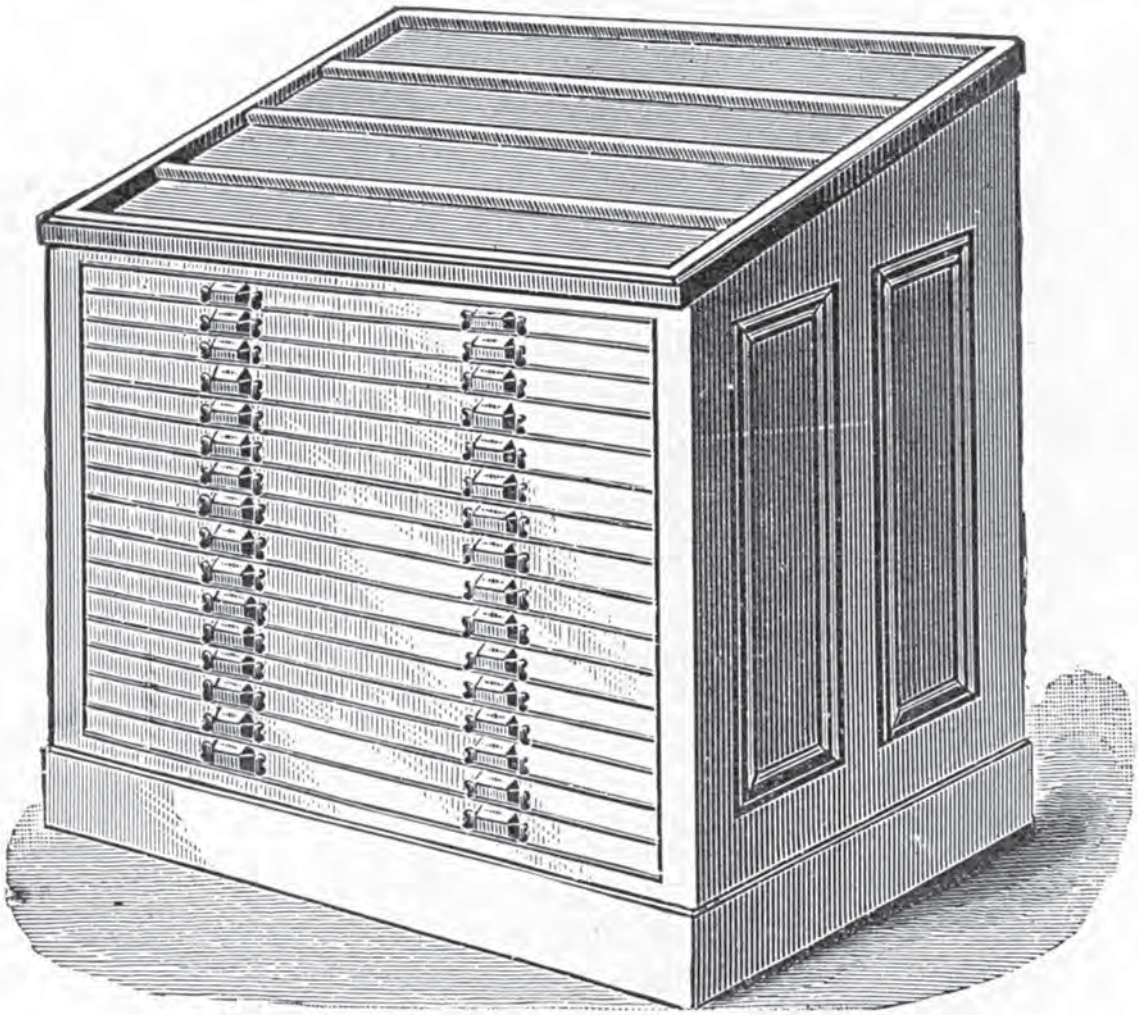

PEARL

Figure 19 Wood type cabinet, *American Type Founders Company*, no date, Division of Graphic Arts, National Museum of American History, Smithsonian Institution.

CABINETS--WOOD TYPE.

