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MASTER'S THESIS

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THE CONTRIBUTIONS OF
LINN BOYD BENTON AND MORRIS FULLER BENTON
TO THE TECHNOLOGY OF TYPESETTING
AND TYPEFACE DESIGN

by

Patricia Knittel Cost

A thesis submitted in partial fulfillment of the
requirements for the degree of Master of Science in the
School of Printing in the College of Graphic Arts and Photography
of the Rochester Institute of Technology

May 1986

Thesis Advisors: Herbert H. Johnson
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The Contributions of Linn Boyd Benton and Morris Fuller Benton
to the Technology of Typesetting and Typeface Design

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ABSTRACT

The relative obscurity of Linn Boyd Benton and Morris Fuller Benton is investigated. The two men, father and son, made significant contributions to the technology of typesetting and to typeface design, yet they are not now well known in the industry.

Linn Boyd Benton invented a pantographic punch-cutting machine, which he later modified to engrave matrices. This machine made the Linotype machine practical, since it took the tedium and great expense out of the making of Linotype 'mats.' Benton's machine was and still is used at the American Type Founders Company, and was copied for use at type founding companies and composing machine manufacturers around the world.

Morris Fuller Benton was the first type designer to develop the concept of the type family, and also revived many beautiful types like Baskerville, Bulmer, Bodoni, and Garamond. He designed more types than any other American type designer, and many of them are still in wide use. Benton's father collaborated on the original Century type, and Morris Benton designed Century Expanded, Century Oldstyle, Century Catalogue, Century Schoolbook, and all the italic, bold, condensed and extended versions that went along with them. He designed a variety of types, from gothics to moderns to classic revivals. Some of Benton's types became popular right away, and others, like Souvenir, became

popular years after Benton died.

The Bentons were written about in the printing literature of their day, but only a few recent and fairly obscure articles have mentioned them. It is shown that the reason for this is most probably due to the modesty and reticence of the Bentons. Both father and son worked for the American Type Founders (ATF) Company, which did not promote its employees but instead advertised its products. So while ATF became the most influential type founding company in the country, the Bentons remained relative unknowns.

The story of their professional and personal lives, and the story of ATF's rise and decline are included. Morris Benton's type designs are discussed, and the ATF method of making type is given.

CHAPTER ONE

INTRODUCTION

Statement of the Problem

Linn Boyd and Morris Fuller Benton, father and son, each played a crucial part in the development of modern typography, and yet there is no complete account of their work. There are no books about the two men. Technical information about them has to be gleaned from old Inland Printer articles dating back to the early 1900s, and from occasional sentences or paragraphs in typography books.

One of Linn Boyd Benton's inventions literally made linotype typesetting possible. He was working in Milwaukee when the linotype machine was being developed in Baltimore by Ottmar Mergenthaler. Henry Lewis Bullen explained the situation in the Inland Printer:

After several years of experimentation and the expenditure of hundreds of thousands of dollars, Mergenthaler severed his connection with his employers, leaving them with a machine from which little if any profitable returns could be realized. ... Mergenthaler had made no provision for supplying the unlimited quantities of matrices which were required. The linotype machine without adequate means of providing matrices was no more effective than a machine gun without unlimited cartridges. As an investment, the owners of the linotype machine faced failure.¹

Benton in the meantime had invented a punch-cutting machine for another of his inventions, "self-spacing types." When the Mergenthaler Linotype Company found out about Benton's machine, it immediately contacted Benton, and the two entered into a leasing agreement. The revolutionary machine solved the company's problem:

In a report submitted to the directors of Mergenthaler Linotype Company at that time it was written that 'By the acquisition of the Benton punch-cutting machine we have overcome a seemingly insurmountable obstacle to our success.' ...without the Benton machine, or a similar invention (apparently not in any other man's mind) the Mergenthaler Linotype Company could not have recovered the cost of its long series of experiments before its patents had expired--if at all. The same is true of the Lanston Monotype machine, which also depended upon Benton's wonderful machine to make it practicable."²

Morris Fuller Benton, like his father, had a profound influence on American type and typography. He designed some 246 typefaces.³

"During an active career of more than 40 years, he designed all or most of the great Century, Cheltenham, Bodoni, Garamond, Cloister, and Stymie families; the Alternate, Franklin, News and Bank Gothics; the Typo Romans and Scripts; and scores of smaller families and individual faces from Broadway to Souvenir and Wedding Text."⁴ Benton's research and diligence revived several beautiful European typefaces such as Jenson's roman face, and Baskerville, Bodoni, and Bulmer.

Frederic W. Goudy designed 123 typefaces,⁵ about half the output of Morris Benton. Many of his designs are not widely used. Yet an extensive body of literature has been written about Goudy, while Benton remains relatively obscure. Indeed, Goudy has even been credited with Benton designs. In Stanley Morison's On Type Designs Past and Present, Goudy is given as the designer of Cloister, when in fact, the typeface was one of Benton's greatest achievements.⁶ Although typophiles will be quick to point out Morison's mistake, it nevertheless remains part of the literature of typographic history.

Alexander Lawson gives a different account of the Cloister story in his Printing Types. "The first type completely acceptable as a modernized Venetian was Cloister Oldstyle designed by Morris Benton for

American Type Founders Company in 1913. Cloister Oldstyle is still widely used and is available in both single-type and machine versions."⁷

Lawson is one of several people who have expressed dismay at the lack of accurate information about Morris Fuller Benton. Twenty years ago he wrote an article for American Printer magazine about the problem. It was entitled "Morris Fuller Benton Deserves More Than Obscurity," and in it he lamented the fact that one of the greatest of American type designers was being ignored.

Others have written similar articles, the most recent being Allen Haley for U&lc. Two RIT students completed projects on Benton, and in both cases the motivation came from Benton's obscurity.⁸ But there is still no definitive source of information on the Bentons.

In one sense, the problem is one of publicity. Goudy loved to give speeches, to be in the lime-light. Benton did not--he was a quiet man. As a result, not much was ever written about Benton or his work.

M.F. McGrew, yet another Benton enthusiast, feels that the main difference between Goudy and Benton can be found in their philosophies of type design. "Benton was a strong believer in changing the proportions of a typeface as it went down in size, a belief based on sound principles of legibility and readability," McGrew claimed. "Goudy, on the other hand, insisted on using strict photographic proportions. Benton was more concerned with the legibility of his types. Goudy was more the artist."⁹

In any case, the great disparity between the image of Goudy and that of Morris Fuller Benton is deplorable. Morris Fuller Benton affected the course of type history at least as much if not more than

Goudy. And Linn Boyd Benton's inventive genius is all but forgotten. The truth of their respective contributions is buried in the literature, and is totally missing from much of it.

The purpose of this thesis, then, is to ameliorate this very unfortunate situation by researching and telling the Benton story.

Hypothesis Statement

"The invention and development of the mechanical punch- and matrix-engraving machine had a seminal impact on the development of American typefaces between 1885 and 1936."

Linn Boyd Benton invented the engraving machine, and his son was intimately involved with the course of type design during this period. The thesis will show what effect the Bentons had on the course of typographic history during the period. The obscurity of the father and son seems to point to their playing minor roles in this development.

FOOTNOTES TO CHAPTER 1

1. Henry Lewis Bullen, "Linn Boyd Benton--The Man and His Work," Inland Printer, October 1922, p. 60.
2. Ibid., p. 62-3.
3. Maureen Hitchcock, "Benton Types: Typefaces Designed or Adapted by Morris Fuller Benton" (Rochester: Press of the Good Mountain, 1978).
4. M.F. McGrew, "Benton...or Whitehall," It's a Small World, No. 26 (1980).
5. Alexander Lawson, ed., Typographer's Digest, Spring 1969, p. 3.
6. Stanley Morison, On Type Designs Past and Present (London: Ernest Benn Limited, 1962), p. 76.
7. Lawson, Printing Types: An Introduction (Boston: Beacon Press, 1971), p. 57.
8. The two RIT students are David L. Ritter ("The Contribution to American Type Design Made by Morris Fuller Benton," 1971) and Maureen Hitchcock ("Benton Types: Typefaces Designed or Adapted by Morris Fuller Benton," 1978).
9. Interview with M.F. McGrew, Pittsburgh, September 3, 1984.

CHAPTER TWO

FAMILY BACKGROUND

The Bentons came from well-established and intelligent American families on all sides. The Benton name was brought to this country by an Englishman, Andrew Benton, who settled in Connecticut in 1638.¹

Linn Boyd Benton's father, Charles Swan Benton, was born July 12, 1810, in Fryeburg, Maine, the youngest of the ten children of Dr. Joseph Benton and Catherine Britton. Dr. Benton was a physician "of the old school," whose excellent reputation extended for hundreds of miles.² Charles developed a great respect for his father, noting in later years that his scoldings cured more people than did his medicines."³

When Charles was 14 he was moved to Little Falls, New York, where he was apprenticed to his uncle, a tanner. But Charles soon gave up the tanner's trade to attend the Lowville Academy, and paid for his tuition by doing chores. At the age of 20 he began to study law at the office of his oldest brother, Judge Nathaniel S. Benton, also in Little Falls.⁴

Charles Benton established the Mohawk Courier & Little Falls Gazette in 1832. From 1833-1834, he and J. Barstow were the proprietors of the paper. The next publisher was Josiah A. Noonan, and Benton was editor.⁵ His editorship "brought him into prominence in the political struggle then in progress upon the banking question and the resumption of specie payment."⁶ Benton was commissioned as the Judge

Advocate of the first division of riflemen of the New York State militia in 1833, with the grade of colonel, and was admitted to the bar in 1835.⁷

In 1937 Benton was appointed surrogate of Herkimer County, New York, which office he held for four years. Apparently he was not destined to stay in law because, as one hand-written obituary pointed out, "he possessed a warm feeling-ed human friendly for right and truth glowing heart, and a man with one such heart, can as lawyer not successful be."⁸

In 1840 Colonel Benton, as he came to be called, married Emeline Fuller, whose family could trace its ancestry back at least to 1671, when a Thomas Morris bought a large mansion in New Haven, Connecticut. Amos Morris, a descendent of Thomas, served in the Revolutionary War, and was taken captive by the British. In 1783, Eliphalet Fuller had married Amos's daughter Amy, who became Emeline's grandmother.⁹

Emeline Fuller's immediate family was apparently from Canandaigua, New York,¹⁰ although there was a Fuller family that had a general store in Little Falls, and "one of their domiciles is still standing on Garden Street, incidentally direct across the street from the rather imposing home built by Nathaniel [Benton] in 1835."¹¹

In 1842 Charles Benton was elected to Congress from the 17th congressional district of New York State, and was re-elected in 1844. While in Congress he voted to aide Morse in building the first electric telegraph line.

Linn Boyd, a congressman from Kentucky who later became Speaker of the House of Representatives, trained Charles Benton for dueling by

telling him 'Never fight a duel; never be afraid to fight a duel--let them know you will fight and you will never have to fight.'¹² The two became close friends, and "the colonel [Benton] never tired of dilating upon the character and statesmanship of his Kentucky friend."¹³ When Charles had his first son on May 13, 1844, he named him after Linn Boyd.¹⁴

Charles Benton was elected Clerk of the Court of Appeals of New York State in 1847, and served for two terms. His wife Emeline died during this time, less than five years after her son Linn Boyd was born.¹⁵ Charles was married again in 1853 to Elizabeth Babcock Reynolds of Oswego, New York, and they had one son, Charles R. Benton.¹⁶

Many years later, Linn Boyd Benton told his granddaughter Caroline stories about his childhood in New York State. When he was about 6 or 7 years old, he had a crush on one of the older girls in his school. One day he saw her in tears and so asked what was the matter. She said, 'I've lost my gold piece.' It was probably a two-dollar charm from a little bracelet, and it had come off. Linn Boyd asked her where she had lost it, and she told him she had been on the swings. He immediately asked, 'Well, if I find your gold piece, can I be your beau?' And she said yes. "So he went home and got the coal scuttle and the little coal shovel and the strainer," Caroline explained, "and he came back and he strained all the dirt under the swing, and he found the gold piece. And then I asked grandpa, 'And were you her beau?' And he said, 'Yes, for one day!'"¹⁷

Another time, Linn Boyd and an older boy went to a traveling show that had come to town. There were all sorts of wagons with various

amazing spectacles inside—one was a 'man-eating alligator.' Linn Boyd and his friend wanted to see that alligator, but only had enough money for admission for one of them (about three cents). The slogan on the wagon said, "Money back if you're not satisfied." So Linn Boyd ("...he was just a little tyke....," Caroline was quick to add) went first, paid the admission, and looked at the alligator. And when he came out he went up to the man and said, 'Please, mister, I don't like your alligator. I want my money back.' And the man gave it to him, and his friend went in. When Caroline asked her grandfather why he didn't ask for the money back a second time, he just shrugged and said, "Oh, that wouldn't have been right."¹⁸

At least for some period of time, Linn Boyd was brought up by his maternal grandmother. When he was old enough for a suit, he decided that he wanted to pick out his own, and chose a rather flashy, impractical one. His grandmother tried to get him to change his mind, but Linn Boyd insisted on buying it. Then one day when he was walking home from church, it started to rain, and the suit got all wet. It shrank and all the seams burst.¹⁹

Charles S. Benton moved to Milwaukee, Wisconsin in 1853, having purchased a one-third interest in the Milwaukee Daily News. He became the paper's editor. J.A. Noonan of the Mohawk Courier & Little Falls Gazette also moved to Milwaukee about this time, became a partner in a paper mill, opened a paper warehouse, and also established what came to be the Northwestern Type Foundry.²⁰

Boyd Benton, as he was known by this time, joined his father in Milwaukee in 1855,²¹ and was sent to dancing school there. He was

always playing jokes, fooling around, and not paying attention. There were two little girls in the class who were very good, and Boyd Benton liked them very much. One was Jessica Elizabeth Donaldson, and the other Crosdella Fess. The good dancers were promoted up to the front of the line, and Jessie and Crosie, as he called them, were always there. Once when Boyd was at the end of the line because he was naughty, he decided that he was going to get up to the top with the girls. The dancing master would go down the line and have each child come forward and perform the new step before assigning partners. Boyd had time to practice, and by the time the dancing master got to him he knew it perfectly. When his turn came he danced out and did it so well that he was sent right up to the front between the two girls.²²

When he was about eleven, Boyd Benton learned to set type in the composing rooms of the Milwaukee Daily News, of which his father was still editor and part owner. But he was soon to leave the city, and Jessie and Crosie.

In 1855 or 1856 his father was appointed registrar of the land office in La Crosse by President Franklin Pierce, and he held that office until Abraham Lincoln was elected President in 1861.²³ He was later made a judge of the district court in La Crosse.²⁴ Charles Benton was considered as a candidate for the presidency in the convention that nominated Stephen Douglas, and had the convention failed to nominate Douglas, Benton would have received some votes. In 1862 he was a candidate for Congress on the Democratic ticket, and, while he had no hopes of winning the election in the highly Republican sixth district of Wisconsin, he did carry La Crosse County. After this, the elder

Benton took up farming in West Salem, Wisconsin, and later in Galesburg, Illinois, until 1869, when he returned to La Crosse.²⁵

Because his family moved so often, Boyd Benton's education was somewhat unusual. After attending schools in Little Falls and Milwaukee, he studied Latin, Greek, and other advanced subjects with a private tutor in La Crosse. For a time, he was sent to Galesville College in Wisconsin, and completed his education at about age 16.²⁶ Then he began to learn to print in the office of Charles Seymour's La Crosse Republican.

During his three years of tutoring in La Crosse, it was agreed that if Boyd finished his lessons in the morning, he could do as he liked in the afternoon. What he liked to do was to work with the local tombstone maker, learning to design letters and cut them in stone.²⁷ But evidently he wasn't too good at the job. "He said he was terrible," his granddaughter remembered. "He'd make so many mistakes, ... and every time he'd make a mistake he'd have to pay for it out of his own pay."²⁸ The mistakes would have to be chiseled off, the tombstones smoothed down, and the work started over again. "And he said he never got any cash money, but he learned a lot."

When a jeweler settled in La Crosse, Boyd Benton decided to leave the tombstone business to work on watches. "He learned to repair watches at a time when there were no interchangeable parts, and every broken part had to be remade."²⁹ His attention to this job illustrates an early manifestation of Boyd Benton's concern for detail and accuracy. At one point, the jeweler gave him some gold, and in his spare time, Benton made a tiny gold model steam engine that really ran.

The jeweler was so pleased that he put it in the window of the shop.³⁰

Boyd Benton was certainly mechanically inclined, but was also an outdoorsman. He had a fur coonskin cap, and once when he went out hunting a great big snowy owl swooped down, thinking the cap was alive, and picked it up with its talons. Benton told his granddaughter much later that he was terrified at the time, because the owl had legs as big around as a person's wrist. It flew off a little way and then dropped the hat.

Another time, Benton was out alone and slept in a deserted hunter's cabin. It was a very cold night, and he slept on a wooden bunk in the cabin. When he woke up in the morning and started to get out of the bunk, he realized that there was a rattlesnake coiled up under him-- it had come in the cabin to get warm. Benton left very cautiously.

Benton enjoyed problems and puzzles. He believed that there was always a solution to any problem. Maybe he wouldn't find it, but then somebody else would.³¹

When he was finished with his education, the young Benton apparently went to Milwaukee to work again at the Milwaukee Daily News. "And [he] hated it.... He said [his boss] was always thinking of errands ... for him to do that he didn't like"³² But other reports of Benton's early career have him learning to print at Seymour's printing office in La Crosse, and then leaving to work as a bookkeeper for a leather house in the same town.³³

In any event, Boyd must have had some accounting training because in 1866 he became the bookkeeper for J.A. Noonan's Northwestern Type Foundry in Milwaukee. He soon advanced to the position of buyer for

Noonan's wholesale paper warehouse. Noonan went into bankruptcy in the panic of 1873, and Benton and a partner named Cramer bought the type and electrotype foundry.³⁴ In later years, Benton said that if he had known anything about typefounding at that time, he would have thrown the entire plant into the lake as a measure of economy. "It was probably the worst equipped foundry in America."³⁵ But Benton instead went on to master the art of typefounding, and change it dramatically with his inventions.

By this time (1873) Boyd Benton was 29 years old and had been married to Jessie Elizabeth Donaldson for three years. Jessie, born in 1846, came from a large Milwaukee family.³⁶ Her mother, Elizabeth Fairlie Reid, had come to this country from Scotland with two brothers, a sister, and their father to visit relatives. The girls promptly married Americans.³⁷ The Reid family tree goes back at least to 1567.³⁸ Jessie's father's family owned a large country house in Cooperstown, New York, where the Donaldson family had lived for nearly 200 years.³⁹ Jessie's father, Nathaniel S. Donaldson, built a house in Milwaukee and settled his family there.

Jessie Donaldson was born and raised in Milwaukee, apparently the second of nine children. Before she was married, Jessie kept a journal, which is still in the family. She had been going steady with a boy who went off to the Civil War and came back with malaria, and when he died she was very sad. On summer evenings, she and her sisters and neighbors used to sit on the front steps and play their banjos or mandolins, and the neighborhood boys would come by and sit with them. One night, so her journal goes, a new boy in town came along--it was Boyd Benton, whom



Figure 1. Jessica Elizabeth Donaldson, May 20, 1866.



Figure 2. Morris Fuller Benton, 1872.

she hadn't seen since he was a little boy and they had taken dancing class together. And here the journal ends!⁴⁰

Linn Boyd and Jessie were married in Milwaukee in 1871, and Morris Fuller Benton was born to them on November 30, 1872. It was a breech birth, which was difficult because Jessie was so tiny. Boyd Benton swore that he'd never put Jessie through that again, even though he had wanted a large family.⁴¹ The baby was named after Morris E. Fuller, his paternal grandmother Emeline Fuller's brother, who had moved to Madison, Wisconsin.⁴²

In 1874, Cramer sold his half-interest in the type foundry to Lieutenant-Commander Frank M. Gove, "a man utterly ignorant of the business, but who in time proved to be a most efficient and popular salesman, making it possible for Benton to devote himself mainly to manufacturing." The name of the firm was changed to Benton, Gove & Co.⁴³

During his first years in business, Benton learned a great deal about the type and its peculiarities, as Henry Lewis Bullen, a future co-worker at the American Type Founders Company, explained in 1922:

Before Gove died [Linn Boyd] Benton had completed his self-instruction in typefounding and found himself on the most intimate terms with decimal fractions and measurements of ten thousandths of an inch. He had and still has a mania for accuracy to the vanishing point, not only knowing, as the books tell us, that a hot breath impinged on a small piece of steel changes its dimensions, but actually taking that solemn fact to heart, grieving that it cannot be overcome. The bane of Benton's career has been the limitations of error which are made necessary by the disposition of all metals to refuse to resist molecular action. What other mortals⁴⁴ cheerfully accept as accuracy Benton regards as a calamity.

Gove died in 1892, and Benton soon sold a third interest to R.V. Waldo, a former wholesale grocer who in time proved to be an ideal partner. Again the firm's name changed, this time to Benton, Waldo & Co.⁴⁵

FOOTNOTES TO CHAPTER 2

1. "Morris Fuller Benton," for the National Cyclopedia of American Biography, January 5, 1951, p. 1. (Typewritten.)
2. "Lamented Dead. Colonel Charles S. Benton Called from the Scene of Action," La Crosse Republican, May 5, 1882, p. 99.
3. Charles R. Benton, Letter to Linn Boyd Benton, July 1, 1907, p. 14.
4. Ibid., p. 12.
5. Henry Lewis Bullen, "Linn Boyd Benton--The Man and His Work," Inland Printer, October 1922, p. 60.
6. La Crosse Republican, p.99.
7. Charles R. Benton, p. 12-13.
8. Eulogy of Charles S. Benton, no date, p. 1. (Handwritten.)
9. Morris Fuller Benton, Notes on his genealogy, no date, p. 2-3. (Typewritten.)
10. Caroline Benton Gregg, Interview with Patricia Cost, Milwaukee, March 20, 1984, tape 2, p. 6.
11. Ralph Van Horn, Little Falls Historical Society, Letter to Patricia Cost, July 27, 1984, p. 2.
12. Charles R. Benton, p. 14.
13. La Crosse Republican, p. 99.
14. Morris Benton, Notes, p. 1.
15. Gregg, Interview, tape 2, p. 6.
16. Morris Benton, Notes, p. 1.
17. Gregg, Interview, tape 1, p. 2.
18. Ibid., tape 1, p. 2-3.
19. Ibid., tape 2, p. 6.

20. "Achievements of Linn Boyd Benton Vital to Industry's Progress,"
Inland Printer, August 1932, p. 53-4.
21. Bullen, "Linn Boyd Benton," p. 60.
22. Gregg, Interview, tape 1, p. 3-4.
23. La Crosse Republican, p. 99.
24. "Achievements of Linn Boyd Benton," p. 53.
25. Charles R. Benton, p. 13.
26. Bullen, "Linn Boyd Benton," p. 60.
27. Ibid., p. 61.
28. Gregg, Interview, tape 1, p. 4.
29. Bullen, "Linn Boyd Benton," p. 61.
30. Gregg, Interview, tape 1, p. 5.
31. Ibid., tape 1, p. 3, 5.
32. Ibid., tape 1, p. 4.
33. "Achievements of Linn Boyd Benton," p. 53, and Bullen, "Linn Boyd Benton," p. 60.
34. Henry Lewis Bullen, "Discursions of a Retired Printer, No. VII,"
Inland Printer, January 1907, p. 519.
35. Bullen, "Linn Boyd Benton," p. 60.
36. Morris Benton, Notes, p. 4.
37. Gregg, Interview, tape 6, p. 5-6.
38. Morris Benton, Notes, p. 7.
39. Ibid., p. 5.
40. Gregg, Interview, tape 1, p. 4.
41. Ibid., tape 5, p. 2.
42. Morris Benton, Notes, p. 3.
43. Bullen, "Linn Boyd Benton," p. 60-1.

44. Ibid., p. 61.

45. Ibid., p. 61.

CHAPTER THREE

THE EARLY YEARS: THE INVENTIONS

Typesetting in the 1870s

Linn Boyd Benton's Milwaukee type foundry started out making type essentially the same way it had been made since Gutenberg invented moveable type in the 1450s. True, machines had replaced hand methods for actually casting the individual pieces of type, and each type foundry had its own peculiar system of type dimensions and metal alloys,¹ but the punches for making type matrices were still being cut by hand, in a profession that required a considerable amount of skill, precision, and patience.

The punchcutter started with a bar of soft steel, about a quarter of an inch square by an inch and three-quarters long. Until the middle of the 18th century or so, the punchcutter had to forge his own piece of steel, and old punches are of strange sizes and shapes.² The steel had to be long enough to be held rigidly in a clamp while being driven into a matrix. On one end of the bar he sketched out the approximate shape of the letter, after using adjustable gauges to scratch the base and top lines. If the letter had a counter, or inside opening such as in the letters o, e, and a, the punchcutter usually made that opening with a steel counter-punch he had previously shaped and hardened. Then he used files of various sizes to cut away the excess metal from what was to become the letter.

As he got close to perfecting the punch, the punchcutter would frequently stop to make smoke-proofs by holding the unfinished punch in the flame of a candle or gas-burner until its face became covered with soot. He then pressed it onto a piece of paper. In this way he obtained a sharp, right-reading impression of the letter, and could judge it by eye.

In shaping each letter, aligning it with the other letters in the font, and determining the amount of space to be left on either side, the trained eye is the sole judge. Frank Denman explains in his book The Shaping of Our Alphabet, "It must be optically right, not mathematically right; for to make it look right it must be in many respects mathematically wrong."³ For example, a C or an O must actually extend below the baseline, or else they will appear short. The b and t must tip a bit to the right, and the d to the left, to compensate for an optical illusion that would make them look off balance if they were exactly perpendicular to the baseline.

When the punchcutter was satisfied with his punch, he polished it, and hardened it by heating it and then placing it in water or oil. If it didn't break, it could then be driven into a piece of softer metal, usually copper, to create an exact duplicate of the letter. In his book The Practice of Typography, printed in 1900, Theodore Low De Vinne, a famous printer and scholar, wrote, "In this state, the copper bar is known as a drive, a strike, or an unjustified matrix. It is only when the drive has been made perfect that it is known as the matrix. This matrix is really the mould for the face of the letter."⁴ Individual pieces of type were then cast from the finished matrix.

It is generally agreed that punch-cutting was the most difficult work in typefounding. "Each punch was an individual work of art," Denman wrote. "If it broke, the punch that replaced it could never quite be the same."⁵ The quality of the punch depended as much on the artistic sense of the punchcutter as it did on his skill and precision.

"...steel punchcutting is a most difficult art," Henry Lewis Bullen of the American Type Founders Company wrote in 1924, "few men having the temperament to succeed in it, while the process of instruction was slow and tedious. ... [Even] the most expert punchcutters could not exactly duplicate any letter they might have cut. If the punch of a letter broke, the letter that replaced it was more or less a 'wrong font.'"⁶

De Vinne wrote this about punch-cutting: "No operation in typography requires more skill than this, and in none is error more disastrous."⁷

The cutting of steel punches was done "by highly expert men and was very costly, which precluded the issuing of new type faces except at long intervals of time."⁸ Another important problem with type at the time was its lack of dimensional standardization. Because punches were cut by hand, type sizes, widths, and base alignment varied tremendously, both within a foundry and between foundries. Bullen explained that the variations between foundries "were expected to give each letterfounder a sort of monopoly of the trade of the printers who may have been its original customers, for a printer would be likely to submit to many inconveniences or exactions before facing the greater inconvenience of introducing confusion into his establishment in the shape of differing

FOUNDRY.	Height.	Diamond.	Pearl.	Agate.	Nonpa-reil.	Minion.	Brevier.	Bourgeois.	Long Primer.	Small Pica.	Pica.
Boston Type Foundry.....	.9200	.....	.0700	.0760	.0833½	.0855	.1100	.1166	.1345	.1520	.1670
Cincinnati Type Foundry.....	.9170	.0625	.0694½	.0764	.0833½	.0872	.1911	.1250	.1389	.1528	.1666½
Marder, Luse & Co.....	.9180	.0622½	.0691½	.0760½	.0830	.0908½	.1106½	.1245	.1383½	.1521½	.1660
Johnson Type Foundry.....	.9180	.....	.....	.....	.0830	.....	.....	.....	.....	.....	.1660
Farmer, Little & Co.....	.9180	.....	.0667	.....	.0830	.....	.....	.....	.1335	.....	.1660
James Connor's Sons.....	.9180	.....	.0665	.....	.0840	.....	.1062	.....	.1330	.....	.1680
Geo. Bruce's Son & Co.....	.9190	.0595	.0668	.0750	.0841	.0944	.1060	.1190	.1336	.1500	.1683
Benton, Waldo & Co.....	.9200	.....	.0665	.0725	.0835	.1010	.1070	.1170	.1330	.1450	.1610
Barnhart Bros. & Spindler.....	.9200	.....	.0664	.0706	.0838	.0949	.1065	.1170	.1330	.1412	.1679
Phelps, Dalton & Co.....	.9200	.....	.0667	.....	.0824	.....	.1060	.....	.1332	.....	.1670

Table 1. Variations in the sizes of type-bodies in 1885, before the adoption of the point system.

type standards."⁹

As late as 1886, American typefounders referred to their type sizes not in points, but with romantic names such as diamond, brevier, pica, small pica, two-line small pica, bourgeois, double paragon, two-line Columbian, double great primer, and two-line mignonette.¹⁰ The foundries did not even agree as to what each name actually meant: a comparison of the type bodies of six leading foundries showed that a brevier could mean anything from 7 3/8 points to 8 1/8 points, or a long primer could range from 9 5/8 points to 9 3/4 points. (See Table 1.) In England, the situation was even worse: the theory that six picas should equal one standard inch was generally accepted, but beyond that there was no agreement even in theory. In France, however, a system of type-bodies had been adopted as early as 1737, which was revised and corrected in 1789 by Francois Ambroise Didot.¹¹

When the Chicago Type Foundry was destroyed in the great Chicago Fire of 1871, John Marder, its managing partner, saw an opportunity to experiment with a new system of type sizes. He decided to adopt a system of point bodies conforming in principle with the Didot system, and by 1879 type cast on his new system was available for sale. Marder acted entirely alone in this reform.¹² It was the first attempt at a point system in this country, and although it was appreciated by all who worked with it, most other typefounders were unimpressed and opposed the idea. But when the Central Type Foundry of St. Louis decided to adopt the Marder system, the tide turned, and by 1886 a meeting of the Type Founders' Association formally adopted it as the American system.¹³

The point and pica adopted at this time are the same that printers

use today. Bullen explained the system in one of his Inland Printer articles:

The pica or 12-point standard of the American point system is .166044 inch, six 12-point bodies measuring .996264 inch, or less than four one-thousandths under the theoretically correct standard of six 12-point bodies to one United States standard lineal inch. Didot's French point is .0376 centimeters, and the American point .0351 centimeters. The American standard height-to-paper is .918 inch. When the point system was formally adopted in America there existed variations in the height of type of over five one-thousandths of an inch from minimum to maximum. The agreement among the typefounders corrected this evil, not the least [of] which had vexed the printers.¹⁴

Apparently Linn Boyd Benton was working behind the scenes even in the adoption of Marder's point system. A footnote to the above citation explains that when the American Typefounders' Association formally adopted the point system, a steel standard furnished by MacKellar, Smiths & Jordan, one of the leading typefoundries at that time, was accepted as the official standard. On this steel rule, 83 12-point bodies equaled 35 centimeters, and 15 heights-to-paper also equaled 35 centimeters. It was soon found that the standard was inaccurate. "It is only approximately correct," the footnote goes on to say, "and the term 'approximate' as applied to type standards of body, width or line does not exist in the dictionary of Mr. L.B. Benton, whose investigations, tested by other experts, have established the absolute standards."¹⁵

The adoption of Marder's point system greatly aided the printer in his need for standardization, but it related only to type's body size. Types were still cast in so many widths that justifying them took quite a bit of time and patience, and there was as yet no standard lining

system. In 1883 Linn Boyd Benton was granted a patent for what would help clear up some of the problems printers had with type widths.

Self-Spacing Types

Benton's first type-related patent came in 1882. It was a multiple mold for casting leads and slugs.¹⁶ Benton "claimed that his machine, with one man operating it, could cast more spacing material in a ten-hour day than ten men working the same period could turn out with other methods."¹⁷

In the same year, Benton started to invent an automatic-justifying justifying typesetting machine. To speed the justification process, as Bullen wrote, Benton "devised a system of casting body types on eight different widths, instead of the more than 100 widths normally found in an ordinary body-type font."¹⁸ The claim that there were normally more than 100 set widths in a font of type at that time is an exaggeration on Bullen's part. However, Benton's system did reduce the time required for justification by reducing the number of type widths in a font of type—it was the first time printing type characters were cut on pre-determined widths.

Benton was granted a patent for type that was 'the point system both ways' in 1883. In this so-called 'self-spacing type,' all characters were made on set widths which were multiples of one-sixth of the body. Thus, one em (one body width) was made up of six units. Any combination could be made up to a multiple of the em by adding self-spacing spaces which were also equal multiples of a sixth of the body. An advertisement for self-spacing type boasted: "In a complete font of



1 unit	—Space.....	1
2 units	—Space, f i j l , : ; . - ' ! I J ' | ..	16
3 units	—Quad, c e r s t z ? ) ] * † ‡ § || ¶ I J s z - °	22
4 units	—Quad, a b d g h k n o p q u v x y fi fl ff \$ £ 1 2 3 4 5 6 7 8 9 0 S Z A B C D E F G L N O P Q R T U V X Y & .. - \	59
5 units	—æ A B C D E F G L N O P Q R T U V Y H K M	21
6 units	—Quad, m ct w fi fl œ H K X & w æ œ fb þ @ — ... ¼ ½ ¾ ⅓ ⅔ ⅛ ⅜ ⅝ ⅞	28
7 units	—M W	2
8 units	—Æ Œ	2
12 units	—Quad, —  	5
9 sizes.	Roman characters.	156
	Italic characters.....	77
		<hr/> 233

Table 2. The nine widths of the type-bodies of Linn Boyd Benton's self-spacing types.

the old kind of body type there are about 190 widths of bodies. ... [With self-spacing types] there are but nine widths of bodies all told, and ... the four-unit width predominates over any other, there being 59 characters of this width."¹⁹ Table 2 shows the nine widths Benton used, and which characters were cut to which widths.

The term 'self-spacing' was obviously a misnomer. It was first coined by Walter Stoddard, who later was one of the founders of the Curtis Publishing Company in Philadelphia. Stoddard was a compositor hired by Benton to determine what gain, if any, the unit-width types could afford over a non-unit font of the same width of lower-case alphabet. Bullen recorded this version of the story in one of his Inland Printer articles:

Three comparative trials showed that Stoddard set the unit-width types 33.3% faster than the non-unit types. Stoddard's average with unit widths, per one thousand ems, was 45.5 minutes as against an average of 60 minutes [very slow for a professional compositor]. When asked what he thought of the justification, he pondered a while and said, 'I never thought of that--why, the d--d thing spaces itself!' The types had not [yet] been named, and thus it came to be called 'self-spacing.'²⁰

Other reports of self-spacing types claim that the average gain in composing speed was 25% for straight matter and more for tabular work (the types were excellent for tabular work).²¹ In any case, the success of the type itself caused Benton to suspend work on his typesetting machine, and instead to concentrate on getting the new type on the market.

Benton by this time already had a reputation for being a perfectionist. When he was designing the self-spacing types, he had in his employ a boy named William Ferdinand Lietke, who grew up working in the typefoundry. Will's earliest task was to sharpen 15 pencils and

have them on Benton's designing table each morning. Bullen wrote, "Benton's first work was to examine the pencil points under a magnifying glass. If five of the 15 were accepted Will was lucky—most of them would be too flat or too round or too sharp. Benton knew what he wanted and trained his people to give it to him, without compromise."²²

Benton's self-spacing types were primarily designed for newspapers—the types reduced the cost of composition by making the justification process easier. Newspaper offices generally used one series of body-type in any one size, not great varieties of types in the same size. "The price [of self-spacing foundry type] was higher than for non-unit types, but in many parts of the West, the scale for setting self-spacing types was 5 cents less than for other body types."²³ If the Linotype machine had not entered the field of newspaper composition, the self-spacing types would no doubt have come into general use.²⁴

But in commercial printing offices the problems of self-spacing types became apparent:

This system was encumbered by an excess of bastard pieces and quadrats [quadrats or quads are pieces of type metal lower than the typeface that are used for filling blank spaces and lines], as the offices which adopted it learned to their sorrow when they found their cases mixed with 'off' sizes that failed to work with other fonts than those especially cast on the unit set.²⁵

In other words, the spaces and quads for any given self-spacing font could not be mixed with the spaces and quads of type from a different foundry, since they differed in width. In commercial printing offices, many fonts in addition to self-spacing fonts (and therefore from various foundries) were used every day. It was impossible in practice to keep the spaces separate, and when they were mixed the justifying economies

12-Point (Pica) Self Spacing Old Style, No. 26.

PAT'D DEC. 18, '83.

The unit of measure of this font is 7 to pica.

Roman, per pound, 44 cts.

Italic, per pound, 50 cts.

Perhaps in no art has there been so little progress in four centuries as in the art of type setting. The machines, some of which are in use, are still inefficient, and the greater part of the enormous and increasing quantity of type used is set as type was set four hundred years ago. If Franklin could come from among the shades, and take his place before the case, he would have nothing to learn. There has been no development of the art to correspond with the evolution of the marvelous perfecting presses of to-day from the slow, laborious hand presses of half a century ago, or with the growth of the art of stereotyping, folding, pasting, and

abcdefghijklmnopqrstuvwxyz

1 2 3 4 5 6 7 $\frac{1}{4}$ $\frac{1}{2}$ $\frac{3}{4}$ $\frac{1}{3}$ $\frac{2}{3}$ $\frac{1}{8}$ $\frac{3}{8}$ $\frac{5}{8}$ $\frac{7}{8}$ 4 5 6 7 8 9 0

Alphabet, a to z, 13 $\frac{1}{4}$ ems.

Circular Font.

11-POINT (SMALL PICA) OLD STYLE ITALIC, No. 25.

\$4.20

GLOBE JOB ROOMS—SAINT PAUL.

In January, 1886, I put in a font of Self Spacing and I am glad to state to you that from the total amount of composition of four compositors for sixty days, I estimate that the saving by

Circular Font.

12-POINT (PICA) OLD STYLE ITALIC, No. 26.

\$3.95

A RED LETTER—DO NOT READ IT.

In January, 1886, I put in a font of Self Spacing and I am glad to state to you that from the total amount of composition of four compositors for sixty days, I esti-

SPACES AND QUADS ARE INCLUDED WITH EACH FONT.

Figure 3. Linn Boyd Benton's Self-Spacing Roman and Italic Type.

were lost.²⁶

Another problem with self-spacing types was the distortion of certain characters in the early fonts. "This is most noticeable," Bullen wrote, "in the round character 'e' which is three-unit, and the 'o' which is four unit, thus giving the 'o' an unfortunate prominence."²⁷ Benton reworked and redesigned several self-spacing fonts, and overcame many of these distortions, even to the point of evoking Bullen's praise: "In the old style series of roman and italic, based on the Ronaldson Old Style design, and in Self-Spacing Old Style Bold, the characters are adjusted to their prescribed widths so judiciously as to leave no room for criticism."²⁸

To further simplify justification, Benton put the italic on the same body widths as the corresponding roman characters. In order to get the italic letters to conform to these pre-determined widths, he abandoned the conventional italic in favor of a sloped roman face. (See Figure 3.) This method of italic letter design was later 'discovered' by Stanley Morison, as Henry Lewis Bullen mockingly pointed out in one of his personal letters to Beatrice Warde: "Speaking of Morison reminds me that his discovery that italic should be slanting roman was put into manufacture in 1883 by L.B. Benton, in his self-spacing types, in which the italics are all slanting romans. Good God, what an asset it appears to be to know a little about a subject and make much noise about that little!"²⁹

It must be noted that Benton's self-spacing types saved an enormous amount of work for the type foundry itself. The type casting machine must be stopped for adjustments each time type of a different width is

cast. Reducing the set widths, then, reduced down time on the type casting machines.

Self-spacing type was only the beginning of the reform to create more uniform type widths. William A. Schraubstadter of the Central Type Foundry and later the Inland Type Foundry, both in St. Louis, perfected Benton's system by casting type to a standard system of units. In Schraubstadter's system, the unit is one-eighth of one point, and the number of widths used on body fonts varies from 13 to 20. His system was widely praised, and eventually adopted by all American type-foundries. "This system, by its compromise between the speed advantage of a lesser number of widths and the requirements of the designer, and its use of justifiers applicable to all fonts, overcomes all the drawbacks of Benton's system."³⁰ Schraubstadter went on to devise and introduce a lining system that also came into general use.

The Benton Punch-Cutting Machine

When Benton first received his patent for self-spacing type, he was immediately faced with a new problem: punches for every character of each font had to be engraved and matrices made. According to Bullen, "There were more than 3,000 punches to be cut and not one punchcutter was available either in America or Europe. The dilemma was the turning point of Benton's career—it eventually disclosed to himself that he had mechanical genius of the highest order."³¹

Benton decided that the only answer was to make a machine that would cut punches. He had never cut a punch himself, although he had an idea how difficult the process would be from his experience with the

tombstone cutter in La Crosse. "Unable to engage the services of expert type-punch cutters, I was compelled to invent my type-punch engraving machine, the success of which became much more important to our art than I ever dreamed of ..."³²

Benton's first pantographic punch-cutting machine was being used in the foundry as early as 1884. "It worked perfectly, showing that the principle was correct. The second machine did no better work but was easier to manipulate."³³ He received patent 332,990 for his third version of the machine on December 22, 1885.³⁴

Although Benton's invention was not publicized, since it was intended simply to aid in the manufacture of self-spacing types, The Inland Printer for July 1884 reported that:

Benton, Waldo & Co., of Milwaukee, claim to have invented a machine for cutting punches for original characters for type foundries in steel,--an invention which will much cheapen the ordinary process of cutting by hand. It will cut from the largest to the smallest punch--even to half-diamond; while as a time-saver, we may state that a piece of work now requiring four hours to perfect by the hand process, can, under its operation, be turned out in half an hour.³⁵

A complete description of how the Benton punch-cutter works is found in chapter 5. Suffice it to say here that the machine was outstandingly accurate. As De Vinne later wrote,

The inventor claims, and the claim is not disputed, that punches completed by this machine produce matrices that are more readily fitted up and justified than those cut by hand. Models for accents, fractions, and borders can be made in sections, and accurately cojoined in proper position before the cutting of the punch. The punches for accents are always truly flat on the face,³⁶ and all kinds of kerns can be provided with proper supports.

