The Committee on Publications of the Grolier Club certifies that this copy of "Notable Printers of Italy during the Fifteenth Century" is from an edition of four hundred copies printed in the summer of the year 1909. Three hundred copies on plain and three copies on Japan paper are for the Grolier Club, and ninety-seven copies are reserved for the author.
NOTABLE PRINTERS OF ITALY DURING THE FIFTEENTH CENTURY
NOTABLE PRINTERS OF ITALY DURING THE FIFTEENTH CENTURY

ILLUSTRATED WITH FACSIMILES FROM EARLY EDITIONS

AND WITH REMARKS ON EARLY AND RECENT PRINTING

BY THEODORE LOW DEVINNE

THE GROLIER CLUB 
OF THE CITY OF NEW YORK
1910
CONTENTS

Introduction ........................................ 15
Early Italian Books ................................. 21
The Older Roman Alphabets ...................... 29
Sweinheim and Pannartz .......................... 37
Conrad Sweinheim ................................ 49
Ulric Hahn ........................................... 53
John Philip de Lignamine ....................... 56
George Herolt ....................................... 58
George Lauer ........................................ 60
John and Wendelin of Speyer .................... 65
Wendelin of Speyer ................................ 68
Nicolas Jenson ....................................... 72
Andrew Torresano .................................. 79
Bartholomew of Cremona .......................... 82
Erhard Ratdolt ...................................... 85
Franz Renner ........................................ 88
Jacob Rubeus ................................******* 92
Baptista de Tortis .................................. 94
Bartholomew de Zanis ............................. 98
Aldus Manutius ...................................... 100
John Numeister ..................................... 117
Sixtus Riessinger .................................. 119
Antonio Miscomini ................................. 121
Contents

Antonio Zarotto ............ 123
The Ripoli Press .......... 127
Caligula Bazalerio ....... 128
Ulric Gering ............. 131
Claude Garamond ......... 134
Large and Small Types .... 137
Type-Founding ........... 147
Printing Ink ............. 159
Paper ................... 163
Composition .............. 171
The Hand Press .......... 187
Authorities ............. 201
Index ................... 203
FACSIMILES

Plate

The R Printer of Strasburg, 1465–70

1 Manuscript on vellum. Unknown scribe
De Oratore of Cicero.
From library of Mr. H. C. Hoskier of the Grolier Club.

2 Antonio Zarotto. Milan, 1490
The Sforziada of Giovanni Simonetta. Proctor 5828.
Illuminated Manuscripts of the British Museum.

Latin Uncials and Minuscules
The Alphabet by Dr. Isaac Taylor.