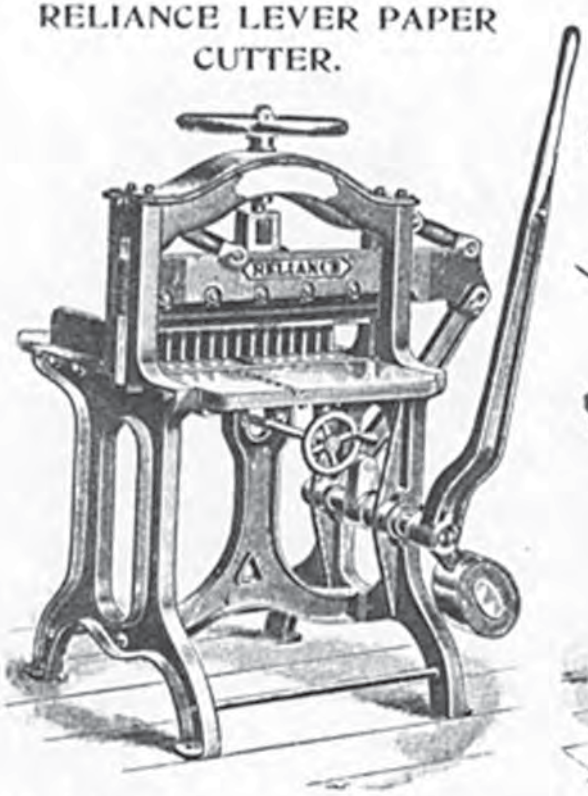


WOOD TYPE CABINET WITH GALLEY TOP.

Made in two sizes. Very substantially constructed of hardwood antique finish. The cases are slotted on the sides, and have movable strips which may be adjusted to picas.

Figure 20 Challenge Pony lever paper cutter, *American Type Founders Company*, no date, Division of Graphic Arts, National Museum of American History, Smithsonian Institution.

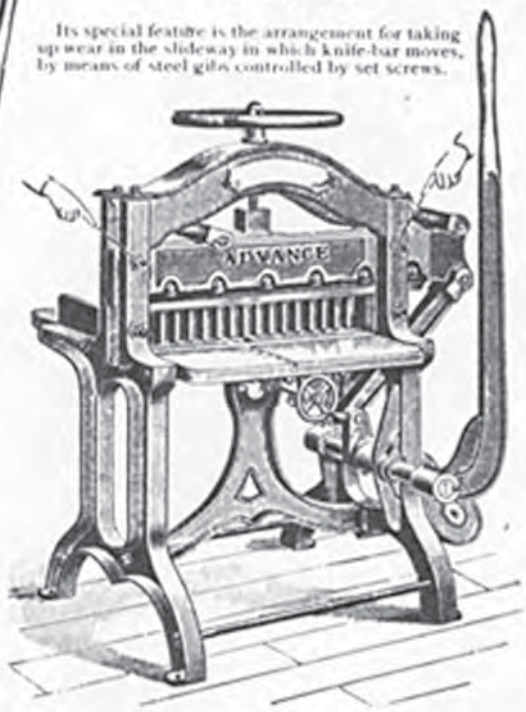
RELIANCE LEVER PAPER CUTTER.



23-inch	$90 00
25-inch	110 00
28-inch	135 00

ADVANCE LEVER PAPER CUTTER.

Its special feature is the arrangement for taking up wear in the slideway in which knife-bar moves, by means of steel gibs controlled by set screws.



22½ inch	$ 90 00
25-inch	110 00
30-inch	165 00
33-inch	200 00

CHALLENGE PONY LEVER PAPER CUTTER.

Used in conjunction with larger cutters, small cutters such as these and the cutters shown on page 930 often double the cutting capacity of an office at a small additional plant expense.

The especial advantage of the 19-inch cutter is that it cuts the usual sizes of flat papers—cap, demy, folio, double cap, medium, and royal.

Prices include interlocking back gauge and clamp, permitting stock to be gauged within one-half inch of knife.