By late 1885, the self-spacing types were selling beyond the capacity of the plant to turn them out.³⁷ The machine had to have a

pattern for each character--which meant that Benton had to design each letter on a large scale and cut metal patterns for each. This was an enormous task. Henry Lewis Bullen later wrote of this frantic period: "Mr. Benton, working night and day, looked much older than he does now, and his face was then much more furrowed than it is now, forty years after. He was a hero of the same character as Palissy, the renowned potter. At that time, like Palissy, he was ready to 'burn his furniture,' and to let his inventive ardor 'know no brother,' if need be, to accomplish his task."³⁸

Most sources give Benton credit for having invented the first pantographic punch-cutting machine, not mentioning any of the other similar machines invented and used prior to 1885. The relative accuracy and precision of these machines is hard to judge now, but apparently pantographs were used for years in both Germany and America, although not necessarily for the same purpose.

William Leavenworth of New Jersey adapted the pantograph principle to the manufacture of wood type in 1834. His machine made hand-drawings of the letters on wood unnecessary. "From one set of models attached to the pantograph an unskilled workman could cut on untraced wood various sizes from two-line pica upward, and every size would be a faithful reproduction of the model."³⁹ (See Figure 4.)

According to type specialist N.J. Werner, an early pantographic machine for cutting steel punches was brought to the Central Type Foundry in St. Louis from Germany in 1882.⁴⁰ The same foundry later engraved characters directly into matrices by machine, the first such work being done by William Schraubstadter. But Henry Lewis Bullen

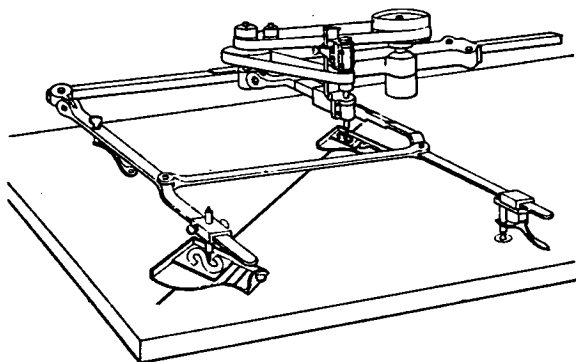


Figure 4. The Leavenworth pantograph machine for wood type.



Figure 5. Building of Benton, Waldo & Company at 89 Huron Street, Milwaukee, Wisconsin.

claimed that "metal-engraving machines had been made and used before 1885 in Germany, and William Schraubstadter made and used one in this country in 1881, but these all lacked precision and required to be supplanted by hand work."⁴¹

Apparently an earlier machine for engraving type matrices came to Chicago from Germany. Robert P. Weibking was born in Schwelem, Germany in 1870, where his father Herman practiced type engraving. Herman brought his family to the United States in 1881, and moved to Chicago. "The elder Wiebking brought his matrix engraving machine with him from Germany, but the late '80s saw his passing, so it remained for his eldest son, Robert, to develop the invention."⁴² Herman is said to have engraved a matrix in 1882 from which type was cast by Marder, Luse & Company of Chicago. Robert engraved his first successful matrices in 1894, and later worked for many years in Chicago as a type designer and engraver at Barnhart Brothers and Spindler.⁴³ Weibking engraved many of Frederic Goudy's types.

Robert's brother Adolph wrote this about his father's German matrix engraving machine: "My father's original engraving machine was made by somebody in Berlin, possibly during 1870 or even before, for it was in his house as far back as I can remember. We children were never permitted to touch it, and it was carefully covered up when not in use. I made wax seals on this very same machine when only fourteen years old."⁴⁴

R.H. Middleton, for many years director of typeface design at the Ludlow Typograph Co., claimed that Robert Weibking and William A. Reade, the founder and first president of the Ludlow company, made an

arrangement whereby Ludlow purchased one of Weibking's engraving machines, and Weibking provided Ludlow employees a brief period of tutelage in engraving methods. Middleton gave no dates for the transaction, but merely stated that "this arrangement ... launched the Ludlow Company on an independent engraving program."⁴⁵

Did Benton know of these machines? Perhaps not. The Weibking machine was a matrix engraver, and Benton's first machine was a punch-cutter, although he later modified it to skip the punch-cutting step entirely and to engrave instead original matrices. Milwaukee's proximity to Chicago, where Weibking lived and worked, may merely be a coincidence, for no evidence exists that the two men met before 1885.

The story of Benton's punch-cutter and the influence it had on the typefounding industry only begins with Benton's patent in 1885. Ironically, Benton's invention to aid typefounding became "the greatest ally of a machine which at the time was expected to destroy the typefounding industry."⁴⁶ During the time that Benton was solving his problems with the manufacture of self-spacing type, Ottmar Mergenthaler was working on a typesetting machine in Baltimore. The story of the development of the Linotype involves so many people and ideas that only a brief outline will be included here.

Mergenthaler's Linotype Machine

It all started with James Olivie Clephane, a court stenographer and later a practicing lawyer, who felt oppressed by the tediousness of producing manuscript copies of his notes and the notes of his employees for the law courts. Clephane became interested as early as 1866 in

devising a system of mechanical writing. The first seven Remington typewriters, invented by Christopher Sholes, were sold to and used by Clephane. But Clephane wanted more. His objective from the beginning had been "to produce a machine that would mechanically produce copy that would eliminate the cost of type composition."⁴⁷

Charles T. Moore persuaded Clephane to try out one of his designs, using a keyboard to create characters on lithographic paper which would then be transferred to lithographic stone. The first of these machines was built in 1877 in Baltimore by A. Hahl & Co. Ottmar Mergenthaler was Hahl's nephew and the foreman of the machine shop, and he first met Clephane at this time. The National Machine Printing Company was established to handle the process and the machines.

Mergenthaler worked for Clephane and even patented a Rotary Impression Machine in 1879, but he became disenchanted with the work, and severed his ties with the new company. "Mergenthaler thought so little of the future of the company that in 1881 he sold his three shares [of stock] for \$60. Hahl, holding on a year or two longer, sold his three shares for \$900."⁴⁸ By 1924, those shares would be worth tens of thousands of dollars. In 1882 a new company, the National Typographic Company, acquired all the interests and patents of its predecessor, the National Machine Printing Company.

Mergenthaler started his own machinist business the following year, and after again studying Clephane's objective, he evolved his first 'band-machine.' Bands or bars of metal had all the letters and other characters used in type composition engraved on their edges. "At the touch of the corresponding key on the keyboard the bar dropped until the

required letter came into alignment with other letters which formed words and lines. The line of punches was then pressed into a long strip of papier-mache, which in turn was assembled on paper and justified ..., after which each page was stereotyped in a hand mold."⁴⁹ Mergenthaler soon thought of two ways to improve his first band machine--to assemble and justify a line of matrices instead of punches, and to cast cast the type direct from them.

In 1884 the first 'line of type' was cast in Mergenthaler's shop in Baltimore on the second band machine. The National Typographic Company bought two of the machines, and helped Mergenthaler set up a factory in Baltimore. For justification, Mergenthaler used a wedge system patented in 1872 by Merritt Gally, the inventor of the Universal Press and the player piano and player organ. (Some reports call Gally's spacing device "the most effective detail on the Linotype....")⁵⁰

But Mergenthaler soon realized the impracticality of the band machine: it was much too expensive to build and he could not satisfactorily align the matrices. Clephane and another backer agreed to defer manufacture, and encouraged Mergenthaler to go back to the drawing board and make more experiments. But the leading newspaper publishers were already interested in the band machine, and formed a syndicate that bought 7,000 of the 40,000 shares of stock in the Mergenthaler Printing Company.⁵¹

In 1885, the first single-matrix or 'blower' machine came out. "The matrices were held in perpendicular channels, and, dropping straight down onto a wire rod in the horizontal assembling channel, were brought to the justifying point by means of blasts of air provided by a

blower—a most unmechanical makeshift, which did not work satisfactorily."⁵² But the directors of the company thought the 1885 blower was good enough, and ordered 100 to be manufactured. Mergenthaler reduced this number to 12, and by July 1886, the first one was installed at The New York Tribune.

The 1886 model was an improvement over the 1885 blower, but Mergenthaler wanted to work the bugs out of it before he began mass production. He was, however, ordered to make 200 more machines. By February 1888, about 60 machines were in use in the composing rooms of members of the newspaper syndicate, but none of them were satisfactory. "As a consequence of various disagreements Mergenthaler severed his connection with the company in April, 1888, leaving with it an unsatisfactory machine, which he had been prohibited from improving."⁵³

Mergenthaler sold his stock in the company which bore his name, and again set up his own small work shop. By the end of 1888 he had completed drawings for an improved machine, which eventually became what is now called the 1890 model, the Linotype in its final form. He applied to Clephane again for financial assistance, and, after a lot of managerial squabbling, the new machine began to be manufactured.

But, although the machine itself was by now satisfactory, a new problem presented itself. Bullen explained it very well:

The rapid production of matrices required the rapid production of steel punches. The typefounder may use a steel punch only once; he would seldom use it half a dozen times. But each linotype matrix requires the use of a punch, and punches are fragile things. A steel punch may break the first time it is used. Where steel punches are used thousands of times a day the percentage of breakage is serious. Steel punches also wear out and must be replaced immediately they show signs of wear. Steel punches cut by hand are very expensive. It is said that the hand-cut

punches of the Mergenthaler Printing Company cost \$5 each. This cost, however, was a small matter compared with the slowness of production when cut by hand. In 1890 the Linotype company had six or seven punchcutters in its employ, and these could do no more than keep up the supply of matrices for about 200 machines. Not in all the world could enough steel punchcutters be found to furnish an adequate supply of matrices, without which the machines were as useless and unsalable as gun where powder is unprocurable."⁵⁴

An earlier account of the same problem brings out the fact that punches for making linotype matrices had to be positioned very precisely for them to be useful:

Every one of my readers has seen a Linotype matrix; on one edge of a thin piece of brass the matrix is made by driving into the brass a steel punch on which the character is engraved. For every character used on a Linotype machine a steel punch was required to be made with greater exactness as to the position of the character on the punch than a typefounder demanded. ... Punches soon wore out; they might last one hour or a year, as breakages were frequent. The Linotype company was paying as high as \$8 per letter-punch.⁵⁵

When Linn Boyd Benton set out to invent a typesetting machine, he immediately realized that he would have the same problem, and so abandoned that work to devise instead a machine to cut punches. "Linn Boyd Benton considered trying to invent a typesetting machine which would cast the type as it went along, but realized that such a machine would require a prohibitive amount of mat-making, so he turned his attention to inventing a punch-cutting machine."⁵⁶ Mergenthaler, on the other hand, only realized the fundamental flaw with his machine when it jumped out at him. Thus it was simply chance that presented the solution to the Linotype's biggest dilemma.

Mergenthaler has come to be regarded as an inspired man, but not necessarily a genius. He was a good mechanic, and had the integrity to pursue his goals against great odds. Bullen wrote that "His path as an

inventor is that of a plodder, and is marked by an unusual number of machines that failed. Had he possessed the genius of a great inventor he would have confined his failures to paper"⁵⁷ Nevertheless, Mergenthaler's 1890 linotype was used successfully until the mid-20th century.

Benton, working in Milwaukee, did not know anything about Mergenthaler or his Linotype machine. Benton was too busy getting self-spacing types ready for the newspapers that had ordered them, and marketing the idea to newspapers that hadn't. His partner at the time was R.V. Waldo (see Figure 5), who handled the marketing end of the business with gusto and integrity. When Waldo went to New York City to sell the larger newspapers on the idea of self-spacing type, he made the rounds and eventually landed in the composing room of The New York Tribune, the only paper at the time that was using the Linotype for daily production.

Every time a Linotype punch broke at the Tribune, a new one had to be cut by hand, so there were minute differences in some of the letters in the paper, which no one but a type founder would notice, under a microscope at that. But Bullen nevertheless felt that the paper's overall look left something to be desired. "We remember, as some of our readers may, the peculiar appearance of The New York Tribune when it was first set by linotypes," he wrote. "Each line had wrong font characters in it. There would be two or three kinds of letters e or c or t in each line, each change of character indicating the breakage of a punch."⁵⁸ Bullen is grossly exaggerating the situation when he calls the recut letters wrong font characters. Nevertheless, it must have been a

nuisance to have someone recut the broken punches every time by hand.

Waldo, ever the salesman, was undaunted by the new machines, and "persisted in unloading his story."⁵⁹ The superintendent of the Tribune's composing room, Mr. Millholland, wasn't interested until Waldo made the claim that better stereotype matrices could be made from self-spacing types because "the punches from which the matrices were made were cut by a machine which finished the bevels below the face of the letters as smoothly as the faces of the letters."⁶⁰ Millholland knew of the Linotype's biggest problem, and so asked Waldo to repeat his story to Whitelaw Reid, who represented the majority of the stockholders. Reid told Waldo that the Tribune was not interested in self-spacing type. Waldo, considering his visit a failure, returned to Milwaukee, unaware of what Reid actually had in mind.

Soon after Waldo arrived in Milwaukee, Philip T. Dodge, the Mergenthaler Company's patent attorney, appeared at Benton, Waldo & Co. According to Bullen, he asked to see the punch-cutting machine, and found out that at that time it was cutting in type metal, not steel, because Benton was using electrotyped matrices.

When asked if his machine could cut in steel, Benton said he did not know. He was not eager to stop work to experiment for other folks. He did not know how much good or evil depended upon the answer to Dodge's question. However, he was persuaded to try, Dodge agreeing to pay him \$50 if he did not succeed, as compensation for lost time."⁶¹

That evening, Benton slightly changed the cutting tools, and successfully cut the steel punch for Dodge. Soon he received an order to cut ninety steel punches, and when this also proved successful, Benton and the Mergenthaler Company entered into an agreement for leasing Benton's machines.⁶² Although undoubtedly some other

pantographic device would have been invented had not Benton's machine been brought to the attention of the Mergenthaler Company, Henry Lewis Bullen claimed, "Thus Benton saved the Linotype machine, with an invention much more marvelous than the Linotype machine."⁶³ The first Benton punch-cutting machine was shipped to the Mergenthaler company from Milwaukee on February 13, 1889.

Boyd Benton himself later wrote:

This invention proved as fundamental to the success of the Linotype, Monotype and Intertype and other composing machines as Edison's improvements on Bell's invention were to the success of the present Bell-Edison telephone. My steel type-punch engraving machine was the first to cut a perfect type punch in metal; it was probably the first attempt in that direction. Its importance to the Linotype machine, then in its infancy, was acknowledged in the first annual report of the Mergenthaler Linotype Company issued following the date on which my punch engraving machines were first put to work in their Brooklyn factory, in the sentence, 'By the acquisition of the Benton punch-cutting machine a seemingly insurmountable obstacle to our success has been overcome.'⁶⁴

And as De Vinne put it, the success of the Linotype machine was "largely due to the accuracy of the matrices made from Benton machine punches. As the counters are deeper and the bevels truer, the types do not show distortion when they have been flattened by wear."⁶⁵

Thus an invention meant to aid typesetting instead helped to hurry into existence the new composing machines, which would eventually lead to the downfall of typesetting. But Benton did not regret making his important contribution. "Though a typesetter I am fully appreciative of the importance of the composing machines to the printing industry," he wrote. "It is a great satisfaction to me to have aided in their efficiency."⁶⁶

Had Benton known of the Mergenthaler Company's problem when he

first met Philip Dodge, perhaps he could have sold his punch-cutting machine outright, and made a fortune on the spot. The Mergenthaler Company would have had sole access to the machine, and later composing-machine manufacturers such as Lanston Monotype would have been at a great disadvantage. But instead, Benton's machine "conferred a wide-reaching benefit on the printing trade of the whole world."⁶⁷ It has even been claimed that "all the matrices used in composing machines throughout the world are made by machines and appliances invented by Linn Boyd Benton."⁶⁸--Perhaps the anonymous author who made this claim did not know that Weibking once sold the Ludlow Company one of his engraving machines.

In fact, composing machine manufacturers came relatively close to being deprived of Benton's machine. Before Benton knew of Mergenthaler's efforts or of the Lanston Monotype Company, he offered to sell his machine to commercial typefounders, but they were skeptical and didn't want to buy it. "Benton next offered to sell the patents and exclusive control of his invention to MacKellar, Smiths & Jordan, the wealthiest and most extensive typefounders of that period. The firm was responsive to the proposition; a price was agreed upon; but Benton had stipulated for the use of one machine in his own typefoundry; this the prospective purchasers would not concede; Benton was firm, and there was no sale."⁶⁹

By this time, Benton was slowly becoming better known in the printing industry, even though his company was not as influential as other type foundries. The Inland Printer for September 1886 reported that Benton was "an intelligent, entertaining, unostentatious gentleman, a mechanical genius of whom [Milwaukee] has every right to feel proud;

.... One such man is of more value to the community than all the brainless dudes to be found throughout the length and breadth of the country." ⁷⁰

In 1890, Boyd Benton and his son Morris went to Washington, D.C. to assist Tolbert Lanston, then inventing the Monotype machine. The Monotype casts single types, as opposed to the Linotype's slug system. But it too requires large quantities of matrices.⁷¹ Lanston had bought several Benton punch-cutting machines, and the Bentons went to instruct the organization in their use.⁷² By this time, Morris Fuller Benton was 18 years old.

Other Inventions

Boyd Benton received some 20 patents in his life, 18 of which related to printing. The first three, as already explained, were for a multiple mold for casting leads and slugs, for self-spacing type, and for the punch-engraving machine. Benton's other patents included:

4. tool grinder (1890),
5. font of type (1890),
6. method of making piece fractions (1895),
7. type dressing machine (1901),
8. grinding machine (1904),
9. delineating machine (1905),
10. matrix trimming (fitting) machine (1906),
11. automatic type casting machine for casting types on angular bodies, with all kerns supported (1907),
12. depth gage (1913),
13. parallel lining device (1913),
14. apparatus for engraving shaded letters (1913),
15. improvements in automatic type casting machines, which accelerated the speed of casting (1913),
16. machine for putting faces on brass rules (1913-16?),
17. fonting apparatus for use with multigraph types, jointly with Morris F. Benton (1922).⁷³

His tool grinder and some other machines were for sharpening and

shaping the cutting tools used in the punch engraver. These were "so constructed that each tool is sharpened with its point in the center of its rotation without removal from its original position."⁷⁴

Some of Benton's other inventions will be discussed in later chapters.

Morris Benton's daughter Caroline remembers the two Bentons consulting over some of the later inventions. "[They] would talk things over sometimes, [but] not at the [dinner] table. Grandpa would say, 'Oh, Morris, before you go upstairs, I'd like to ask you something. And they would go into a huddle together and discuss. ... After my grandfather died, I [asked] my father ... about working on one of the recent machines grandpa had perfected, and I said, 'Did you work on that too?' And he said, 'Oh yes ...' And then I said, 'Well, you had a mechanical engineering degree, did you work on the others?' And he said, 'I think I worked on practically all of them.'"⁷⁵

Life in Milwaukee

Morris Fuller Benton spent many hours of his youth working on his own printing press. He had a little workshop in his house on Wells Street in Milwaukee.⁷⁶ When he was eleven, Morris made admittance cards for children's music classes, tickets for neighborhood shows in Milwaukee, receipts for work he did for his father, and booklets of riddles. (See Figure 6.) He printed a funny little poem, "To an Electric Light," based on Twinkle, Twinkle Little Star, which contains two typos in six stanzas.

Morris was not a strong boy. He had several diseases when he was

GRAND SHOW.

Admit One

PROPS.

CHILDREN'S MUSIC CLASSES,

BY

W. L. TOMLINS.

MILWAUKEE, SEASON 1883-84.

Admit ----- Age -----

Of ----- Sunday School,

Residence -----, Father's Initials -----

Lesson, Tuesdays, 4 P. M., at Arion Music Hall.

Lesson, Saturdays. ----- at -----

TO AN ELECTRIC LIGHT.

Twinkle, twinkle, little arc,
Sickly, blue, uncertain spark;
Up above my head you swing,
Ugly, strange, expensive, thing.

When across the foggy air
Streams the lightning's purple glare:
Does the travler in the dark
Bless your radiance, little arc?

When you fade with modest blush,
Scarce more bright than farthing rush,
Would he know which way to go
If you always twinkled so?

Cold, unloving, blinding star,
I've no notion what you are;
How your wondrous "system" works,
Who controls its jumps and jerks.

Yours a luster like the day!
Ghastly, green, inconstant ray!
No: where'er they worship you
All the world is black or blue.

Though your light perchance surpass
Homely oil or vulgar gas,
Still (I close with this remark)
I detest you little arc!

THE GAME OF BOX.

This game is played by two persons, Each person in turn drawing a line from one dot to another. The object of the game, is to get the most boxes. A box is four lines joining at four dots so as to form a square. The person making the last line of a box is entitled to it. After making a box the player has another turn.

Figure 6. Printed material from Morris Benton's boyhood press.

growing up, including scarlet fever.⁷⁷ Once when he was not well the doctor told his father that Morris should get away from Lake Michigan, so the family moved west of the city, to Wauwatosa. Morris set up a workshop there for his printing and for photography.

Linn Boyd Benton had a fine baritone voice, and sang as a soloist in St. James and St. Paul Episcopal Churches in Milwaukee. He had been a choirboy, but when his voice changed it became "gruff and growly."⁷⁸ The elder Benton and his wife also belonged to a singing society in Milwaukee, and took part in a number of Gilbert and Sullivan and other light operas. Naturally, when they moved to Wauwatosa they still wanted to get in to Milwaukee to participate in these things, but there was no easy way to get home from the city at night. It was several hours by horse and buggy, and the last train left Milwaukee too early for the Bentons to attend the theater.

"So my grandfather and two or three buddies decided to buy a train," Caroline recalled, "which they did, from the Milwaukee Railroad." They bought an engine and one car, and could take their friends to Milwaukee to see all the shows and other evening activities that interested them. They would leave the city just before midnight. The project was so successful that they had to add a second car to the train, and then a third, and finally the railroad bought the train back at the end of the year.⁷⁸

The Bentons spent most of their Milwaukee years on Wells Street, between 29th and 31st streets and within a block of a corporate lawyer, Elias Huntington Bottum, and his wife Caroline Melinda Bailey. The Bottums had one daughter, Mary Ethel, who had been born in

Schuylerville, New York in 1877. Elias Bottum was Linn Boyd Benton's patent attorney for his first few inventions.

The neighborhood young people gathered to form a tennis club and bicycling club, and to take picnics to the lake shore and to the woodlands and farms to the west of city. Morris met Mary Ethel Bottum when she was about 13, and never forgot his first sight of her—a plump little girl with her hair tied up in ribbons.⁸⁰ Ethel was mature for her age, and she and Morris, although five years apart in age, got to know each other well and made many mutual friends.

Morris left Milwaukee for Cornell University when he was 20, later than most other students because of the time he had lost due to sickness.

FOOTNOTES TO CHAPTER 3

1. N.J. Werner, "Saint Louis' Place on the Type Founders' Map," Inland Printer, August 1927, p. 764.
2. Harry G. Carter, "Letter Design & Typecutting," Journal of the Royal Society of Arts, October 1954, p. 881.
3. Frank Denman, The Shaping of Our Alphabet (New York: Alfred A. Knopf, 1955), p. 214.
4. Theodore Low De Vinne, The Practice of Typography (New York: The Century Co., 1899), p. 17.
5. Denman, p. 214, 216.
6. Henry Lewis Bullen, "Origin and Development of the Linotype Machine, Part 2," Inland Printer, March 1924, p. 937.
7. De Vinne, p. 11.
8. Werner, p. 765.
9. Bullen, "Discursions of a Retired Printer, No. VII," Inland Printer, June 1907, p. 514.
10. Werner, p. 764.
11. Bullen, "Discursions, No. VII," p. 513-14.
12. Ibid., p. 515-16.
13. Werner, p. 764.
14. Bullen, "Discursions, No. VII," p. 515.
15. Ibid.
16. Linn Boyd Benton, "Inventions of Linn Boyd Benton" (for Who's Who in Printing in the United States), N.D., p. 1. (Typewritten.)
17. Dr. James Eckman, "The Immortal Century Type Face and the Bentons, Father and Son," The Printer's Digest, November 1964, p. 4.

18. Bullen, "Discursions, No. VII," p. 517.
19. "Description of Self-Spacing Type." Desk Book of Type and Printing Materials (San Francisco: American Type Founders Company, 1900), p. 82.
20. Bullen, "Linn Boyd Benton--The Man and His Work," Inland Printer, October 1922, p. 61.
21. Idem, "Discursions, No. VII," p. 517.
22. Idem, "Linn Boyd Benton," p. 62.
23. Ibid., p. 61.
24. Bullen, "Discursions, No. VII," p. 519.
25. "Origin of Point-Set Type," Inland Printer, March 1907, p. 853.
26. Bullen, "Discursions, No. VII," p. 519.
27. Ibid.
28. Bullen, "Linn Boyd Benton," p. 62.
29. Idem, Letter to Beatrice Warde, February 14, 1927, p. 4.
30. Idem, "Discursions, No. VII," p. 519.
31. Idem, "Linn Boyd Benton," p. 61.
32. Benton, p. 1.
33. Bullen, "Linn Boyd Benton," p. 61.
34. Benton, p. 1.
35. Inland Printer, July 1884, p. 21.
36. De Vinne, p. 353.
37. John Allen Murphy, "Morris Benton: Type Designer-Executive, Part 1," Inland Printer, March 1936, p. 34.
38. Bullen, "Linn Boyd Benton," p. 61-2.
39. De Vinne, p. 348.
40. Werner, p. 765.

41. Bullen, "Discursions, No. VII," p. 517.
42. R. Hunter Middleton, Chicago Letter Founding (Chicago: The Black Cat Press, 1937), p. 13.
43. Werner, "Wiebking Created Popular Face in Chicago, Friend Discloses," Inland Printer, November 1932, p. 71.
44. Ibid., p. 73.
45. Middleton, p. 25.
46. Bullen, "Discursions, No. VII," p. 518.
47. Idem, "Origin and Development of the Linotype Machine, Part 1," Inland Printer, February 1924, p. 770.
48. Ibid.
49. Ibid., p. 771.
50. Idem, "Discursions, No. VII," p. 518.
51. Idem, "Linotype, Part 1," p. 771, and "Linotype, Part 2," p. 936.
52. Idem, "Linotype, Part 2," p. 936.
53. Ibid.
54. Ibid., p. 937.
55. Idem, "Discursions, No. VII," p. 518.
56. M.F. McGrew, "The Bentons, Father & Son," Typographic i, March 1978, (reprinted by McGrew), p. 1.
57. Bullen, "Linotype, Part 2," p. 938.
58. Idem, "Linn Boyd Benton," p. 62.
59. Idem, "Discursions, No. VII," p. 518.
60. Idem, "Linn Boyd Benton," p. 62.
61. Ibid.
62. Ibid.
63. Idem, "Linotype, Part 2," p. 937.
64. Benton, p. 1.

65. De Vinne, p. 353.
66. Benton, p. 2.
67. Bullen, "Discursions of a Retired Printer, No. VI," Inland Printer, December 1906, p. 357.
68. "Two Men Whose Work Greatly Benefits All Typographers," Inland Printer, December 1925, p. 453.
69. Bullen, "The Creators of the New Era in Typefounding," Inland Printer, August 1924, p. 764.
70. Inland Printer, September 1886, p. 789.
71. McGrew, p. 1.
72. Benton, p. 1-2.
73. Ibid., p. 2-3; and Linn Boyd Benton, Patent Number 18,775 (December 4, 1888), and Patent Number 20,120 (August 26, 1890)
74. De Vinne, p. 353.
75. Caroline Benton Gregg, Interview with Patricia Cost, Milwaukee, March 20, 1984, tape 5, p. 4.
76. Ibid., tape 2, p. 5.
77. Elizabeth Swain, Telephone conversation with Patricia Cost, July 6, 1985.
78. Gregg, tape 5, p. 4.
79. Ibid., tape 5, p. 7.
80. Swain, "Mary Ethel Bottum," June 1973, p. 1. (Typewritten.)

CHAPTER FOUR

THE BENTONS AT ATF

The Merger

American typefoundries such as Benton's were not faring especially well in the late 1870s and 1880s. "As early as 1878 the various foundries were in trouble because there were too many of them. They had been granting long credit to unstable printers, outfitting whole printing plants for printers with insufficient capital, and carrying on a murderous price war with each other."¹

The problem of foundry type prices was perhaps the most confusing. There was no mutually-accepted price list for type and equipment, so price wars, including discounts of up to 25% or more, became common. In the early 1880s, "efforts to organize and agree on price-fixing procedures ... met with failure."² In 1886 there was an agreement to stabilize prices, but in a few years some foundries broke the agreement, "generating in 1889 a pendulum-swing back to throat-cutting, competitive, discount prices."³

Another problem was on the horizon. Mergenthaler's Linotype machine had not yet been perfected, and the typefoundries' main business was with the daily newspapers. "In pre-Linotype days the constantly recurring and unforeseeable exigencies of the larger newspapers in the matter of type supplies made local type foundries necessary and more or less profitable. Philadelphia, for instance, was too far away from

Baltimore when a newspaper in the latter city needed immediate service; a newspaper in St. Paul could not wait on Milwaukee, nor Milwaukee on Chicago; nor Buffalo on New York, nor Cleveland on Cincinnati or Chicago."⁴ But by the time the Linotype came into general use, it took most of the newspaper business away from the foundries. Dr. James Eckman wrote, "Each machine could wipe out an entire type foundry, ..."⁵

The owners of the type foundries began to realize that there was no choice but to consolidate. After many meetings and much disagreement, a plan was drawn up, promoted by John Marder (Marder, Luse & Company) and Arthur T.H. Brower (Union Typefoundry, Chicago), with two New York bankers.⁶ When the oldest and most respected foundry, MacKellar, Smiths & Jordan, joined the merger, its success was virtually guaranteed. On February 8, 1892, the American Type Founders (ATF) Company was incorporated. The new company had \$4,000,000 in preferred and \$5,000,000 in common stock.⁷

Twenty-three foundries were consolidated in the merger. Three were purchased for cash, and each of the remaining foundry owners sold all interests and assets to ATF, receiving cash and shares of ATF common stock in return.⁸ Only five American type foundries, including Barnhart Brothers & Spindler, did not join the new company. The first result of the consolidation was to close the weak foundries and concentrate the work in the remaining 12, in New York, Boston (two), Philadelphia, Chicago, St. Louis, Cincinnati (two), Milwaukee (Benton's company), Baltimore, Cleveland, and San Francisco.⁹

The first ATF president was Robert Allison, of the Franklin Type Foundry, Cincinnati. ATF's general office was in New York, but Allison

continued as general manager of the Cincinnati branch, and didn't travel to the general office often. There was no central executive control, and no policy, except to continue along the same lines as before the merger. Allison neglected two of the new company's most important assets, the Benton punch-cutting machine and the Barth type casting machine. ATF did not provide any foundry with a Benton punch-cutter, and added only six Barth machines. The new company simply "continued the old methods of manufacture."¹⁰

Joseph Warren Phinney, formerly the manager of the Dickinson Type Foundry in Boston, became an outstanding early leader in the new company. In fact, Phinney, Linn Boyd Benton, and Henry Barth had talked of combining into a smaller corporation in 1891, when the larger merger seemed uncertain.¹¹

But even though the three did join the merger in 1892, their problems and the problems of the other foundries were far from being solved. "There still existed the troublesome duplication of type styles, costly to everyone concerned."¹² There was very little company spirit among the 12 foundries: they continued under the management of their former owners, who in each case kept the original name of the foundry foremost. There was no vision, and the financial situation did not improve, because there was very little liquid capital: "The plants and stocks of most of the type foundries had been paid for with stock of the new company. ... As the valuations of most of the type foundries were on a liberal basis, the company was over-capitalized."¹³

By 1894 there was no improvement. There was no type specimen book,

there were no new type faces, and there had been no dividends paid. The new company was being attacked as a trust, it was badly managed, and the stockholders were divided into two groups, each vying for control. Some directors sold out, and others held on simply in the hopes that in a dissolution they might resume ownership of the type foundries with which they had been affiliated.

In one of his many Inland Printer articles, Bullen explained the situation with compassion:

... the controlling interest ... was composed of as honest, unplotting, and simple-minded a group of directors as ever undertook to manage a big company. This group had individual efficiency and collective inefficiency. They were helpless against a sea of troubles aggravated by the totally unmerited unpopularity of the company, which came to be known as the 'Type Trust.' ... Propaganda instigated against the company at the time was decidedly dangerous, and added greatly to the embarrassments of a management not strong enough to overcome the adverse conditions with which it was confronted.¹⁴

At that time, some of the employees of ATF knew a Robert W. Nelson as a type buyer for his Thorne typesetting machines. He was a frequent customer, and knew about the history of the company and its troubles. Phinney talked Nelson into making a study of the possibilities of the company, and ultimately, in 1894, to buy out the interest of a director who had lost faith in the company.

Nelson, though unsalaried, immediately got to work, giving most of his time to the company. He managed to unite the two factions of stockholders, as far as each would permit. At a stockholders meeting on October 24, 1894, the old management was thrown out, and new directors were elected. Nelson was appointed general manager of the company at the first meeting of the new directors. Although a prominent lawyer, John E. Searles, was elected president, Nelson actually assumed "all

but the legalistic duties of the president," until Searles resigned in 1901 and Nelson was elected president.¹⁵

"From the first Nelson was determined to unite ATF both in name and function."¹⁶ He ordered the foundries to remove their old signboards and letterheads, and to replace them with the corporate name. He managed to get ATF employees to transfer their allegiance from the original foundries to the general office in New York. "One decisive, far-reaching act followed another in rapid succession."¹⁷ The Barth automatic type casting machine and the Benton punch cutting machine "became sources of extraordinary economies in type precision." Nelson organized a designing department equipped with several punch-cutting machines under Benton's direction, and, within one month of his appointment, he ordered 100 Barth type casters to be manufactured for distribution to ATF's type foundries. In 1895 the first "Collective Specimen Book" and a catalogue were issued.

Although it was too early at this time to tell, Nelson had managed to turn the company around.

The Bentons' Early Years in New York

At the time of the merger, the Bentons were still in Milwaukee, where they remained for ATF's first chaotic months. But Benton, Waldo & Company would prove to be one of the key foundries in the new company, necessitating a move to New York.

Morris Benton entered Cornell University in September 1892, and majored in mechanical engineering. His best grades were in mechanical drawing,¹⁸ but he had trouble with the language requirement. His

daughter remembers his telling her that "he had an awful time with French. ... He kept going to take the test in French. He'd bone up on it and he'd go in--he only had to have a reading knowledge.... And finally, senior year, he had his thesis all written and he had a little trouble on that--the professor lost the thesis, and had to give him a grade sort of off the top of his head—but finally, the French professor said, 'I've seen too much of you. You bone up once more and come in and we'll see what we can do.' So he went in and took it once more and [the professor] gave him a passing grade."¹⁹

For his Cornell thesis, Benton had to work for part of a semester at a machine shop. He had to choose a piece of machinery in the shop, draw blueprints of it, and build a model. Benton also designed a cannon at Cornell. He built a model of it out of brass, and, for years afterwards, used to fire it every fourth of July.²⁰

Although not a tall man (he was about 5 feet 4 inches), Morris Benton liked sports.²¹ In his first year at Cornell he complained of headaches,²² but apparently these cleared up. He weighed about 135--too light to be on the football team. There was no basketball at the time, so Benton went out for the rowing team. He learned to row, but was too light to be an oarsman and too heavy for coxswain on the varsity crew. Nevertheless, "he went out in the shells and he practiced, and he watched all the races, and he was a great fan. He thought that the coach [Courtney] ... was the greatest."²³

In a letter from Ithaca to Ethel Bottum in Milwaukee dated January 8, 1893, Morris discussed his reasons for not attending a certain party over the vacation, and told Ethel that he had received the highest mark

in one of his classes. Apparently his relationship with Ethel was not yet serious:

I suppose that you will be somewhat surprised at receiving this after what I said the last evening I was there, about having too many correspondents, not having any time to write, and all that sort of thing. ... If for any reason you feel that you ought not to correspond with me do not hesitate to let me know, but if you could spare a few minutes now and then to write, I would be very much obliged for the trouble.²⁴

The young man soon won Ethel's affection, and by the time she was 16 they were engaged. Her parents insisted that she wait to get married until she had reached her 20th birthday, and encouraged her to continue her education. They sent Ethel that same year to the Gilman School in Cambridge, Massachusetts, where her father's sister, Caroline Bottum Hall, lived.²⁵

In the meantime, Boyd Benton moved his Milwaukee foundry to New York in 1894, leaving Waldo in Milwaukee to handle a sales office. He also left his house on Wells Street, and Morris was put in charge of renting it out. So Morris spent the next few summer vacations in Milwaukee, looking after the house. Morris's daughter Caroline later figured out why: "Grandpa must have had a lot of trust in my father, because my father wanted to come out here [to Milwaukee], and do anything he could as an excuse to [be] here because of my mother."²⁶ Boyd Benton apparently didn't know whether his new position in New York was going to work out, and therefore didn't want to sell the house in Milwaukee right away. But when the time came several years later to sell it, Morris had a great deal to do with the sale.

When Ethel graduated from the Gilman School, she attended Radcliffe

for two years, living with Dean Everett of the Harvard Divinity School and his daughter. A picture of her at the time reveals "a lovely, tall, beautifully proportioned erect young girl in faultless Gibson style dress, with bull dog [the Everett's] on leash, walking down Garden Street."²⁷ Her elder daughter later remembered that, "her poise was always noticeable, for when I went shopping with her and she slipped on coat or dress, salesgirls always stopped what they were doing to turn and admire her as [a] 'model.'"²⁸

Morris and Ethel kept up a tremendous correspondence during their years of separation. Morris kept most of Ethel's letters, which are still in the family. When he didn't write often enough Ethel would become 'desperate.' She didn't like being so far away, and didn't like the boarding school itself because of the regimentation and rules. "She was an iconoclast. [Later,] she didn't want to get married and wear all that white mosquito netting on her head. Her mother insisted, [and] she wore a white dress, but she didn't like to be conventional. ... She just wanted to go off and get married, as simply as possible."²⁹

Morris Benton didn't set out to follow in his father's footsteps in typefounding. When he matriculated at Cornell he was still open-minded about his career,³⁰ and later decided to study engineering, perhaps because he had a knack for it. He graduated in June 1896, having taken prizes in freehand drawing, mechanical drawing, and machine shop work.

On September 1, 1896, Morris started at ATF as his father's assistant.³¹ "I think it was because he and my mother wanted to get married, and that was an obvious salary and start for him," his daughter Caroline decided. "And I have letters covering all that period. They

This Certificate

That on the First day of
September

IN THE YEAR OF OUR LORD:

1897

Morris Fuller Benton
and Mary Ethel Bottum
were by me united in

MARRIAGE

at Milwaukee

according to the Laws of the State of Wisconsin

Witnesses

Wm. L. Benton

Geo. H. Ide
Pastor of the

Grand Avenue
Evangelical Church

Figure 7. Morris Benton's marriage certificate.



Figure 8. The Bentons' house on Staten Island, 19 Central Ave. in Thompkinsville, circa 1900.

were very much in love, and it was a long, hard wait. And as soon as he graduated and had worked a few months they were able to get married."³²

In fact, Morris worked at ATF for one year before he married Ethel.

So after a three-year engagement, when Ethel had just turned twenty, they were married, on September 1, 1897. (See Figure 7.) They moved to Staten Island, to a small, somewhat dingy apartment, ten blocks away from the senior Bentons. The two men met every morning and took the ferry over to New York City to work, because the foundry at that time was on the southernmost tip of Manhattan. But Ethel was alone all day, and when her first daughter, Elizabeth Boyd, was born the following year, she became "terribly lonesome. ... She didn't know anybody, not a soul, on Staten Island."³³

So the young family moved in with Boyd Benton and his wife, who in the meantime had bought a large Victorian house at 19 Central Avenue, Thomkinsville, Staten Island.³⁴ (See Figure 8.) The two families lived together on Staten Island for nine years. Another daughter, Caroline, was born in 1902. When ATF moved to Communipaw Avenue in Jersey City, New Jersey, in 1903, Boyd and Morris decided to move to closer to the company. Plainfield, New Jersey, was famous for its good water from artesian wells, and the "schools were good."³⁵ The Bentons moved there in 1905.

Linn Boyd Benton's ATF Career

In 1893 Linn Boyd Benton came to New York as ATF's chief technical advisor.³⁶ His stationery that summer, however, listed him as manager of the Conner Type Foundry in New York, no doubt one of the

foundries involved in the merger which hadn't as yet changed its letterhead to show that it was part of ATF.

When Robert Nelson became ATF's general manager the following year, he gave Benton the authority to establish a letter-designing department, the first in the history of type-making.³⁷ The department soon became a most important asset of the company.