3 Sweinheim and Pannartz. Subiaco, 1465
From library of Mr. Robert Hoe of the Grolier Club.

4 Reproduction of the Types of the Lactantius
Mr. C. H. St. John Hornby’s reprint of the Inferno of Dante. 1902.

5 Sweinheim and Pannartz. Rome, 1470
<table>
<thead>
<tr>
<th>Plate</th>
<th>Facsimiles</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Arnold Pannartz. Rome, 1476</td>
<td>47</td>
</tr>
<tr>
<td></td>
<td>St. Thomae Questiones de Veritate. Hain &quot;*1420.&quot; Proctor 3533.</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Conrad Sweinheim. Rome, 1478</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td>Map of Sardinia from Geography of Ptolemy. Hain 13537. Proctor 3613.</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Conrad Sweinheim. Rome, 1478</td>
<td>51</td>
</tr>
<tr>
<td>9</td>
<td>Ulric Hahn. Rome, 1475</td>
<td>55</td>
</tr>
<tr>
<td>10</td>
<td>John Philip de Lignamine. Rome, 1482</td>
<td>57</td>
</tr>
<tr>
<td></td>
<td>Oratio in vitum et merita divi S. Bonaventure. Hain &quot;*10830.&quot;</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>George Herolt. Rome, 1481</td>
<td>59</td>
</tr>
<tr>
<td>12</td>
<td>George Lauer. Rome, 1470</td>
<td>61</td>
</tr>
<tr>
<td></td>
<td>From collection of Mr. H. C. Hoskier.</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>A Printer at Rome, 1474</td>
<td>63</td>
</tr>
<tr>
<td>Plate</td>
<td>Facsimiles</td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>John and Wendelin of Speyer. Venice, 1470.</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Wendelin of Speyer. Venice, 1475.</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Nicolas Jenson. Venice, 1471</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>John of Cologne and Nicolas Jenson. Venice, 1481.</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Andrew Torresano. Venice, 1498.</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Bartholomew of Cremona. Venice, 1472</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vergili Maronis Opera. Proctor 4223.</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Ratdolt, Löslein and Maler. Venice, 1477</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Erhard Ratdolt. Venice, 1483</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Franz Renner. Venice, 1472</td>
<td></td>
</tr>
<tr>
<td>Plate</td>
<td>Facsimiles</td>
<td>Page</td>
</tr>
<tr>
<td>-------</td>
<td>------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>23</td>
<td>Franz Renner. Venice, 1478</td>
<td>91</td>
</tr>
<tr>
<td></td>
<td>Johannes de Sacrobosco: Sphaera Mundi. Hain *14108. Proctor 4175.</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Jacob Rubeus. Venice, 1474</td>
<td>93</td>
</tr>
<tr>
<td>25</td>
<td>Baptista de Tortis. Venice, 1483</td>
<td>95</td>
</tr>
<tr>
<td>26</td>
<td>Bartholomew de Zanis. Venice, 1496</td>
<td>97</td>
</tr>
<tr>
<td></td>
<td>Portrait of Aldus Manutius</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>From Firmin-Didot's Alde Manuce et l'Hellénisme à Venise.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aldus Manutius. Venice, 1495</td>
<td>101</td>
</tr>
<tr>
<td></td>
<td>Imprint of Bartholomew Trot</td>
<td>108</td>
</tr>
<tr>
<td>27</td>
<td>Aldus Manutius. Venice, 1502</td>
<td>109</td>
</tr>
<tr>
<td></td>
<td>Small Greek Type of Statius of 1502</td>
<td>111</td>
</tr>
<tr>
<td></td>
<td>Woodcut of Hypnerotomachia of 1499</td>
<td>112</td>
</tr>
</tbody>
</table>
## Facsimiles

<table>
<thead>
<tr>
<th>Plate</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device of Aldus as shown in Statius of 1502</td>
<td>113</td>
</tr>
<tr>
<td>Portrait of Paul Manutius From Renouard's Annales de l'Imprimerie des Alde.</td>
<td>114</td>
</tr>
<tr>
<td>28 Paul Manutius. Venice, 1566 Preface to Orthographiae Ratio ab Aldo Manutio, etc. Brunet, III, col. 1384.</td>
<td>115</td>
</tr>
<tr>
<td>30 Sixtus Riessinger. Naples, 1471 (?) Phalaridis Epistole. Hain 12883.</td>
<td>118</td>
</tr>
<tr>
<td>31 Antonio Miscomini. Florence, c. 1483 S. Agostino: de la Città di Deo. Hain *2071. Proctor 6145.</td>
<td>120</td>
</tr>
</tbody>
</table>
# Facsimiles

<table>
<thead>
<tr>
<th>Plate</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>38</td>
<td>Christopher Froshover. Zurich, 1543 Biblia Sacrosancta. Copinger, p. 308.</td>
<td>139</td>
</tr>
<tr>
<td>40</td>
<td>Presswork and Composition as done in 1520 Device of Jodocus Badius of Paris. Presswork and Composition as done in 1564 From Jost Amman's Book of Trades. Early Inking Balls A playing card of the sixteenth century, from Chatto.</td>
<td>189</td>
</tr>
<tr>
<td>41</td>
<td>Unidentified Printer at Lyons, 1499 The Dance of Death.</td>
<td>195</td>
</tr>
</tbody>
</table>
PREFACE

Early types can be examined to best advantage in early books, where they present many characteristic adjuncts in the ink, paper, and impression given to them on publication. Yet readers find the study of old types really difficult. Old books printed with these early types are seldom seen outside of large libraries, and even there a book most desired may not be found, nor may two or more books showing the different styles of notable printers be readily compared.

Facsimiles of early types, as made by the bibliographers of the eighteenth century and even later, are often unsatisfactory. They usually appear in the form of detached lines or short paragraphs that have been traced by hand on transparent paper and transferred to blocks of wood or plates of copper. The competent engravers of these tracings have not always been happy in making acceptable counterfeits. The reader has had to wait for the combination of photography with chemical engraving before a printing surface could be produced that would be fairly trustworthy. Facsimiles of early types drawn and engraved by hand and printed on stone or copper lack many of the typographic mannerisms that can be produced only from a printing surface in relief. Even when most carefully engraved, detached lines or short paragraphs are scant and unsatisfactory.
Preface

The facsimiles usually attempted are those of types from famous printers, which often lead a hasty reader to unsafe conclusions. There were many able printers in Italy during the fifteenth century, yet the Roman type of Jenson, in one face only, has been exhibited for many years as the true model of good form. During this period types of merit were made by Hahn, Herolt, Miscomini, Ratdolt, and Renner, but their merits have been neglected and not acknowledged. There were also unskilled printers. To correctly understand the peculiar typography of the time the facsimiles of amateurs as well as those of famous printers are really needed.