16-inch	$50 00
19-inch	65 00

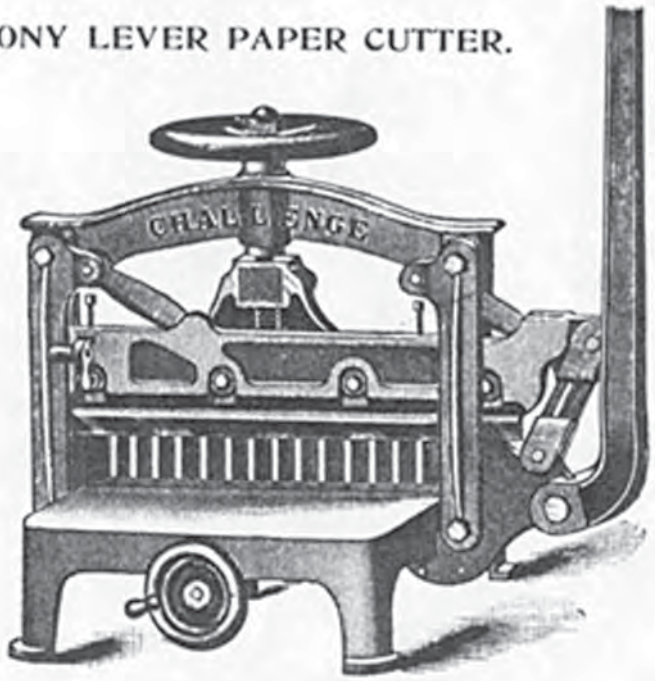
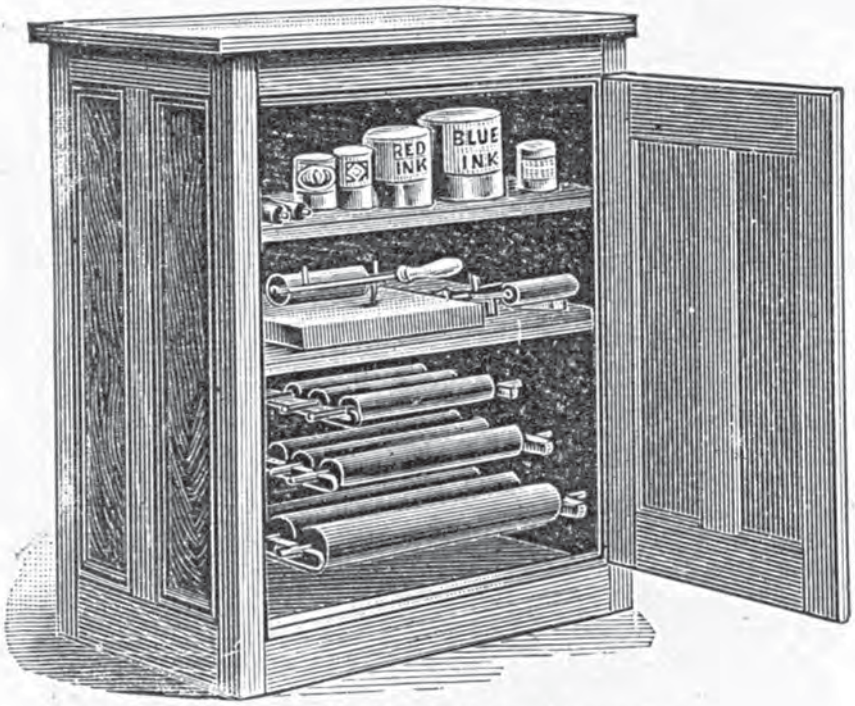


Figure 21 Wright brothers' paper cabinet, The Henry Ford, National Park Service photograph.