Benton's first work in New York was "to cut a series of punches in collaboration with Theodore L. De Vinne."³⁸ De Vinne was printing The Century Magazine at the time, and was not satisfied with the type it had been using. He complained about the magazine's thin, weak book types that were both hard to read and 'gray-printing.' These types had been appropriate for earlier printing methods, but by the 1890s were entirely outdated. De Vinne wrote this about the situation:

In the bewildering variety of type faces devised during this century one peculiarity, the sharp hair-line (a fashion introduced by Bodoni and Didot, in imitation of the delicate lines of the copper-plate printer), has never been changed. When printing was done upon wet paper, against an elastic blanket, the hair-line was necessarily thickened by its impress against the yielding paper, which overlapped the sides of every line. Under this treatment the hair-line appeared thicker in print than in type, and was unobjectionable to printer or reader; but when the new method began (as it did in 1872) of printing on dry and smooth paper against an inelastic surface, the hair-lines and light faces of types were not thickened at all.³⁹

De Vinne preached simplicity in printing. He kept pace with new developments and experimented with wood engravings. He even had the Warren Paper Company make the first coated paper for his press.

So De Vinne experimented with a new typeface. "Experiments made with broad letters proved that increased expansion did not always secure increased legibility."⁴¹ Instead, he thickened the hairlines,

clearer, and more readable. The average reader rejects the angularities of the old and the new cut, and prefers the symmetry of types of modern fashion.

In the bewildering variety of faces devised during this century, one peculiarity, the sharp hair-line (a fashion introduced by Bodoni and Didot, in imitation of the delicate lines of the copper-plate printer), has never been changed. When printing was done upon wet paper, against an elastic blanket, the hair-line was necessarily thickened by its impress against the yielding paper, which overlapped the sides of every line. Under this treatment the hair-line appeared thicker in print than in type, and was unobjectionable to printer or reader; but when the new method began (as it did in 1872) of printing on dry and smooth paper against an inelastic surface, the hair-lines and light faces of types were not thickened at all. From an engraver's point of view, new types so printed were exquisitely sharp and clean; but from a reader's point of view, the general effect of the print was relatively mean and wiry, gray and feeble. Each letter lost some of its individuality. A reader of imperfect eyesight could not see the razor-edged hair-lines that connected the thicker strokes; he had to guess at the identity of many letters. A new style of delicate but weak presswork came in fashion. The readable presswork produced by all good printers during the first half of this century was supplanted by feeble impressions that compelled continual strain of eyesight.

In the mean time a great change has taken place in the taste of readers, who have wearied of light types and gray impressions. There is an unmistakable demand for bold and stronger print. William Morris has printed books in many styles of letters; all of them are black and rugged, yet they find readers and buyers. American type-founders have recently introduced other styles of bold and black letter—for publishers and advertisers, as well as for bibliophiles. The «Jenson», the «Monotone», and the «De Vinne» are in high favor with all, not for their novelty of form, but for their greater legibility. With these evidences before them of a general preference for bolder types, the publishers of *THE CENTURY* decided that they would swim with the tide, and have new types of larger face and thicker hair-lines.

According to old rules, roman types would be bolder and more readable when made larger and wider. Experiments made with broad letters proved that increased expansion did not always secure increased legibility. The broad and round faces which seemed so beautiful in the large-margined pages of Bodoni and Didot were not all beautiful (quite the reverse) when printed in double columns on a page with narrow margins. To use types in which the thick strokes of each type are unduly spread apart on a page with narrow margins is an incongruity that cannot be justified. When margins are ample, and space is not pinched, types may be broad and even expanded. When the page is over-full, the types should be compressed to suit the changed condition.

have been more largely used than types of any other cut by the printers of France and southern Europe. In dictionaries, and books of two or more columns to the page, the compressed face is a necessity. The slowness of the compression in this new face will be perceived at a glance in a comparison of the alphabets of the old and the new face as here submitted. The new face is as

abcdefghijklmnopqrstuvwxyzABCDEFGHIJS

THE NEW FACE.

abcdefghijklmnopqrstuvwxyzABCDEFGHIHL

THE OLD FACE.

wide as the old; it has as much open space within as without each letter, and as many letters to the line; it has the greater clearness of a thickened hair-line. It seems to be compressed only because it is taller, but this increase of height is only sixty-five ten-thousandths ($\frac{65}{100000}$) of an inch.

The so-called *new* quotation-marks are not at all new. They may be noticed, in almost the same form as they now appear in this magazine, in the books of those excellent printers, the Didots of Paris, at the close of the last century, and they have ever since been used by all French printers. When British publishers decided to use quotation-marks their type-founders had no characters for the purpose, and did not make them. Whether this refusal was due to the unwillingness of the British printer to pay for a new character, or to the prevalent dislike of everything French, cannot be decided; all we know is that they decided to imitate them with the unfit characters in stock. These characters were two inverted commas and two conjoined apostrophes—characters never intended, and not at all fitted, for the purpose. Imperfect as they were, habit has kept them in use for about a century. There are serious mechanical objections to these makeshift devices. The apostrophes and commas are not mates; the apostrophes at the end of the quotation are thinner and closer together than the beginning; the round marks are not in beginning and high together than the ginning; the round marks are not in beginning and high together than the ginning; the round marks are not in beginning and high together than the ginning. They are the only characters in ordinary use that are thrust up at the top of the line. It follows that they leave an ungainly blotch of white below, and so produce an appearance of uneven and unworkmanlike spacing. For this reason, if for no other, the form should be altered. The German method of marking quotations with special characters is but a trifle more uncouth, viz.: „“ The simplicity of the French quotes have led to their general adoption in Spain and Italy: their adoption by American and English printers is only a question of time.

For more than fifty years critics have complained of the feeble printing of new books. «Why not use blacker

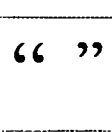


Figure 9. Century type in *Century Magazine*, November 1895, page 795.

shortened the serifs, and increased the x-height. As he later explained, "to secure a proper relief of white space within each character the round letters were made a little taller. To proportion the type for a large page in two columns and with narrow margins, and to give the usual amount of text in the Century page, the characters were compressed a trifle."⁴²

The new typeface, modelled and cut by Boyd Benton in 8-, 9-, and 10-point sizes, first appeared in The Century Magazine's November 1895 issue.⁴³ (See Figure 9.) De Vinne called the Century face a "practical protest of experienced printers against the growing effeminacy of modern types. Readers of failing eyesight ask for types that are plain and unequivocal, that reveal the entire character at a glance, and are not discerned with difficulty by body-marks joined to hairlines and serifs that are but half seen or not seen at all."⁴⁴

The new type was slightly taller than the Caslon derivative that the magazine had been using since 1870. "The Century Magazine ... used its new Century face for only eight years--1895 to 1903. Then, ironically, it returned to a modernized old-style letter."⁴⁵

But the type immediately received praise from designers and printers. In an open letter to The Century Magazine in 1896, De Vinne explained his reasons for the change, and quoted some of the compliments he had received from admirers of the new type. He then went on to explain how it was created:

The story of the designing of this face is too full of technical detail to interest the casual reader. Perhaps it is enough to say that each character (first drawn on the enlarged scale of ten inches high) was scrutinized by editor and publisher, printer and engraver, and often repeatedly altered before it was put in the form of a working model.

Only a maker of instruments of precision can appreciate the subservient tools, gauges, and machine that show aberrations of a ten-thousandth part of an inch; only an expert punch-cutter can understand why minute geometrical accuracy was a work of necessity upon some letters, and why it was discarded in others, for the humoring of optical illusions in the reader. Type-making ⁴⁶ does not tell its story; like other arts, it hides its methods.

De Vinne's letter to the magazine seems to indicate that Benton used his punch-cutting machine to cut the new Century type face. Preliminary ten-inch drawings; working models; "tools, gauges, and machine that show aberrations of a ten-thousandth of an inch"--these hints point to the use of the new method. Benton had been in New York since sometime in 1894, he surely had brought the punch-cutting machine with him, and perhaps was eager to show his new ATF colleagues that it really worked.

Steve Watts, many years later in charge of ATF's type sales, wrote in 1962 that Century Roman, with small caps and italics, "was cut on the Benton punch cutting machine, in the 9 point size only, circa 1895."⁴⁷ Perhaps the other sizes were so far along in production that it was decided to cut only the one size on Benton's machine.

Shortly after the new Century face appeared, De Vinne, again with Benton as collaborator and designer, came out with a slightly wider version for use by his own press. It was called Century Broad-Face, and was intended for the longer measures required in book composition.⁴⁸

"Types are not always made more readable by giving them larger and blacker faces," De Vinne wrote in a specimen showing of this Century Broad-Face type. "The attractiveness of a very black-faced type when used in one line or in a few lines becomes repelling when it is used in a mass. ... What a reader needs for pleasurable reading is the instant

visibility of every stroke in every letter; but this visibility is dimmed when the types have too much black."⁴⁹ De Vinne was talking about legibility, which would later become the battle-cry of so many other type designers. His experiments led him to create, in conjunction with Benton, a forerunner of the so-called legibility faces that would later become so popular.⁵⁰

At ATF, Boyd Benton continually worked to improve his punch-cutting machine, to make it safer for the operators, and to come up with new machines where necessary. After the letter-designing department was established, it was determined to abandon the use of punches, and instead engrave the matrices directly. Bullen claimed that "the first font of type to be made from matrices directly engraved on the Benton machine was 24-point Roycroft, October 4, 1900."⁵¹ Apparently ATF used Benton's punch-cutting machine to engrave matrices for several years before the new process was patented. Boyd Benton wrote: "In 1906 (patent of Jan. 9, 809,548) I extended the usefulness of my punch engraving machine, adding accessories by the use of which the machines engrave the matrices directly in the metal without necessity of using a letter punch. I was not the originator of this idea."⁵²

Engraving the matrices direct saved much time, since it eliminated the punch and the driving of the punch into brass to form the matrix. And apparently the machine was well adapted to either operation, whether a raised letter (punch) or a sunken one (matrix) was needed. "When the Benton punch-cutting machine is required to cut a punch the outside of the pattern is used; when it is required to engrave a matrix the inside of the pattern is used," Bullen explained.⁵³

Benton worked on many other inventions and processes, and also made improvements in the Barth type caster. In 1925 an anonymous author wrote in the Inland Printer:

In the typemaking division of the American Type Founders Company there is scarcely a tool, apparatus, machine or process the efficiency of which has not been advanced by Mr. Benton's inventive genius. Unlike many inventors, he is a thorough mechanic and himself translates his inventive ideas into practical mechanical movements.⁵⁴

One machine in particular deserves special note. The Benton Delineator, a refined pantograph, reduced a ten-inch outline drawing of a letter to a practicable size, say a 24-point or any other size body. When this reduced outline was inked in, it gave the appearance of a sharp impression from type. "This seems simple enough," Bullen wrote, "but many mechanisms in the Delineator are unique." It had a tracing pen that inked in lines of equal thickness in whichever direction it was guided. From one drawing it could enlarge a letter proportionally, or make condensed, extended, italic, or back slope variations--the machine's microscope attachment automatically conformed with the varying focal points. "One Benton's Delineating Apparatus is sufficient for the purposes of the American Type Founders Company," Bullen continued, "and thus a second has never been built. It is a miracle of accuracy and flexibility."⁵⁵ The delineator is further described in Chapter 6.

When Benton went to apply for a patent for the delineator, it was rejected by the Patent Commissioner on the ground that he was applying for 'a mechanical impossibility.' Benton was much amused by this response. "Our company had been using the 'mechanical impossibility,'" he said, "and my answer to the Patent Office in Washington was to send

drawings, all made from a single print of characters of 14-pt. Caslon Oldstyle roman, in italic, backslope, condensed and extended forms, whereupon the patent was issued."⁵⁶

Another important invention was the machine for putting faces on brass rules of varying thicknesses. Up until 1912, brass rules had been "laboriously planed and faced by hand."⁵⁷ Benton later wrote that "for more than a century, attempts were made to face brass rules by machine. All were unsuccessful and brass rules continued to be faced with hand planers until my successful machine, which is not only very economical but gives a better product than is possible with hand planes."⁵⁸

In 1903 Benton was appointed manager of ATF's general manufacturing department. He continued to design new machinery and to improve existing machinery and processes until 15 days before he died in 1932. He was a vital part of the company up until the very end. An article in the American Printer described him as "one of those men, quietly doing their day's work, who have had a tremendous influence on the American printing industry."⁵⁹ In a short article for Who's Who in Printing in the United States, Benton wrote: "There is still room for improvement in the machinery and appliances of our art, contemplation of which keeps my mind active, notwithstanding my advanced age."⁶⁰

Morris Benton at ATF

A few months after Morris Benton graduated from Cornell in 1896, he became his father's assistant at ATF. He did machine designing and a little type designing at first. He helped his father develop the

engraving machine and other typefounding machines from about 1896 to 1905-6.⁶¹ In 1900, he became ATF's chief type designer.⁶²

Although Morris's early work at ATF was in mechanical designing, one of his first assignments was to standardize the various type lines that ATF had taken over from the 23 foundries in the merger. This was a complicated, meticulous job--the type matrices had been made from hand-cut punches, so each type face was slightly different in each foundry. Benton had to sort through countless matrices to consolidate the type. The point system had been adopted by some foundries only a short time before the merger, but most of the type went back to old standards, which conflicted and were often imprecise.⁶³

"While notable work had been done in the four years since the merger in unifying the 23 divergent lines into one well-rounded American Type Founders line, the completion of this immense task became for Morris Benton an intriguing and immediate responsibility."⁶⁴

Apparently, Benton was able to handle the job by applying a relatively new concept used by De Vinne--that of the type family.⁶⁵ When ATF received matrices from other foundries, there were undoubtedly several versions of a number of type faces. For example, four foundries may have had an "Egyptian" font, but no two would be exactly identical in weight. There may have been a normal weight font, a heavier font, and a really bold. To make the four fonts useful as a 'family,' Benton would have to be sure they were cut with the same alignment and had the same x-height. Some alterations were probably necessary. Surely the job taught him to be selective, and was a good introduction to the complete line of type faces the company had acquired. Morris also continued to

help his father design equipment for the foundry.⁶⁶

When Robert Nelson became the general manager of ATF, the type industry was badly demoralized. But Nelson was a 'type man,' and decided to maintain type as the chief product of the company. "Deprived of a large part of the sales of body type, as used in newspapers, he foresaw that the future of the type industry depended on a never-ceasing succession of new type faces of a new order of type design, now known as publicity type—type which is adapted as well for text pages as for display pages."⁶⁷ In the years to come, Morris Benton would carry out Nelson's plan creating more type faces than any other American type designer.

In 1898 Morris Benton apparently worked on a typeface [Roycroft] designed by Lewis Buddy—but the reports of Benton's supposed first design work conflict. The catalog of the exhibition held in 1947 at the Lakeside Press in Chicago lists Benton's first type as Roycroft. But perhaps the most authoritative compilation of Benton's work, that prepared by Steve Watts, does not list Roycroft. Al Lawson, another Benton enthusiast, wrote that "Some doubts may be cast on whether Benton could have survived the reputation of having fathered such a letter."⁶⁸

Benton certainly did not 'father' Roycroft, as the following story explains. But in any case, the typeface achieved wide popularity. "Roycroft was an immediate success. ATF stated in an advertisement one year after the introduction of the type that on one day the foundry had shipped 10,000 pounds of Roycroft."⁶⁹ A. Raymond Hopper noted that "at one time it was in the case of almost every printer in this country."⁷⁰ Perhaps Roycroft achieved this popularity because it

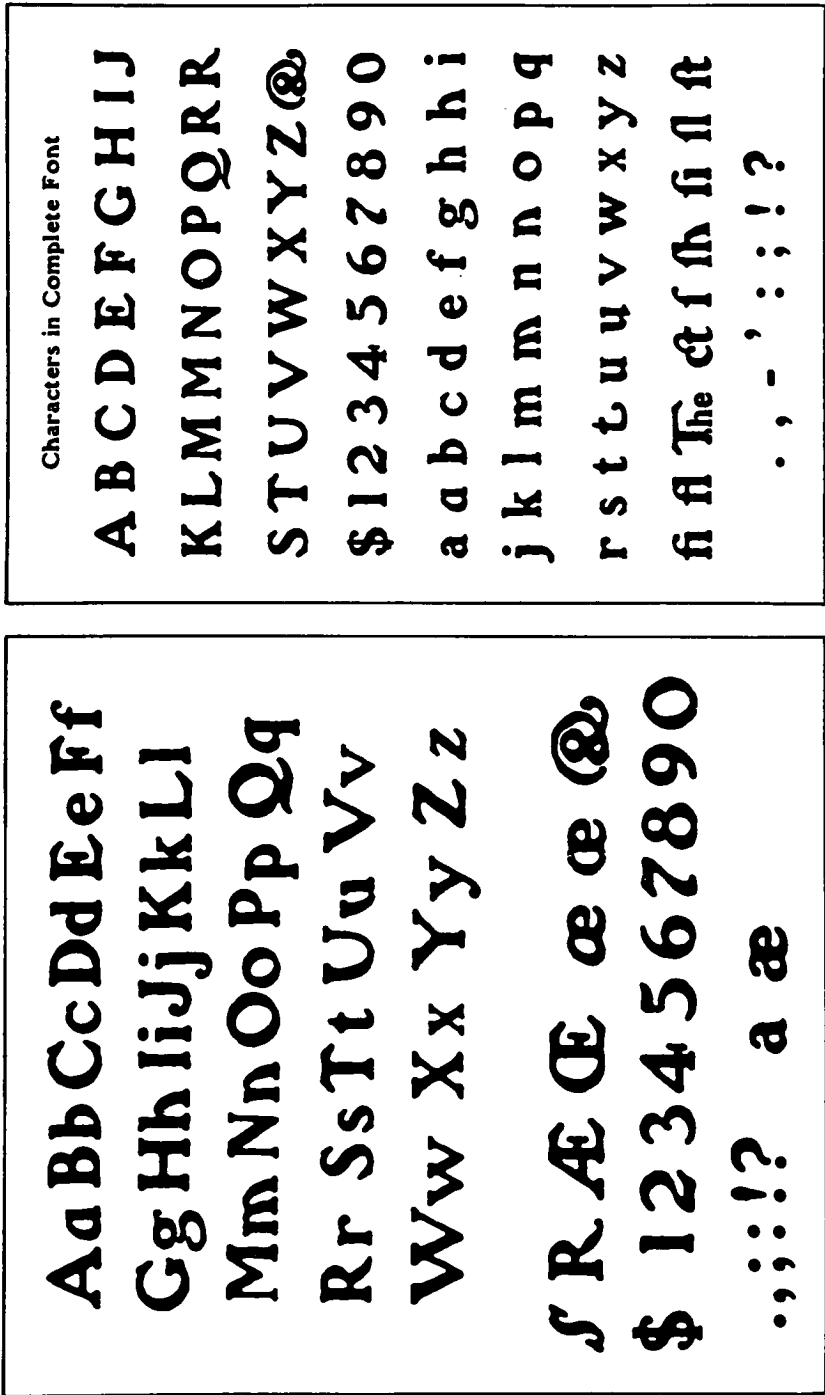


Figure 10. The original drawings for Roycroft, and the font as it was cut at ATF. (Inland Printer, June 1937, page 36.)

was a reaction against the weak book types of the later 19th century. Roycroft came to be the best known of the "rugged" faces.

The type was originated by Lewis Buddy, III, a former artist on the staff of The Saturday Evening Post who had hand-lettered his own headings. Shortly after he left the Post to become the art editor of The Chatauquann in Cleveland, he received a telegram from J.W. Phinney asking him to design a complete font of type based on the letters he had done for the Post. Buddy rushed through the drawings and mailed them the same day he received the telegram.⁷¹

Buddy wanted to call the type Carbudy, after his grandfather Edward Will Carr and himself. But Phinney had other ideas. At the time, Elbert Hubbard and a group of craftsmen called the Roycrofters worked in Aurora, New York. They published a periodical called The Philistine, which was about the same size as The Reader's Digest, and about as popular. It was printed on antique paper with butcher paper for the cover, and the pages were untrimmed. "The vigorous, 'homespun' style of typography the Roycrofters affected was widely favored, and Mr. Phinney very likely thought it good salesmanship, as surely it was, to attach the luster of the Roycroft name to this new offering in rugged types."⁷² The Roycrofters actually had nothing to do with the typeface.

Buddy's original drawings had to be reworked to be made into type at ATF. A. Raymond Hopper, writing for the Inland Printer in 1937, was displeased with Benton's reworking of the drawings. The magazine reproduced a photograph that Buddy had made of his drawing before sending it to ATF, placing it next to a reproduction of the font as it was cut. (See Figure 10.) "A comparison shows how much the face was

narrowed in the rendering," Hopper wrote. "This, in this writer's opinion, is a lamentable deficiency in a design so suited to its time, however much its great and long popularity might seem to contradict the criticism here made."⁷³

Although there is no definite evidence that Morris Benton revised Buddy's drawings, it is likely that he did. An annotated copy of the 1923 ATF "Specimen Book and Catalogue" at Columbia University gives Benton partial credit for Roycroft, and lists 1898 as the date.⁷⁴ Benton was working for his father in ATF's letter-designing department at the time, and very likely could have revised the original drawings. It was the type of work that would make him famous in subsequent years.

Roycroft in 24-point has been named the first font of type to be made from matrices directly engraved from Benton's machine, October 4, 1900.⁷⁵ Again, Morris Benton, working closely with his father, may have been very involved with this process.

In any case, Morris Benton began designing types and reworking drawings submitted to ATF by other designers. When ATF's central plant moved to Jersey City, New Jersey, he was put in charge of the type-designing department. "Since that time almost every type face shown in the type-specimen book of the American Type Founders Company has derived its design quality from the head and hands of the younger Benton,"⁷⁶ The great number of types designed or revised by Morris Benton is discussed in Chapter 7.

Some sources erroneously give Morris Benton the credit for first devising the idea of a type 'family.' Actually, the idea was around before Benton began his career. "...earlier styles, notably De Vinne

and Philadelphia Lining Gothic, had proved the success of the so-called family idea in printing types,"⁷⁷ De Vinne was made by the Central Type Foundry, and came in "regular, ... condensed, extra condensed and italic."⁷⁸ De Vinne, the printer, apparently inspired this development. "De Vinne and other printers had long complained that most text faces could be had only in text sizes, and without variants, so that a printer who wanted a 24- or 36-point heading for a text was forced to use some other display face, often one which did not harmonize with the text."⁷⁹

Henry Lewis Bullen explained in an Inland Printer article that J.W. Phinney had also come up with the idea, and introduced it to ATF. "He produced the first type family—the Jenson family of related designs."⁸⁰ But in a different article, Bullen gave Robert Nelson full credit for the concept: "It was in connection with this success that Nelson conceived the idea of the type family, an idea which, while of inestimable value to printers both from the esthetic and the economic point of view, has had a marvelous effect upon type sales. This was the master idea in modern typemaking. It was wholly Nelson's."⁸¹

Regardless of who actually conceived the idea, it is agreed that with the Cheltenham type family the idea began to take hold. Cheltenham, in its permutations, became "the best seller in the history of typography."⁸²

Robert Nelson purchased the drawings for Cheltenham Oldstyle, a book type designed by Bertrand Grosvenor Goodhue, against the advice of the majority of his associates. They felt that the price was too great.⁸³ Nelson's decision proved to be a good one, as the

complete story of this type in Chapter 7 will show. It was Morris Benton who took the original drawings for Cheltenham Oldstyle and got them ready for the "mechanical maze through which all drawings must pass before they materialize into actual type."⁸⁴ He then proceeded to design 21 variations of Cheltenham. "The type became practically a household word far beyond the confines of the nation's composing rooms."⁸⁵

Some historians have given Benton the credit for both the idea and the actualization of the Cheltenham family of types. John Murphy, for one, writing about Morris Benton in the Inland Printer in 1936, claimed that, "In Cheltenham, ... he saw an opportunity to give a type face a range of possibilities and an extent of usefulness by giving it different variations in weight and proportion that no type had yet had in all the long and fascinating history of printing. Thus was born the invaluable 'type family.'"⁸⁶ (Actually, Giambattista Bodoni had produced many weights of the same basic typeface in Italy in the 18th century.) Ironically, Murphy goes on to admit that Morris Benton himself denied having originated the concept of type families: "When I asked him how he got this revolutionary concept in type designing, his answer was, 'I didn't. I merely accepted an assignment.'"⁸⁷

It is obvious that Murphy knew very little about type, or that he wasn't a very good listener and digester of Morris Benton's story. Murphy's contradictory statements also highlight Benton's lack of concern for publicity. If Benton had wanted to be famous, he certainly would have set Murphy straight on the facts. Murphy even wrote: "Morris Benton seems one of the most difficult men to interview I have

ever talked to--and I have interviewed thousands in my time. Try to pin some honor on him, or give him credit for some achievement, and he will modestly sidestep with the remark that 'Lady Luck helped me a lot there.'"88

As a result of this modesty and reticence, there are many things about Morris Benton of which we will never be certain. Much of what has been written should be carefully weighed. Henry Lewis Bullen wrote glowing articles about the Bentons--but he was an employee of ATF and responsible for its publicity. Bullen was also known to stretch the truth in some cases, perhaps not deliberately, but out of a rush of enthusiasm. "[Bruce] Rogers ... tried to encourage Bullen to restrain a propensity for hyperbole and occasional inaccuracy. ... D.B. Updike also indicated to Bullen that eagerness to establish an attractive point could misrepresent the blander truth of a situation."89 John Murphy's article contradicts itself, which also leads one to believe that Murphy came to some conclusions based on his own enthusiasm rather than fact.

Morris Benton may not have independently conceived of the idea of the type family, but it is sure that he carried out the idea with great success.

In addition to Cheltenham, Morris collaborated with his father on a variant of the popular Century type, and by 1924 had expanded that family to include at least 16 variations. Other families Benton developed include Bank Gothic, Bodoni, Clearface, Cloister, Franklin Gothic, Globe Gothic, Louvaine, Typo Roman and Script, and Venetian.

Many of Benton's type faces were restorations of great old types.

These classic faces had been developed for printing on wet paper, and were often cut in only a few sizes. They were not exceptionally legible in small sizes, which were rarely used. ("The punchcutters of the 16th-18th centuries when they cut diminutive types were thinking of footnotes and marginal notes to texts set in larger founts, and they had not to think seriously of the problem of making long texts readable in small type."⁹⁰) Benton did face the problem of making small types readable. Thus it required considerable skill to translate these faces to all sizes of foundry types appropriate for the 20th century.

The inspiration for the revival of these classic typefaces came from ATF's typographic library, developed and managed by Henry Lewis Bullen. It contained type specimens from around the world, histories of printing and publishing, biographies of famous printers, books from famous presses, and many other historical items.⁹¹ Benton spent time pouring over books and broadsides in the library.

For example, Morris Benton had always been an ardent admirer of Nicolas Jenson, and before he designed Cloister Oldstyle, which was modeled after Jenson's type, he must have spent a lot of time in the library. J.W. Phinney knew that another type designer, Bruce Rogers, had designed a letter based on Jenson's work—*Montaigne* (produced in 1901), and perhaps Phinney suggested to Benton that ATF should also come out with a revival of Jenson's type. Benton read extensively in the literature of the period, "saturated himself with the Venice of 1470, the year Jenson established his press,"⁹² examined books and folios printed in Venice, and tried to imagine the conditions under which Jenson had to work. Then he asked himself what Jenson would do if he

had the facilities at ATF, and finally got down to the business of designing the type.

Thus the Bullen library was an important asset to Benton's work. It gave him immediate access to a wealth of ideas, and enabled him to thoroughly research his ideas before committing them to paper.

In the Jersey City plant, Benton had a roll-top desk with a window right over his left shoulder, and most probably his own drafting table.⁹³ As an executive, he was responsible for more than simply creating new typefaces. He managed several assistant designers, and a type committee which worked as a group to determine what types the market would support.

In this capacity, Benton learned to decipher the significance of trends in advertising types, deciding which types were fads and which would meet a real need. John Murphy claimed that Benton used many sources of information to enable him to keep on top of these trends: scouts connected with ATF who made observation trips to determine changes in type demand; tabulations of orders for type; careful study of newspapers and magazines. All of this evidence was then sifted and weighed by the committee. Benton's policy was not to flood the market with new type designs. "He does not bring out a new face until there is every reason to believe that it satisfies an actual typographic need," Murphy wrote, "and that the demand for it is much more than a mere whimsy of the day."⁹⁴

Benton's historic revivals became popular for advertising typography. The Inland Printer's "Typographic Scoreboard" from 1929 to 1945 consistently ranked two Benton revivals, Bodoni and Garamond, as

the most popular faces for advertisements in The Saturday Evening Post.⁹⁵ In 1961, Al Lawson wrote that "it is safe to say that there are more Benton types in use at the present than Goudy faces, and it is unfortunate that Benton's name has been obscured in spite of the importance of his contribution."⁹⁶ The reasons for these statements are obvious: Benton worked for ATF, which had more outlets for its type than Frederic Goudy, an independent designer, could ever possibly have had. Because Benton worked for ATF, his typefaces were promoted as ATF faces, and his name was never mentioned. Nevertheless, Benton's output was not only enormous, but became very popular.

The younger Benton apparently had a drive which was not translated into a vibrant, outgoing personality, but, instead, to careful and conscientious work. "As soon as one job is accomplished," John Murphy wrote, "he is restless until he is immersed in the pursuit of another great enterprise."⁹⁷

Morris Benton stayed at ATF his entire professional life, and the company was good to him, giving him the chance to accomplish great things without having to also promote himself. Bullen wrote of ATF that "there never was a more loyal organization, nor a pleasanter one to work with, ...," and attributed much of this atmosphere to Robert Nelson's personality: "No one ever came in contact with him or ever had any dealings with him who was not the better for it--no, not one!"⁹⁸

Morris Benton's lack of pretension apparently won him a great deal of respect in the company, even if the story of his work did not reach far beyond Jersey City. In 1925, an anonymous author in The Inland Printer acclaimed "the younger Benton, whose designs cover every



Figure 11. The Bentons' house in Plainfield, New Jersey, 104 Crescent Ave., circa 1915. (Photo taken by Morris Benton.)

requirement of typography; who has produced the greatest type successes of this century; yet has considered these achievements as 'all in a day's work,' and has never sought or received any notoriety through advertising's artful aid."⁹⁹

The Bentons in Plainfield

When the three generations of Bentons decided to move to Plainfield, New Jersey in 1906, Boyd again bought a home for the whole family, a large Victorian house with about 3 1/2 acres of lawn and gardens at 107 Crescent Ave. (See Figure 11.)

ATF never paid Morris Benton very well.¹⁰⁰ "He never got the salary to anywhere near compensate for what he was doing," his daughter said.¹⁰¹ But his father, as a director, made plenty of money, and so could afford the house. Perhaps Morris agreed to the living arrangement to provide an adequate space for his wife and two daughters. At the same time, Boyd had always wanted a large family, and here was the perfect way to acquire it. Jessie, coming from a big family herself, was also happy with the three-generation arrangement.

The first two floors of the Plainfield house were for the whole family. Jessie was queen of the kitchen, although she didn't do the cooking--the family always had a housekeeper. The first floor also had twin living rooms and a dining room, and the bedrooms were on the second floor.

The third floor, with three large rooms and several smaller rooms, was set aside exclusively for the "junior Bentons." There Morris and Ethel read aloud to each other in their study, usually current novels



Figure 12. Mary Ethel Bottum Benton, and her two daughters, Elizabeth (left), and Caroline, circa 1910.

like The Virginian, by Owen Wister, The Riverman, by Stewart Edward White, and The Crisis, by Winston Churchill. They also enjoyed the serials in The Saturday Evening Post, and reread from time to time all of Mark Twain.¹⁰²

Morris took color photographs before they were commercially available, and developed them in his own darkroom on the third floor, where he also mounted them and experimented with stereotypes.¹⁰³ He kept his target guns, target records and ammunition in his darkroom, which also had a work table and a lathe. Ethel had two sewing machines, a lock stitch and a chain stitch, with which she made dresses for herself, the children, and their dolls. "She was a dainty seamstress and designed and finished many of their modern dresses, styles ahead of the times."¹⁰⁴ (See Figure 12.) The children's playroom had shelves on two sides for toys. Many happy hours were spent in those third floor rooms.

Once when Boyd was playing with the girls he became dissatisfied with their blocks. "These blocks are terrible," he said. "They don't have straight edges. You can't really make anything."¹⁰⁵ So he and his son designed a new set of blocks based on Montessori shapes, and had a carpenter make them out of maple, with edges that were "absolutely true." The children also had toy pantographs, and Morris once electrified a mechanical train for them, before electric trains were readily available.¹⁰⁶

The junior family frequently went on Sunday outings in the family car. As his daughter later remembered, "Morris Benton's interest in automobiles seemed more than an interest in transportation. The series

of cars the family owned, beginning before my birth in 1902, consisted of mechanical problems which my father was expected to solve. Each car was expected to run perfectly; my father did all the work on them himself for many years, and careful records were kept on all repairs and adjustments made, in addition to records on fuel consumption, oiling, greasing, tires, etc. Hours might be spent (and much conversation with my mother on the road) tracking down an elusive body squeak, or a strange ping or 'birdie' in the engine."¹⁰⁷

The family's first car was a Stanley Steamer. Morris needed a locomotive operator's license to take it on the road. This was followed by a Haynes-Apperson (gasoline) touring car; a 1902 one-cylinder Oldsmobile two-seater runabout, with a top speed of about 20 miles per hour; a four-cylinder Haynes touring car; several Reo touring cars, with a permanent top Reo coming in about 1925; and then a variety of Buicks and Chevrolets.¹⁰⁸ Boyd Benton left the driving and repairs to Morris, who loved to go out and take care of the cars. He would roll himself underneath a car with a skateboard, and work.¹⁰⁹

Ethel kept a journal from April 1904 to November 1906 entitled "The book of the Oldsmobile with the Bentons In It," which recorded repairs as well as outings. The journal shows both Morris Benton's desire for perfection ("It had been thoroughly cleaned even to polishing the muffler with stove polish."), and Ethel's whimsy:

The little black devil who made his home with us inside the machine during our first weeks of ownership and who had seen fit to leave us alone for some time had put his finger on some screw or other and we were missing explosions to beat the band. ... Thump, thump, thump--'I don't want to go,' miss, thump, thump--'I won't go, so there,' miss, miss, thump, thump, thump. 'Now do go and be a good auto,'¹¹⁰ 'But I don't want to,' thump, miss, thump, miss, miss, & ∞.

In about 1914 the Bentons got a new car, and Morris gave the Oldsmobile to the gardener.¹¹¹

Morris and Ethel loved outdoor life. Morris taught his wife to swim, and did bicycle tricks when they were out bicycling. He was an avid figure-skater, making figure eights, waltzing on the ice with his daughters, doing what he called the grapevine, and spelling out his name in the ice.¹¹² He took the family to the Adirondacks on summer weekends, where they all went hiking with a map and compass. "He would take red tags and hang them on the trees, and then coming back he'd collect the tags again."¹¹³ Morris took slides of the family in the Adirondacks, and gave slide shows back in Plainfield.¹¹⁴ He didn't like hunting but enjoyed target shooting. Morris had inherited a collection of about 12 or 14 guns from his father-in-law, and belonged to a local gun club. He kept the guns oiled and cleaned, and taught his daughters how to shoot at tin cans.¹¹⁵

Music was another of Morris's hobbies. He had studied violin as a child, and later switched to the mandolin. Since he had never studied piano, he encouraged his daughters to play, and wanted them to be prepared to perform for guests. "... but knowing his feeling for perfection," Caroline recalled, "we rather dreaded being called on, although he was always kind and appreciative of our efforts."¹¹⁶ He often re-tuned the piano after the regular piano tuner had just left the house. "He had the theory that every individual piano had certain tonal areas which needed to be 'balanced' with extra care in the tuning."¹¹⁷

He had an Edison phonograph and later a Victrola, and loved to listen to Enrico Caruso and other classical music (except Brahms). At

one point he had an Aeolian Orchestrelle, a pump organ made in Boston. "He used to play Tannhauser," his elder daughter remembers, "and my little bed upstairs would rock."¹¹⁸ Benton would manipulate the stops to get the tone he wanted, the paper roll taking care of the notes.

For exercise, Boyd Benton bought a croquet set, and had the lawn rolled often.¹¹⁹ The two men were very good at it, and taught the girls how to play. "Grandpa was very scientific about it. He taught us how to make split shots, like [in] billiards, so that one ball would go one way and the other ball would go the other way. And when he couldn't see very well, he used to have us tie a handkerchief on the wicket,"¹¹⁹ Using this method, he could still make shots from 30 or 40 feet away.

Morris and his wife belonged to a card club in Plainfield which played 500 and gave costume parties.¹²¹ One Halloween, the club invited other guests to a costume party. Ethel made Morris a jack-o-lantern costume out of orange paper cambric--a big, full ball that covered his head and body. Because he was a fairly small man, he also had small feet. He didn't say a word at the party, and people couldn't figure out who he was. "And they kept looking at his feet," Caroline said, "trying to decide if they were big enough to be a man's. He had women's shoes [on], I don't know where he got them. They never guessed who he was."¹²²

Morris was a patient man, and explained things carefully to his daughters. He used to draw diagrams on the tablecloth after dinner, to illustrate a point he was making. When the table was set with good

linen, he'd move the salt shakers around, explaining complex machinery as he did so in very simple terms.¹²³

Morris and Ethel had a very strong and happy relationship. Even before they were married, their elder daughter recalled, one of Ethel's classmates at the Gilman School said that "she had never known a more devoted couple than my mother and father."¹²⁴ If Morris was too tired in the evening to work on his photography, he and Ethel would retire to the study, where she would read aloud to him, very beautifully. Morris preferred his wife's company to that of most other people.

Boyd Benton, on the other hand, was much more gregarious, a 'big, powerful character.'¹²⁵ He often would 'orate' at the dinner table, especially about politics. He was what they called a single taxer, and therefore didn't agree with the 1913 income tax law, saying, "That's terrible! It's socialism."¹²⁶ He would slap the table to make a point, startling his wife in the process. "Oh boy! You made me jump!" Jessie would say. After she died at the age of 84, he would stand at the dining room table and bring his fist down, saying, "Damnable! I've lost my little doll."¹²⁷

Boyd could recite whole pages of Dickens, and was very sympathetic with Dickens' view of the Industrial Revolution in England. Both men also loved to quote Mark Twain, and Morris also quoted George Ade's fables and songs. One favorite saying of his was, "Them that ain't up on things is usually down on them."¹²⁸

Boyd loved the children. Before going to bed they often sat in his lap while he told them stories about his own childhood. He would buy tremendous valentines for the girls, each in a big box. On at least one

occasion, he pretended to go off to catch the train to work as usual on Valentine's Day, but then sneaked back, set the two boxes up against the house, rang the doorbell, and then hid behind a tree to see his granddaughters' faces when they found the surprise.¹²⁹

Boyd Benton wrote his granddaughter Caroline a letter in the shape of a dog on July 26, 1908, when she was about six years old. (See Figure 13.) The dog's toenails are even apparent, another instance of Boyd's meticulous attention to detail.

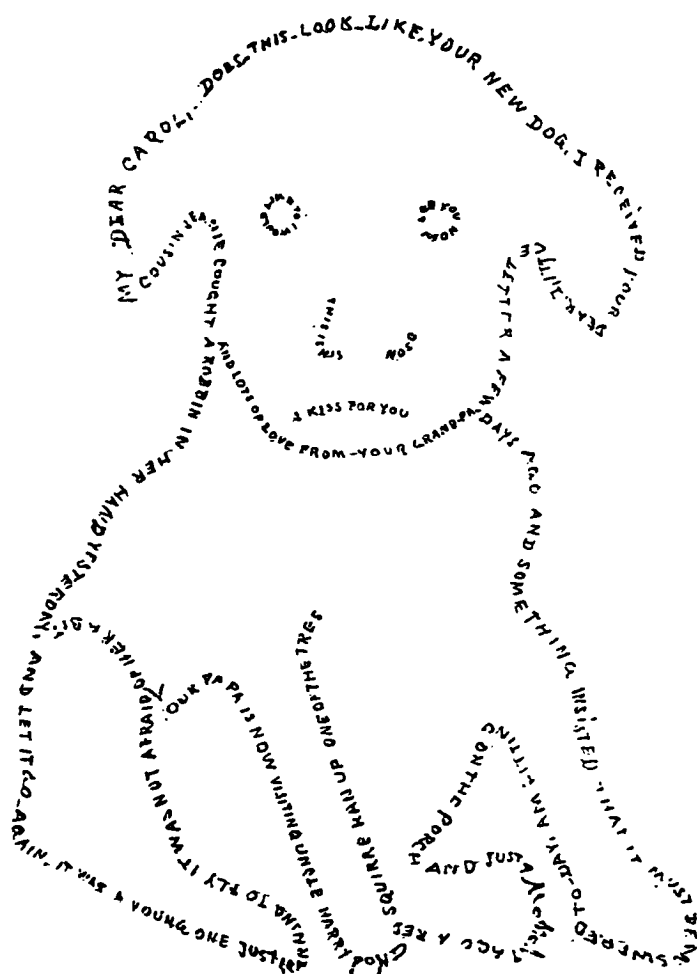


Figure 13. Linn Boyd Benton's letter to his granddaughter.

[My Dear Carol,

Does this look like your new dog? I received your dear little letter a few days ago and something insisted that it must be answered today. Am sitting on the porch and just a moment ago a red squirrel ran up one of the trees. Our papa is now visiting Uncle Harry Pond. Cousin Jeannie caught [sic] a robbin [sic] in her hand yesterday, and let it go again. It was a young one just learning to fly. It was not afraid of her a bit. I would like to see you now. This is his nose. A kiss for you.]



Figure 14. Mary Ethel Bottum Benton, 1915.



Figure 15. Mary Ethel Bottum Benton, 1915.