To show old types properly it seems necessary to present them of the exact size of the originals and with the generous margin that was then customary. The full-page facsimiles here shown are not hackneyed as illustrations; nearly all of them have been photo-engraved direct from old books, mainly in the collections of the writer and of fellow-members of the Grolier Club, and are here reprinted for the first time. Types of famous books only have not been preferred; illustrations have been selected to show the different faces of Roman type more or less acceptable to early Italian book buyers. That they are of unequal merit is to be expected, but they are of value as evidences of the slow improvement of type-founding and of frequent changes in methods of composition and in the planning and making of books. To these facsimiles have been added brief notices of the service rendered by their printers. Explanation has also been attempted of some of the peculiarities in old paper, composition, and presswork.
INTRODUCTION
As a rule, we should go to the old printers not so much for models to be slavishly followed as for ideas which can be adopted and improved by modern appliances and modern skill.

Pollard.
NOTABLE PRINTERS OF ITALY DURING THE FIFTEENTH CENTURY

INTRODUCTION

A PRINTED book of the fifteenth century, intelligently planned and put together, has mechanical merits that command respect even when its subject-matter is of small interest. Its paper, rarely harmed by time, is white and clear, seldom thick, but smooth and strong; its margins are usually ample, with a generous provision of white space for the subsequent insertion of the initials and borders of the illuminators, or the annotations of a studious or critical reader; its text-types, of twenty-three capital and twenty-four lower-case letters, larger than those of the ordinary modern book, are more easily discerned, and show a visible lane of relieving white space between lines. It has the mannerisms of its own time in abbreviations, thin spacing between words, and compact composition, but it does not annoy the reader with profligate use of Italic, small capitals, and types of display.
Standards of value are capricious

An early binding of large size fairly represents simplicity with dignity. At first glance it shows workmanship made for use more than for show. The tall folio was bound in boards of wood covered with tooled or stamped calf, fastened with thongs of leather or clasps of bronze; the prayer-book or classic text of small leaf was eased in vellum or pigskin and tied with tapes; but strong sewing and honest workmanship are as noticeable in books of small as of large size. A modern cloth-bound book of large edition that has been commercially made at a competitive rate will suffer in comparison with the old book that has been separately bound to order.

The bibliophile has strong binding to add to other reasons in his preference for old books, but binding and even illustrations of high merit are adjuncts only. To most readers paper and binding are but vehicles that bear the more valued burden of the author’s thoughts expressed in printing types. The first purpose of the book is to be read; it was not made to be shown or sold as an exhibit of skill in the crafts of paper-making, type-founding, engraving, or binding. Print occupies the largest part of the space and consequently receives the closest scrutiny; as a rule the type of every book receives the first consideration.

Other standards are frequently used for adjudging value. Fifteenth-century books may be prized for more than plain print or honest workmanship. Rarity is always important. To some collectors it is a great pleasure to be the owner of the only known copy of a book of celebrity. A first edition is of more value than a second, even if the later edition has been made accurate with needed corrections. The bookseller’s phrases of “limited edition,” “scarce,” “rare,” “unique,” indicate the scale of gradually increasing prices, largely governed by priority.
Mannerisms make early books attractive

Books may undergo some unexpected reverses. When new, adapted in manner and matter to popular taste, they meet ready sale and a fair appreciation; but when, to the readers of the next century, they become old-fashioned as to type and form, order is often given to depose them from the shelves they have encumbered, and to send them to dealers in second-hand books who may sell them for small sums. Most books of celebrity have suffered this fate. Copies of good works from famous printing houses have appealed from street book-stalls to passers-by, often in vain, for a purchaser who would pay but a small portion of the first price. At long intervals a curious book buyer may discover in an unexpected place a book of great merit at low price, and his good luck as its purchaser may stimulate another buyer to search for other lost children of literature. It follows that old books of merit have been slowly but steadily increasing in value.\(^1\)