PRINT SHOP, HOOVER BLOCK

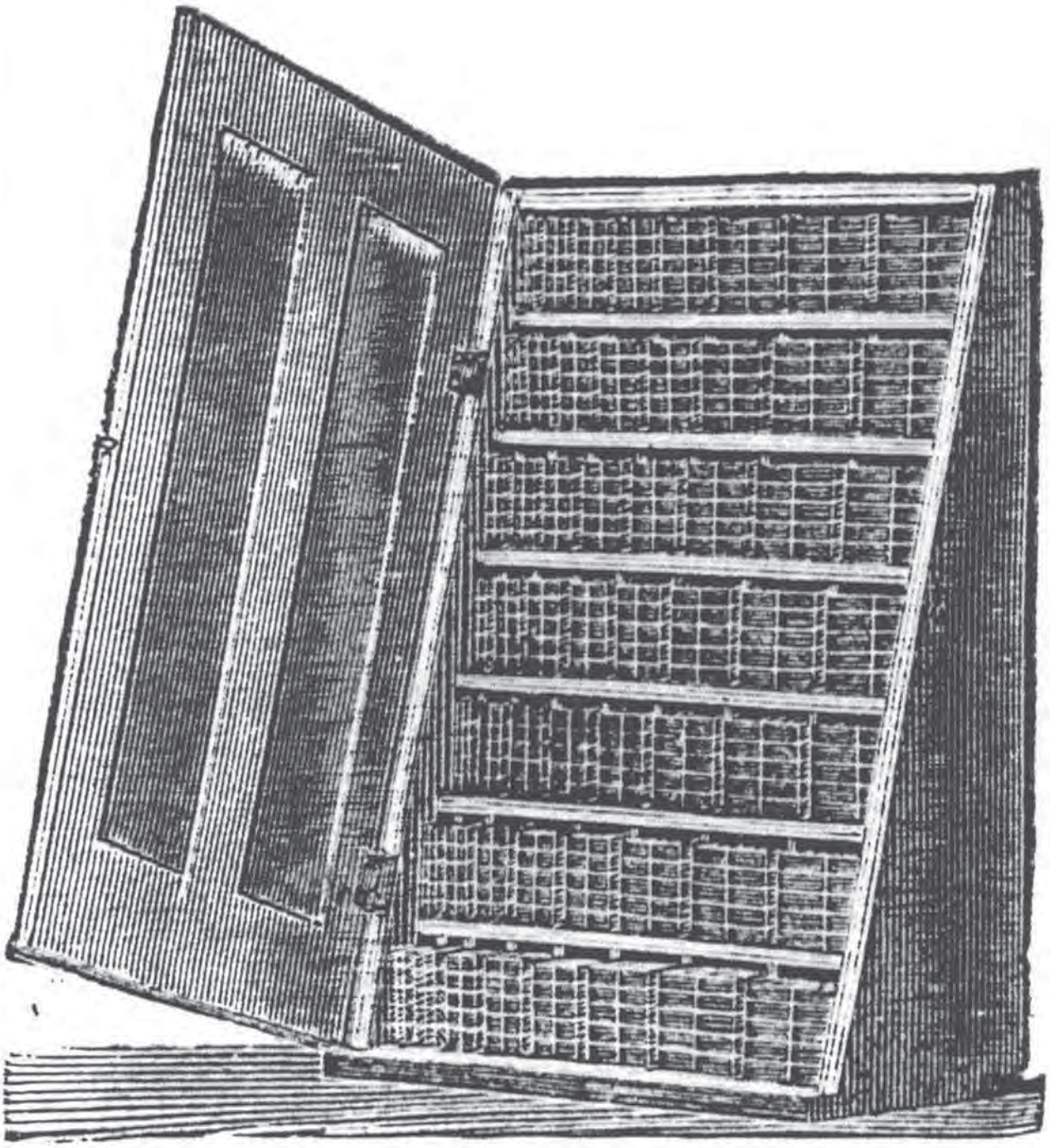
Figure 22 Ink and roller cabinet, *American Type Founders Company*, no date, Division of Graphic Arts, National Museum of American History, Smithsonian Institution.



INK AND ROLLER CABINET.

No. 1,	with	shelves	for	ink,	brayer	and	slab,	racks	for 12	rollers	....$ 6 50
" 2,	"	"	"	"	"	"	"	"	18	"	.... 9 50
" 3,	"	"	"	"	"	"	"	"	36	"	... 13 00

Figure 23 Furniture case, *The Inland Printer*, March 1890.



FURNITURE CASE.

Figure 24 Prouty jobber, c. 1880, *Catalogue of Nineteenth Century Printing Presses*, Harold E. Sterne.