Figure 16. Jessie Elizabeth Benton and her elder granddaughter, Elizabeth Boyd Benton, 1899.



Figure 17. Linn Boyd Benton at ATF, circa 1922.

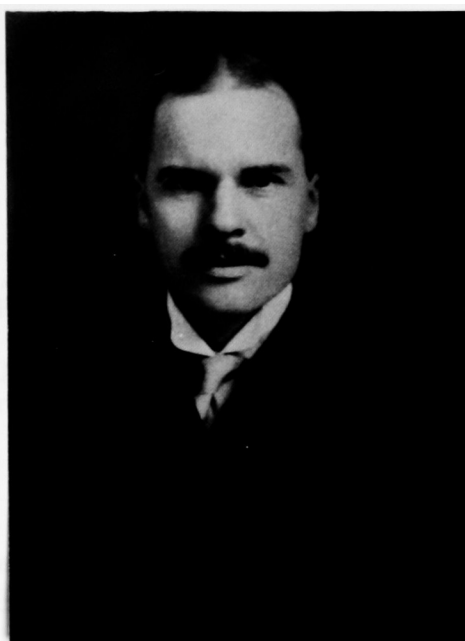


Figure 18. Morris Fuller Benton, circa 1915.

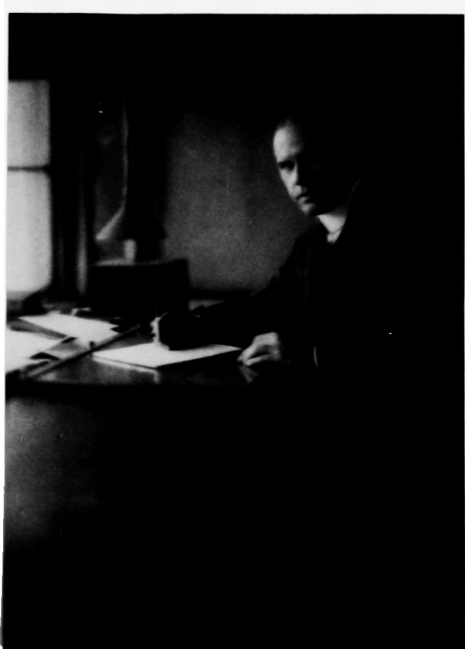


Figure 19. Morris Fuller Benton at ATF, 1922.

19. Caroline Benton Gregg, Interview with Patricia Cost, Milwaukee, March 20, 1984, tape 6, p. 4-5.
20. Ibid., tape 6, p. 5.
21. Idem, "Personal Remembrances of My Father, Morris Fuller Benton," Milwaukee, n.d., p. 7. (Typewritten.)
22. Linn Boyd Benton, Letter to Morris Benton, May 22, 1893.
23. Gregg, Interview, tape 6, p. 1-2.
24. Morris Fuller Benton, Letter to Miss Ethel Bottum, Ithaca, January 8, 1893.
25. Elizabeth Benton Swain, "Mary Ethel Bottum," June 1973, p. 1. (Typewritten.)
26. Gregg, Interview, tape 1, p. 6.
27. Swain, "Bottum," p. 1.
28. Ibid.
29. Gregg, Interview, tape 6, p. 6.
30. John Allen Murphy, "Morris Benton--Type Designer-Executive," Inland Printer, March 1936, p. 33.
31. Anon., "Morris Fuller Benton," October 3, 1925. (Typewritten.)
32. Gregg, Interview, tape 6, p. 2.
33. Ibid., tape 5, p. 1.
34. Idem, "Remembrances," p. 1.
35. Swain, "Bottum," p. 1.
36. Linn Boyd Benton, "Inventions of Linn Boyd Benton," for Who's Who in Printing in the United States, n.d., p. 4. (Typewritten.)
37. "Two Men Whose Work Greatly Benefits All Typographers," Inland Printer, December 1925, p. 453.
38. Bullen, "Linn Boyd Benton--The Man and His Work," Inland Printer, October 1922, p. 63.
39. Theodore Low De Vinne, "The Century's Printer on the Century's Type," Century Magazine, March 1896, p. 795.

40. Eugene M. Ettenberg, Type for Books and Advertising (New York: Van Nostrand & Co., Inc., 1947), p. 109.
41. De Vinne, p. 795.
42. Idem, The Practice of Typography (New York: The Century Co., 1899), p. 376.
43. Eckman, "The Immortal Century Type Face and the Bentons, Father and Son," The Printer's Digest, November 1964, p. 4.
44. Alexander Lawson, "After 70 Years Century Typefaces Hold Their Own," Inland Printer/American Lithographer, January 1965, p. 46.
45. Eckman, "Century Type Face," p. 5.
46. De Vinne, "Century's Printer," p. 796.
47. Stevens L. Watts, "Memo for Dr. Eckman—Century Roman and Century Oldstyle," October 14, 1963.
48. Lawson, p. 46.
49. De Vinne, Typography, p. 377.
50. Lawson, p. 46.
51. Bullen, "Linn Boyd Benton," p. 63.
52. Linn Boyd Benton, "Inventions," p. 2.
53. Bullen, "Linn Boyd Benton," p. 63.
54. "Two Men," p. 453.
55. Bullen, "Linn Boyd Benton," p. 63.
56. Linn Boyd Benton, "Inventions," p. 2-3.
57. "Linn Boyd Benton, 'Edison of Typographic Industry,' Is Dead at His Home Here," Plainfield Courier-News, July 16, 1932, p. 1.
58. Linn Boyd Benton, "Inventions," p. 3.
59. "Linn Boyd Benton: Typefounder, Inventor," American Printer, March 1923, p. 34.
60. Linn Boyd Benton, "Inventions," p. 3.
61. Anon., "Morris Fuller Benton," October 3, 1925. (Typewritten.)

62. Anon., "Morris Fuller Benton," for the National Cyclopedia of American Biograhpy, January 5, 1951, p. 2. (Typewritten.)
63. Mac McGrew, "The Bentons, Father & Son," Typographic i, March 1978 (Reprinted by McGrew), p. 2.
64. Murphy, p. 34.
65. Eckman, "Century Type Face," p. 5.
66. Lawson, "Morris Fuller Benton Deserves More Than Obscurity," Inland Printer/American Lithographer, October 1961, p. 80.
67. Bullen, "Nelson," p. 906.
68. Lawson, "The Prolific Career of Morris Benton," Printing Impressions, April 1971, p. 77.
69. Lawson, "'Rugged' Typefaces Are Latest Revival," Inland Printer/American Lithographer, April 1965, p. 64.
70. A. Raymond Hopper, "The Romance of Roycroft," Inland Printer, June 1937, p. 35.
71. Ibid.
72. Ibid., p. 36.
73. Ibid.
74. Specimen Book and Catalogue Dedicated to the Typographic Art, American Type Founders Company, 1923, p. 504.
75. Bullen, "Linn Boyd Benton," p. 63; "Linn Boyd Benton: Typefounder, Inventor," p. 34; and McGrew, "The Bentons," p. 2.
76. "Two Men," p. 453.
77. Lawson, "Anatomy of a Type: Cheltenham," Printing Impressions, March 1971, p. 55.
78. N.J. Werner, "St. Louis in Type-Founding History," Share Your Knowledge Review, January 1941, p. 21.
79. Eckman, "Century Type Face," p. 5-6.
80. Bullen, "Composing Machines," p. 595.
81. Idem, "Nelson," p. 906.
82. Idem, "Composing Machines," p. 595.

83. Ibid.
84. Murphy, "Morris Benton, Part 2," Inland Printer, April 1936, p. 42.
85. Lawson, "Cheltenham, p. 55.
86. Murphy, "Benton, Part 2," p. 42.
87. Ibid.
88. Ibid.
89. Mallison, p. 220-1.
90. Harry Carter, "Optical Scale in Typefounding," Printing Historical Society, Bulletin 13, September 1984 (reprinted from Typography 4, Autumn 1937), p. 146.
91. Mallison, p. 115-16.
92. Murphy, "Benton, Part 2," p. 43.
93. Gregg, Interview, tapes 3-4.
94. Murphy, "Benton, Part 1," p. 36.
95. "'Scoreboard' Reveals Popularity Trends in Type Faces," Inland Printer, June 1945, p. 55.
96. Lawson, "Morris Fuller Benton," p. 80.
97. Murphy, "Benton, Part 1," p. 35.
98. Bullen, "Nelson," p. 908.
99. "Two Men," p. 453.
100. Swain, Telephone interview with Patricia Cost, July 6, 1985.
101. Gregg, Interview, tape 1, p. 7.
102. Idem, "Remembrances," p. 6-7.
103. Swain, Telephone interview.
104. Idem, "Bottum," p. 2.
105. Gregg, Interview, tape 5, p. 3.
106. Idem, "Remembrances," p. 2-3.
107. Ibid., p. 4.

108. Ibid., p. 4-5.
109. Swain, Telephone interview.
110. Mary Ethel Bottum Benton, "The Book of the Oldsmobile with the Bentons In It, April 1904-November 1906." (Handwritten.)
111. Gregg, "Remembrances," p. 6; and Swain, Telephone conversation.
112. Gregg, Interview, tape 2, p. 5-6.
113. Ibid., tape 6, p. 3.
114. Swain, Telephone interview.
115. Gregg, Interview, tape 5 p. 5-6.
116. Idem, "Remembrances," p. 7-8.
117. Ibid., p. 8.
118. Swain, Telephone interview.
119. Ibid.
120. Gregg, Interview, tape 2, p. 3.
121. Idem, "Remembrances," p. 7.
122. Idem, Interview, tape 3, p. 4.
123. Ibid., tape 6, p. 5.
124. Swain, Telephone interview.
125. Ibid.
126. Gregg, Interview, tape 2, p. 4.
127. Ibid., tape 2, p. 1.
128. Ibid., tape 2, p. 4.
129. Ibid., tape 1, p. 2.

CHAPTER FIVE

TYPOGRAPHIC CHANGES & CLIMATE

The Times

The typefounding industry went through profound changes during the careers of the two Bentons, who in turn played pivotal roles in helping to bring about these changes.

Before the Linotype machine came into general use, type designing and founding were very different from what they came to be. There was not a tremendous amount of competition between designers. Most type designers were affiliated with printing establishments, and their type was very often originally designed for a specific purpose or a particular press. "The old masters ... did not contemplate the use of [their] type by other printers. The type had to please only themselves, and, in some cases, a few princely patrons. In any event, they did not have to sell it to other printers, so it made no difference whether or not other printers liked it."¹

A couple hundred years later, as Morris Benton came into his own at ATF, things were radically changing. The traditional business of the type founders, namely, supplying newspapers with composition type, was being taken over by the composing machines. Type design was becoming more important--as the composing machines came into general use, their manufacturers continued to look to the type founders for new type designs. "It wasn't until the 1920s that the typesetting machines had

matured to the point where they were producing some original type designs. And it wasn't until much later that they were producing really first-class designs."²

Another great change took place in the 1920s--the introduction of advertising typographers and the ad agency, or type shop. Before this time, ads were usually placed directly with the newspapers or magazines that would print them. A publication's compositors would set up ads as they saw fit, using the type faces that were readily available in the composing room. Newspapers obviously did not stock a great variety of types. And the average printer would rather use the type he had than buy new type for every advertisement that came along--so the type choices were limited. It was natural for the ad agency to evolve out of this situation.

Ad agencies gave businesses much greater freedom in ad design. With the ad agency came advertising photographers and artists, as well as a demand for new, exciting typefaces. This in turn became a big boost to the typefounding industry. There was always a time lag between the introduction of a new foundry type and its adaptation to the composing machines, so naturally the artists at the ad agencies turned to the foundries to get the latest in type design. "Advertising typographers could invest in typefaces on a larger scale than the average printer could. And that prompted the typefounders and eventually the typesetting machine companies to develop new styles. And that's pretty much what kept Benton and Goudy and people like that busy."³

But the new types had to out-perform the old types, because they

were expected now to sell products. Type had to appeal not only to the ad agencies, but to businesses, printers, and the general public.

"Advertising demands more of type--in variety, in novelty, in eye appeal--than any other use to which it is put. It puts type in the position of having to produce results--that is, of having to win the attention of the reader to the message that it clothes. Presumably all type is intended to be read, wherever it is used. A book is printed to be read, but if the book does not sell, rarely is the type blamed for the apathy."⁴

If an advertisement didn't sell the product it advertised, very often the type was blamed for the failure. This put the pressure on the ad agencies to obtain new types, on the type designers to design them, and ultimately the type foundries to produce them. Thus the foundries had a new market. Robert Nelson at ATF quickly picked up on the new trend, and encouraged the design department to follow through. As Bullen claimed, "Undeniably, the greater effectiveness of printing in advertising, the greater is the demand for printing. This is the basic idea in Nelson's policy: to increase the demand for types by increasing the demand for printing. Nelson moves his type families as generals move their divisions, not haphazardly, but with deliberation."⁵

The concept of the type family obviously came in handy here. Families insured harmonious layouts, so agencies bought them instead of single fonts. But as it turned out, Cheltenham Bold and Goudy Bold actually outsold Cheltenham Old Style and Goudy Old Style, their parent designs, because they had become so popular for advertising. "In developing type families, a new order of types was created, properly

called Publicity Types, because [they were] peculiarly adapted for advertising purposes."⁶

Publicity types have to be as well designed as book types, even though they serve an entirely different putpose. As Morris Benton began to design type, he was as meticulous about his publicity types as his text types.

The Competition

During Morris Benton's career, the type designing field went through an explosive expansion. As the manufacturers of the composing machines searched for new types, they began to call on independent type designers in addition to the type foundries. Perhaps Frederic W. Goudy is the most well-known of these, although he was by no means the only one.

Eugene M. Ettenberg credits 22 type designers with the major 20th century faces. These include, in addition to Morris Benton, Will Bradley, T.L. De Vinne, Bertram Goodhue, Frederic W. Goudy, Bruce Rogers, Thomas Maitland Cleland, Lucian Bernhard, Rudolph Ruzicka, Frederic Warde, Robert Hunter Middleton, William Addison Dwiggins, Warren Chappell, Joseph Blumenthal, and Victor Hammer. All were Benton's contemporaries.

In 1947, an R.R. Donnelley exhibition on "American Type Designers and Their Work" honored more than 500 type designs by 46 men and one woman. Many of the designers listed above were represented in the exhibition, but it also included the work of Wadsworth A. Parker, Alfred Bosco, Robert E. Smith, Willard T. Sniffin, and Gerry Powell from the American Type Founders Company; Sidney Gaunt, Carl Junge, Richard N. MacArthur, Ralph Fletcher Seymour, Robert Weibking, and John

Zimmermann of Barnhart Bros. & Spindler; Ernst Frederick Detterer and William E. Fink at the Ludlow Typograph Co.; C.H. Griffith at Mergenthaler Linotype; Sol Hess of the Monotype Company; and, among others, Oswald Cooper and Elizabeth Colwell.

How did Morris Benton stack up in the crowd? A 1948 article about the Donnelley exhibition credited him with "the greatest number of type faces designed by any one American."⁷ But 23 years later, Alexander Lawson wrote, "This was the period when such figures as Frederic W. Goudy, Bruce Rogers, Daniel B. Updike, and Carl Rollins were building reputable careers. Goudy attained recognition as the foremost American type designer of his time, while Benton remained relatively obscure to most of his contemporaries."⁸

Morris Benton worked for ATF for his entire professional life. This had a great influence on his work—he had to produce types that would sell. His types had to "satisfy thousands of printers and tens of thousands of discriminating buyers of printing."⁹

Many other type designers, such as Frederic W. Goudy, were not working under the same restrictions. They may not have been as financially secure as Benton, but they were also a lot freer to express their ideas.

Benton and Frederic W. Goudy

So much had been written comparing Goudy and Morris Benton that the subject demands some treatment here. Goudy has been called the "miracle that came out of the Midwest," and "the greatest type designer in the world,"¹⁰ and "America's most widely known and respected type

designer."¹¹ Even the editor of The Inland Printer claimed that Goudy designed "more typefaces than anybody in the history of the Graphic Arts."¹²

Goudy was an extremely likeable person, warm, outgoing, and always ready to lend a hand. Aspiring typographers were welcome to visit him at his workshop, where he was never too busy to talk to them. Goudy loved to have a good time, and made friends easily.

The most dramatic difference between Benton and Goudy was their personalities. Goudy was outgoing, Benton reserved. It is then only natural that Goudy became famous while Benton remained obscure.

N.J. Werner, writing in the Inland Printer for November 1932, lamented the fact that type designers were changing, seeking acclaim and recognition for their work. "It seems to me that, in former days, type designers and engravers were very modest and kept their own personalities much in the background. ... Typefounders were not in the habit of exploiting the reputations or merits of their designers and punchcutters, preferring, evidently, to let their productions speak for themselves. Guild tradition, one might say."¹³

But type designers deserve recognition for good work. It's not the company that makes things happen, but individuals within that company. However, ATF's policy was simply to promote its type as ATF type, and not as the work of any particular individual. Thus Benton did not receive any publicity for his work.

So although Goudy's personality and temperament may have endeared him to the printers and typographers of his day, Benton was reticent--he was simply the more traditional of the two. It is ironic that his very

'traditionally typographic' temperament would contribute to his obscurity.

Goudy, who had training as a letterer and had studied early hand-written letter forms, wrote in one of his journal articles: "Types of today as produced by the founders are not based on a study of classic models of the times before printing, nor is there any serious attempt to revise letter forms with any regard for beauty and proportion or thought of the alphabet itself."¹⁴ Goudy the letterer was more sensitive to hand-written letter forms, whereas Benton was brought up on the early printing types, which themselves had been developed from hand-written letter forms. Benton worked in ATF's typographical library, studying the old masters and basing his revivals on the best of them.

Goudy and Benton must have met at ATF, because Goudy made "frequent visits to the Company, then located in Jersey City."¹⁵ In fact, Goudy's very first type, Camelot, was produced by ATF, and patented in 1900, although this does not necessarily mean that Goudy visited the company at that time.¹⁶ But on one of his later visits, Robert Nelson asked him to design a face for ATF to produce—not an uncommon request at the time. When Goudy's preliminary drawings were submitted to the type design department, Benton or someone under him in the department redrew some of the letters. Goudy was furious. "The first proofs of my design from the foundry showed differences from my drawings," he wrote. "I immediately took the matter up with Nelson and reminded him of his promise that my design would be followed exactly."¹⁷

Nelson sided with Goudy, and the type was brought out in 1915. Nevertheless, Benton did manage to retain a few changes in the letters.

Goudy later wrote "I am almost satisfied that the design is a good one, marred only by the short descenders which I allowed the American Type Founders to inveigle me into giving p, q, g, j, and y--though only under protest."¹⁸ To whom did Goudy protest if not to Morris Benton, head of the design department?

Benton must have thought the new face, Goudy Old Style, would be a good seller, because he proceeded to make it into a family of type. By 1927, there were nine Benton variations: Goudy Bold, Goudy Bold Italic, Goudy Catalogue, Goudy Catalogue Italic, Goudy Extrabold, Goudy Extrabold Italic, Goudy Handtooled and Goudy Handtooled Italic (collaborations with Wadsworth A. Parker), and Goudy Title.¹⁹ Goudy of course did not receive any commission for these variations--he had sold his original drawings outright to ATF. In time, however, Goudy Bold became one of ATF's most popular typefaces.

Although he admitted to the fact that Goudy Bold was not his design, Frederic Goudy was impressed with Benton's type, "a face which seems to be more successful than [I] could have anticipated." Nevertheless, Goudy didn't feel that Benton should receive credit for it. Goudy explained that "It is the writer's contention that simply thickening or thinning an existing type, or making it wider or narrower, is not real design. A letter should be thought of at the outset as possessing a particular character in which weight and widths are mere details in its presentation ..."²⁰ But the fact remains that Goudy did not design Goudy Bold, and Morris Benton did.

In a 1933 article about Fred Goudy, The New Yorker magazine gave this account of his tribulations with ATF over the original type:

Some of his friends ... thought it was a happy circumstance when the American Type Founders Company purchased 'Goudy Old Style,' today one of his most widely distributed fonts. The company bought the type outright for fifteen hundred dollars, and has never regretted its bargain. In addition to the profitable return from 'Goudy Old Style,' the company succeeded in making three types sprout where one had grown before. The designer at its plant redrew the original letters (this still annoys Goudy) to produce two additional alphabets. Goudy nowadays never sells a design outright to a foundry ..."²¹

Thus Goudy and Benton were more than competitors in the abstract--they met head to head at least on this one occasion. Goudy designed a few other typefaces for ATF, although none of these is accompanied with a similar story in Goudy's memoirs.

Benton has been called an engineer and Goudy an artist. To be sure, Benton's degree in mechanical engineering and Goudy's artistic temperament back up these claims. But Benton's knowledge of engineering and his mechanical ability did not also make him aesthetically insensitive. He may not have had an artistic temperament or called himself an artist, but he was very conscious of the look of his type.

Goudy did not feel that engineers could make good type designers: "Types of distinction," he wrote, "are created by artists only, and not by engineers or artisans, ..."²² Engineers, he felt, were too concerned with precision and accuracy. "Every bit of finish and refinement not necessary to the expression of the design is useless and is wasted effort. ... The demand for perfection is an evidence of a misunderstanding of the true ends of art."²³ But one of the tools the designer had to keep in mind was the pantographic matrix engraver, the very nature of which is its precision.

Goudy did not engrave too many sizes of his types--he only engraved

the sizes he needed for a particular project. But Benton had to plan for a complete font in all the standard ATF sizes every time he designed a new typeface, and therefore took great pains to overcome the problems that a strictly proportional rendering would present.

Herman Zapf, the leading typeface designer today, regards Benton as more of a designer and Goudy more an artist. "There's a lot of creative work that goes into type designing," he said, "and Morris Benton is one of the great designers we should not forget." Zapf credits Benton's relative obscurity with his personality. "In this country you have to make noise to get recognized." He likens the Benton situation to Seward's purchase of Alaska in the 1800s--a very important move on Seward's part, but one which is not remembered by most Americans.²⁴

Leave it to Henry Lewis Bullen to make a sweeping, pro-Benton statement in comparing the two type designers. Bullen had this to say:

In the experienced opinion of the writer, [Morris Benton] is the most experienced and best letterer of type designers in the world and has perfected more designs than any other man, including the boastful man who claims to have designed 100 type faces, few of which are used in the printing industry, while there would scarcely be any printing industry if at this time all the types lettered by M.F.B. were excluded."²⁵

On July 28, 1932, Goudy wrote to Morris Benton on the occasion of the death of Boyd Benton. "I trust you will accept my sincere sympathy & condolences," Goudy wrote. "I had the highest regard for Mr. Benton, and the American as well as his friends have suffered a suffered a very great loss."²⁶ Morris Benton noted on Goudy's letter that he answered it on August 1. Thus the two most important type designers of their day were apparently not overtly antagonistic, at least at this time. But neither were they close friends and colleagues.

FOOTNOTES TO CHAPTER 5

1. John Allen Murphy, "Morris Benton, Part 3," Inland Printer, May 1936, p. 69.
2. M.F. McGrew, Interview with Patricia Cost, Pittsburgh, September 3, 1984.
3. Ibid.
4. Murphy, p. 69.
5. Henry Lewis Bullen, "The Effect of the Composing Machines Upon the Typefounding Industry," Inland Printer, July 1924, p. 595.
6. Ibid., p. 596.
7. Eugene M. Ettenberg, "American Type Designers and Their Work: An R.R. Donnelley Exhibition," American Printer, May 1948, p. 18.
8. Alexander Lawson, "The Prolific Career of Morris Benton," Printing Impressions, April 1971, p. 76.
9. Murphy, p. 69.
10. Milton McKaye, "Profiles: Glorifier of the Alphabet," The New Yorker, January 14, 1933, p. 20.
11. Lawson, Introduction to Typographer's Digest, No. 27, Spring 1969, p. 3.
12. Laurance B. Siegfried, "Ninth Annual Frederic W. Goudy Distinguished Lecture in Typography" (Rochester, New York: The Press of the Good Mountain, 1977), p. 7.
13. N.J. Werner, "Weibking Created Popular Faces in Chicago, Friend Discloses," Inland Printer, November 1932, p. 71.
14. Frederic W. Goudy, "Type Designs: Old and New," Ars Typographica, Spring 1918, p. 39-40.
15. Idem, A Half-Century of Type Design & Typography, 1895-1945, Vol. 1, (New York: The Typophiles, 1946), p. 92.

16. Idem and J.W. Phinney, Patent No. 32,298 for Camelot Old Style, February 27, 1900.
17. Goudy, A Half-Century, p. 93.
18. Ibid.
19. Maureen D. Hitchcock, "Benton Types" (Rochester, New York: The Press of the Good Mountain, 1978).
20. Goudy, Elements of Lettering (New York: Mitchell Kennerley, 1922), p. 42.
21. McKaye, p. 23.
22. Goudy, Typologia: Studies in Type Design & Type Making (Berkeley: University of California Press, 1940), p. 28.
23. Idem, "Type Designs: Old and New," p. 38-40.
24. Hermann Zapf, Interview with Patricia Cost, Rochester, New York, August 9, 1985.
25. Stevens Lewis Watts, Notebook, 1895-1966. (Handwritten.)
26. Goudy, Letter to Morris Fuller Benton, July 28, 1932.

CHAPTER SIX

HOW TYPE WAS MADE AT ATF

An Emphasis on Accuracy

Creating type at ATF was not an simply an artistic process, but a mechanical one as well, requiring a high degree of precision. Accuracy was of the utmost importance to insure that types would align and fit properly. Both Bentons were perfectly suited to this type of work. Although the John Marder had initiated the measurement of type sizes at his foundry in Chicago, "the process of making measurements really was Linn Boyd Benton's. ... [He] was the one who perfected the business of measuring type sizes, working in 6 or 7 decimal places at a time."¹

An article in American Machinist for December 1909 argues that "the accuracy of any result, either mathematical or concrete machine construction, is only determined by the accuracy of the means by which results have been reached," The article goes on to explain ATF's type-making methods as an example of state-of-the-art procedures. "It is an art where little things, measured in fractions of a thousandth of an inch, are the big things as exemplified by the American Type Founders Company, of Jersey City, N.J., whose system makes each small step a refinement link in the whole chain of microscopic accuracy."²

Benton's matrix engraver, the key to the typemaking process at ATF, was accurate, first and foremost. A good matrix depended upon this machine's accuracy. To demonstrate its precision, letters were cut for

souvenirs for visitors to the design department--some small enough to fit on a half-point (144th of an inch) body.³

One of ATF's advertising devices, used as early as 1922, was a piece of 8-point type on which was cast the entire Lord's Prayer: 66 words, made up of 271 characters, including punctuation. The piece of type measured less than an eighth of an inch square, but the words were entirely legible under a microscope. The sample type was meant to promote the Benton matrix engraver. "This extremely sensitive device reduces the characters on the pattern plate to whatever size the type is to be cast, and mechanically engraves them into a matrix. In this instance, the lower case letters on the matrix were .0044" high and were cut by a tool measuring .0005"."⁴

An accurate matrix engraver was of little use if the design of the type was not also precise. Goudy explained: "The machine itself may be hard and uncompromising, but its product is entirely within the control of the pattern--if the pattern is right, then the more accurate and precise the machine, the perfect the reproduction of the designer's art."⁵

Preliminary Research

Before most of Morris Benton's typefaces were drawn, he studied the classic faces in ATF's typographical library. The ideas for many of his type revivals started out there, with Benton studying original specimen sheets and books to get a feel for spacing and fit.

Walter Marder remembers seeing Benton in the library on Saturdays, a half work-day for ATF at the time. Walter was much younger than

Benton, but knew him as a friend of the family. "I used to spend a lot of my time on Saturdays in the library. ... [Benton's] inspiration came from the Bullen library. That's one of the reasons the library was created."⁶

Benton undertook his design tasks with "a thoroughness seldom found in an artist." Even when he was designing a completely modern face, he first researched his project. "The first thing he always finds out in starting a new commission is how much is already known about this subject. How much thinking has been done on it, and where are the records of this thinking. He believes that research to gather a broad groundwork of information on the assignment in hand is an essential part of the designer's job,"⁷

The Drawings

Benton and the other designers in ATF's design department started out with pencil drawings, which they would normally ink in before proceeding. "The first drawing, the one they used to judge, was usually an ink drawing, created just to get the feel for what the letter looked like. [They'd] put several together to get a feel for what the word looked like."⁸

The original drawing could be of any size, but was preferably larger than 96 point. As was noted in the previous chapter, many original drawings came to the design department from independent designers. Some faces started with just one word, such as Balloon Light and Extrabold starting from the word "CHAMPION," inked in for both the Light and Extrabold styles.⁹ Every year ATF received hundreds of

these proposed type faces from 'enthusiastic letterers,' few of which could possibly be cast in type.¹⁰

Many independent type designers did not fully realize the complex task of making beautiful type. As a result, their original drawings could seldom be used as working drawings. For example, when Bertram Goodhue's drawings for Cheltenham were received by ATF's design department, they were not immediately translated into patterns for cutting matrices. "...like almost every design submitted to a type foundry by artists who are uninstructed in the technique of typemaking, the original design had to be redrawn to conform to the limitations created by molds and peculiar word combinations."¹¹ It was Morris Benton's job to make Goodhue's and other designer's drawings useable, and a tedious and exacting job it was.

Other designers, realizing the exacting nature of type, were prepared to make the slight design changes that were needed to compensate for different sizes of a face. D.B. Updike, for example, maintained that "a design for a type alphabet that may be entirely successful for the size for which it is drawn, cannot be successfully applied to all other sizes of the same series. Each size is a law unto itself, and is often bettered by modifications in the original design made by the feeling and taste of the designer."¹²

J.I. Biegeleisen further explained this concept in his Art

Director's Workbook of Typefaces:

A type design which looks good in 10-point, may not appear aesthetically pleasing or structurally correct in 48, 72, or 96 points. The reverse is similarly true. A typeface which has been designed and cut for 48 points may develop structural shortcomings and suffer design-wise when photographically reduced to 10 or 12 points. For instance, the counters may

close up, the thin serifs and hairlines may tend to disappear, etc. Consequently for popular type designs which are issued in many sizes, the basic structural elements of the letter are slightly modified in a number of intermediate sizes so that excessive enlargements or reductions will not be limited to one master design.¹³

But these procedures were not generally understood. As late as 1947, A. Raymond Hopper wrote in The Inland Printer that "... the belief is widespread that a type face originates by some designer submitting the drawing of an alphabet to the founder who ... then proceeds to photograph it to the various sizes to make up a series."¹⁴ This was far from the case. The original drawings were simply the starting point for the design department.

The Delineating Apparatus

The first step in actual type production was to get the characters to an appropriate size for making patterns. Each character of a new design was placed under a microscope on L.B. Benton's delineating apparatus, a refined pantograph with a microscope attachment. The delineator greatly aided the type-making process, by enabling the designer to enlarge and reduce a single character very accurately.

The face of the microscope attached to the delineator held two single filaments of silk, crossed in the center of the focal point. Directly beneath the focal point, a small bed or plate held the character, clamped in place.

The larger bed of the machine held a sheet of paper under the pantograph's tracing point, which for this operation held a small pencil. The intersection point of the silk filaments was focused on the outline of the character clamped under the microscope. Then the

operator, "grasping the pencil holder and keeping his eyes entirely on the focal point of the microscope," followed the outline of the design by moving the pencil holder to trace an enlarged outline of the character.¹⁵

The bed of the holder on which the original character was clamped could be swiveled to any angle, "thereby changing the style of the letter to wide, narrow, back slope or italic, both the italic and back slope being produced through the combination of angles."¹⁶

The enlarged outline drawing was normally made about ten inches high, and the designer now judged it. "The drawings of a letter designer not thoroughly trained and experienced in the type-making art [always had to be] adjusted by a type designer."¹⁷ A great amount of skill was required to be able to judge an enlarged letter and visualize what the text size would look like. "Believe me, it isn't easy," Walter Marder explained.¹⁸ But Morris Benton was an expert at making these mental reductions.

The enlarged outline drawing was adjusted to meet the limits of the standard lining system and point system, and then it went back on the delineating machine. This time, however, the microscope attachment was removed, and a tracing pen was attached instead of the small pencil. The operator proceeded to reduce the design to a practical size, say 36 point or less. This reduced outline was inked in, giving it the appearance of a sharp impression from a piece of type. A solid letter so made lent itself more readily to further criticism. If the reduced image was not satisfactory, the ten-inch outline drawing was again altered, and the process was repeated until the letter was approved.

48 pt. 3A 6a 4-1

QUALITY IN
Zero the figure

42 pt. 4A 7a 4-1

A XYLOPHONE
Dutch tulip bulbs

36 pt. 5A 9a 5-1

Lower case alphabet 405 pts. Characters per pica .84

ALL THE KNIGHTS
After apprenticeship a

30 pt. 6A 11a 7-1

Lower case alphabet 315 pts. Characters per pica .97

JADE VARIES IN COLOR
Is used for jewelry or carved
for ornamental purposes and

24 pt. 6A 13a 7-1

Lower case alphabet 261 pts. Characters per pica 1.3

AT BRAZIL AND OTHER
It shows civilization at a time so
remote that it is doubtful whether

Figure 20. Caslon Oldstyle No. 471, from ATF's 1941 Specimen Book.

Thus the delineator was used both to enlarge and reduce characters. If the original drawings came in very large, the process was simply reversed, first reducing the image and inking it in, and then making the appropriate ten-inch outline drawings. The focal length of the delineator's magnifier could be changed to meet the requirements of the changes in size of the letter.

Design Considerations

One set of drawings of a font of type cannot always be used for every size of that type, so a number of separate drawings for certain letters had to be made for size variations in a font. Harry Carter explains: "A hairline or a serif should be equally noticeable in a 72-point and in a 6-point, and not more prominent in one than in the other."¹⁹ The 1942 specimen of ATF's Caslon Old Style No. 471 is a case in point. Notice how the letters change considerably from size to size. (See Figure 20.)

Another example of this variation from size to size can be found in Morris Benton's Franklin Gothic Extra Condensed, brought out by ATF in 1906. Hopper's explanation and figure are very clear here:

Optically, the H's seem to be of relatively uniform weight and width, as if a standard design had been photographed down to the respective sizes. Actually they are not. In [Figure 21] three H's are shown in outline for easy comparison. The middle one is an enlargement of a 36-point H; the left one is a 6-point H enlarged to the same height; and a third H, 120-point reduced to the same height. Notice how much narrower and thinner the letter has become in the largest size and how much fatter in the smallest, as compared with the 36-point letter which is usually taken as the standard. And all to make them look the same!²⁰

The type designer had to be intimately familiar with the entire

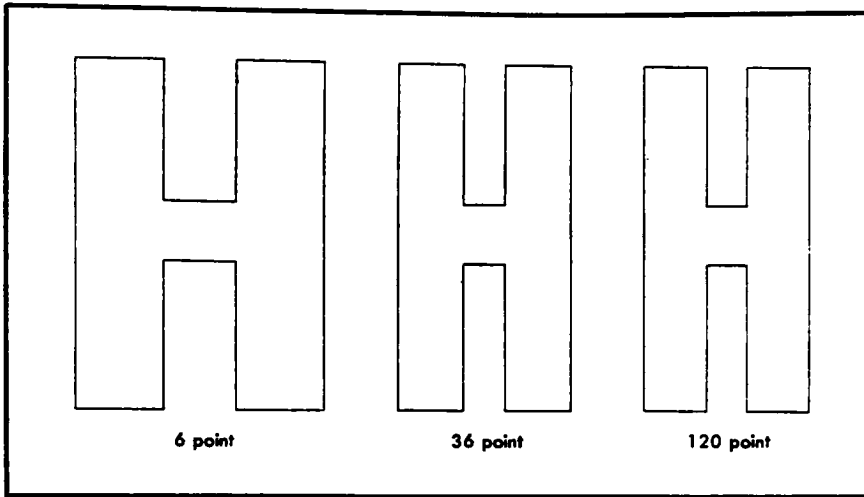


Figure 21. Franklin Gothic Extra Condensed: 6-point H, 36-point H, and 120-point H. (*Inland Printer*, April 1947, p. 50.)

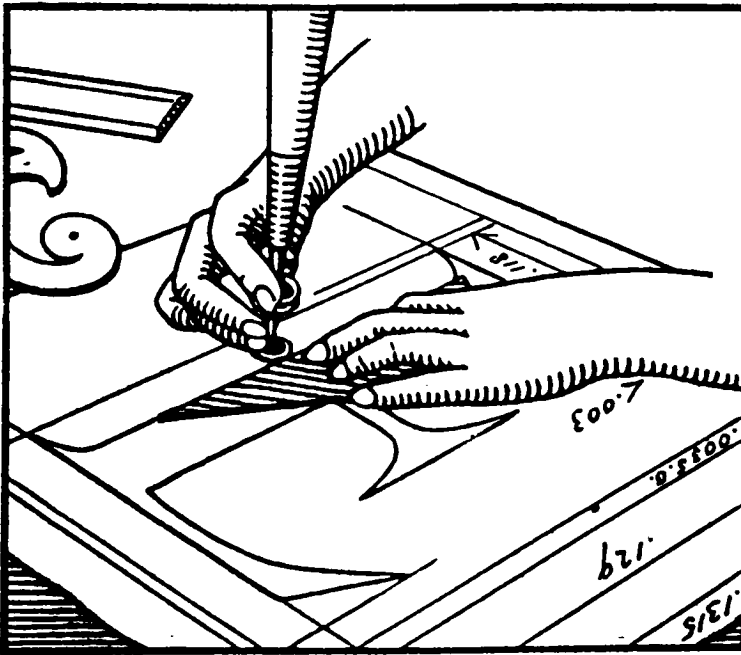


Figure 22. Transposing the drawing. (*The Dolphin*, No. 2, 1935, p. 66.)

type-making process. De Vinne wrote in 1900 that "the knowledge of what is needed in the forms of types can be acquired only by long practice, and by a careful study of the combinations of different letters.

American typefounders say that there are not a dozen men in the United States who can make acceptable drawings for a symmetrical font of roman and italic types."²¹ Hopper added in 1947, "There probably are not many more now," but went on to point out that "In the laboratory of the American Type Founders at Elizabeth, New Jersey, this highly skilled work is in charge of men who have been at it continuously with this company for around 50 years."²² Hopper no doubt was referring to Morris Benton, who by then had worked at ATF for over 50 years.

The mechanical finish of type also imposed limitations on its design. Hairlines and serifs had to be well supported to prevent breakage. Counters had to be deep enough, especially in the smaller sizes, to prevent their being filled up with ink and paper dust when a job was run. Designers had to have a feel for these things to design practical, useable type.

Working Drawings

Before the drawings ever got out of the design department, they were worked and reworked many times. The delineating machine enabled the designer to reduce the original ten-inch outline drawings to various sizes, without the expense of actually casting type. Thus, adjustments could easily be made right on the drawings for different type sizes.

The approved traced outline of a letter was used to make working drawings of that letter. If the designer wanted a vertical line to be

perfectly straight, for example, he would use a straight edge on the working drawing. These drawings were noted with measurements that would be helpful later in the process. (See Figure 22.) Beatrice Warde explained:

All sorts of measurements, expressed in tens of thousandths of an inch, are noted on the finished drawing and referred to at many subsequent stages. For instance, the 'x-height,' which tells what proportion of the whole type, vertically, from the 'line' on which letters like x 'rest,' has been allowed for a character without descenders or ascenders and, by inference, how much will be left²³ for the ascending part of h or the descending part of p.

The Pattern

When the ten-inch outline drawings were approved, the next step was to create a pattern. This was made either in wax and then electrotyped, or directly in metal, depending on whether a punch or a matrix was required. A pantograph machine, another Linn Boyd Benton invention, was used to make the pattern. Bullen called an early version "Benton's Wax Plate Machine."²⁴

When a punch was required, the pantograph machine held a glass or brass plate coated with wax. The operator used a "follower" to trace the ten-inch outline drawing, and the cutting tool engraved an outline of the character in wax. The tracing needle was above the wax plate, but the operator could follow its movement by looking into a strategically placed mirror. The character was reduced in this process to about one-third, or about three and a half inches high.

The ragged edges of the wax were removed, and the plate was then electrotyped. In the electrotyping process, metal was deposited in the engraved lines of the wax, leaving a raised character. The wax plate



Figure 23. An ATF pattern. (Photo taken at ATF Co., November 1984.)

was backed up with type metal, trimmed and finished. It was now called the "pattern," it had a raised image, and was ready to be used on the punch-cutting machine.

Patterns for matrix engraving were engraved into type metal, brass or copper, also using the pantograph machine.

In later years, ATF used a photo-engraving processs to etch the outline drawing into a zinc plate which would then serve as the pattern plate.²⁵ Many hundreds of such patterns are still kept at the ATF plant in New Jersey. (See Figure 23.)

Engraving a Matrix

The earliest Benton machine was used to cut letters to cast his 'self-spacing type.' Thus Benton's matrix-engraver was actually a later development than his punch-cutting machine. But by the early 1900s, it was decided at ATF that engraving matrices was more practical than cutting punches from which matrices would be made. ATF still has several working Benton matrix-engravers in Elizabeth, New Jersey, which it continues to use in production. (See Figure 24.)

Actually, the Benton machine could either cut punches or engrave matrices, depending on which type of patterns were used. Bullen explained that "when the Benton punch-cutting machine is required to cut a punch, the outside of the pattern is used; when it is required to engrave a matrix the inside of the pattern is used."²⁶ Because Benton's machine is more often used to engrave matrices, this description concentrates on the matrix engraving process.

The Benton engraving machine itself consists of two housings



Figure 24. The Benton punch-cutting machine. (Photo taken at ATF Co., November 1984.)

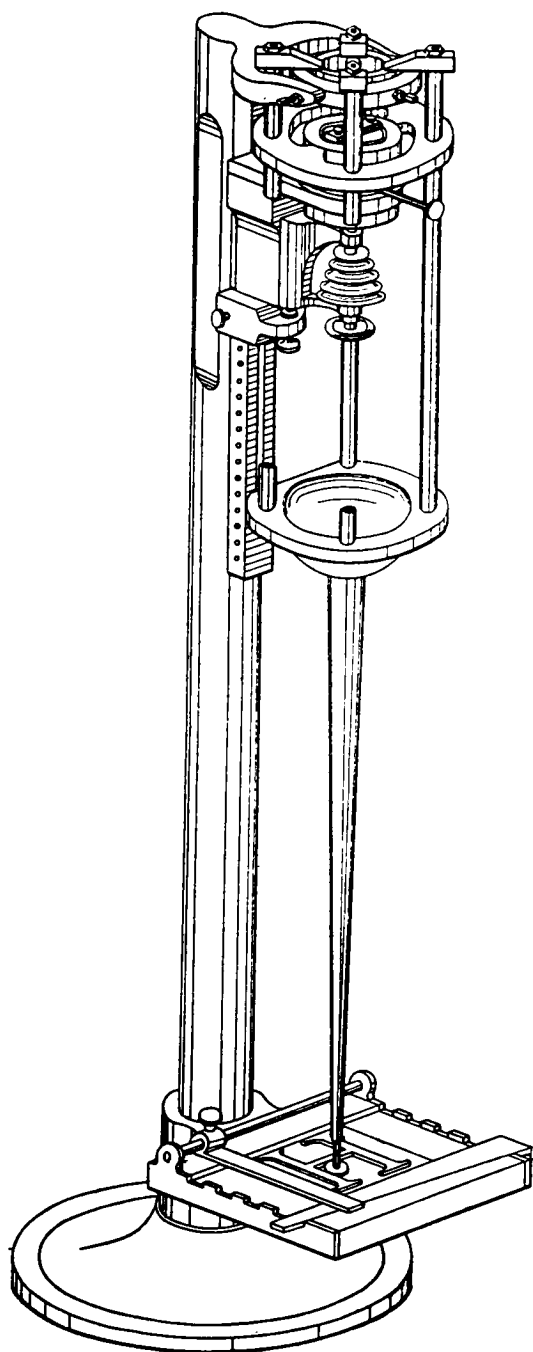


Figure 25. Original Benton punch-cutting machine from patent specification, 1885. (Typographical Printing Surfaces, page 196.)

between which a long pendulum swings. (See Figure 25.) The pendulum is suspended 'in a compound yoke by means of gimbal screws which give it a toggle-joint effect.'²⁷ The free end of the pendulum can be moved all around the pattern, which is placed on the bed of the machine, directly in front of the operator. The ratio of the pantograph can be set anywhere from 60 to 1, depending on the matrix to be engraved.

A small bar of watchmaker's nickel, resembling hard brass, is mounted in a frame which is then inserted above the cross-bar of the machine, above the operator's head. This bar will become the matrix when a tiny rotating cutting tool engraves the desired type character, little by little. (See Figure 26.)

The quill holder, or the head which holds the cutting tool, is perhaps the most highly developed part of the engraving machine. "The steel is specially selected and machined and then laid away for three or four months for seasoning or adjustment of the various strains inherent in all steels." Only after such time is it fitted into its guides. The limits of accuracy in the construction of this head are within 0.0002 inch.²⁸

There are various cutting tools--some for initial cuts and others for cutting in corners and also for smoothing the bottom of the matrices to give a perfect printing surface. Only one tool at a time is held in place in the machine, above the metal to be cut. When T.L. De Vinne explained the Benton punch cutting machine, he was especially impressed with the precision of the cutting tools: "The cutting tools are exceedingly minute, but they are made with the nicest accuracy, and are rotated at high speed by steam power."²⁹

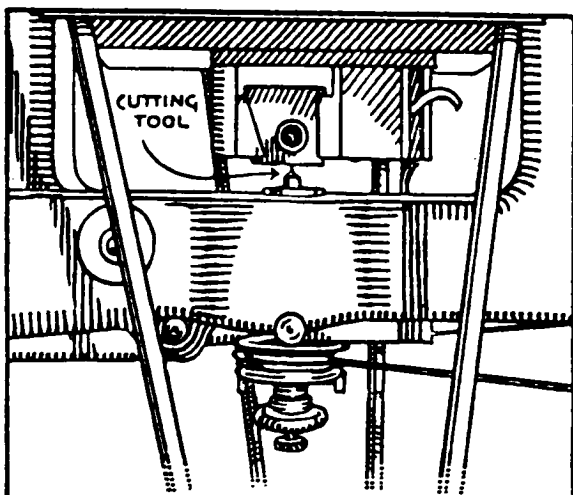


Figure 26. Top of punch-cutting machine.

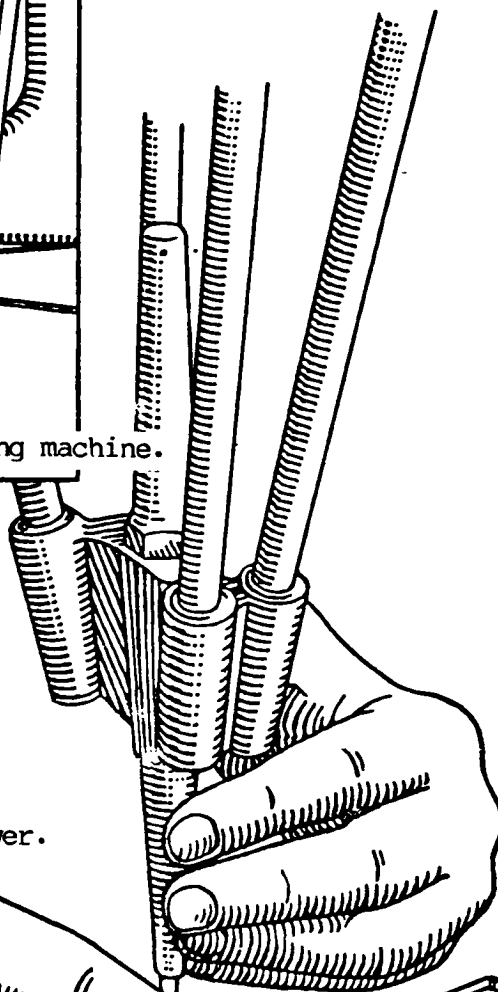
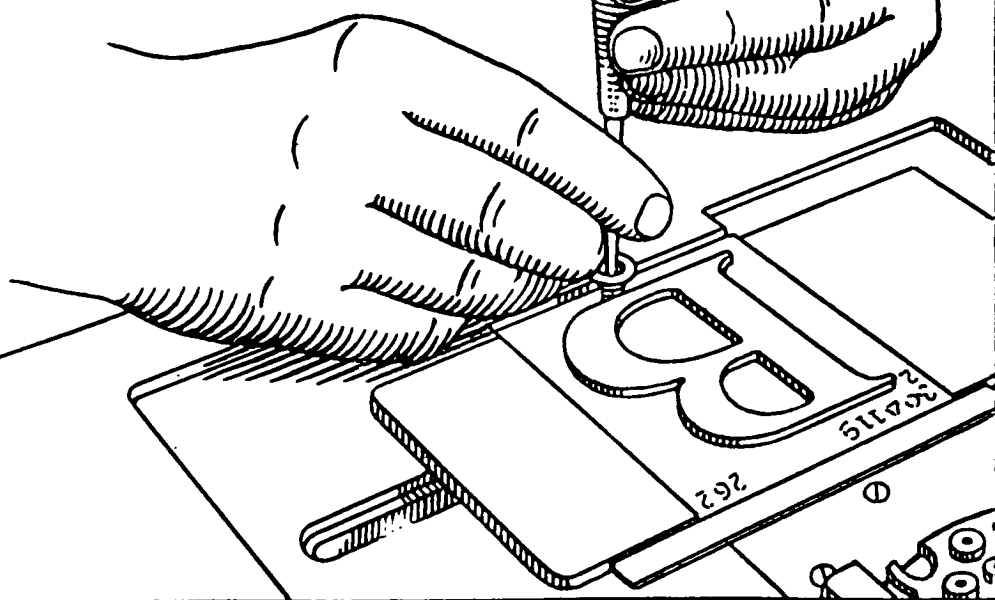


Figure 27. Guiding the follower.



The cutting tool in place in the matrix engraver is driven by a flexible shaft which revolves at a speed of 8,000 to 10,000 revolutions per minute.³⁰ The faces of the cutting edge vary in size from tool to tool, from 0.001 to 0.080 inch in width, the heavier cutters being used for removing large chunks of the matrix and the finer ones for outlining the character.

The follower is attached to the swinging pendulum, and is used by the operator to follow the outline of the pattern. On the end of this follower is a pin with a ball end, and "a light spring in tension against the end of the pin holds the follower always in position. The size of the follower is in direct ratio with the size of the tool, as for example, the pendulum arm with a ratio of 10 to 1, using a tool with 0.0008 inch face, would require a follower ten times as large, or 0.080 inch diameter."³¹

The operator guides the follower along the intaglio edges of the pattern, and at the same time, the cutting tool above cuts the outline of the character. (See Figure 27.) A rough cut is made first, and the surplus metal is removed. "Another circuit of the pattern, after an adjustment, and the tool up above has cut all round the letter again ..."³² Different tools are used for about 17 successive cuts, and finally a finishing tool is used to make the last precise cuts. (See Figure 28.)

The operator periodically examines the cutting tools through a microscope, since the accuracy of the matrix depends to a large extent on the accuracy of the cutting tool. Only if the tool has been damaged will the resulting matrix be faulty. "In case the tool edge should

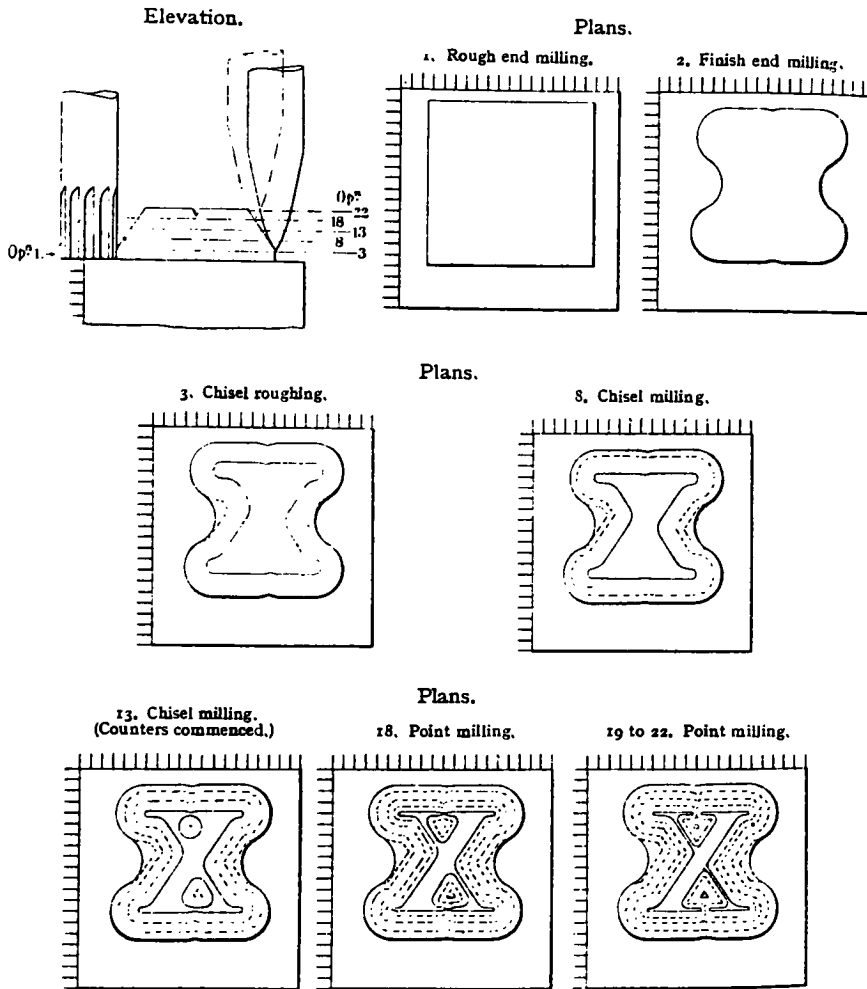


Figure 28. Operations of punch-cutting. (Typographical Printing Surfaces, page 200.)

become broken or dulled, necessitating its removal in the midst of the operation, it is essential that some means of grinding or renewing the edge be employed that will at the same time insure the same accurate outline of the tool, but more important than all else, the same size and length, ..."³³ To insure this precise grinding of cutting tools, Linn Boyd Benton invented a special machine that grinds with automatic accuracy when the gage is properly set. Any desired width of tool face can be obtained.

The cutting tools, after being re-ground, are again inspected under a microscope. "Across the center of the face or lens of the microscope, is arranged a fine scale reading in 0.0005 of an inch"³⁴ This is about half the thickness of a cigarette paper. A cutting tool looks like a heavy nail under this microscope, and so the cutting tools can easily be gauged by eye—"the 0.025 tool covering 160 lines on the scale, the 0.001 tool two lines."³⁵

The Benton engraving machine has been hailed by typefoundries around the world as a miracle of accuracy. In the early 1900s, many companies either bought Benton matrix engravers or copied the design of the machine. The Stempel foundry in Germany had one, and most American composing machine manufacturers used modified versions of it.

At ATF, cutting slips are written out for each size of a typeface. (See Figure 29.) These slips guide the engraving machine operator to choose the proper followers and cutting tools. Apparently Benton used such slips from the very beginning. In an 1888 ad for Benton's punch-cutting machine, we read that "The operator is provided with a card on which is printed a series of numbers, corresponding with numbers stamped

on the followers, opposite which are a series of figures identical with figures on the micrometer. This card indicates to the operator the order in which the different followers should be used, and the number to which the micrometer is to be set for each succeeding change of follower."³⁶

As the operator traces the pattern, the follower will obviously change angles. But the cutting tool above the operator's head remains perpendicular to the matrix. "... the cutter is made automatically to adjust itself, so that at all times it makes a cut of equal depth, insuring uniformity of height of the types to be cast from the matrix."³⁷

Adjusting the Machine

Many articles about the Benton machine mention that it can make slight alterations in the design of a letter. Bullen explained in 1907 that the punch-cutting machine had been perfected to engrave matrices in copper, and was "capable of infinitesimal gradations in all directions."³⁸

Dr. James Eckman, an avid follower of the progress of American typefoundries, confirmed that some adjustments must have been made at ATF:

In the matrix-engraving department of the American Type Founders Company I have seen, on the walls, great charts of trigonometric projections of curves for use in correcting aberrations produced by magnification of letter forms from a beginning prototype of one size of letter. I think there is therefore no doubt that both Bentons accepted and employed magnification to obtain different sizes of a given design,"³⁹

These adjustments were made both on the machine itself and in the drawings, when necessary.

The possibility of adjustments on the machine would seem to overcome what some designers felt was the engraver's main problem: "it extracts its payment in terms of increased mechanization and a decrease in variation of letters to compensate for variation of letter size."⁴⁰ Some type designers were opposed to any machine intervention (other than for casting) in the type-making process. Others were not as adamant, but nevertheless were leery of the Benton matrix engraver.

But it eventually became general knowledge that "the Benton [machine] can be adjusted to compensate for variables that occur when letter sizes change." Ben Rosen explains the normal use of the machine's adjusting capability in his Type and Typography: The Designer's Type Book: "The average size letter matrix from a typical alphabet will be precisely reproduced as originally drawn, while small sizes can become progressively more extended, and large sizes can be more condensed."⁴¹ As operators became more knowledgeable, they could make certain minute modifications to the design for different sizes.

But would a machine operator have the design sense to make sound alterations to the design? Beatrice Warde mentioned in a footnote to her article that "...there exists an ingenious mechanism by which a certain amount of reproportioning can be done by adjusting the machine. Opinions differ as to the wisdom (from the designer's point of view) of using the adjustment."⁴²

D.B. Updike was perhaps one of the designers who were apprehensive of such machine adjustments. "In point of fact," he wrote in 1922, "the first types produced by punch-cutting machines did seem to show a certain rigidity from the point of view of design. That there has been

an improvement of late in type cut by machine is undeniable, and yet there has been practically no change in its mechanism. This improvement, I learn, has come to pass through a more sympathetic and subtle manipulation of the machine itself, and by modifications of rules by the eye of the workman who operates it."⁴³ Updike concluded that the trained eye must remain the primary judge of good design, and that machine alterations must be made by operators with a sense of good design.

The great contemporary type designer, Hermann Zapf, was designing type for the Stempel foundry when it still used a Benton matrix engraver in the 1940s. He explained that three sets of patterns were normally made for any typeface, and that adjustments on the machine itself were only used to widen the characters in the smaller sizes, say five- to eight-point.⁴⁴

Morris Benton made more than one set of patterns for each typeface (see Chapter 5), and the Stempel foundry actually was following practices established by ATF in adjusting the machine only for minute design changes in the smaller sizes. ATF established the system of making three sets of patterns, one for letters up to 14-point, another for medium size display type, and a third for large type.

Fitting (or Justification)

The matrices were far from complete as they came off the Benton machine. There remained the important process of 'fitting.'

Goudy explained fitting in purely artistic terms: "When a type design is good, it is not because each individual letter of the alphabet

is perfect in form, but because there is a feeling of harmony and unbroken rhythm that runs through the whole design, each letter kin to every other and to all."⁴⁵

A more mundane explanation of the same concept would go something like this: the 'fitting' of matrices involves adjusting the matrix as to depth of drive, adjusting to precise parallelness of face to foot, adjusting to the base height ('x' height), adjusting side bearings for proper 'set,' and adjusting matrices to perfect squareness to prevent squirts in the typecasting machine.

Without careful fitting at the typefoundry, even the most beautiful typeface would suffer. "Any font of type improperly fitted may exhibit awkward gaps between some letters and a confusing proximity between some of the others."⁴⁶

Hopper defined fitting as "the typefounder's term for adjusting the face upon the body to meet certain standards of good typography, and since badly fitted type can mar the effect of even the best of composition and presswork, fitting is of prime importance."⁴⁷ The American Machinist explained that, after the character was machined, it was necessary that "a fixed relationship exist between it and the sides and top of the bar in which it has been cut."⁴⁸

So the unfinished matrix went to a fitter, who gave it final adjustments for line, width, and depth. First the unfinished matrix was clamped onto a 'matrix-fitting' machine, which refaced the matrix to the precise depth of drive. In other words, if the matrix was cut too deep, part of its face was shaved off. If, however, the matrix was cut too shallow, it had to be scrapped.

Next the face of the matrix was made precisely parallel to its foot, and then the left side was made perfectly square, keeping in mind the set of that particular letter. The top of the matrix was made perpendicular to the left side, and by the same operation the 'x' height was determined. The fitter had to know where the baseline of the type fell in relation to the matrix, something not always apparent as in the case of 'o' or 'c.' If all letters were placed exactly on the type's baseline, they would appear to be bouncing up and down on it, because letter combinations give rise to optical illusions. Deviations have to be made to trick the eye into seeing letters that seem to sit on a common baseline. These irregularities cannot be systematized, but vary with each new alphabet design and, to an extent, with every size of one design. To help him, the matrix cutter had engraved tiny dots on the side of the matrix at the baseline, following the measurements given on the working drawings.

After adjusting the left and top edges of the matrix, the fitter adjusted the right side. These three adjustments determined the 'set' of the letter, or how much space would appear around that letter when it was placed beside another letter in the font. For new fonts, proofs were made for each letter in combination with every other letter, and the results would be studied for legibility and beauty. Certain letters, such as H, O, o, and m, on account of their shape and proportion, were printed beside each letter to judge the quality of 'set.'

Alignment and set were concerns of the type designer, so Benton was involved with the fitting department, ensuring that his type designs

were properly executed.

Designing and fitting type was a very creative process, although it was not well understood in the wider printing community. "...remarkably little has ever been told about it, and even that little is known to not more than one printer among many. Yet it is a vital process demanding the highest skill and judgement and is of profound significance to everything that is or can be done with the type in a printer's case."⁴⁹

Casting

When the matrix was at last ready, the type would be cast. ATF cast its type in Barth automatic typecasting machines, which not only cast the type, but broke off the jet, ploughed a groove to form the feet, smoothed the feather-edges at the angles, and delivered the types in lines ready for inspection.⁵⁰

Henry Barth, once president of the Cincinnati Type Foundry, was granted a patent in 1888 for his type-casting machine, and soon after became part of the merger that created the American Type Founders Company. Nelson made Barth a director of the company, and his son Henry O. Barth became his assistant.⁵¹ Linn Boyd Benton, true to his name, made several improvements in the Barth type-casting machine.⁵²

FOOTNOTES TO CHAPTER 6

1. Walter Marder, Interview with Patricia Cost, New Jersey, November 1985.
2. W.J. Kaup, "Modern Automatic Type Making," American Machinist, December 16, 1909, p. 1042.
3. Henry Lewis Bullen, "Linn Boyd Benton--The Man and His Work," Inland Printer, October 1922, p. 64.
4. "A Demonstration of ATF Craftsmanship," Promotional piece of eight-point type on which The Lord's Prayer is cast, American Type Founders Company, no date.
5. Frederic W. Goudy, "Type Design: A Homily," Ars Typographica, Autumn 1934, p. 21.
6. Marder, Interview.
7. John Allen Murphy, "Morris Benton, Part 2," Inland Printer, April 1934, p. 44.
8. Marder, Interview.
9. A. Raymond Hopper, "Fitting: A Vital Step in the Perfection of a Type Face," Inland Printer, April 1947, p. 52.
10. Ibid., p. 50.
11. "Two Men Whose Work Greatly Benefits All Typographers," Inland Printer, December 1925, p. 453.
12. Daniel Berkeley Updike, Printing Types: Their History, Forms, and Use (Cambridge: Harvard University Press, 1922), p. 11.
13. J.I. Biegeleinsen, Art Directors Workbook of Type Faces (New York: Arco Publishing Co., 1976), p. 14.
14. Hopper, p. 50.
15. Bullen, p. 63.
16. Kaup, p. 1042-3.

17. Bullen, p. 63.
18. Marder, Interview.
19. Harry Carter, "Optical Scale in Typefounding," Printing Historical Society, Bulletin 13, September 1984, (Reprinted from Typography 4, Autumn 1937), p. 148.
20. Hopper, p. 51.
21. Theodore Low De Vinne, The Practice of Typography (New York: The Century Co., 1899), p. 15.
22. Hopper, p. 51.
23. Beatrice L. Warde, "Cutting Types for the Machines: A Layman's Account," The Dolphin, No. 2, 1935, p. 66.
24. Bullen, p. 64.
25. George Gasparik, Interview with Patricia Cost, ATF, Elizabeth, New Jersey, November 1985.
26. Bullen, p. 63.
27. Kaup, p. 1043.
28. Ibid.
29. De Vinne, p. 352.
30. Kaup, p. 1044.
31. Ibid.
32. Warde, p. 67.
33. Kaup, p. 1045.
34. Ibid.
35. Bullen, p. 64.
36. "Benton's Punch Engraving Machine," Advertising brochure, no date, p. 2.
37. Bullen, p. 67.
38. Bullen, "Discursions of a Retired Printer, No. VII," Inland Printer, January 1907, p. 520.

39. Dr. James Eckman, Letter to Patricia Cost, July 8, 1985.
40. Ben Rosen, Type and Typography: The Designer's Type Book (New York: Van Nostrand Reinhold Co., 1976), p. 13.
41. Ibid., p. 14.
42. Warde, p. 64.
43. Updike, p. 12-13.
44. Hermann Zaof, Interview with Patricia Cost, August 9, 1985.
45. Goudy, Typologia: Studies in Type Design & Type Making (Berkeley: University of California Press, 1940), p. 43.
46. Hopper, p. 51.
47. Ibid., p. 50.
48. Kaup, p. 1045.
49. Hopper, p. 52.
50. De Vinne, p. 23.
51. Bullen, "Discursions, No. VII," p. 521.
52. Bullen, "Linn Boyd Benton," p. 64.

CHAPTER SEVEN

MORRIS BENTON'S TYPE DESIGNS

Morris Benton's body of work is amazing for more than its volume. His designs encompass a wide range of styles, from ultra-modern to purely classical. And, as Alexander Lawson wrote, "Diversity should of course be the hallmark of a good designer."¹

Steve Watts, by 1948 ATF's director of type sales and the production of new type faces, greatly admired Morris Benton's work. "Sentimentalists among type lovers regard Mr. Benton's work in reviving old faces and making them available in type suited for modern printing as being his greatest achievement," Watts wrote in a letter to an RIT student in 1965. "It is true that he brought back Bodoni, Baskerville, Garamond, Bulmer, and other faces that became popular and were copied or approximated by the machine composition people, but those 'esthetic' faces were not Benton's best money-makers for American Type Founders Company."² Watts goes on to describe his favorite Benton face, and to discuss the many styles of type Benton experimented with.

Benton did not merely continue to re-design and perfect one basic face, an accusation some have made of Frederic W. Goudy's work. "Some Goudy faces were rehashes of other Goudy faces," Walter Marder claimed.³ Laurance Siegfried, in his 1977 Goudy lecture at RIT, said this about Goudy's work, "Well, the last 20 or so of those types, they frankly aren't so much. They're mostly all the same job. I don't hesitate to

mention that because I once told him that."⁴

Another distinction of Benton's types has been their long life. In a 1944 article entitled "What Are the Enduring Faces?", A. Raymond Hopper comes back several times to Benton faces. Although advertising typographers loved to bring out new faces, many of Benton's types nevertheless remained popular. "A little historical reminiscence, it will be seen, is all that is necessary to explode the myth about the durability of type styles being the exclusive property of the 'ancients,'" Hopper writes. "There never has been a type face that maintained popular favor continuously for even a century."⁵ Hopper concludes that three ATF typefaces (Bookman, Cheltenham, and Century), two of which were Benton's, had already lived as long as any traditional face could boast.

The Inland Printer's "Typographic Scoreboard" reported similar conclusions. This feature ran for many years in the magazine, rating the popularity of typefaces based on their use for advertisements in The Saturday Evening Post. A comprehensive graph published in 1945 shows that from 1929 to 1945, Garamond and Bodoni types were the consistent winners.⁶ It was Benton who revived both types, and although the composing machine manufacturers copied his revivals, "in both these cases, his versions have won out over competing adaptations to become the American standards."⁷

Although Morris Benton may not have originated the 'family' concept in type design (see Chapter 4), he no doubt was the designer who developed the idea. Walter Marder goes so far as to call Benton "the father of the type family, [because] he did more than anyone else to

exploit [it]."⁸

And Morris Benton should also be remembered for his legibility studies, which culminated in the Century Schoolbook family. The family came to be used for much more than school textbooks, and is still popular today. These studies will be discussed further in this chapter's section on Century Schoolbook.

Thus, although Morris Benton can be credited with having adapted or designed more typefaces than any other American type designer (252 typefaces, see Appendix A), this fact is not his sole contribution. The stories of some of his most noteworthy typefaces follow.

Roycroft, c. 1898

The story of this type and Benton's work on it has already been given in Chapter 4. Suffice it to repeat here that Roycroft became probably the best-known of the several versions of the 'rugged letter.'⁹

Century Expanded, 1900

The original Century Roman type was cut in 1895 by Linn Boyd Benton in collaboration with Theodore L. De Vinne, specially for The Century Magazine. (See Chapter 4.) Although the Century type was used by the magazine for several years, it did not come into more general use "because the measure was a little too narrow,"¹⁰ or, in other words, the type was too condensed. Therefore, Boyd Benton and De Vinne soon after brought out a slightly wider version, Century Broad-Face, for use by the De Vinne press.

A few years after he started working at ATF, Morris Benton became

72 pt. 3A 4a 3-1

Prints are

60 pt. 3A 5a 4-1

While there

48 pt. 3A 6a 3-1

Zero is a figure

42 pt. 4A 6a 4-1

Dutch tulips are

36 pt. 4A 8a 4-1

Lower case alphabet 466 pts. Characters per pica .73

ALL KNIGHTS IN
After an apprentice

30 pt. 5A 9a 5-1

Lower case alphabet 382 pts. Characters per pica .89

JADE CHANGES THE
It is used for jewelry or

Figure 30. Morris Benton's Century Expanded.

interested in the two typefaces, and began experimenting with them. His father was involved in the work as well, and in 1900, ATF came out with Century Expanded, actually based on Century Broad-Face.¹¹ (See Figure 30.) It was easy to read, "therefore good type for advertising,"¹² and had good wearing qualities. Century Expanded "proved a great success, especially in newspaper offices in the smaller towns; it also found much favor in commercial printing offices,"¹³ The type is still "a basic, much used American typeface."¹⁴

The matrices for Century Expanded were cut on the matrix engraving machine, and the face was first shown in sizes 6, 8, 10, 11, 12, 14, 18, and 24, 30 and 36 point in the 1903 Specimen Book of American Line Type Faces.¹⁵

The name 'Century Expanded' may cause some confusion because the type does not resemble a typical expanded face. But the origin of the type must be remembered--it was an adaptation of a narrow typeface. As M.F. McGrew explained, "...it is 'expanded' upward in relation to some of the weak faces of the 19th century, and outward in relation to the original Century Roman, which has long been obsolete now, but not in relation to most contemporary faces."¹⁶

Not all printers were happy with Century Expanded. "Its chief drawback," wrote J.L. Frazier, at one time the editor of Specimen Review, "is a commonplace, mechanical, rather severe appearance; esthetic considerations appear to have had little influence in its design. Century Expanded, in effect, is a busy, efficient workman dressed in denims. It is a type face for common 'ads' and booklets on common subjects. Lacking in style and grace, it is wholly unsuited for

job work."¹⁷

Steve Watts wrote in 1962 that he had never liked Century Expanded, "it being too pedestrian for my taste. The italics are graceful but kerned characters in the larger sizes break off and cause trouble in use."¹⁸

Even so, "Century Expanded became the most popular of all the Century types, and has survived as a type for the text composition of advertisements."¹⁹ As of 1925, the text matter of The Saturday Evening Post was being set in the monotype version of Century Expanded.²⁰ It was also copied by other composing machine manufacturers, and, as late as 1965, was still "available on the majority of the new typesetting devices."²¹

Century Expanded is noteworthy for reasons other than its design: Morris Benton developed it into a type family with 13 variations. Later he would go back to Century and develop three more versions: the Century Schoolbook family. Sixteen years after Benton's death in 1948, ATF came out with yet another Century type, Century Nova, designed by Charles Hughes of Milwaukee and based on the original Century Roman.

The Century Family, before 1920

Benton designed the first variant of the family, Century Expanded Italic, in 1900, with the help of his father. Within a few years, Morris had turned out two more faces, Century Bold (which would become a major display face) and Century Bold Italic.

In 1906, the younger Benton departed from the Expanded series with Century Oldstyle, a somewhat lighter face which discarded the curled

24 pt. 7A 12a 7-1

Lower case alphabet 291 pts. Characters per pica 1.2

BRAZIL AND COUNTRIES
It shows civilization at a time

18 pt. 9A 18a 9-1

Lower case alphabet 232 pts. Characters per pica 1.4

THE EARLY PRINTERS CAST HIS
THEY instructed some local blacksmith

14 pt. 14A 26a 11-1

Lower case alphabet 184 pts. Characters per pica 1.8

THE EARLY PRINTER CAST THEIR OWN
THEY instructed a local blacksmith to make the

12 pt. 16A 33a 13-1

Lower case alphabet 151 pts. Characters per pica 2.2

THE EARLY PRINTERS CAST THEIR OWN TYPES
THEY instructed the blacksmith to make the iron frames
or chase in which the types are confined for printing, and

Characters in complete font:

ABCDEFGHIJKLMNOPQRSTUVWXYZ&.,-;:!?'"'[]()
abcdefghijklmnopqrstuvwxyz\$1234567890fi ffi ffi ffi st ct

Small Caps, 6 to 18 pt.

ABCDEFGHIJKLMNOPQRSTUVWXYZ&

Figure 31. Morris Benton's Century Oldstyle.

Century Catalogue

Series Number 444

Designed by Morris F. Benton

12 pt. 17A 37a 13-1

Lower case alphabet 144 pts. Characters per pica 2.3

THE EARLY PRINTERS CAST THEIR OWN TYPES
They instructed a local blacksmith to make the iron frames
or chases in which the types are confined for printing, and

10 pt. 20A 43a 17-1

Lower case alphabet 125 pts. Characters per pica 2.7

THE EARLY PRINTERS CAST THEIR OWN TYPES MADE
They instructed a local blacksmith to make the iron frame or chases
in which the types are confined for printing, and either made or desi

Figure 32. Morris Benton's Century Catalogue.

tail of the capital R and the straight vertical serifs of the T. (See Figure 31.) The upper serifs of the ascending lowercase letters (i, d, k, l, etc.) were slanted. In the next few years, Benton made Century Oldstyle into its own sub-family, with bold, italic, bold italic, and condensed variations.

Frazier called Century Oldstyle "a desirable body or text letter, especially where a large face in relation to the body is desirable, as when six point must be used or when a pocket sized booklet is in prospect."²² He even felt that the foundry Century Oldstyle Bold was more attractive than Cheltenham and the bold Caslons. Century Oldstyle was always popular with school printing teachers,²³ but it never achieved the success of the other members of the Century family.²⁴

Other Benton types in the Century family included a Bold Condensed (1908 or 1909), Bold Condensed Title (1924, and apparently abandoned soon after), and Bold Extended (1909 or 1910).

According to the 1923 ATF Specimen Book, in 1914 Benton designed a medium weight letter called Century Catalogue. (See Figure 32.) Watts felt that Century Catalogue was "one of the very finest straight-matter letters ever made."²⁵ It had its own italic, which was essentially the design for Brimmer Italic "with plain capitals and slightly different face sizes."²⁶

Century Schoolbook, 1920

In his book Typologia, first published in 1940, Frederic Goudy again brings up a controversial point, this time about legibility. He maintains that, although many legibility experiments and studies had

been completed up to that time, no designer had used them in devising a new typeface. "It is a pity," he writes, "that the experiments have dealt only with existing forms (not always well chosen), and so far as the writer is aware, no suggestions for incorporating any results making for increased legibility by devising new forms based on the experiments have been made. Why haven't there been enlisted in these experiments the services of a designer who has given thought to the question of legibility of letters as well as to physical representation and their esthetic expression?"²⁷

Goudy goes on to discuss the legibility research of Durer, Tory, da Vinci, Moxon and others, and gives the conclusions of a 1911 investigation undertaken at Clark University to ascertain "the relative legibility of different faces of printing types."²⁸ But he never once mentions Morris Benton's legibility studies, nor the famous Benton typeface that was designed as a result of them.

In 1915, the schoolbook publishers Ginn and Company asked Morris Benton to design a legible type for their young readers.²⁹ They felt that a type "that would be better for the eyesight of students logically should be designed by an expert."³⁰ As was his style, Benton began to research the idea, and soon found that much work on the subject had already been done.

In fact, before he began to experiment with Century Roman back in the 1890s, T.L. De Vinne himself had been aware of a series of tests in typographic legibility performed in 1865 by Emile Javal, a professor at the University of Paris. These tests "included eye movements of the reader in addition to typographic considerations."³¹ De Vinne had

wanted to bring out a new type that would satisfy both esthetic and practical requirements. His Century Roman may thus be called a precursor of the legibility types that were to follow.

Morris Benton turned to the Century types as a basis for his Ginn and Company face. He found the Clark University study, and also another investigation by the British Association for the Advancement of Science entitled 'A Report of the Influence of School Books upon Eyesight.' The British report discussed periodic eye examinations, the care of eyesight, lighting, paper, binding, type, and printing, but concluded that no specific attention was being given to the legibility of school textbooks. "Speaking generally, no definite principles or rules as to printing and other conditions of legibility have been adopted in the selection of school books, atlases, diagrams, et cetera."³²

The report explained why the immature optical apparatus of a growing child requires books specially printed for it, and then made recommendations for an ideal textbook. "... the best type for isolated letters is not necessarily the best for word-wholes, and attention must be given to the comparative legibility of letters as seen in context," the report stated. Compressed or condensed type should not be used, and the contrast between fine and heavy strokes should not be too great. "In the ideal type the whites and blacks are well balanced in each letter, and it is easy to discriminate between e, c, and d, h, and k, for example. Numerous other recommendations [were] made concerning the use of serifs, the size of type, spacing, the use of italics, length of lines, margins, ink, paper, alignment, and the numerous other details that enter into the making of a reputable text book."³³

48 pt. 3A 5a 3-1

PRINTING IS
Zero is a figure

36 pt. 4A 8a 4-1

Lower case alphabet 458 pts. Characters per pica .74

KNIGHTS OF THE
After an apprentice

30 pt. 5A 10a 5-1

Lower case alphabet 369 pts. Characters per pica .92

JADE COLOR VARIES
It is used for jewelry or
carved into ornamental

24 pt. 7A 12a 7-1

Lower case alphabet 309 pts. Characters per pica 1.1

ARGENTINA AND OTHER
Shows civilization at a time
so remote that it is doubtful

Figure 33. Morris Benton's Century Schoolbook.

Benton studied all this, but still was not satisfied with the information, and made tests of his own to determine what would constitute the best possible schoolbook type. His studies of eyesight and reading problems led to the design of Century Schoolbook, which "subsequently turned up on nearly every list of legible types."³⁴ The new type came out in the 1920 Supplement No. 2 to the 1912 ATF type catalog, and proceeded to go "far beyond the schoolbook field to become one of the most popular designs for advertising and other printing."³⁵

Century Schoolbook (see Figure 33) is a rather bold member of the Century family, although it actually is a normal width type. Its open counters, large x-height, and squared-off serifs (just slightly bracketed) bring to fulfillment the original legibility ideals of De Vinne. Benton explained in a letter to N.J. Werner in 1936 that "the height of the 'm' is 65% of the height of the 'H' and the ascenders do not come above the 'H' which is 10 inches high on our drawings."³⁶

The type has been said to "reflect the composite opinion of those seeking to determine the most legible type."³⁷ In 1965, Al Lawson was able to write that Century Schoolbook "is presently the most widely used member of the [Century] family, and is available on all composing machines as well as foundry type from ATF."³⁸ And J.I. Biegeleisen wrote in his book on typefaces that "No respectable American printer is ever without a good supply of Century Schoolbook."³⁹

At first, however, Century Schoolbook was "a flop as a foundry face," Watts wrote in 1962. "Very few printing teachers in junior and senior high schools specified Century Schoolbook. It [was] too black. Under a densitometer it shows up as bold as Bookman Oldstyle. Sales of

foundry Schoolbook faces amounted to very little until advertising specifiers went for it around twenty years ago."⁴⁰ But when the type was copied by other foundries and the composing machine manufacturers, it became very popular. Century Modern is the Ludlow Typograph Co.'s version of Schoolbook, adapted by R. Hunter Middleton. The design was acquired by the Mergenthaler Linotype Co. in the 1960s.⁴¹ Other names for the face are Century Medium and Century Text, and ITC's version is called Century Book.⁴²

Morris Benton designed two companion types for the Schoolbook face: Century Schoolbook Italic (1919 or 1920), and Century Schoolbook Bold (1924).

Many years later, when Benton's second wife, Katrina, and daughter Caroline sorted through his personal papers, they found a 1943 Inland Printer article about a legibility type developed by the Stanley Morison for The London Times, called The Times New Roman. The article claimed that over 5,000 matrices had been rejected before the type was approved.⁴³ Apparently Benton remained intrigued by legibility studies and the quest for the 'perfect type.'

Cheltenham, 1904

Although Benton's name is always associated with the great Cheltenham family, he did not in fact design the original Cheltenham type.

Bertram Grosvenor Goodhue was an architect interested in the graphic arts. He was noted for his designs of St. Thomas Church in New York, the Nebraska State Capitol, and some buildings at the U.S. Military Academy at West Point. Goodhue also cut the Merrymount type

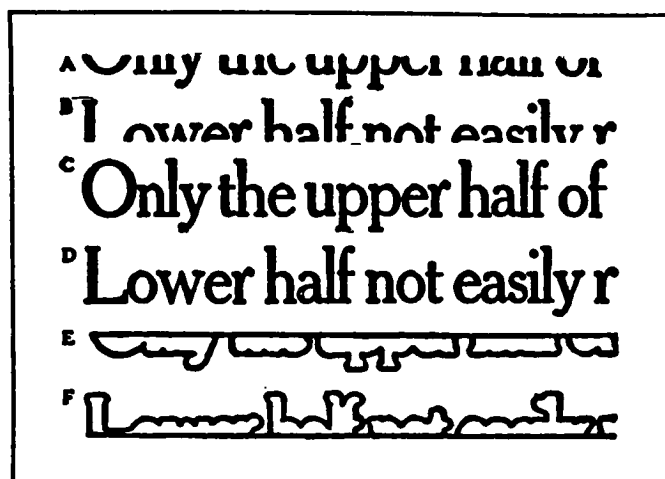


Figure 34. The importance to legibility of the upper half of lower-case letters. (*Type Lore*, page 93.)

Extinguished

48 Point 4 A 8 a

CONSPIRED

Make Rejection

42 Point 5 A 8 a

SELECT MINE

Drop Experiments

Figure 35. ATF's Cheltenham.

for D.B. Updike's Merrymount Press. Goodhue first met Ingalls Kimball when they both worked on the production of Stone and Kimball's Chap Book, first published in Boston in 1894. Years later, Kimball, then owner of the Cheltenham Press in New York, commissioned Goodhue to design a type exclusively for his press.