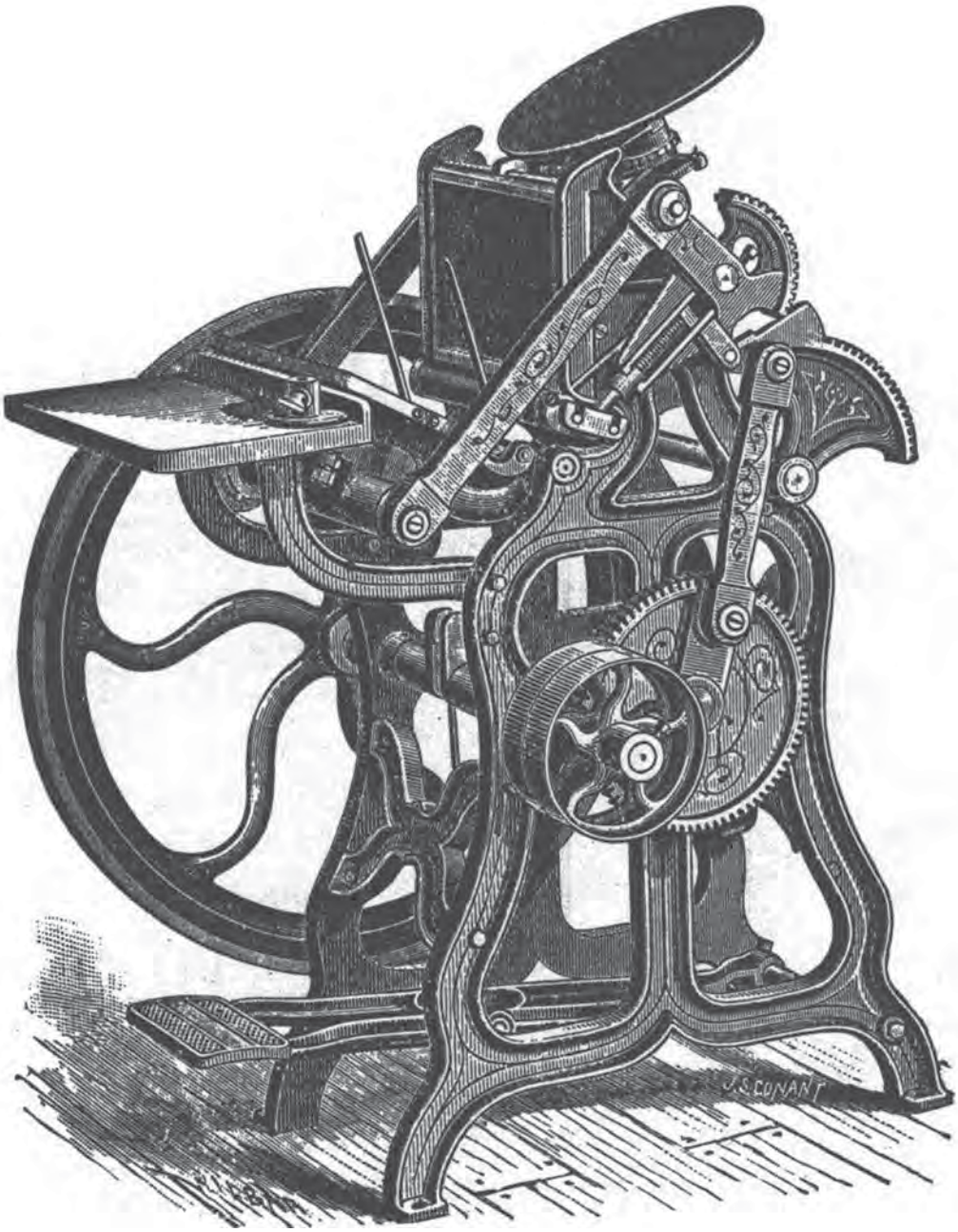

J.S. CONANT

Figure 25 Prouty "Standard" cylinder press, *Catalogue of Nineteenth Century Printing Presses*, Harold E. Sterne.

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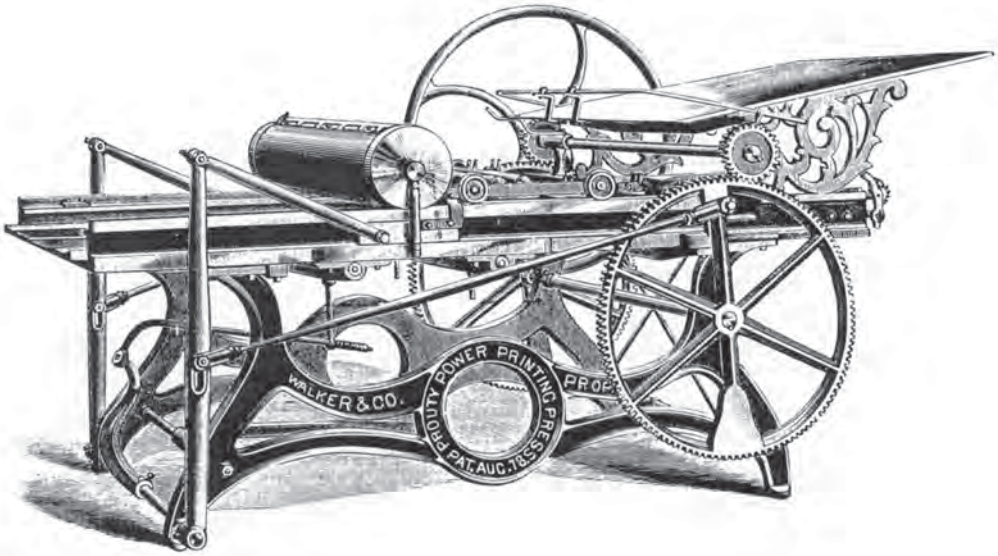

Prouty "Standard" without gears on ends of cylinder.

Figure 26 Exterior of the Hoover Block, Dayton, Ohio, c. 1893, in *New Dayton Illustrated* (Dayton: National Coupon Publishing Company, 1893). Photograph in collection of Dayton Aviation Heritage National Historical Park.

HOOVER BLOC

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