Goodhue intended to create a book type which would also be very legible. Realizing that the upper half of a letter is most important for recognizing that letter, Goodhue designed a type with lengthened ascenders and shortened descenders. Frazier explains: "Reading is a matter of recognizing word forms rather than of spelling out the letters that go to make up the words. In Cheltenham the long ascenders accent the word forms, which accounts for its very good legibility."⁴⁴ Figure 34 illustrates this. Notice that line B can easily be read, whereas line A cannot.

By the time Goodhue's drawings were completed, Kimball decided not to hold them exclusively for the use of his press, and sold the design to the Mergenthaler firm. But he retained the rights to the foundry version of the type, which he sold to ATF in 1902.

Thus Morris Benton found the drawings for Cheltenham type on his desk one day. Some sources list the work of steering Goodhue's drawings through production as Benton's first type designing assignment.⁴⁵ In any case, "someone, probably Benton, did considerable modification of the original drawings before the design was ready for use."⁴⁶

Cheltenham is a compact type, with a condensed lower case and a short x-height. (See Figure 35.) The type's condensed shape permits it to fit closely, thus allowing more copy to be set in a given space than

most types. And the combination of short descenders and long ascenders enables the type to be set solid. "This feature allowed for economic composition, since leading could be dispensed with, even in longer than average lines."⁴⁷ The Linotype Bulletin stated that the number of words per thousand ems could be increased by almost almost one-fifth with Cheltenham.⁴⁸ (The type was actually first cut for the Linotype machine.)

Cheltenham's legibility made it a natural for advertisements. When Benton expanded the face into a family, its sales increased dramatically. It never became as popular for straight-matter composition, as Goodhue had hoped, but it did become one of the first great advertising types. "Up to the time that Cheltenham was created there was really no [strict] advertising type. It is true that a number of types were used effectively in advertising composition, but these types lacked the variety [of sizes and weights] needed in advertising work."⁴⁹

The great popularity of Cheltenham was actually a result of this family treatment of the original design. While earlier types such as De Vinne and Philadelphia Lining Gothic had been made into families, "it was with Cheltenham that the theory really blossomed."⁵⁰ Benton has to be given sole credit for the 27 Cheltenham variations that he had designed by 1915.

ATF came out with its first version of Cheltenham in 1902, and Benton's first variant, Cheltenham Bold, was introduced in 1904. It soon became "a veritable goldmine for the foundry There was not a printing office in the land which didn't proudly accommodate one or more fonts of "Chelt," as it was more fondly described by the comps who were

vaguely uncomfortable with the true British connotation of the full name."⁵¹

The parent design was named Cheltenham Oldstyle, for which Morris Benton is not given credit in lists of his types.⁵² But his variations had "much greater popularity and sales than the parent design."⁵³ Benton's Cheltenhams included: bold, bold italic, bold condensed, bold condensed italic, bold extended, bold extra condensed, bold extra condensed title, bold outline, bold shaded, bold italic shaded, extrabold, extrabold shaded, inline, inline extended, inline extra condensed, medium, medium italic, medium condensed, medium expanded, odlstyle condensed, and wide. At least five of Benton's Cheltenham variations were abandoned: bold black outline, bold condensed shaded, bold initials, monotone, and rimmed.

Everyone wanted Cheltenham. "Something new and decidedly different, Cheltenham took hold with a grip. Its selection amounted to a rage; the universal order, seemingly, was 'When in doubt, use Cheltenham,' ..." ⁵⁴ Linotype brought out ten variants starting in 1904, and Monotype followed with 15. Ludlow produced 13, and the Intertype company cut a dozen variations under the name Cheltonian. And American typefoundries outside the ATF merger also copied the face, the Inland Foundry calling it Kenilworth, and the Western Foundry, Chesterfield. Cheltenham even became internationally popular: "Steve Watts loved to tell of a version he found in a Japanese specimen book called Chentury Bold."⁵⁵

As early as 1915, Benjamin Duffield wrote in The American Bulletin, ATF's advertising periodical:

One cannot have too much or too great an assortment of this ideal letter. A font or so will prove but to create a desire for more, more, until its beauty and utility are convincingly recognized, then will come the wonder why one held aloof so long, and a general 'stocking up' ensues.⁵⁶

Perhaps the face was overused, because it began to lose popularity in the 1920s. Goudy Bold, introduced in 1917, greatly slowed up the sales of the type for a few years,⁵⁷ and from about 1928 to 1941, "Chelt was a black sheep."⁵⁸ Douglas McMurtrie went so far as to say that "The appearance of most magazine and commercial printing will be improved by the simple expedient of denying any variants of the Cheltenham design to compositors."⁵⁹

But Cheltenham has nevertheless become a basic American design, "which has gone through perennial revivals without ever really being dead."⁶⁰ It has been called "the best known type to be designed in the United States." Although some typographers still feel it is old-hat, "Cheltenham continues its long and happy existence as a valuable marketplace type."⁶¹

Certain individual characters of Cheltenham have been criticized, especially the capital A and G, the a, and the final trilled r.⁶² Stanley Hlasta felt that the type was a tricky one to work with, and that an improper layout would cause an advertisement set in Chelt to appear lifeless. In 1950 he wrote that an "effective use of Cheltenham must include a consideration of the weight of the face, the point size to be used, and the arrangement of the words in a line."⁶³ However, Hlasta also called Cheltenham the most widely known pure American typeface, and very popular for newspaper advertising.

possem dicere. Porro cū duæ sint cōsuetudines quæ uirtuti subiciunt: alia q̄dem quid quodq; entiū sit īspicit: alia uero quid uocetur: atq; in hunc modū de rōali philosophiæ pte differunt. Enimuero moralē philosophiæ ptē ī subiectos diuidunt locos: uidelicet de appetitione: de bonis & malis: de pturbationibus: de uirtute: de fine: deq; prima extimatōne: & de actibus ac de officiis: de adhortationibus & hortationibus: in hunc autem modū subdistingūt Chrysippus archedemus Zeno tarsensis Apollodorus Diogenes Antipater & Possidonius. Nā cittieus Zeno & cleantes ut antiquiores simplicius ita tractarunt. At hi & rōnalē naturalemq; philosophiæ ptē diuiserunt. Primā autē hanc aīantis appetitionē fuisse dicunt seipsum tuendi atq; seruandi: natura sibi ipsū ab initio ita cōciliāte: ut chrysippus ait ī priō de finibus: primū pprium cuiq; aīanti dicēs sui ipsius fuisse cōmendationē huiusq; notionē. Neq; enī fas erat aīal ipsum uel ab se alienū fieri: uel oīo id fieri: uel non sibi maxie ppī quū fieri. Restat ut dicamus hanc ipsum sibi maxia concordia & caritate deuīxisse. Ita enī & noxia propellit: & quæ ad sui constantiā sunt utilia suscipit. Quod autē dicunt quidā primā appetitionē animātibus ad uoluptatē fieri falsum pfecto est. Accessionē enim dicunt si quid sit uoluptatē esse: cū ipsam p se natura inq̄sierit: & quæ cōmendatōi suæ sūt accomodata pcepit: quēadmodū exhilarescunt aīalia uirescuntq; arbores: Nihilq; aiunt differt natura in arboribus & aīalibus quādo de illis absq; motu uoluntatis ac sēsu disponit: & in nobis quādā eadē ratōe fiunt. Cū uero ex superfluo appetitio animantibus accesserit: qua uteutes pagant quæ sua sunt: in eis quidē naturali cōstātia appetitionē illā disponi. Cæterū cū rōalibus pfectiore præcepto data sit rō secundū eā uiuere. s. recte fieri his quæ secundū naturā sūt ea qppe artifex accidit moderatrixq; appetitōis. Quocirca primus Zeno in libro de natura hoīs finē ait cōsentaneē secundū naturā uiuere. Id autē est secundū uirtutem uiuere.

Figure 36. Laertius: *Lives of the Philosophers*, printed by Nicolas Jenson in Italy, 1475

Cloister Oldstyle, 1913

Nicolas Jenson, a 15th century mintmaster and engraver who later became a printer and type designer in Venice, designed a roman type in 1470 to print his famous Eusebius. He cut and cast the type in only one size, about 16 point. (See Figure 36.) Jenson was influenced by the early Roman inscriptions on buildings in Italy, where he worked, and by the Caroline scripts of the scribes. "In the preparation of his type Jenson is said to have cut but one set of punches, the cutting being so well accomplished that he concluded no changes were necessary."⁶⁴ Jenson's type has been acclaimed by many type designers as one of the most beautiful ever cut. Jenson has been called "the world's first great type designer, perhaps the greatest in all typographical history."⁶⁵

Jenson's type probably became the source of William Morris's first typeface, the Golden type. In the 1890s, Morris had enlarged photographs of Jenson's type, and "arranged the details to conform to his own ideas."⁶⁶ Morris's type was much heavier than Jenson's letter, and lacked the subtle grace of the Roman stone inscriptions. But "though full of faults, stiff, ungraceful and not easy to read--defects excusable in a beginner in type design--the Golden types had a tremendous influence in bringing typefounders and printers to a knowledge of how far they had departed from 'this perfected Roman type' of Jenson."⁶⁷

The Golden type was a great departure from the weak book types of the late 19th century, and in fact started a typographic trend. It was copied in the United States under such names as Jenson, Lining Jenson, Ancient Roman, and Kelmscott. Al Lawson felt that "the commercial

cuttings which followed the Morris revival, such as Jenson Oldstyle, were ugly types."⁶⁸ In any event, "the use of the style became so widespread that, despite its superiority over the thin modern styles that started William Morris on his reformation, the public soon tired of it."⁶⁹

When Morris Benton began research for an ATF version of Morris's type, he did not turn to the Golden type, but went back to Jenson's original letter. Benton had been a long-time admirer of Jenson, and found the work "a labor of love."⁷⁰ It was Henry Lewis Bullen who suggested to Morris Benton that he revive the Jenson type.⁷¹

"Through my initiative," Bullen wrote, "the printers are enjoying the use of the Cloister Old Style series"⁷²

Benton's preparatory research was exhaustive, as discussed in Chapter 4. He read and studied every piece of literature of the period he could find, and tried to put himself in Jenson's place by visualizing the conditions under which he had worked. He based his work on the types Jenson designed and cast for his Eusebius.⁷³ While he was designing what would be called Cloister Oldstyle, Benton "gave full and untrammelled expression to the artistic side of his nature."⁷⁴ The result was his favorite type, a face "having many of the recognizable features of the Jenson letter but none of the oddities of the Golden type,"⁷⁵

ATF announced Cloister Oldstyle in 1913 or 1914, and the response was overwhelming. Here at last was a truly Jensonian type,⁷⁶ which captured the beauty and grace of the 15th century face. The type was hailed as "a first breakthrough in the availability of new typefaces

Cloister Oldstyle

72 Point 3 A 5 a 5 fig 1

Completion

60 Point 3 A 7 a 4 fig 1

Gray Samples

48 Point 4 A 8 a 4 fig 1

Employed Friend

42 Point 4 A 9 a 5 fig 1

MODEL GOWN
Delightfully Stylish

36 Point 5 A 10 a 6 fig 1

IMPORTED GOLD
Rapidly Accomplished

30 Point 6 A 12 a 7 fig 1

GOVERNMENT BIDS
Begin Large Developments

Figure 37. Morris Benton's Cloister Oldstyle.

based on historic originals"⁷⁷ Cloister Oldstyle was praised by typographers all over the country.

"Of the productions of the American Type Founders Company in later years none can compare with the Cloister Oldstyle," wrote Harry Hillman, editor of The Inland Printer, in 1927. "It ... is without doubt one of the three most popular type faces available today. With this type face a typographer worthy of his salt may build type forms of exceeding beauty and dignity."⁷⁸

J.L. Frazier agreed: "The genius of its designer, Morris Benton, is reflected in every detail of this handsomest of Venetian faces. Smoother, more graceful and more stylish by far than the Golden type, the movement from the stiff, mechanical style toward interesting and legible forms is admirably represented by Cloister."⁷⁹ And A. Raymond Hopper included Cloister Oldstyle in his 1944 dissertation on 'enduring' typefaces, stating, "It took Morris Benton of the American Type Founders, centuries after Jenson's day, to reveal the true charm of the original in his still popular--and probably always popular -- Cloister Oldstyle, ..." ⁸⁰

Benton's Cloister Oldstyle retained many of the details of Jenson's Eusebius type, for example, the diagonal stroke of the 'e,' the leftward inclination of the lowercase 'o' and capital 'O,' and the further extension of the serifs to the right rather than to the left. (See Figure 37.)⁸¹ In the capital A, this last characteristic is modified so that the longer extension of the serifs go to the inside of the letter. The ascenders and descenders are unusually long, but because the letters are rounded they are still very legible. The ascenders of

the lower case rise above the capitals, which are rather wide, and the lower case itself rather close-fitting. There is a slight variation between thick and thin strokes.

The Cloister family grew to include 11 members. By 1924, Benton had designed the following Cloister Oldstyle variations: italic, bold, bold italic, bold condensed, bold title, cursive, cursive handtooled, lightface, lightface italic, and title. Cloister Oldstyle Italic was actually based on the italic cast by Aldus Manutius in 1501, since italics were unknown in Jenson's day. In designing the italic, Benton did not follow Aldus's italic as closely as he had followed Jenson's roman, but simply used the Aldine letter as a starting point.

Stanley Hlasta claims that Morris Benton, perfectionist that he was, wanted to be sure that a printer's use of different kinds of paper wouldn't distort Cloister Oldstyle's beauty, so he designed two versions or weights. Cloister Lightface, 1924, was intended for use on soft, antique papers which tend to thicken the face and make it appear more like Jenson's. Cloister Oldstyle, 1913, was slightly heavier, for use on the hard finishes of modern papers, so different from the papers used in Jenson's day.⁸² Steve Watts called Cloister Lightface "the finest body letter ever cast, but sales of the type hardly paid for cutting the matrices."⁸³

Benton's Cloister Oldstyle was copied by Intertype, Ludlow and Monotype.

Cloister Black

72 Point 3 A 5 a

Noted Judge

60 Point 3 A 6 a

War Reported

48 Point 4 A 7 a

Delightful Evening

42 Point 4 A 8 a

Enterprising Neighbor

36 Point 4 A 9 a

Pledge Improved Quality

30 Point 5 A 11 a

Bought Newly Completed Home
Landscaped Gardens

Figure 38. Morris Benton's Cloister Black.

48 Point 4A 10a
Gold Rings

42 Point 4A 11a
Silk Hosiery

36 Point 4A 13a
Diamond
Brightest Star

30 Point 5A 15a
Enterprising
Regular Diplomat

24 Point No. 1 6A 18a
Advertisement
Grand Entertainers

24 Point No. 2 7A 19a
Announcement
Big Social Gathering

18 Point No. 1 9A 30a
Reproduction
Finest Steel Engraving

18 Point No. 2 10A 30a
Lace Embroidery
Excellent Wearing Apparel

14 Point 13A 40a
Graduation Exercises
Delightful Musical Program

Figure 39. Morris Benton's Wedding Text.

Cloister Black, 1904

Benton's famous blackletter face should not be confused with Cloister Oldstyle. Blackletter type was the first type adapted from manuscript handwriting in the 15th century, very different from Jenson's roman letter. (See Figure 38.)

The actual design for Cloister Black was conceived by Joseph W. Phinney of ATF's Boston foundry. But Morris Benton must have done most of the work on the type, because its November 15, 1904 patent lists Benton as the type's 'inventor.'⁸⁴ It was introduced before the patent date, and in fact used the same lowercase as Flemish Black, patented at the same time.⁸⁵ Cloister Black, however, remains one of the most popular versions of blackletter type in America.⁸⁶

Wedding Text, about 1901

Benton's Wedding Text is another blackletter face. (See Figure 39.) This type became, and still is, popular for printing wedding invitations, although some typographers feel the type is overrated. "For far too many years the principal type style for social printing was Wedding Text," Al Lawson and Archibald Provan stated in their 100 Type Histories. "Admittedly more appropriate for funeral notices, Wedding Text was nevertheless the prime type for many years."⁸⁷ Benton designed one variant, Wedding Text Shaded, in 1913 or 1916.

Bodoni, 1909

Giambattista Bodoni was born in Italy in 1740, and became "a master of the art of printing and a great and prolific type designer."⁸⁸ By

72 Point 3A 4a

Sight GUN

60 Point 3A 5a

HIRE Guard

48 Point 5A 8a

BRIGHT KING
is ruler of nation

42 Point 5A 9a

QUICK RETURN
emigrants delayed

36 Point 5A 10a

DESIGNS MUSEUM
graceful architecture

30 Point 6A 11a

ELIGIBLE BACHELOR

Figure 40. Morris Benton's Bodoni.

1788, he had cut a large number of fonts, which gradually assumed the modern appearance for which he became known. His roman types have exceptionally long ascenders and descenders. His fine lines were very thin, the heavier strokes were thick, and the serifs were perfectly horizontal. His types became so popular that they were copied extensively. But these copies did not do justice to the originals: "With a very few exceptions, most of the so-called 'Bodonis' are libelous versions which perpetuate the name but not the designer's skills."⁸⁹

Morris Benton revived the type. (See Figure 40.) Bodoni "suffered much of an eclipse because of rank abortions and abuses," wrote A. Raymond Hopper in 1944, "until the American Type Founders brought it to public notice again in 1911 with Morris Benton's brilliant series, at present much adored and popular with most printers."⁹⁰ Most other sources give 1909 as the date of Benton's design work on Bodoni.

Although some historians have given Cloister Oldstyle the credit for being the first 'revival' of a classic typeface (see above), the ATF Bodoni was actually "the first successful revival of the Italian masters' type to be manufactured in this country."⁹¹

Morris Benton spent three years studying the Bodoni type models in ATF's typographic library before ATF issued a type specimen.⁹² In a 1927 letter to Kent D. Currie, Henry Lewis Bullen wrote:

[Benton's] preliminary studies disclosed the fact that Bodoni had made as many as 18 variations of his roman type design, the group forming an entirely new division of type design which we now call 'modern' to distinguish the new divisions from the earlier romans which we now call 'Old Style.' These variations compelled Mr. Benton to either select one of Bodoni's renderings of his idea or to effect a compromise. A compromise was made, which resulted in the

completion in February, 1910, of our Bodoni series, roman and italic. This is a free interpretation of Bodoni's basic idea, but in no sense a copy. For the purpose of present day printers it is, in the opinion of the writer, an improvement⁹³ on Bodoni's own cutting, especially in the italics.

In 1923, Bullen had claimed that Morris Benton and the ATF Company were the "originators of the Bodoni type family," and accused the composing machine manufacturers of copying it. "The advertisers, now beginning to create their own designs, will understand how unpleasant it is to find one's design property, developed at a cost of thousands of dollars, copied so closely that the types fit into the originator's matrices with absolute precision."⁹⁴

Being an employee of the first American typefoundry to revive the face, Bullen's argument is somewhat understandable. The Bodoni types were copied extensively, and again, the credit for the revival did not appear to fall on Morris Benton's shoulders.

Not one to be upset with a lack of publicity, Benton worked on developing the original face into a family. At first he concentrated on the typical variations: italic, bold, and bold italic. But over the years, Benton came back to the face again and again, and designed such variants as Card Bodoni and Card Bodoni Bold; Bodoni Book, Bodoni Book Italic, and Bodoni Book Expanded (later abandoned); Engraver's Bodoni and Engraver's Bodoni Open (abandoned); Bodoni Open; Bodoni Bold Shaded; Bodoni Shaded Initials; Bodoni Bold Condensed (abandoned); and the Ultra Bodoni mini-family, including Ultra Bodoni, Ultra Bodoni Italic, Ultra Bodoni Condensed, and Ultra Bodoni Extra Condensed. By 1933 the extended family included 15 viable members and 3 which had been abandoned.

The first Bodoni that Benton drew appears somewhat mechanical. The long ascenders and descenders, great contrast between thicks and thins, and flat serifs give it a distinction that is easily recognizable. And Bodoni is very readable. "It is an aggressive face and unusually brilliant when printed on smooth, hard-finish stock."⁹⁵

Benton's family treatment of the original Bodoni made it ideal for newspaper headlines and magazine ads, and it soon became a very popular face. Bodoni consistently headed the list of faces in The Inland Printer's "Typographic Scoreboard," and the magazine even published a five-page article in 1939 quoting contemporary typographers on their reasons for the type's success.⁹⁶ William A. Dwiggins rated Bodoni a 75% as compared with his ideal type, ATF Caslon No. 471. And J.L. Frazier wrote, "Bodoni suggests cleanliness—yes, even the 'hard' aspect found in hospital wards. ... On the whole it appears to be wearing a stiff collar and looks best in precise surroundings."⁹⁷

Clearface, 1907

The Clearface design came as a result of more than seven years of study by both Bentons. This family was another attempt at a legibility type, as Henry Lewis Bullen explained in the American Bulletin for July 1910:

The intention of the designer is to adapt the characters, singly and when assembled in words and lines, to the necessities of normal eyesight in a design agreeable to the senses of form and color. A glance at the smaller sizes (where the test is most severe) shows Clearface to be extremely optical, ... favorable to vision, legible without strain to the optic nerves.⁹⁸

Bullen goes on to explain how the top curves of many lowercase letters are varied to distinguish them, and how the openings or white spaces at

b d f k m n p q r u

Figure 41. Clearface: enlarged openings or white spaces at junctions of perpendicular or curved lines.

Clearface Series

72 Point 3 A 4 a

Mold

60 Point 3 A 5 a

Sleigh

48 Point 4 A 7 a

DRUM

Explain

42 Point 5 A 8 a

NURSE

Rejected

24 Point 7 A 12 a

REMINDE

Journalize

10 Point 19 A 38 a

FINE ARGUMENT

Nearly all merchants

who advertise display

real business acumen

Characters in Complete Font

A	B	C	D	E	F	G
H	I	J	K	L	M	N
O	P	Q	R	S	T	U
V	W	X	Y	Z	&	\$
1	2	3	4	5	6	7
8	9	0	a	b	c	d
e	f	g	h	i	j	k
l	m	n	o	p	q	r
s	t	u	v	w	x	y
z	.	,	-	'	:	;
!	?					

The following characters are furnished with all
fonts from 5 point to 36 Point inclusive

ff fi fl ffi ffl

Figure 42. Morris Benton's Clearface.

the junctions of curved and perpendicular lines are magnified by deflections of the lines. (See Figure 41.) Notice the lower end of the perpendicular line in the d, which exemplifies the deflection best.

The first four members of the Clearface family were designed from 1905-1908 by Morris Benton with his father's collaboration. These included the parent Clearface (see Figure 42), and the italic, bold, and bold italic. Later, Morris Benton expanded the family with Clearface Gothic, Clearface Heavy, and Clearface Heavy Italic.⁹⁹

Clearface was an advertising letter. The bold version was first shown in an ATF catalog in 1909, and the family appeared as late as the 1923 specimen book. But the advent of sans-serif types overshadowed the family, and advertisers lost interest in Clearface.¹⁰⁰

Baskerville, 1915

John Baskerville was born in 1706 in England, and only began experimenting with type and printing in 1750. He designed the type for his first book, published in 1757, and by 1762 his specimen sheets showed "eight kinds of roman and six sizes of italic."¹⁰¹

His design was copied by an English foundry in Bristol, Joseph Fry & Sons, which had been established in 1764. Joseph's son Edward cut a series of letters resembling Baskerville's type for the British typefoundry of Stephenson, Blake and Company in about 1768 and called it Baskerville Old Face. This is the type which became the source for Benton's Baskerville revival in 1914. ATF's Baskerville Italic was cut in 1916, "with a few fancy capitals added."¹⁰²

Fry's Baskerville was actually a display face, and as such was not

72 Point 3 A 4 s
Kid Belt

60 Point 3 A 5 s
Ranks Big

48 Point 4 A 6 s
Costly Metal

36 Point 4 A 8 s
PROFESSIONS
mysterious nights

30 Point 5 A 9 s
SAIL ARRANGED
new reports produced

24 Point 9 A 16 s
IMPORTS FINE JEWELS
charming royal pendant secured

Figure 43. Morris Benton's Baskerville.

cut in the smaller sizes. But when ATF brought out the face it was available in the full range of sizes, although most type shops only bought the display sizes. (See Figure 43.)

The Baskerville types are graceful, open and clear. The characters are rounded and wide, but somewhat thin, and therefore do not stand much abuse in hot metal form. "The hair-line elements and sharp-pointed serifs are more easily nicked than those of Caslon type, with which the uninitiated might readily confuse it, although it is a rounder, fuller face."¹⁰³

The Benton revival of Fry's Baskerville did not catch on until about 40 years after ATF brought it out, when national advertisers 'found' the ATF Baskerville and used it in several advertising campaigns.¹⁰⁴

Benton was the first to revive this type, thus setting the stage for the other foundries and composing machine manufacturers. The demand for foundry Baskerville did not noticeably diminish until about 1948,¹⁰⁵ but it remains a staple of ATF's dwindling inventory.

Garamond, 1917

Some time between 1914 and 1917, Morris Benton began work on another classic face, an adaptation of the types known as Caracteres de l'Universite. It was Henry Lewis Bullen who urged that this type be revived.¹⁰⁶ The punches and matrices for these types had been discovered in 1845 at the Imprimerie Nationale at Paris, and after type was cast from them, they were eventually (and erroneously) identified as a design of Claude Garamond's.¹⁰⁷

72 Point 3 A 5 a 5 fig 1
Rigid Frame

60 Point 4 A 7 a 3 fig 1
Dirt Highways

48 Point 4 A 7 a 4 fig 1
Startling Eruption

42 Point 4 A 8 a 5 fig 1
Modernized Systems

36 Point 5 A 10 a 6 fig 1
INSPIRED ARTISAN
manufactures big clocks

Figure 44. Morris Benton's Garamond.

Garamond was born in about 1500 in France, and became one of the first independent type designers. He modified the letters of Jenson and Griffo, Aldus Manutius's punchcutter. It is generally agreed that Garamond cut types for Geoffroy Tory, and at one time worked as type-founder in the office of Simone de Colines. Christopher Plantin also Garamond's types for his famous polyglot Bible. Some time in the mid 1500s, Garamond established his own type foundry, "the first in the world, by the way, which was not an adjunct of a printing plant."¹⁰⁸ After his death, Garamond's typefaces and matrices were acquired by other typefounders, and they found their way into the Imprimerie Nationale.

When Benton designed his Garamond type (Figure 44), he shortened the descenders of the type he imitated, increasing their legibility but also making leading a necessity. The ATF revival was light and clean, with just a slight variation between thick and thin letter strokes. It showed an altered tail on the Q, and also changed the italic k and w, which had been rather exotic in the original version.¹⁰⁹

Benton's typeface was introduced in 1919, and became "the standard for Garamond in the United States."¹¹⁰ By 1923 he had designed five members of the Garamond family: the original Garamond, Garamond, and an italic, bold, bold italic, and open letter. In 1922, T.M. Cleland added some characters to ATF's Garamond Italic, so this face was actually a collaboration. And Henry Lewis Bullen noted in a 1923 article that Bruce Rogers was also responsible for revising the face.¹¹¹

Garamond quickly became a popular face, and has remained so to this day. Writing of the ATF Garamond in 1950, Stanley Hlasta claimed that

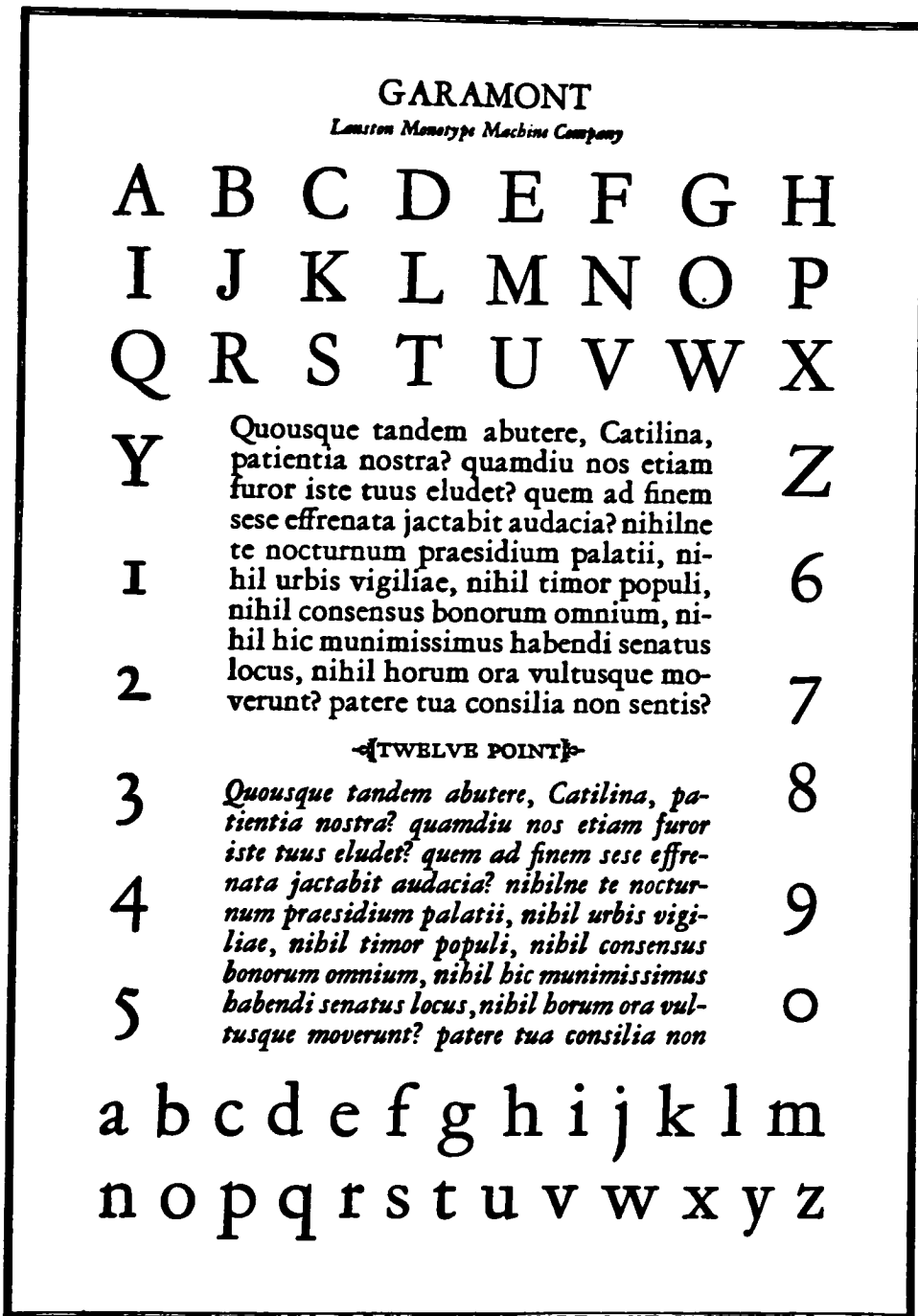


Figure 45. Frederic W. Goudy's Garamont.

"Insofar as advertising faces are concerned, it is sufficient to say that this type is the pick of the crop for a versatile display face which may be used for most products."¹¹²

In the Garamond revival, Benton had once again started a trend. By 1921, Frederic Goudy had completed a 'Garamont' type for Lanston Monotype, also based on the Caracteres de l'Universite. (See Figure 45.) And the English Monotype company introduced its interpretation in 1924.

Henry Lewis Bullen was eager to have type critics compare Goudy's Garamont with Benton's Garamond, both modeled on the same original letter. Of course, Bullen favored Benton's work, but he allowed some other opinions in an Inland Printer article he wrote in 1923. "Mr. [William A.] Kittredge says that Mr. Goudy's Garamond [sic] is better than Mr. Benton's Garamond," Bullen later points out in the article that, no matter whose type would win this 'contest,' the ATF face had been in production 60 months before Goudy "decided to give his company a substitute"¹¹³, and thus ATF had started the Garamond craze.

In 1926, an article by Paul Beaujon (Beatrice Warde) in the Fleurion established the fact that the Caracteres de l'Universite were not Garamond types, but were the work of Jean Jannon, a Paris printer in the early 1600s. Jannon had been using Garamond types, but when he moved to Sedan in 1610, "he was unable to buy the needed types for his new undertaking, so set out to create his own. The results [were] undoubtedly influenced by Garamond."¹¹⁴

The news that ATF's Garamond types were actually based on the types

of Jean Jannon did not adversely affect sales. The type was so popular, in fact, that Intertype duplicated it in 1927, Mergenthaler Linotype in 1936, and Lanston Monotype in 1938. Other designers went back to faces actually designed by Claude Garamond. In 1924, for example, Linotype & Machinery of London came out with a type based on Garamond's original work, designed by George W. Jones, called Granjon (one of Garamond's contemporaries).¹¹⁵ Many other Garamond designs were also produced over the next several years.

Beatrice Warde had this to say about Benton's original revival of the face:

The design was copied in America after the war, but something was lost in the copying, naturally, and one might say fortunately; for 'Garamond' emerged from Jersey City, N.J., U.S.A., with a chastened expression on its Gallic face, and began to look, in this soberer version, like a real book type.¹¹⁶

Bulmer, 1926

This type was originally designed by William Martin in about 1790 for the English printer William Bulmer to use in an edition of Shakespeare being printed at his 'Shakespeare Printing Office.' Martin may have learned punchcutting in Baskerville's foundry in Birmingham, for his brother Robert was the foreman of the printing office there.¹¹⁷

Martin's design seemed to 'bridge the gap' between Baskerville and Bodoni types. It was more condensed and contrasty than the former, but less mechanical than the latter. "Bulmer was a regular face having few peculiarities."¹¹⁸ The ascenders and descenders are long, the lowercase g leans to the left, and the capital R has a curved tail.

In 1926, when Henry Lewis Bullen suggested that Martin's type

48 Point 6 A 10 a

REFRESHED
splendid plane

42 Point 6 A 11 a

QUIET FIELDS
delightful groves

36 Point 6 A 11 a

MUSIC STUDIOS
prosperous players

30 Point 8 A 14 a

ROMANTIC OPERA
unique camping places

24 Point 9 A 17 a

WHISPERING ZEPHYRS
islands especially interesting

Figure 46. Morris Benton's Bulmer.

Goudy Bold

120 Point 3 A 4 a
HE is

96 Point 3 A 4 a
dry IT

84 Point 3 A 4 a
NO hat

72 Point 3 A 4 a
try SILK

60 Point 3 A 5 a
BUY dress

48 Point 4 A 8 a
heated CABS

Figure 47. Morris Benton's Goudy Bold.

become one of ATF's classic revivals, Morris Benton agreed.¹¹⁹

Benton studied the books of Bulmer's press, and decided to name the type after the printer rather than the punchcutter.

In 1928, ATF issued Bulmer Roman (Figure 46), which "met with immediate acclaim."¹²⁰ Bulmer Italic soon followed. Although the family consisted of only these two variants, the type is "greatly admired by modern printers, and stands as one of Benton's most popular revivals."¹²¹ Bulmer Roman and Italic have rated "among the most distinguished text faces in use today."¹²²

Bulmer became popular as a display type, and so was made available for machine casting on the Monotype, and for line casting in 1953 by Intertype. Later, the type was converted to film for the Fotosetter and the Fototronic, and was produced for other early phototypesetting devices.

Goudy Bold, 1918

The story of this type (see Figure 47) and the nine-member family to which it belongs is given in Chapter 5. As late as 1983, Al Lawson and Archibald Provan could write that Benton's Goudy Bold was "by far the most widely used of the series, and remains in daily use 65 years after its introduction."¹²³

Broadway, 1926

In the late 1920s, American typography went through a radical change. It was the 'Jazz Age,' a time of excess, and wild display types were all the rage. The types were geometric, lacked symmetry, and for the most

BROADWAY

72 Point 3A

SHO

60 Point 3A

KIND

48 Point 3A

GRANT

42 Point 4A

DELUSIO

36 Point 5A

NICE PERS

30 Point 6A

ELECTROTY

24 Point 8A

MODEST REPO

CHARACTERS IN COMPLETE FONT

A B C D**E F G H****I J K L****M N O P****Q R S S****ss T U V****W X Y Z****& \$ 1 2****3 4 5 6****7 8 9 0****. , - ' ,****: ; ! ?**

14 Point 13A

**UNCOVERED
HISTORICAL**

12 Point 14A

**INVESTIGATED
LITTLE HOMES**

10 Point 17A

**POPULAR YOUTH
SUPERIOR GUIDE**

Figure 48. Morris Benton's Broadway.

part, were sans serif.

"This period was one of great confusion from the standpoint of typographic design," Al Lawson explained. The German Bauhaus school of design was slowly being imported to this country, and the first attempts of American modernism were simply copies of the European models. The typographic results of the Bauhaus experiments were sans serif types. But before the new way of thinking was fully assimilated into this culture, a profusion of bad types were introduced. As Lawson states, "A glance at the period 1929-31 will indicate that advertisers believed the hard sell could be accomplished only with the combined use of bad types and bad design."¹²⁴

It was in this frame of reference that Morris Benton brought out several of his 'commercial' display types. The best of these was Broadway, which has been called the most representative type of the era.

ATF issued Broadway in 1928, first as a font with capitals only, and later as a condensed variant with lowercase added. (See Figure 48.) Two other Broadways, Numbers 2 and 3, were abandoned. Soon after its introduction, Broadway was copied for Monotype, and Sol Hess designed a lowercase for the normal weight version. Oz Cooper, the designer famous for his Cooper Black type, incorporated Broadway into a similar type, Boul Mich, and Monotype in turn copied this in its Broadway Engraved. The Bauer Typefoundry's 1929 Futura also had its roots in Benton's type: Futura has been called a stencil version of Broadway.

But Broadway itself was the longest-lived of the host of other commercial types that were brought out during the same time. It is used today to evoke the Roaring Twenties. "Whenever a publication referring

Hobo

48 Point 3 A 5 a

**SPORTING
37 Athletes**

36 Point 4 A 6 a

**SWEET MUSIC
Dance Acrobat**

24 Point 6 A 11 a

**48 NOTABLE CRITICS
Enjoy Radio Programs**

18 Point 9 A 18 a

**FRAGRANT LILAC PERFUME
Gayly Decorated Auditoriums**

14 Point 12 A 23 a

**PRINT SOCIAL ANNOUNCEMENTS
Excellent Letter for Society Printing**


Figure 49. Morris Benton's Hobo.

Studies on Modern Painters:

THE PAINTING OF THE NINETEENTH CENTURY

I

M O N T I C E L L I

 CLEARLY marked off from those painters to whom paint has been no more than a difficult, never really loved or accepted, medium for the translation of dreams or ideas into visible form, yet not without some of their desire of the impossible in paint, Monticelli seems to combine several of the tendencies of modern painting, in a contradiction all his own. I confess that he interests me more than many better painters. He tries to do a thing wholly his own, and is led into one of those confusing and interesting attempts to make one form of art do the work of another form of art as well as its own, which are so characteristic of our century, and which appeal, with so much illegitimate charm, to most of the speculative minds.

To Monticelli colour is a mood; or is it that he is so much a painter that mood to him is colour? Faust and Margaret, or a vase of flowers on a table, or a woman feeding chickens, or a conversation in a park, or a cottage interior, it is as much the same to him as one title or another is the same to a musician. The mood of his own soul, or the fiery idea at the heart of these mere reds and greens and yellows: that is his aim, and the form which offers itself to embody that desire is a somewhat unimportant accident to him. But since form is the language in which alone we can express thought or emotion so as to be under-

Set in Louvaine Light and Liberty Series Harlequins

ATF Co. Specimen Sheet.

Figure 50. Morris Benton's Louvaine.

to the Jazz Age appears, the chances are better than average that the display typography will feature Broadway."¹²⁵

Other Benton Commercial Types

Benton designed Hobo in 1910, and ATF introduced it in 1912, and patented it in 1915. (See Figure 49.) Hobo was one of the first of the "Gee whiz! Look at me" types, a radical departure from Benton's other early types and type revivals. He designed two variations of the face, Hobo Light and Hobo Shaded, but the latter type was abandoned.

Hobo first appeared in the 1912 ATF specimen book, and remained popular until the 1950s. The type has been called a failure by some,¹²⁶ continuing its itinerant way in the trade."¹²⁷

In the late 1920s, when the demand for such commercial types was at its highest, Benton produced three other designs in the same genre: Modernique, which closely resembled Broadway, and the freely-drawn Chic and Parisian. And in 1929, Benton developed the Louvaine family, with bold, bold italic, light, light italic, medium, and medium italic variants. (See Figure 50.)

Gothics

In the 19th century, European typefoundries began experimenting with letters without any serifs. "It was the most radical typographical innovation since the invention of moveable type itself."¹²⁸ The first typefoundry in the United States to bring out a similar letter was the Boston Type and Stereotype Foundry. In "a typical demonstration of American independence," the American foundry called the type gothic.

Globe Gothic

120 Point 8 A 4 a

Sit

96 Point 8 A 3 a

Isle

72 Point 8 A 4 a

Nick

60 Point 8 A 4 a

Spelt

48 Point 4 A 8 a

United

Characters in Complete Font													
A	B	C	D	E	F	G	H	I	J				
K	L	M	N	O	P	Q	R	S					
T	U	V	W	X	Y	Z	&	\$					
1	2	3	4	5	6	7	8	9	0				
a	b	c	d	e	f	g	h	i	j	k			
l	m	n	o	p	q	r	s	t	u				
v	w	x	y	z	.	,	-	'	:	;	!	?	

86 Point 5 A 9 a

RESIGN
Senator

30 Point 6 A 10 a

INJURED
Diplomat

24 Point 7 A 13 a

EMBARGO
Navigators

14 Point 14 A 28 a

HOME GARDENS
Chinese rosebush
bloom fading fast

12 Point 18 A 36 a

PUBLISH MAGAZINE
Noted editorial writer
financing corporation

10 Point 18 A 40 a

RECORDING MINUTES
Maine senators display
ingenuity in fine debate

Figure 51. Morris Benton's Globe Gothic.

True gothic letters were the original blackletter types of the very early days of printing. But the only similarity between the true gothic and these new sans serif types was their weight--they were bold and black. English typographers call the style simply 'sans serif,' and in Germany it is known as 'block.' But in this country, ever since the Boston foundry's decision, 19th century sans serifs have traditionally been called gothics. "Only the American name for the breed seems altogether unfit and inappropriate," J.L. Frazier wrote.¹²⁹

Morris Benton began a design program of gothics in 1900, when he drew Globe Gothic. (See Figure 51.) The 1923 ATF specimen book credits Benton with designing three other Globe Gothics in the same year--condensed, extra condensed, and extended versions. However, Steve Watts noted in a 1964 letter to Dr. James Eckman that Frederic Goudy had actually designed Globe Gothic Extended 176 in 1905.¹³⁰

In his A Half-Century of Type Design, Frederic Goudy claims to have designed Globe Gothic Bold,¹³¹ and the catalogue of the 1947 Donnelley exhibition repeats this statement. But again, Steve Watts claims that this is an error, and that Goudy's type was the aforementioned Globe Gothic Extended 176.¹³² In his book, Goudy makes no mention of the face he apparently did design. Because he was writing many years after the fact, it is very possible that Goudy was simply confused.

In any event, Benton went on to design Globe Gothic Bold and Globe Gothic Bold Italic in 1907 and 1908. But the face did not sell and did not appear in many later ATF specimen books.

Globe Gothic was only the first of the Benton gothic families to be



Figure 52. Morris Benton's Franklin Gothic.

Alternate Gothic No. 1

72 Point 3A 5a
Symbol

30 Point 9A 16a
DISCOMPOSE
Spendthrifts

12 Point 25A 50a
SECURITIES INVESTIGATED
Many stockholders rejoice
on completion of inventory
which proved encouraging

Alternate Gothic No. 3

72 Point 3A 4a
Maple

30 Point 7A 12a
SHARPEN
Captivate

12 Point 20A 40a
EXCELLENT REPORTS
Promising young man
gets highest average
in recent history test

News Gothic

72 Point 3A 4a
Right

18 Point 11A 22a
MENAGERIE
Big elephant
securely tied

10 Point 21A 42a
OBEY INSTRUCTION
Commanding officer
teaches recruits how
hospital tents should
be folded when down

Figure 53. Morris Benton's Alternate Gothic and News Gothic.

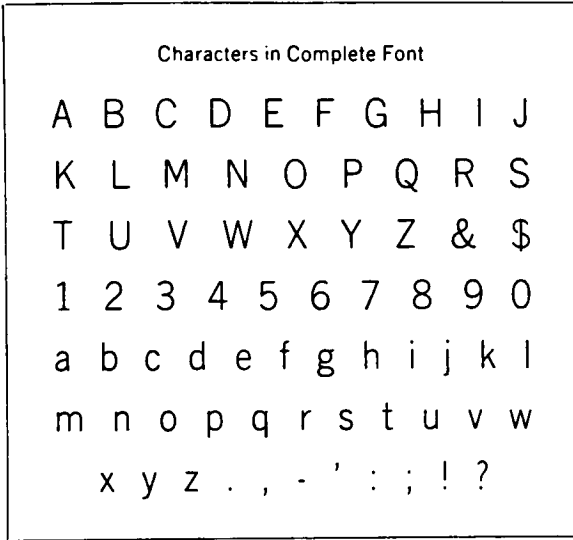
produced by ATF. His other early gothics became very popular in their time, and after a brief hiatus, became classics in the gothic style. Of his Alternate, Franklin and News Gothic types, Al Lawson had this to say: "In retrospect, Benton evinced a positive clairvoyance in producing types which, a half century later, are among the top current faces."¹³³

Benton's second sans serif face was Franklin Gothic, designed in 1902. (See Figure 52.) He made the type into a family during the next few years, with italic, condensed, condensed shaded, and extended versions, the latter of which was abandoned. Franklin Gothic and its first three variants were a success, and remained so for many years.

Mac McGrew writes in his American Metal Typefaces of the Twentieth Century (soon to be published) that Franklin Gothic "might well be called the patriarch of modern American gothics."¹³⁴ And a sales bulletin that was sent to ATF branches on June 30, 1953 stated that "Four Franklin Gothics are best sellers."¹³⁵

Franklin Gothic does have a slight degree of thick and thin contrast, and the lowercase g is distinguished by its double loop. The type was copied by Monotype, Linotype and Intertype, and Ludlow's version has some slight variations.¹³⁶

In 1903, Benton designed three widths of Alternate Gothic, No. 1, No. 2, and No. 3. A fourth variant, Alternate Gothic Title No. 1, was later abandoned. Another Benton family, News Gothic, followed in 1908. Benton designed three variants of the parent face: condensed, extra condensed, and extra condensed title. These two gothic type families also met with success. (See Figure 53.) The same 1953 ATF



36 Point 6 A 9 a
Hypothesis

30 Point 6 A 12 a
Military Band

24 Point 8 A 14 a
EXPENDITURE
Rival Champion

18 Point 11 A 22 a
FOREIGN DICTUM
Independent Official

14 Point 17 A 32 a
SOCIAL CONFERENCE
Bibliographic Discussion

12 Point 19 A 39 a
UNINTERESTING STORIES
Entertain Rich Philanthropist

10 Point 22 A 43 a
POPULAR DRAMAS RECALLED
Many famous plays scheduled for
presentation starting next season

8 Point 24 A 47 a
NEWSPAPER PUBLISHERS CONVENE
Editors and proprietors have agreed upon
program for their semi-annual conference

Figure 54. Morris Benton's Lightline Gothic.

bulletin verified that "News Gothics and Alternate Gothics are standbys that always do a fine job."¹³⁷

It is true, these two gothic faces have weathered several decades of typographic change. "Certainly the Alternate and Franklin Gothics have withstood the test of time," Al Lawson wrote in 1961. "News Gothic, first offered in 1908, is another face still popular today, particularly since it provides the basic pattern of a contemporary crop of gothic faces."¹³⁸

In 1907, Benton designed Monotone Gothic, and the following year introduced one variant, Monotone Title. Another Benton type introduced in 1908 was Lightline Gothic, which in 1951 was still number 71 on the ATF Type Merchandising Department's list of the foundry's 100 most important faces.¹³⁹ (See Figure 54.) Benton designed one variant, Lightline Title Gothic, in 1921. One-tone Gothic, which Benton designed in 1912, was abandoned.

Gothic types fell out of favor among the advertising typographers with the advent of the Cheltenham family and the classic type revivals. Because gothics were not usually used for straight reading matter, but for lists, titles, and advertising, their temporary eclipse did not affect book printing. J.L. Frazier noted that "The use of the form is not because of any merit in the letter itself, but rather in deference to vogue ... and applies only to small commercial forms such as business cards, letterheads, and the like."¹⁴⁰

In 1928, Benton again began a new outpouring of gothic types. The first was Novel Gothic, which was actually originated by Charles Herman Becker, a hand engraver in ATF's matrix cutting department. (See Figure

One Printer
advertises
as follows:

MODERNISM

is plainly expressed
herein . . . the new
types and ornaments
carry the modernistic
spirit now prevailing
clearly and forcefully

**HOTEL
STARK
ROOF
GARDEN**
■ ■ ■ ■
**FOX SQUARE
NEW YORK**

**ANNOUNCING
THE
OPENING
OF THE
ROOF GARDEN
AND
TROCADERO
RESTAURANT**

Figure 55. Morris Benton's Novel Gothic

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z &

1 2 3 4 5 6 7 8 9 0

BANK GOTHIC LIGHT

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z &

1 2 3 4 5 6 7 8 9 0

BANK GOTHIC MEDIUM

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z &

1 2 3 4 5 6 7 8 9 0

BANK GOTHIC BOLD

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z &

1 2 3 4 5 6 7 8 9 0

BANK GOTHIC CONDENSED MEDIUM

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z &

1 2 3 4 5 6 7 8 9 0

BANK GOTHIC CONDENSED LIGHT

GEORGE M. CHAPMAN
PRESIDENT

GIBSON-KINNEY COMPANY
MANUFACTURING CHEMISTS

Figure 56. Morris Benton's Bank Gothic.

120/96 Point 3 A 5 a
Night

96/84 Point 3 A 5 a 48 Point 4 A 7 a
Job Spirit

42 Point 5 A 8 a
Maple

84/72 Point 3 A 4 a 36 Point 5 A 10 a
Girl IS Light

Figure 57. Morris Benton's Stymie.

FINE QUALITY COLO
Zero is the figure for
symbols that were in

Figure 58. Morris Benton's Tower.

55.) But Benton is given credit for the type, which means that he must have approved it and even revised it before it was cut. Novel Gothic was 'modernistic,' apparently a bridge between the wild jazz age types of the 1920s and the gothics which were to follow. No variations were produced.

In 1932, Benton started designing another gothic type, and the following year this Bank Gothic series already included medium, condensed medium, light, condensed light, and bold and condensed bold variations. The series became popular especially for letterheads and legal documents. (See Figure 56.) Bank Gothic Light was rated as ATF's 24th best seller for 1951.¹⁴¹

Benton's Bank Gothics were followed by several other types, including Agency Gothic in 1933 (with three variations), Poster Gothic and Raleigh Gothic Condensed in 1934, and Headline Gothic in 1936.

Stymie, 1931 and Tower, 1934

The first work on Benton's Stymie family came in 1931. (See Figure 57.) This face has square serifs, but is included here because it resembles the gothics in other respects. It is apparently derived from the Egyptian blackletter.¹⁴² The strokes are of a uniform thickness, which is essential to a gothic design. Stymie has a very modern feel to it, with completely symmetrical shapes. By 1935, the family had grown to eight members: light, light italic, medium, medium italic, bold, bold italic, and black and black italic. Stymie has become a classic face; six of the eight variants made the ATF 'Top 100' list in 1951, with Stymie Medium rated as number 12.¹⁴³ Sol Hess drew a version of

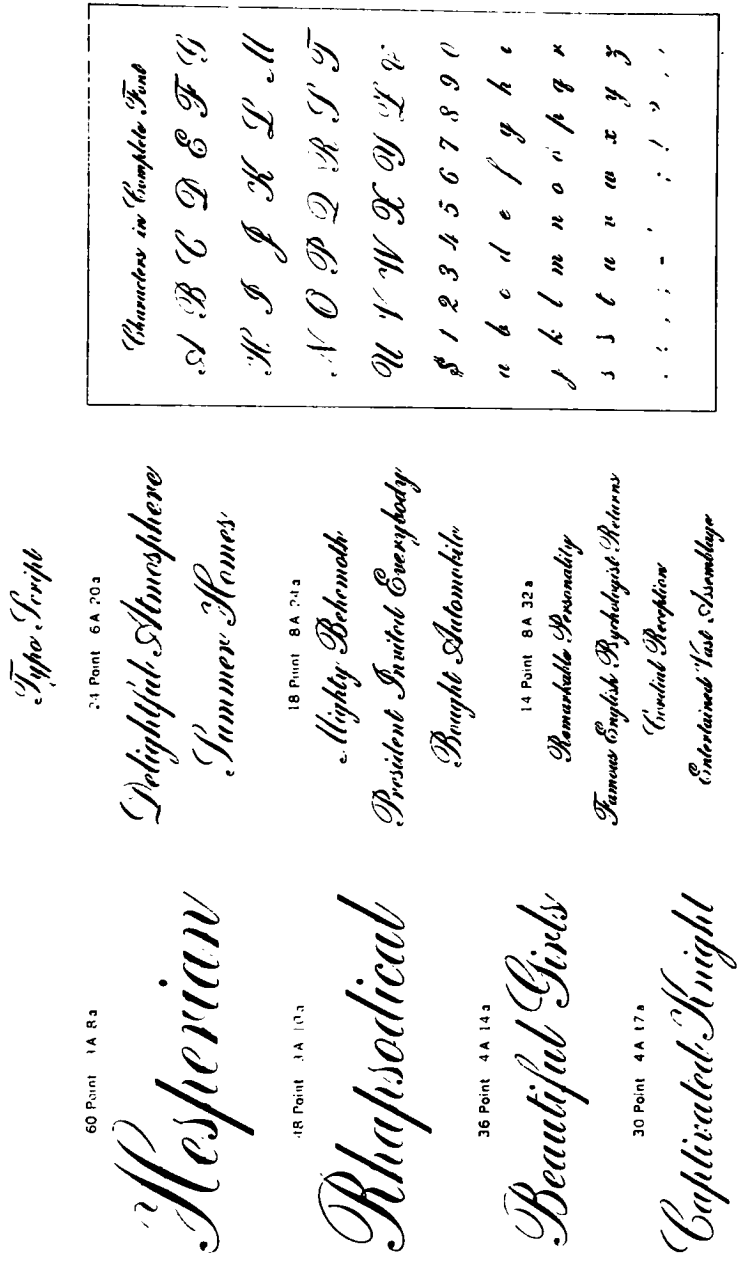


Figure 59. Morris Benton's Typo Script.

Stymie for Lanston Monotype a few years after Benton's design was produced.

Benton designed Tower, a virtual condensed version of Stymie, in 1934. (See Figure 58.) The face is strong but not as legible as other square serif faces. It has short descenders and long ascenders, and most of the lowercase letters are formed like rectangles with rounded corners. Benton designed Tower Bold in 1936, but it was abandoned in favor of Stymie Bold Condensed, a face designed by Gerry Powell of ATF.¹⁴⁴

Scripts

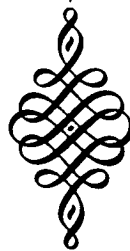
"There are today a bewildering array of script faces, yet almost none of them existed before 1930," states Al Lawson in his Printing Types. Of course, Benton script faces were an exception to this rule.

Probably the best-known American script even today is Benton's Typo Script, drawn in 1903. (See Figure 59.) Typo Script has remained an important face since then, ranking as the fourth most popular ATF type on the 1951 sales list.¹⁴⁵ Benton also drew Typo Script Extended in 1903, and it is number 16 on the same list. Over the next few years, Benton added other scripts to the family: Typo Slope and Typo Upright in 1905, and Typo Upright Bold and Typo Shaded in 1906. The design must have been popular from the very start, because as late as 1926, Benton was still working on it. He drew Typo Roman Shaded in 1921 and Typo Roman in 1926, both roman fonts, very loosely related to the original scripts, and both still appearing further down the list of ATF's "Top 100" types in 1951.

Civilite, a 1923 Benton design, is a fancy face with some

CIVILITE

A B C D E F G H I J K L
M N O P Q R S T U V W X Y Z
\$ 1 2 3 4 5 6 7 8 9 0 ~ a a b c d e e e — f g h i j k l l
m n o p p q r s t u v w x y z ~ ‘ ’ ; ! ?



48 Point 4A 12s

Designer Exhibits American Specimen

36 Point 5A 15s

Composers Awarded Graphic Arts Scholarship

Figure 60. Morris Benton's Civilite.

historical significance. (See Figure 60.) It is an accurate copy of the earliest known cursive, Robert Granjon's 1557 type, which was cut to imitate the semi-formal writing in vogue at the time. This type and copies of it were frequently used to print books of children's etiquette, so it acquired the name "Civilite."¹⁴⁶ "Despite its complication and wealth of ligatures," Harry Carter wrote in 1954, "[Civilite] was made in four sizes and went on being used until late in the 18th century in France, the Low Countries, and to a less extent in England."¹⁴⁷

Many of the the ATF Civilite lowercase letters are cut in two forms, the more flamboyant of which can be used at the end of a word. Although the type does not resemble modern handwriting, the extreme height of the capitals and the length of the descenders makes it necessary to print Civilite in two impressions if the lines are close together. (One impression for even-numbered lines, and the other for the odd.) The larger letters will thus overlap, simulating handwriting. Benton drew a second version of Civilite in 1924, but it was abandoned.

Other Benton scripts include Cloister Cursive and Cloister Cursive Handtooled, members of the family discussed in the early pages of this chapter.

Souvenir, 1914

Many people do not realize that the source for the International Typeface Corporation (ITC)'s extremely popular Souvenir type was an ATF Souvenir designed in 1914 or 1915 by Morris Benton. (See Figure 61.)

Benton modeled his letter after 'Schelter Antiqua,' a 1905 German

36 Point

6 A 10 a

MENDER
Straighten

30 Point

7 A 12 a

BRIGHTER
Neckerchief

24 Point

9 A 17 a

REBUILDING
Machine Shop

18 Point

13 A 25 a

GUIDES REGAIN
Distinguished Men

14 Point

18 A 34 a

SHREWD INVESTOR
County Disbursements

12 Point

21 A 40 a

IMPROVES FURNISHING
Inspect College Auditorium

10 Point

23 A 46 a

HANDSOME SHIP DESIGNS
Foreign Manufacturers Pleased

8 Point

26 A 52 a

REQUIRE BUSINESS TECHNIQUE
Superintendent Prevented Deficiency

6 Point

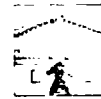
29 A 58 a

MAGNIFICENT GOLDEN SUNSET HOURS
Beautiful Shadows Delight Outdoor Enthusiast

Characters in Complete Font

A B C D E F G H I J
K L M N O P Q R S
T U V W X Y Z & \$
1 2 3 4 5 6 7 8 9 0
a b c d e f g h i j k l m n
o p q r s t u v w x y z
ff fi fl ffi ffl . , - ' : ; ! ?

MUSIC



Gebring-Smithe
now commands
attention from the
most conservative
as well as the more
fastidious lover of
music. The shelves
are piled high. Miss
Mayson entertains

Your selections
played

GEBRING-SMITHE
BLOOMINGTON

VERSATILE ORNAMENT

Figure 61. Morris Benton's Souvenir.

BENTON ATF No. 566

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz.,-:;’!?)&
\$1234567890 Pack my box with five dozen

Designed by Morris F. Benton, as a modern interpretation of traditional types, combining refinement and legibility. Introduced in 1933 as BENTON, the only one of more than 200 faces by this designer to be named for him. Discontinued after a few years, then reissued 1953 as WHITEHALL. We prefer the first name. Held at The Press of the Licorice Cat in 8, 10, 12, 14, 18, 24. Wanted: 6 and more 8 & 10.


THE PRESS OF THE LICORICE CAT
Mac McGrew, 181 Mt. Lebanon Bouievard, Pittsburgh, Pa. 15228 ☎ 412-563-4074—APA 521, AAPA 

Figure 62. Morris Benton's Benton (or Whitehall).

Art Nouveau type produced by Schelter & Giesecke. "Morris Fuller Benton took the rounded half of the characters (gsvwy) almost without change, wholly redesigning the remainder, some of which have a chiseled appearance in the original."¹⁴⁸

The face is somewhat odd and easily recognizable, although not particularly beautiful. Perhaps due to low sales, Benton did not draw any variants for Souvenir. It took some 60 years for Benton's design to catch on, and when it did, it became available in every possible medium. The type was used in the 1970s for book work, advertising, and anything else that came along. It was one of the few fonts that even small printing shops were required to own.

Cambridge, Benton, or Whitehall, 1934

Benton designed a face in 1930¹⁴⁹ that never amounted to much, but that has been discussed ad infinitum by almost all Morris Benton enthusiasts. The type was designed with the name Cambridge, but was changed to Benton on the original cutting slips. Whether the type was renamed after the father or son is a mystery. (See Figure 62.)

This type has been called "a modern interpretation of traditional types, combining refinement and legibility."¹⁵⁰ It is similar to Baskerville, but "has a number of distinctive little details of its own,"¹⁵¹ such as the feet of the lowercase d and u, the broad bowl of the capital J, and "the way the crossbar of the e flows into the curve."¹⁵²

The first seven trial letters of the type were first cut in 36-point on November 20, 1931.¹⁵³ The following week the same letters

Benton

Like the beauty of old lace, the attractiveness of a type page depends upon a combination of many separate designs, each one beautiful in itself but without individual oddities to detract from the mass effect. Benton is the result of a long study of the best of the classical types. It retains many of the notable characteristics of both the Oldstyle and the Modern and produces a page which is readable and brilliant without being dazzling. This paragraph is 10 Point Benton.

Figure 63. From page nine of ATF's 1934 Book of American Types, paragraph set in ten-point Benton type.

were cut in 12-point, and a few years later, on June 28, 1934, 69 characters of a trial font were cut in 12-point. The type was first announced as Benton on page 9 of ATF's 1934 Book of American Types, where a paragraph set in ten-point Benton appears with five other "New Type Faces in Preparation." (See Figure 63.) But Benton never made it into an ATF Specimen Book as a completed product. "It was listed and shown in one line in the 1937 and 1939 Index of American Types, and included in the 1938 price list,"¹⁵⁴ but then was discontinued for several years.

Perhaps Morris Benton himself was not too fond of the type, or perhaps he was reluctant to promote a face bearing his name. He may have wanted to see how the type would fare for itself, without pulling any strings, but he didn't have much time to observe. Benton retired from ATF in 1937, and although he remained an ATF consultant, he was no longer in charge of the type designing department.

When ATF brought back the type in 1953, it was renamed Whitehall. The explanation is simply utilitarian. "If you had a new type named 'Alpha' or 'Benton' many tons of type would have to be moved to accommodate the new type face on the shelves in alphabetical order. 'Whitehall,' close to the end of the alphabet, would present a much smaller problem."¹⁵⁵ The story seems incredible, but because it comes from so many different sources, it must have some truth to it.

Al Lawson gave the same explanation in a 1961 article on 'The Prolific Career of Morris Benton.' "... ATF chose to call [the Benton type] Whitehall. The reason was quite simple. At the foundry, and in all the dealer locations in the various states, type is stored in

inventory by alphabetical sequence. Thus it was decided to switch from a 'B' to a 'W,' as fewer fonts would have to be shifted to make room for the new design."¹⁵⁶

And Steve Watts, in charge of ATF's type sales by 1948, was actually involved in the decision. Watts was especially interested in the Bentons, and decided in 1953 that the type in question should be reissued. He explained the name change in a letter to an RIT student: "... the name 'Whitehall' was the result of a compromise to save moving hundreds of tons of type to place it on stock shelves at the foundry and at sales branches. More than half of the ATF faces at that time were in the A, B, C categories. 'Whitehall' as a name placed it at the tail end of the alphabetical list, after Wedding Text."¹⁵⁷ The new name was taken from a New York telephone exchange.¹⁵⁸

Thus the only Morris Benton typeface that at one time indicated the identity of its designer was renamed. Whitehall was shown in one-liners in the 1953, '55, '58, '61, and '66 ATF specimen books, and in full pages in the 1955 and 1961 specimen books. But it must not have done too well, because in a memo to dealers on October 31, 1967, it was listed as one of the ATF faces to be discontinued in January 1968.¹⁵⁹ Needless to say, the type was never made into a machine-set face.

Whitehall has never been regarded as Benton's greatest design, but because of its obscurity it seems a fitting typeface for Morris Benton enthusiasts.

Miscellany

The list of Benton types actually goes on and on, and several whole families have not even been mentioned here. A complete list of Morris Benton typefaces is found in Appendix A. But those considered are perhaps the more well-known, and although not every type is covered, the reader must by now have an idea of Benton's diversity and keen sense of what would be useful to the trade.

John Murphy made a statement in his 1936 Inland Printer article which has not been verified by any other source: "Incidentally, in his time Mr. Benton has created both Greek and Chinese types that received high praise for their accuracy and beauty, and he did not know either the Chinese or Greek language."¹⁶⁰ Murphy apparently had a personal interview with Benton for the article, so the statement serves as yet another example of Benton's reticence, because no further mention is made of the Chinese and Greek fonts.

Benton also designed a great body of type ornaments. The Tabard Borders were patented in 1904 under the names of W.H. Bradley and M.F. Benton.¹⁶¹ The 1923 ATF specimen book notes at least 35 other type accessories and decorative material designed by Benton, either alone or in collaboration with Clarence Marder.¹⁶²

FOOTNOTES TO CHAPTER 7

1. Alexander Lawson, "After 70 Years Century Typefaces Hold Their Own," Inland Printer/American Lithographer, January 1965, p. 47.
2. Stevens L. Watts, Letter to David Ritter, May 30, 1965.
3. Walter Marder, Interview with Patricia Cost, New Jersey, November 1984.
4. Laurance B. Siegfried, "Ninth Annual Frederic W. Goudy Distinguished Lecture in Typography" (Rochester: The Press of the Good Mountain, 1977), p. 6-7.
5. A. Raymond Hopper, "What Are 'Enduring' Type Faces?" Inland Printer, April 1947, p. 31.
6. "'Scoreboard' Reveals Popularity Trends in Type Faces," Inland Printer, June 1945, p. 55.
7. M.F. McGrew, "The Bentons, Father & Son," Typographic i, March 1978, Reprinted by McGrew, p. 4
8. Marder, Interview.
9. Lawson, "'Rugged' Typefaces Are Latest Revival," Inland Printer/American Lithographer, April 1965, p. 64.
10. Julius Leroy Frazier, Type Lore: Popular Types of Today, Their Origin and Use (Chicago: Frazier, 1925), p. 85.
11. Lawson, "After 70 Years," p. 46.
12. Frazier, p. 85.
13. Harry Hillman, "The Types of a Quarter Century," Inland Printer, August 1927, p. 811.
14. McGrew, p. 2.
15. Watts, "Century Roman and Century Oldstyle," Memo for Dr. Eckman, October 14, 1963.
16. McGrew, p. 2.

17. Frazier, p. 85.
18. Watts, "Century Roman."
19. Lawson, "Anatomy of a Type: Century, Part 3," Printing Impressions, January 1982, p. 62.
20. Frazier, p. 87.
21. Lawson, "Century, Part 3," p. 62.
22. Frazier, p. 87.
23. Watts, "Century Roman."
24. Lawson, "Century, Part 3, p. 63.
25. Watts, "Century Roman."
26. Maureen Delaney Hitchcock, Benton Types: Typefaces Designed or Adapted by Morris Fuller Benton (Rochester: The Press of the Good Mountain, 1978).
27. Frederic W. Goudy, Typologia: Studies in Type Design & Type Making (Berkeley: University of California Press, 1940), p. 138.
28. Ibid., p. 142.
29. McGrew, p. 4.
30. John Allen Murphy, "Morris Benton, Part 2," Inland Printer, April 1936, p. 44.
31. Lawson, "Anatomy of a Type: Century, Part 2," Printing Impressions, December 1981, p. 41.
32. Murphy, p. 44.
33. Ibid.
34. Lawson, "Century, Part 3," p. 63.
35. McGrew, p. 4.
36. Morris Fuller Benton, Letter to N.J. Werner, June 9, 1936.
37. Frazier, p. 87.
38. Lawson, "After 70 Years," p. 47.
39. J.I. Biegeleinsen, Art Directors' Workbook of Type Faces (New York:

Arco Publishing Co., 1976), p. 66.

40. Watts, "Century Roman."
41. Lawson, "After 70 Years," p. 46-7.
42. Idem, "Century, Part 3," p. 63.
43. "Crowell-Collier Adopts a Type Developed by London Times,"
Inland Printer, September 1943, p. 51-2.
44. Frazier, p. 93.
45. Murphy, "Morris Benton, Part 2," p. 42.
46. McGrew, p. 4.
47. Lawson, "Anatomy of a Type: Cheltenham," Printing Impressions,
March 1971, p. 55.
48. Frazier, p. 91.
49. Murphy, "Morris Benton, Part 2," p. 44.
50. Lawson, "Cheltenham," p. 55.
51. Ibid., p. 54.
52. Hitchcock, Benton Types.
53. Henry Lewis Bullen, "What the Typefounders Have Done," Inland
Printer, August 1927, p. 763.
54. Frazier, p. 89.
55. Lawson, "Cheltenham," p. 55.
56. Benjamin P. Duffield, "An Appreciation for Cheltenham," The
American Bulletin, December 1915, p. 7.
57. Murphy, "Morris Benton, Part 2," p. 43.
58. Lawson, "Cheltenham," p. 54.
59. Frazier, p. 95.
60. McGrew, p. 4.
61. Alexander Lawson and Archibald Provan, 100 Type Histories,
Volume 1 (Arlington, Virginia: National Composition
Association, 1983), p. 50.

62. Frazier, p. 91.
63. Stanley C. Hlasta, Printing Types & How to Use Them (Pittsburgh: The Carnegie Press, 1950), p. 217.
64. Frazier, p. 35.
65. Hlasta, p. 33.
66. Frazier, p. 37.
67. Bullen, "Nicolas Jensen, Printer of Venice" (San Francisco: John Henry Nash, 1926), p. 7.
68. Lawson, "The Prolific Career of Morris Benton," Printing Impressions, April 1971, p. 77.
69. Frazier, p. 37.
70. Hlasta, p. 35.
71. Linn Boyd Benton, "Inventions of Linn Boyd Benton," for Who's Who in Printing in the United States, no date. (Typewritten.)
72. Bullen, "Observations on Type Designs and Type Designers and Their Press Agents," Inland Printer, September 1923, p. 833.
73. "Narrative of Cloister, Cloister Oldstyle Italic and Cloister Title," The American Bulletin, April 1914.
74. Murphy, "Morris Benton, Part 2," p. 43.
75. Lawson, "Morris Fuller Benton Deserves More Than Obscurity," Inland Printer/American Lithographer, October 1961, p. 80-1.
76. Bullen, "Typefounders," p. 763.
77. Joseph Blumenthal, Art of the Printer Book (New York: Pierpont Morgan Library, 1973), p. 39.
78. Hillman, p. 811.
79. Frazier, p. 38.
80. Hopper, "Enduring," p. 30.
81. Frazier, p. 38.
82. Hlasta, p. 36.
83. Watts, Letter to Ritter.

84. Morris Fuller Benton, Patent No. 37,234, November 15, 1904, for Cloister Black and Patent No. 37,235, November 15, 1904, for Flemish Black.
85. Hitchcock, Benton Types.
86. Lawson and Provan, Volume 1, p. 54.
87. Ibid., Volume 2, p. 58.
88. Blumenthal, p. 28.
89. Ibid.
90. Hopper, "Enduring," p. 31.
91. Lawson, "Prolific Career," p. 77.
92. Bullen, "Bodoni, Benjamin Franklin and Bodoni's Grandson," The American Bulletin, April/May, 1912, p. 1-2.
93. Idem, Letter to Kent D. Currie, April 20, 1927, p. 1.
94. Idem, "Observations," p. 833.
95. Hlasta, p. 138.
96. "Bodoni," Inland Printer, December 1939, p. 53-7.
97. Frazier, p. 71.
98. "The Clearface Family, Optically Correct in Design," The American Bulletin, July 1910, p. 7.
99. Hitchcock, Benton Types.
100. Lawson and Provan, Volume 1, p. 52.
101. Frazier, p. 61.
102. Watts, "Typorhythmics," The Pastime Printer, March 1957, p. 8.
103. Frazier, p. 63.
104. Lawson, "More Than Obscurity," p. 81.
105. Watts, "Typorhythmics."
106. David Walker Mallison, "Henry Lewis Bullen and the Typographic Library and Museum of the American Type Founders Co.," Master's Thesis (New York: Columbia University, 1976), p. 222.

107. Hlasta, p. 77.
108. Frazier, p. 43-4.
109. Paul Beaujon, "The Garamond Types: Sixteenth & Seventeenth Century Sources Considered," Fleurion Anthology (Boston: David R. Godine, 1979), p. 206.
110. Frazier, p. 81.
111. Bullen, "Observations," p. 834.
112. Hlasta, p. 233.
113. Bullen, "Observations," p. 834.
114. McGrew, "Garamond: The Typeface & The Designers," Reprinted from Typographic i, no date, p. 2.
115. Ibid.
116. Beaujon, p. 181.
117. Lawson, "Anatomy of a Type: Bulmer," Printing Impressions, August 1972, p. 44.
118. Hlasta, p. 109.
119. Linn Boyd Benton, "Inventions," p. 5.
120. Lawson, "Bulmer," p. 45.
121. Idem, "More Than Obscurity," p. 81.
122. Dr. James Eckman, Heritage of the Printer (Philadelphia: North American Publishing Co., 1965), p. 114.
123. Lawson and Provan, Volume 1, p. 98.
124. Lawson, "Young Typographers Are Going Back to Design of 'Roaring Twenties'," Inland Printer/American Lithographer, March 1964, p. 70.
125. Lawson and Provan, Volume 1, p. 36.
126. Eugene M. Ettenberg, Type for Books and Advertising (New York: D. Van Nostrand Co., Inc., 1947), p. 24.
127. Lawson and Provan, Volume 2, p. 14.
128. Lawson, Printing Types: An Introduction (Boston: Beacon Press, 1971), p. 97.

129. Frazier, p. 18.
130. Watts, Letter to Dr. Eckman, March 11, 1964.
131. Goudy, A Half-Century of Type Design & Typography, 1895-1945 (New York: The Typophiles, 1946), p. 66.
132. Watts, Letter to Dr. Eckman, March 11, 1964.
133. Lawson, "More Than Obscurity," p. 80.
134. McGrew, "American Metal Typefaces of the Twentieth Century," (unpublished book), excerpt.
135. Watts, Letter to Ritter.
136. McGrew, "Metal Typefaces."
137. Watts, Letter to Ritter.
138. Lawson, "More Than Obscurity," p. 80.
139. Watts, Notebook, 1895-1966, excerpt.
140. Frazier, p. 19.
141. "Little Life Stories of Live Men Known to the Printers of America: Linn Boyd Benton: Typefounder, Inventor," American Printer, March 1923, p. 34.
142. Hlasta, p. 287.
143. "Little Life Stories," p. 34.
144. Hitchcock, Benton Types.
145. "Little Life Stories," p. 34.
146. Lawson, Printing Types, p. 109.
147. Harry Carter, "Letter Design & Typecutting," Journal of the Royal Society of Arts, October 1954, p. 886.
148. "Bitstream Digital Type Library, Preliminary Copy, January 31, 1986," p. 55.
149. McGrew, "Metal Typefaces," excerpt.
150. Idem, "Benton, ATF 566" (Pittsburgh: The Press of the Licorice Cat, no date).

151. Idem, "Metal Typefaces," excerpt.
152. Idem, "Conversation on Whitehall" (Pittsburgh: The Press of the Licorice Cat, 1969).
153. Francis X. Simpson, Notebook ("Record of Matrices Cut at the ATF Co., 1896-1944"). (Handwritten.)
154. McGrew, Letter to Patricia Cost, June 29, 1985.
155. Eckman, Letter to Patricia Cost, June 13, 1985.
156. Lawson, "Prolific Career," p. 77.
157. Watts, Letter to Ritter.
158. McGrew, "Metal Typefaces," excerpt.
159. Idem, Letter to Patricia Cost.
160. Murphy, "Morris Benton, Part 3," p. 71.
161. Morris Fuller Benton and Will Bradley, Patent No. 37,072, August 9, 1904, for Tabard Borders.
162. Specimen Book and Catalogue Dedicated to the Typographic Art
(New York: American Type Founders Co., 1923).

CHAPTER EIGHT

THE LATER YEARS

ATF's Decline

The American Type Founders Company began to experience hard times in the mid 1920s. Robert Nelson died in 1926, and ATF's annual report for that year showed the largest profits in the company's history. But the next year's report was not so impressive. Frank B. Berry had replaced Nelson as president in August 1926, and by September, opposing factions on the board of directors had already begun to disagree about issues. Berry was replaced by Joseph F. Gillick in 1928.¹

"By 1929 ATF's sales again showed a profit,"² but the comeback was short-lived. The general business depression began to affect ATF in 1931, when working hours were cut back, inventories reduced, and financial reserves depleted. By 1932, sales were down by 25%, and salaries had to be cut. When major accounting errors turned up in the company's books, they showed that the assets of the company had been exaggerated and that there were serious liabilities.³ Gillick resigned.

Because of the advent of the composing machines and their effect on foundry type sales, ATF had by this time diversified into other markets besides type production--the selling of printing presses and equipment. The Type Department had been the heart of the company under Nelson, but even while he was still alive it had had to scramble to come up with new

designs not available on the machines to stay afloat. The new management and the confusion it brought with it furthered the diversification, and type no longer was ATF's chief product.

Gillick was replaced by Thomas Roy Jones, a businessman with no experience in type founding. Soon afterwards, Henry Lewis Bullen submitted a report to Jones that stated, "Since Nelson's death there has been no leadership." The report went on to outline the problems of the Type Design Committee, and ended with a pledge of support for Jones as president. But by October 4, 1933, Jones "filed a voluntary petition for ATF's bankruptcy. The Federal District Court immediately placed ATF under the control of an association of banks to which it owed money. Expenditures of every kind ceased, contracts were automatically voided, and every effort was made to decrease the debt owed the banks."⁴

The company's manufacturing division and general offices moved to Elizabeth, New Jersey in 1935, and the next year the former plant building in Jersey City was sold. South American subsidiaries were also sold, and by 1936 the court had approved plans for reorganization. ATF was back on its feet, but type founding was no longer the center of its business. In 1938, ATF bought the Webendorfer-Wills Co., manufacturers of lithographic printing presses.⁵ The intervention of the Second World War forced a complete switchover in the company. By 1939, "the manufacturing facilities of the main plant were totally converted to war work," except for the type foundry itself.⁶

Morris Benton's daughter attributed some of ATF's problems to a lack of planning--the management evidently did not groom others to carry on when they would retire. "Everybody was getting old, and I think that

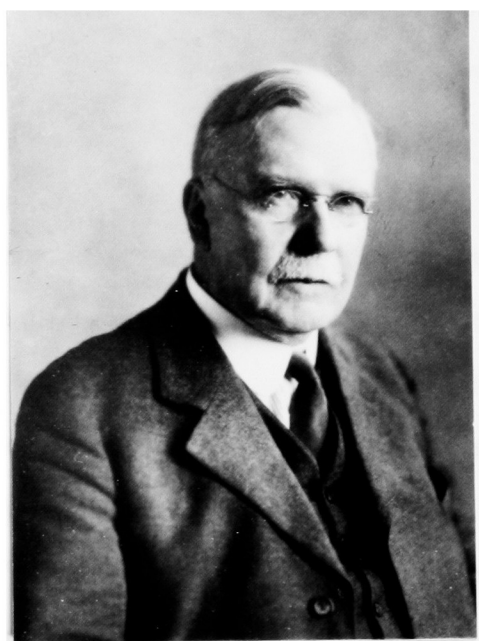


Figure 64. Linn Boyd Benton, circa 1922.

was the trouble. ... It was very short-sighted not to take in younger men and train them, and they didn't. They were satisfied with getting their profits."⁷

ATF stock was up over \$100 a share for a time, but plunged to the 30s after the depression. All ATF directors owned stock in the company, and therefore didn't take large salaries because of the dividends. When the bad times hit, Boyd Benton didn't want to sell, and held onto his stock. When he died and it passed to his son, Morris "sold out pretty fast. He couldn't afford to hold it and see it go down, he said."⁸

Linn Boyd Benton's Later Years

Linn Boyd Benton has been described in various places as an extremely modest man, which perhaps was responsible for his "being so little known among those men whose pleasure and livelihood are dependent upon the graphic arts."⁹ He was respected by his peers, reserved, and yet "much loved by those he admit[ted] to an intimacy." His character was beyond reproach, and "in his thought and the expression of his thought [he was] as accurate and precise as his own machines."¹⁰ (See Figure 64.)

He wasn't a boring individual. Benton loved working--his friends were at ATF, and his social life revolved around the company. He didn't have the same interest in hobbies, sports and the outdoors as his son Morris, and so didn't want to retire from ATF until absolutely necessary, even though in the meantime his eyesight became worse and worse. In 1923, the senior Benton was described in The American Printer as "one of those men, quietly doing their day's work, who have had a

tremendous influence on the American printing industry."¹¹ Boyd Benton continued as the manager of ATF's general manufacturing department until 1932, when he was 88 years old, and Morris remained his assistant.

During the first World War, Boyd Benton knit socks in the evenings after work for the soldiers. Even though his eyesight was already failing him, he could easily operate the sock-knitting machine, and his wife Jessie cast off the socks and finished them. "He'd crank away and the socks would come out," his granddaughter explained. "He'd get the yarn free from the Red Cross."¹² Boyd donated all the socks he made to her school, which apparently participated in the war effort with a drive for soldiers' socks.

Boyd Benton's sense of humor did not wane with his advancing age. In 1922 when Boyd was 78 years old, Henry Lewis Bullen wrote, "Mr. Benton outdoes his youthful years in humor and geniality. An observant man, he has accumulated a great fund of genial anecdotes."¹³ Benton loved these anecdotes and jokes of all kinds, and remained gregarious well into his 80s. For example, he knew all the conductors, brakemen and regular passengers on the train he took to work every day, and loved to read or tell them jokes to pass the time. "When he couldn't read anymore," his granddaughter Caroline recalled, "he always carried a couple of humorous magazines in his pocket, and he'd hand one to the man he was riding with and say, 'Any good stories in here?'"¹⁴

As his father grew older, Morris Benton's job became more difficult. "If things didn't go right at the foundry, then he [Morris] was the one that had to straighten them out," Caroline explained.

"That's the trouble when you work 'til you're 88, you know, somebody has to help you. And you know who did it."¹⁵ Boyd Benton undoubtedly got more demanding as the years went by, and yet was still as interested in precision and accuracy as when he could see. Caroline explained that Morris developed very bad stomach ulcers in the 1920s, "which probably was coping with grandpa, because grandpa wasn't as sweet and loveable as he had been when he was younger. And as papa said, he would come into the foundry and all hell would break loose--everything had to be just so."¹⁶ But Morris remained "very patient with his father, and very sweet."¹⁷

One of Caroline's stories gives an interesting picture of how his near blindness affected Boyd Benton:

Once in a while, I'd go to the bank with grandpa to cut coupons off the bonds. And we'd go in there, his eyes were very bad, and he'd say, 'Have we got the scissors?' 'Yes, we've got the scissors.' 'All right, unlock the box and take out the bonds. How many bonds have you got?' 'We've got six bonds.' 'All right, what's the first one?' And you'd tell him what the first one [was]. 'Can you find the coupon for this date?' 'Yes, yes.' Oh, this went on and on and on. And it would drive you nuts, absolutely nuts. My father usually went, and he was delighted if my sister and I were home from college and we could take grandpa to the bank, because he₁₈ had him all day, and it was ---. Old people get very trying.

But the elder Benton remained a valued ATF employee, and continued to improve existing machinery and operations for many years. Bullen wrote in 1922 that Boyd Benton retained "as ardent an interest ... in every detail of typefoundry as ever he had when confronting its most difficult problems in earlier years. He [permitted] nothing to interfere with a most punctual attention to his duties, though these [were] largely self-imposed."¹⁹ And as late as 1930, when he was 86 years old, he received a patent "for an important improvement in the

larger printing types used in newspaper headings."²⁰ Admittedly, the reference is a bit obscure, but it again shows that Boyd remained active and forward thinking well into his 80s.

Jessie Benton died on September 9, 1930. Boyd, at 86, missed her greatly, but continued working. He retired from his position as manager of ATF's general manufacturing department two years later, on July 1, 1932. About a week later he became ill, and died on July 15 of a cerebral hemorrhage.²¹

The minutes of the ATF directors' meeting for October 14, 1932 included the following statement:

RESOLVED: That the Directors of the American Type Founders Company place upon record their sorrow and deep sense of loss to themselves personally and to the Company in the death of LINN BOYD BENTON, who has been a member of the Board of Directors since its first organization in 1892, a period of forty years.

Devoting his great natural genius of invention exclusively for the advantage of this Company from the time, forty years ago, he became a Director of the Company, and Manager of its General Manufacturing Department, Mr. Benton's inventions revolutionized the typefounding art and craft, and placed the Company in a position of leadership, to the great advantage of the Company and the printing industry which it serves. These benefits have been, from the beginning, of incalculable value. These benefits will continue as long as the indispensable art of typography survives.

Those engaged in the arts of typography throughout the world have acknowledged Mr. Benton's genius, and the resulting benefits. This Company has benefited by his prestige. No other man connected with the Company has served it more valuably than our late departed friend.

As a Man Mr. Benton endeared himself to us by his modesty, his delightful humor, and his probity in all matters, intellectual and material. He was ever faithful to his conscience and also to this Company and the Board of Directors, who were conscious of the honor of being associated with so great and fine a Man.

The Directors respectfully present this appreciation of the Man and his character and genius to his Family in profound sympathy with their grief.²²



Figure 65. Morris Benton and his second wife, Katrina, at Beaver Lake, circa 1930.

Other lengthy obituaries were written on Boyd Benton, in The Plainfield Courier-News, the American Printer, and the Inland Printer, which printed the following testament:

In recognition of the benefits showered upon the industry through the genius of this great figure, some of whose achievements are here recorded, the seat of honor, as it were, in this issue is given over to his most recent portrait. Turn to the frontispiece (page 24), study the kindly, intelligent features, recognize that he worked to benefit you—even after years of practical blindness—until past eighty-eight, and remember him as one of the truly great in the industry's march of progress. —The Editor.²³

Morris Fuller Benton's Later Years

Morris Benton endured a personal tragedy that made him perhaps even more reticent. On March 17, 1920, more than ten years before his mother's death, his wife Ethel died suddenly of an infection after an operation.²⁴ She was only 42 years old, and her death was a shock to the family. At the time, Boyd and Jessie Benton were still thriving, and Morris and Ethel's two daughters were in college.

Morris's marriage had been very satisfying to him, but his wife's death did not destroy him. Shortly after Ethel's death, Morris explained to his daughter Caroline that, as she said, "life divided itself into compartments, and they didn't necessarily follow through, they cut off, ... He just felt that one [had] ended, and he was very, I wouldn't say that he was philosophical, but he did accept the fact that the facts were the facts. He had to make a new life."²⁵ Morris immediately began looking for a summer cottage, which he had previously felt he couldn't afford. He bought one in Beaver Lake, N.J. (See Figure 65.)

In 1923, Morris married Katrina Ten Eyck Wheeler, his second cousin



Figure 66. Katrina Ten Eck Wheeler, 1923.

on his father's side of the family, who was 31 years old. (See Figure 66.) His new marriage was also a "strong and satisfying partnership."²⁶ They moved out of the big white house in Plainfield to an apartment about half a block away for a number of years, but moved back in 1930 when Jessie Benton died.

Morris had had nervous indigestion when he was younger. A doctor friend pointed out his need for extra energy, and helped him plan a diet that would resolve the situation. His standard breakfast consisted of a bowl of cornflakes and an orange, a raw egg whipped up, and three or four pieces of bacon on the side. He didn't drink coffee. But after Ethel's death, his health suffered again—he started getting ulcers, and the added pressures at work took their toll. "... there were times when ... he was so tired he'd just have bread and milk for supper."²⁷

Morris was as upstanding and respected as his father, if more reserved. Walter Marder explained: "My feelings for Morris Benton as a result of not only my contacts but other family contacts are completely 100% favorable. I can't really accept any suggestion to the contrary."²⁸

Morris Benton's picture was on the cover of the July 1935 issue of Printing magazine, along with his father's Hardness Tester for metal type. The only inside reference to either Benton is on page 33 of the same issue, which is an ATF advertisement for foundry type. The Benton Hardness Tester is again shown, opposite this sentence: "Those familiar with the achievements and traditions of the Benton family will recognize in the photograph on the front cover, Mr. Morris Benton, son of the late Linn Boyd Benton, and for years head of the Designing and Engraving Departments of the American Type Founders."²⁹



Figure 67. Morris and Katrina in the garden at Millington, New Jersey, admiring their first home-grown potato, 1941.

In 1936, the Inland Printer came out with John Murphy's three-part article on Morris Benton, which has already been discussed. In 1937, the younger Benton retired from ATF.³⁰ He apparently did not have too much more to do with the company, because in a letter written on August 8, 1938 to Ben Lewis, he stated that "I have definitely retired from business and am no longer connected with the A.T.F."³¹) The letterhead reads "Benton's Shack, Beaver Lake, N.J."

In 1939, when both Jessie and Linn Boyd Benton had been dead for several years, Morris and Katrina bought a house on Long Hill Road in Millington, about 6 miles from Plainfield, and sold the "White Elephant." The taxes on the old Plainfield house were ten times what they would be on Long Hill Road. Their new house included a big landscaped area on a slope, with a lovely view on three sides. Katrina was a gardener, and joined various gardening groups. (See Figure 67.) Morris loved the Long Hill Road house "as the embodiment of the home of his own which he had so little of in his life."³²

Morris enjoyed his remaining eight years in his own home, spending summers and weekend vacations in the Beaver Lake cottage. He entertained his elder daughter's two children and Katrina's niece and nephew at the cottage during vacations, and enjoyed the pictures and movies his younger daughter sent him of her two children.

When Morris was about 65, his doctor wanted him to have his ulcer tested, and perhaps have an operation. But Morris wasn't interested in operations, "having lost his [first] wife that way."³³ He advised his daughter Caroline to vote for Wilkie, not Roosevelt, in the 1940 election, because he was "firmly and completely convinced that another

four years of FDR [would] be the finish of the U.S.,"³⁴ and a few years after the election he wrote, "The doctor says there is nothing the matter with me; but the multitude of complications of the present times gets my goat easier than it would twenty years ago."³⁵

His ulcer may have been malignant, or it may have triggered the embolism which in turn caused his death. Morris Benton had smoked heavily, and "if he hadn't had an ulcer he probably would have had lung cancer."³⁶ In any event, he died at the age of 75, after a brief illness, in All Souls Hospital in Morristown, New Jersey on June 30, 1948.³⁷ Caroline and her two children were visiting Morris in 1948 before he died, and from his bed he delighted in hearing the children singing outside some Gilbert and Sullivan songs they had learned for a play.³⁸

The obituaries of Morris Benton were very short in The New York Times and The Inland Printer, and in each case, dwelled for a precious sentence or two on how important his father had been to the printing industry.³⁹

FOOTNOTES TO CHAPTER 8

1. David Walker Mallison, "Henry Lewis Bullen and the Typographic Library and Museum of the American Type Founders Co.," Master's Thesis, Columbia University, 1976, p. 204-5.
2. Ibid., p. 206.
3. Thomas Roy Jones, "Printing in America--and ATF," New York: Newcomen Society of England, 1948, p. 23.
4. Mallison, p. 212.
5. Jones, p. 23-4.
6. Ibid., p. 24.
7. Caroline Benton Gregg, Interview with Patricia Cost, March 20, 1984, tape 1, p. 9 and tape 2, p. 1.
8. Ibid., tape 2, p. 1.
9. "Achievements of Linn Boyd Benton Vital to Industry's Progress," Inland Printer, August 1932, p. 53.
10. Henry Lewis Bullen, "Discursions of a Retired Printer, No. VII," Inland Printer, January 1907, p. 520.
11. "Little Life Stories of Live Men Known to Printers of America: Linn Boyd Benton: Typefounder, Inventor," American Printer, March 5, 1923, p. 34.
12. Gregg, Interview, tape 2, p. 5.
13. Bullen, "Linn Boyd Benton--The Man and His Work," Inland Printer, October 1922, p. 64.
14. Gregg, Interview, tape 5, p. 6.
15. Ibid., tape 1, p. 8-9.
16. Ibid., tape 1, p. 7.
17. Ibid., tape 4, p. 2.

18. Ibid., tape 1, p. 7.
19. Bullen, "Linn Boyd Benton," p. 64.
20. "Hails Linn Benton's Type Invention As One of Greatest of Present Era," Plainfield Courier-News, October 9, 1930.
21. "Linn Boyd Benton, 'Edison of Typographic Industry,' Is Dead at His Home Here," Plainfield Courier-News, July 16, 1932, p. 1.
22. "Resolved: That the Directors of the American Type Founders Company place upon record ...," Minutes of ATF board meeting, October 14, 1932. (Typewritten.)
23. "Achievements Vital," p. 53.
24. Elizabeth Benton Swain, "Mary Ethel Bottum," June 1973, p 3.
25. Gregg, Interview, tape 6, p. 2.
26. Idem, "Personal Remembrances of My Father, Morris Fuller Benton," Milwaukee, no date, p. 12. (Typewritten.)
27. Idem, Interview, tape 1, p. 8.
28. Walter Marder, Interview with Patricia Cost, New Jersey, November 1984.
29. Printing, July 1935, cover, and advertisement on p. 33.
30. Dr. James Eckman, Heritage of the Printer (Philadelphia: North American Publishing Co., 1965), p. 114.
31. Morris Fuller Benton, Letter to Ben Lewis, August 3, 1938.
32. Idem, Letter to Caroline Benton Gregg, March 8, 1939; and Caroline Benton Gregg, Letter to Patricia Cost, February 1, 1984.
33. Gregg, Interview, tape 2, p. 1.
34. Morris Fuller Benton, Letter to Caroline, October, 16, 1944.
35. Idem, Letter to Caroline, November 15, 1944.
36. Gregg, Interview, tape 2, p. 3.
37. "Obituaries: Morris Fuller Benton," New York Times, July 1, 1948.
38. Gregg, "Personal Remembrances," p. 13.
39. "Obituaries," New York Times.

CHAPTER NINE

CONCLUSION

The Bentons profoundly influenced the course of printing in this country and in the world. Although Morris "sublimated his talents to the needs of a commercial type foundry,"¹ nevertheless "his scores of remarkably successful designs ... form the backbone of American type design" today.² At the same time, "the mechanical wizardry that made the profusion of these types possible in the great mechanical age of typefounding is due in no small measure to the efforts of his illustrious father."³

The original hypothesis to this thesis stated that "the invention and development of the mechanical punch- and matrix-engraving machine had a seminal impact on the development of American typefaces between 1885 and 1936." It has been shown that Benton's machine had such an impact. Boyd Benton ushered in a new era in type design, and his son Morris's development of type families cemented the change.

Because the matrix engraver was so absolutely precise, it could easily cut matrices along family lines. Type families may seem an obvious extension of type design today, but during the Bentons' careers they were a radical, new development. Henry Lewis Bullen wrote that "the type family idea has done more than any other factor to impart harmony, with all needed degrees of emphasis, in American type composition. The saving in time it has effected is incalculable. It is

a great idea--all American."⁴ While we may take the family concept for granted today, it remains a fact that the Bentons brought it into general use.

Morris Benton's revival of classic typefaces was also greatly influenced by his father's inventions. With the appearance of families of these types, design and printing itself were changed forever. Benton had the tools he needed to judge his letters before they were cast into type, saving ATF thousands of dollars, and making his work much easier. The matrix engraver also allowed him to indulge his natural tendencies toward perfection.

As Bullen stated in 1927, "For every [type] design that is now in use, hundreds have gone into the limbo of forgetfulness. No work of art of any kind has ever gained permanent approval unless it has its roots in the arts of the past. Good art is a growth from age to age."⁵ Morris Benton's revival of so many classic faces was a real service to his age.

Although he was not especially well known as a personality in his field, the younger Benton nevertheless set off trends that the more famous type designers of his day picked up on. Baskerville, Garamond, and Cloister Oldstyle are cases in point. These types are very well known even today, and it was Benton who brought them back to the attention of the public.

The fact that printers in the 1980s must cope with a seemingly infinite number of changes and technological advances carries with it a tendency toward apathy for the accomplishments and successes of such historical figures as the Bentons. Certainly typefounding equipment is

no longer of any consequence to most printers, and the type family is so firmly entrenched that no one need give it a second thought. Printers are forever scrambling to attract new business and keep current customers satisfied--which leaves little time for ruminating on the history of the profession.

The little bit of history to which most printers are exposed is usually information about people already famous, whose reputations have been kept alive because of their charisma, charm, or eager admirers.

The obscurity of the Bentons in no way detracts from their real importance to typefounding and type design. It is simply their modesty and reserved natures that have kept them in the shadows. In one of Boyd Benton's obituaries in 1932, the editor of The Inland Printer wrote, "Linn Boyd Benton is a name that should and will rank in the annals of the printing industry with the names of other great men whose devotion to their work and consequent achievements placed our industry in the dominant position it holds today."⁶

FOOTNOTES TO CHAPTER 9

1. Alexander Lawson, "Morris Fuller Benton Deserves More Than Obscurity," Inland Printer/American Lithographer, October 1961, p. 81.
2. M.F. McGrew, "The Bentons, Father & Son," Reprinted from Typographic i, no date, p. 4.
3. Ibid.
4. Henry Lewis Bullen, "What the Typefounders Have Done," Inland Printer, August 1927, p. 763.
5. Ibid., p. 762.
6. "Achievements of Linn Boyd Benton Vital to Industry's Progress," Inland Printer, August 1932, p. 53.

APPENDIX A

LIST OF MORRIS BENTON TYPES

Taken from Maureen D. Hitchcock's Benton Types, with one correction.

Note: Where two conflicting dates are given for the same typeface, the Steve Watts date is given here.

1. Adscript, 1916
2. Agency Gothic, 1933
3. Agency Gothic Open, 1934
4. Alternate Gothic No. 1, 1906
5. Alternate Gothic Title No. 1, 1906 (abandoned)
6. Alternate Gothic No. 2, 1906
7. Alternate Gothic No. 3, 1906
8. American Backslant, 1934
9. American Text, 1932
10. Announcement Roman, 1916
11. Announcement Italic, 1916
12. Antique Shaded, 1911
13. Bank Gothic Bold, 1932
14. Bank Gothic Condensed Bold, 1933
15. Bank Gothic Condensed Light, 1933
16. Bank Gothic Condensed Medium, 1933
17. Bank Gothic Light, 1932
18. Bank Gothic Medium, 1933
19. Baskerville Roman, 1915
20. Baskerville Italic, 1915
21. Bodoni, 1909
22. Bodoni Italic, 1909
23. Bodoni Bold, 1912
24. Bodoni Bold Italic, 1913
25. Bodoni Bold Condensed, 1933 (abandoned)
26. Bodoni Bold Shaded, 1913
27. Bodoni Book, 1911
28. Bodoni Book Italic, 1911
29. Bodoni Book Expanded, 1924 (abandoned)
30. Bodoni Open, 1925
31. Bodoni Shaded Initials, 1914
32. Bold Antique, 1904
33. Bold Antique Italic, 1904 (abandoned)
34. Bold Antique Condensed, 1908
35. Bold Antique Extra Condensed, 1912 (abandoned)
36. Book Title, 1926 (abandoned)

37. Broadway, 1926
38. Broadway Condensed, 1929
39. Broadway Nos. 2 and 3, 1928 (abandoned)
40. Bulfinch Oldstyle, 1903
41. Bulmer Roman, 1926
42. Bulmer Italic, 1927
43. Cambridge Italic, 1934 (abandoned)
44. Canterbury, 1928
45. Card Bodoni, 1915
46. Card Bodoni Bold, 1917
47. Card Litho, 1917
48. Card Light Litho, 1917
49. Card Roman, 1925
50. Caslon, American, 1922
51. Caslon Italic, American, 1922
52. Calson Initials, no date
53. Castile, 1931 (abandoned)
54. Century Bold, 1906
55. Century Bold Italic, 1906
56. Century Bold Condensed, 1909
57. Century Bold Condensed Title, 1924 (abandoned)
58. Century Bold Extended, 1910
59. Century Catalogue, 1922
60. Century Catalogue Italic, 1922
61. Century Expanded, 1900
62. Century Expanded Italic, 1900
63. Century Oldstyle, 1906
64. Century Oldstyle Italic, 1906
65. Century Oldstyle Bold Italic, 1910
66. Century Oldstyle Bold Condensed, 1916
67. Century Schoolbook, 1920
68. Century Schoolbook Italic, 1920
69. Century Schoolbook Bold, 1924
70. Cheltenham Bold, 1904
71. Cheltenham Bold Italic, 1905
72. Cheltenham Bold Black Outline, 1913 (abandoned)
73. Cheltenham Bold Condensed, 1905
74. Cheltenham Bold Condensed Italic, 1905
75. Cheltenham Bold Condensed Shaded, 1915 (abandoned)
76. Cheltenham Bold Extended, 1906
77. Cheltenham Bold Extra Condensed, 1906
78. Cheltenham Bold Extra Condensed Title, 1907
79. Cheltenham Bold Initials, 1912 (abandoned)
80. Cheltenham Bold Outline, 1905
81. Cheltenham Bold Shaded, 1913
82. Cheltenham Bold Italic Shaded, 1915
83. Cheltenham Bold Slope, 1905
84. Cheltenham Extrabold, 1911
85. Cheltenham Extrabold Shaded, 1914
86. Cheltenham Inline, 1907

87. Cheltenham Inline Extended, 1907
88. Cheltenham Inline Extra Condensed, 1907
89. Cheltenham Medium, 1910
90. Cheltenham Medium Italic (Non-Kerning), 1910
91. Cheltenham Medium Condensed, 1914
92. Cheltenham Medium Expanded, 1914
93. Cheltenham Monotone, 1907 (abandoned)
94. Cheltenham Oldstyle Condensed, 1910
95. Cheltenham Rimmed, 1907 (abandoned)
96. Cheltenham Wide, 1905
97. Chic, 1927
98. Civilite, 1923
99. Civilite No. 2, 1924 (abandoned)
100. Clearface, 1907
101. Clearface Italic, 1908
102. Clearface Bold, 1908
103. Clearface Bold Italic, 1908
104. Clearface Gothic, 1909
105. Clearface Heavy, 1909
106. Clearface Heavy Italic (Non-Kerning), 1909
107. Cloister Black, 1904
108. Cloister Oldstyle, 1913
109. Cloister Italic, 1913
110. Cloister Bold, 1913
111. Cloister Bold Italic, 1915
112. Cloister Bold Condensed, 1919
113. Cloister Bold Title, 1915
114. Cloister Cursive, 1922
115. Cloister Cursive Handtooled, 1923
116. Cloister Lightface, 1924
117. Cloister Lightface Italic, 1924
118. Cloister Title, 1915
119. Copperplate Gothic Shaded, 1912
120. Cromwell, 1916
121. Cushing Antique, 1905
122. Cushing Antique Italic, 1907 (abandoned)
123. Della Robbia Light, 1918
124. Dynamic Medium, 1928
125. Eagle Bold, 1934
126. Engravers Bodoni, 1926
127. Engravers Bodoni Open, 1926 (abandoned)
128. Engravers Old English, before 1903
129. Engravers Old English Bold, 1907
130. Engravers Shaded, 1927
131. Engravers Text, 1930
132. Franklin Gothic, 1905
133. Franklin Gothic Italic (Non-Kerning), 1913
134. Franklin Gothic Condensed, 1906
135. Franklin Gothic Condensed Shaded, 1914
136. Franklin Gothic Extended, 1906 (abandoned)
137. Franklin Gothic Extra Condensed, 1906

138. Freehand, 1919
139. Garamond, 1917
140. Garamond Italic, 1918
141. Garamond Bold, 1920
142. Garamond Bold Italic, 1923
143. Garamond Open, 1913
144. Globe Gothic, 1900
145. Globe Gothic Bold, 1907
146. Globe Gothic Bold Italic, 1908
147. Globe Gothic Condensed, 1900
148. Globe Gothic Extended, 1900
149. Globe Gothic Extra Condensed, 1900
150. Goudy Bold, 1918
151. Goudy Bold Italic, 1920
152. Goudy Catalogue, 1921
153. Goudy Catalogue Italic, 1921
154. Goudy Extrabold, 1927
155. Goudy Extrabold Italic, 1927
156. Goudy Handtooled, 1922
157. Goudy Handtooled Italic, 1922
158. Goudy Title, 1918
159. Gravure, 1927
160. Greeting Monotone, 1927
161. Grolier, 1934 (abandoned)
162. Headline Gothic, 1936
163. Hobo, 1910
164. Hobo Light, 1917
165. Hobo Shaded, 1914 (abandoned)
166. Invitation, 1917
167. Invitation Shaded, 1914
168. Light Oldstyle, 1916
169. Lightline Gothic, 1908
170. Lightline Title Gothic, 1921
171. Lincoln, 1935 (abandoned)
172. Lithograph Shaded, 1914
173. Louvaine Bold, 1929
174. Louvaine Bold Italic, 1929
175. Louvaine Light, 1929
176. Louvaine Light Italic, 1929
177. Louvaine Medium, 1929
178. Louvaine Medium Italic, 1929
179. Mercantile, before 1903
180. Miehle Extra Condensed, 1906
181. Miehle Extra Condensed Title, 1907
182. Modernique, 1928
183. Monotone Gothic, 1907
184. Monotone Title, 1908
185. Motto, 1915
186. News Gothic, 1908
187. News Gothic Condensed, 1908

187. News Gothic Condensed, 1908
188. News Gothic Extra Condensed, 1908
189. News Gothic Extra Condensed Title, 1908
190. Norwood Roman, 1906
191. Novel Gothic, 1928
192. One-tone Gothic, 1912 (abandoned)
193. Othello, 1934
194. Packard Bold, 1917
195. Paramount, 1930
196. Parisian, 1928
197. Pen Print Open, 1921
198. Phenix, 1935
199. Piranesi Bold, 1933
200. Piranesi Bold Italic, 1931
201. Piranesi Bold Italic Plain Caps, 1932
202. Piranesi Italic, 1930
203. Piranesi Italic Plain Caps, 1930
204. Poster Gothic, 1934
205. Raleigh Gothic Condensed, 1934
206. Rialto, 1930
207. Rockwell Antique, 1931
208. Roycroft, 1898
209. Rugged Roman, 1912
210. Schoolbook Oldstyle, 1924
211. Shadow, 1934
212. Souvenir, 1915
213. Sterling, 1917
214. Sterling Cursive, 1919
215. Stymie Black, 1935
216. Stymie Black Italic, 1935
217. Stymie Bold, 1931
218. Stymie Bold Italic, 1933
219. Stymie Light, 1931
220. Stymie Light Italic, 1932
221. Stymie Medium, 1931
222. Stymie Medium Italic, 1932
223. Thermo 100 Series, 1931
224. Thermo 200 Series, 1931
225. Thermo 300 Series, 1931
226. Tower, 1934
227. Tower Bold, 1936
228. Two-tone Italic, 1930 (abandoned)
229. Typo Roman, 1926
230. Typo Roman Shaded, 1924
231. Typo Script, 1903
232. Typo Script Extended, 1903
233. Typo Shaded, 1906
234. Typo Slope, 1905
235. Typo Upright, 1905
236. Typo Upright Bold, 1911
237. Ultra Bodoni, 1929

- 238. Ultra Bodoni Italic, 1928
- 239. Ultra Bodoni Condensed, 1930
- 240. Ultra Bodoni Extra Condensed, 1933
- 241. Venetian, 1913
- 242. Venetian Italic, 1913
- 243. Venetian Bold, 1917
- 244. Wedding Text, 1907
- 245. Wedding Text Shaded, 1916
- 246. Whitehall, 1934

APPENDIX B
MORRIS BENTON'S OUTPUT

<u>YEAR</u>	<u>NUMBER OF DESIGNS</u>
1898	X
1899	
1900	XXXXXX
1901	
1902	
1903	XXXXX
1904	XXXX
1905	XXXXXXXXXX
1906	XXXXXXXXXXXXXXXXXX
1907	XXXXXXXXXXXXXXXXXX
1908	XXXXXXXXXXXXXX
1909	XXXXXX
1910	XXXXXX
1911	XXXXX
1912	XXXXXX
1913	XXXXXXXXXXXXXX
1914	XXXXXXXXXX
1915	XXXXXXXXXXXXXX
1916	XXXXXXX
1917	XXXXXXXXXXXXX
1918	XXXX
1919	XXX
1920	XXXX
1921	XXXX
1922	XXXXXXX
1923	XXX
1924	XXXXXXXXXX
1925	XX
1926	XXXXXX
1927	XXXXXXX
1928	XXXXXXX
1929	XXXXXXXXXX
1930	XXXXXXX
1931	XXXXXXXXXXXXX
1932	XXXXXX
1933	XXXXXXXXXXXXX
1934	XXXXXXXXXXXXXX
1935	XXXX
1936	XX

BIBLIOGRAPHY

- "Achievements of Linn Boyd Benton Vital to Industry's Progress," Inland Printer, August 1932, p. 53-4.
- American Institute of Graphic Arts. "American Type Designers and Their Faces on Exhibit, September 2 to October 30, 1948." Chicago: Lakeside Press, 1948.
- American Specimen Book of Type Styles. American Type Founders Company, 1912.
- "American Type Designers Exhibit Turns Up Some Not-So-Widely-Known Styles." Inland Printer, June 1948, p. 51-2.
- "ATF Unveils New Century Face." Industrial Art Methods, December 1964, p. 22.
- "ATF Unveils New Century Type Face in Historic Site." Printing News, October 17, 1964.
- Beaujon, Paul. "The Garamond Types: Sixteenth & Seventeenth Century Sources Considered." Fleurion Anthology (Boston: David R. Godine, 1979), p. 181-213.
- Berry, W. Turner; Johnson, A.F.; and Jaspert, W. Pincus. Encyclopedia of Type Faces. London: Blandford Press, 1970.
- Benton, Charles R. Letter to Linn Boyd Benton. July 1, 1907. (Type-written, p. 12-14 only.)
- Benton, Charles S. Handwritten eulogy, No date.
- Benton, Linn Boyd. "Inventions of Linn Boyd Benton," for Who's Who in Printing in the United States, no date. (Typewritten.)
- . Letter to granddaughter Caroline in the shape of a dog. July 26, 1908.
- . Letters to Morris Fuller Benton. 1894-1900, 1892-93.

Benton, Mary Ethel Bottum. "The Book of the Oldsmobile with the Bentons in it." April 1904-November 1906. (Handwritten, excerpts.)

Benton, Morris Fuller. Letter to Ben Lewis. August 3, 1938.

----. Letter to N.J. Werner. June 9, 1936.

----. Draft-Deferred Status Application. 1918.

----. Letters to his daughter Caroline, 1937-8.

----. Letter to Miss Ethel Bottum. Ithaca: January 8, 1893.

----. Notes on the life of Charles Swan Benton. (Typewritten.)

Benton, Waldo & Co., Type Founders. "Benton's Punch Engraving Machine." No date. (Advertising brochure.)

Benton and Waldo Foundry. Portable Book of Specimens. Milwaukee: Benton and Waldo Foundry, 1893.

Biegeleinsen, Jacob Israel. Art Directors' Workbook of Type Faces. New York: Arco Publishing Company, 1976.

Blumenthal, Joseph. Art of the Printed Book. New York: Pierpont Morgan Library, 1973; and Boston: David R. Godine, 1973.

"Bodoni." Inland Printer, December 1939, p. 53-7.

Book of American Types: ATF Standard Faces. Jersey City: ATF Sales Corp., 1934.

Bullen, Henry Lewis. "Bodoni, Benjamin Franklin and Bodoni's Grandson." American Bulletin, April/May 1912, p. 1-2.

----. "A Composite Showing of Goudy Types." American Type Founders Co., 1927.

----. "The Creators of the New Era in Typefounding." Inland Printer, August 1924, p. 761-4.

----. "Discursions of a Retired Printer, No. VI." Inland Printer, December 1906, p. 353-58.

----. "Discursions of a Retired Printer, No. VII." Inland Printer, January 1907, p. 513-21.

----. "Discursions of a Retired Printer, No. VIII." Inland Printer, February 1907, p. 673-680.

- "Discursions of a Retired Printer, No. IX." Inland Printer, March 1907, p. 856-862.
 - "The Effect of the Composing Machines Upon the Typefounding Industry." Inland Printer, July 1924, p. 595-7.
 - "Linn Boyd Benton--The Man and His Work." Inland Printer, October 1922, p. 60-4.
 - "Nicolas Jenson, Printer of Venice." San Francisco: John Henry Nash, 1926.
 - "Observations on Type Designs and Type Designers and Their Press Agents." Inland Printer, September 1923, p. 833-5.
 - "Origin and Development of the Linotype Machine, Part 1." Inland Printer, February 1924, p. 769-71.
 - "Origin and Development of the Linotype Machine, Part 2." Inland Printer, March 1924, p. 936-8.
 - "Robert Wickham Nelson: An Intimate History." Inland Printer, September 1926, p. 905-9.
 - "What the Typefounders Have Done." Inland Printer, August 1927, p. 762-3.
 - "Why a Typographic Library?" American Bulletin, June 1910.
- Carter, Harry G. "Letter Design and Typecutting." Journal of the Royal Society of Arts, October 1954, p. 878-95.
- "Observations on Modern Type Design." The Gutenberg-Gesellschaft Jahrbuch, 1929, p. 297-302.
 - "Optical Scale in Type Founding." Typography 4, Autumn 1937 (Reprinted in Printing Historical Society Bulletin No. 13, September 1984, p. 144-48).
- "The Clearface Family, Optically Correct in Design." American Bulletin, July 1910, p. 7.
- Coggeshall, Howard W. "The Designer." Typographer, Spring 1960, p. 19-24.
- Cornell University Report Cards for Morris F. Benton. 1892-3, 1894-5, 1895-6.
- "Crowell-Collier Adopts a Type Developed by London Times." Inland Printer, September 1943, p. 51-2.

- "Deaths in the Trade: Linn Boyd Benton." American Printer, August 1932, p. 52.
- Denman, Frank. The Shaping of Our Alphabet. New York: Alfred A. Knopf, 1955.
- "Description of Self-Spacing Type." Desk Book of Type and Printing Materials. San Francisco: American Type Founders Company, 1900, p. 82-5.
- De Vinne, Theodore Low. "The Century's Printer on the Century's Type." Century Magazine, March 1896, p. 794-6.
- . The Practice of Typography: Plain Printing Types. New York: The Century Co., 1900.
- Duffield, Benjamin P. "An Appreciation for Cheltenham." American Bulletin, December 1915, p. 6-7.
- Eckman, James. Heritage of the Printer. Philadelphia: North American Publishing Company, 1965.
- . "The Immortal Century Type Face and the Bentons, Father and Son." The Printer's Digest, November 1964, p. 4-6.
- . Letter to Patricia Cost, July 8, 1985.
- . "The Story of an Historic Typeface--Century and the Bentons." Industrial Art Methods, December 1964, p. 22-4.
- Ettenberg, Eugene M. "American Type Designers and Their Work: An R.R. Donnelley Exhibition." American Printer, May 1948, p. 17-22.
- . Type for Books and Advertising. New York: D. Van Nostrand Co., Inc., 1947.
- Frazier, Julius Leroy. Type Lore: Popular Types of Today, Their Origin and Use. Chicago: Frazier, 1925.
- Goudy, Frederic W. Elements of Lettering. New York: Mitchell Kennerley, 1922.
- . A Half-Century of Type Design & Typography, 1895-1945. New York: The Typophiles, 1946.

- . Letter to Morris Fuller Benton, July 28, 1932.
- . "Type Design: A Homily." Ars Typographica, Autumn 1934, No. 4.
- . "Type Designs: Old and New." Ars Typographica, Spring 1918, p. 38-40.
- . Typologia: Studies in Type Design & Typemaking. Berkeley: University of California Press, 1940.
- Gregg, Caroline Benton. "Books, Pamphlets, etc. among the personal papers of Morris F. Benton." August 1968.
- . Interview with Patricia Cost. Milwaukee, March 20, 1984.
- . "Personal Remembrances of My Father, Morris Fuller Benton." March 1965. (Typewritten.)
- "Hails Linn Benton's Type Invention As One Of Greatest Of Present Era," Plainfield Courier-News, October 9, 1930.
- Haley, Allan. "Typographic Milestones: Morris Fuller Benton." U&lc, September 1983, pp. 16-19.
- Hillman, Harry. "The Types of a Quarter Century." Inland Printer, August 1927, p. 811-17.
- Hitchcock, Maureen Delaney. Benton Types: Typefaces Designed or Adapted by Morris Fuller Benton. Rochester, NY: The Press of the Good Mountain, 1978.
- Hlasta, Stanley C. Printing Types & How to Use Them. Pittsburgh, PA: Carnegie Press, 1950.
- Hopper, A. Raymond. "Fitting: A Vital Step in the Perfection of a Type Face." Inland Printer, April 1947, p. 50-2.
- . "The Romance of Roycroft." Inland Printer, June 1937, p. 35-6.
- . "What Are 'Enduring' Type Faces?" Inland Printer, April 1947, p. 30-1.
- Jones, Thomas Roy. "Printing in America--and ATF." New York: Newcomen Society of England, American Branch, 1948.

- Kaup, W.J. "Modern Automatic Type Making Methods." American Machinist, December 16, 1909, p. 1042-46.
- Lawson, Alexander. "After 70 Years Century Typefaces Hold Their Own." Inland Printer/American Lithographer, January 1965, p. 46-7.
- . "Anatomy of a Type--Bulmer." Printing Impressions, August 1972, p. 44-5.
- . "Anatomy of a Type: Century, Part 1." Printing Impressions, October 1981, p. 42-3.
- . "Anatomy of a Type: Century, Part 2." Printing Impressions, December 1981, p. 40.
- . "Anatomy of a Type: Century, Part 3." Printing Impressions, January 1982, p. 62-3.
- . "Anatomy of a Type: Cheltenham." Printing Impressions, March 1971, p. 54-5.
- . "Frederic William Goudy: An Appreciation." Typographer's Digest, Spring 1969, p. 21.
- . "Morris Fuller Benton Deserves More Than Obscurity." Inland Printer/American Lithographer, October 1961, p. 80-1.
- . Printing Types: An Introduction. Boston: Beacon Press, 1971.
- . "The Prolific Career of Morris Benton." Printing Impressions, April 1971, p. 76-7.
- . "'Rugged' Typefaces Are Latest Revival." Inland Printer/American Lithographer, April 1965, p. 64-5.
- . "Young Typographers Are Going Back to Design of 'Roaring Twenties.'" Inland Printer/American Lithographer, March 1964, p. 70-1.
- and Provan, Archibald. 100 Type Histories, Volume I and II. Arlington, VA: National Composition Association, 1983.
- Legros, Lucien Alphonse, and John Cameron Grant. Typographical Printing Surfaces. London: Longmans, Green, and Co., 1916.
- "Linn Boyd Benton, 'Edison of Typographic Industry,' Is Dead at His Home Here." Plainfield Courier-News, July 16, 1932, p. 1, 6.

- "Little Life Stories of Live Men Known to the Printers of America: Linn Boyd Benton: Typefounder, Inventor." American Printer, March 5, 1923, p. 34.
- MacKaye, Milton. "Profiles: Glorifier of the Alphabet." The New Yorker, January 14, 1933, p. 20-4.
- Mallison, David Walker. "Henry Lewis Bullen and the Typographic Library and Museum of the American Type Founders Co." Master's Thesis, Columbia University, 1976.
- Marder, Walter. Interview with Patricia Cost, New Jersey, November 1984.
- Marriage certificate for Morris Fuller Benton. September 1, 1897.
- McGrew, M.F. "American Metal Typefaces of the Twentieth Century." Excerpts. (Unpublished book.)
- . "Benton. ATF 566." Pittsburgh: The Press of the Licorice Cat, no date. (Card.)
- . "Benton...or Whitehall." It's a Small World, Number 26, 1980.
- . "The Bentons, Father & Son." Typographic i, March 1978, Reprinted, by The Press of the Licorice Cat, p. 1-4.
- . "Conversation on Whitehall." Pittsburgh: The Press of the Licorice Cat, 1969.
- . Interview with Patricia Cost, Pittsburgh, September 3, 1984.
- . Letter to Patricia Cost. June 29, 1985.
- . "My Quest for Morris Benton." Pittsburgh: The Press of the Licorice Cat, 1978.
- McMurtrie, Douglas. Type Design. New York: Bridgman Publishing, 1927.
- Middleton, R. Hunter. Chicago Letter Founding. Chicago: The Black Cat Press, 1937.
- "Morris Fuller Benton." (Obituary.) Inland Printer, August 1948, p. 72.
- "Morris Fuller Benton." (Obituary.) The New York Times, July 1, 1948, p. 23.
- "Morris Fuller Benton," for The National Cyclopedia of American Biography, January 5, 1951. (Typewritten.)
- "Morris Fuller Benton." October 3, 1925. (Typewritten biography.)

Murphy, John Allan. "Morris Benton--Type Designer-Executive, Parts 1-3." Inland Printer, March 1936 (p. 33-6); April 1936 (p. 42-4), May 1936 (p. 69-71).

"Narrative of Cloister, Cloister Oldstyle Italic, and Cloister Title." American Bulletin, April 1914.

"The Only Machine of Its Kind in the World." (Advertisement.) Printing, July 1935, cover and p. 33.

"Origin of Point-Set Type." Inland Printer, March 1907, p. 852-3.

Patents:	No. 18,775	December 4, 1888	(Linn Boyd Benton)
	No. 20,120	August 26, 1890	(Linn Boyd Benton)
	No. 32,298	February 27, 1900	(F.W. Goudy and J.W. Phinney)
	No. 37,072	August 9, 1904	(Will H. Bradley and Morris Fuller Benton)
	No. 37,234	November 15, 1904	(Morris Fuller Benton)
	No. 37,235	November 15, 1904	(Morris Fuller Benton)

"Resolved: That the Directors of the American Type Founders Company place upon record" Minutes, October 14, 1932.

Ritter, David L. "The Contribution to American Type Design Made by Morris Fuller Benton." RIT thesis. January 1971.

Rollins, Carl Purlington. "American Type Designers and Their Work." (Brochure for exhibit, November 3, 1947 to February 27, 1948.)

Rosen, Ben. Type and Typography: The Designer's Type Book. New York: Van Nostrand Reinhold Co., 1976.

"'Scoreboard' Reveals Popularity Trends in Type Faces." Inland Printer, June 1945, p. 55.

Siegfried, Laurance B. "Ninth Annual Frederic W. Goudy Distinguished Lecture in Typography." Rochester: Press of the Good Mountain, p. 1-18.

Simpson, Francis X. Notebook: Record of Matrices Cut at the ATF Co., 1896-1944. (Handwritten.)

Specimen Book and Catalogue Dedicated to the Typographic Art. American Type Founders Company, 1923.

Swain, Elizabeth Benton. "Mary Ethel Bottum." June 1973. (Typewritten.)

----. Telephone conversation with Patricia Cost. July 6, 1985.

"Two Men Whose Work Greatly Benefits All Typographers." Inland Printer, December 1925, p. 453.

"Typographic Scoreboard." Inland Printer. September 1939, p. 69.

"Typography's Forgotten Man: Morris Fuller Benton." Type Talks, May/June 1958, pp. 11-12.

Updike, Daniel Berkeley. Printing Types: Their History, Forms and Use. Cambridge: Harvard University Press, 1922.

Van Horn, Ralph. Letter to Patricia Cost, July 7, 1984.

Warde, Beatrice. "Cutting Types for the Machines: Layman's Account." The Dolphin, No. 2, 1935, p. 60-70.

Watts, Stevens Lewis. "Henry Lewis Bullen and His Work." Warren City, VA: The Privateer Press, 1966.

----. Letter to Dr. James Eckman, March 11, 1964.

----. Letter to David Ritter, May 30, 1965.

----. Memo for Dr. Eckman—Century Roman and Century Oldstyle. October 14, 1963.

----. Notebook. 1895-1966. (Handwritten.)

----. "Some Type Series Originated or Restyled by Morris Fuller Benton." June 1965.

----. "Typorhythmics: A Pastime Celebration." The Pastime Printer, No. 4, March 1957, p. 8.

Werner, N.J. "Saint Louis' Place on the Type Founders' Map." Inland Printer, August 1927, p. 764-66.

----. "St. Louis in Type-Founding History." Share Your Knowledge Review, January 1941, p. 21-4.

----. "Weibking Created Popular Face in Chicago, Friend Discloses."
Inland Printer, November 1932, p. 71-3.

Zapf, Hermann. Interview with Patricia Cost, Rochester, New York,
August 9, 1985.