Conformity to modern notions about the arrangement of types is never expected by the collector. Lines of type may be thin spaced to indistinctness, paragraphs welded together in confusion, words and phrases abbreviated unintelligibly, punctuation neglected, and capital letters used without system; but these eccentricities do not hurt but help the attractiveness of the old book. When it is of a

---

\(^1\)A rare copy of the Bible of Forty-two Lines, on vellum in three volumes folio, valued by its late owner at $25,000, is now in the library of Robert Hoe. The Psalter of 1457 was recently priced by a London bookseller at £5000. A First Folio of Shakspeare sold at auction in London early in 1907 for £3600, the Third Folio for £1550. Caxton’s Dictes and Sayings of Philosophers was sold in 1897 for £1320, and an imperfect copy of his Golden Legend for £465. Books from early printing houses of Italy have not been rated so high. The Lactantius of Sweinheim and Pannartz, the first book printed in Roman type, Subiaco, 1465, was sold at auction, in 1891, for $540; the Virgil of Aldus, Venice, 1501, in 1888, for £145; the Homer of Florence, 1488, in 1908, for $330. A very high price for an early Italian book is that of the Decameron of Valdarfer, 1471, which was sold at London, in 1812, for £2260, the buyer believing that it was the only surviving copy of the proscribed edition.
Black-letter rarely selected for modern books

notable edition, or bears the imprint of a famous printer, eccentricities are disregarded. The buyer expects to find in his prized old book all the mannerisms of its own time. He does not read it for instruction or amusement, or even consult it as a reference book of final authority when a modern edition of the same book is at hand, for he may have doubts of the sagacity of the earlier editor and of the accuracy of a text that has since received wise correction. Faults of many kinds must be tolerated, but with all their faults incunabula are always precious; they mark the evolution from old to new methods of book-making, and for that reason, if for no other, they receive respect and even a qualified reverence.

Respect has not always been wisely bestowed. Praise fairly due to some early books has been conceded unwisely to too many. Eulogies of the general superiority of fifteenth-century typography, written by critics a long time afterward when the printing of the seventeenth century was in its lowest estate, were justifiable then but are not warrantable now. An old book may be highly esteemed for its age and rarity, for its quaint mannerisms or its association with a famous editor, printer, binder, or owner; but these peculiarities need not invest it with a sacredness that puts it beyond examination and comparison. The reading world of this century has its own standard of fair workmanship in printing, by which it judges the old as well as the new. The new too often suffers by comparison, but the old is not always faultless.

Facsimiles of early books in Black-letter need not here be considered, for that form of type is not now used for texts. The types of the Bible of Forty-two Lines, usually accepted as the first book printed by Gutenberg and sometimes offered
Roman preferred to any other style

as a model of stately form, are now out of date and seldom used even in Germany as text-types for a modern book. Fraktur is the name of the style of face now preferred in that country for the ordinary book or newspaper, but the book of science or scholarship is oftener in Roman letter. An American or English publisher of the present day will occasionally decide to use the form of Black-letter known as Old English for a prayer-book or work of a kindred ecclesiastical nature, or for a medieval reprint, but he will never select it for the text of a popular book on a modern subject. Pointed Black-letter is, however, not entirely obsolete, for it is still made by the type-founders of Europe and America in many styles, but it finds its chief employment in job-printing for occasions of ceremony, where its formal and dignified appearance is appropriate.

Black-letter was a preferred type not only in Germany but in Holland, England, France, and Spain for nearly a century after the invention of printing. Caxton never used Roman letter, which was first introduced to England by William Pynson in 1518. Ulric Gering, of Paris, was one of the few early printers of France who provided acceptable books in Roman; but many of his books and those of rival printers in that city were in some form of Semigothic or Black-letter.

For more than two hundred years attempts have been made, sometimes to simplify, sometimes to enlarge by diacritical marks or other contrivances the usefulness of the Roman alphabet, but every novelty from the "real character" of Bishop Wilkins to the angular "visual alphabet" of a recent reformer has been rejected by the book buyer. Our Roman alphabet has admitted defects, but printing has made change difficult and almost impossible. Equally offensive have been strivings to improve letters with ornament.
Roman types in Germany before 1464

Roman types, but of a crude form, appeared in Germany almost as early as at Subiaco and Rome. Proctor specifies the written date of 1464 affixed by an illuminator to his copy of a Durandus printed in Roman type, by the so-called R printer of Strasburg, whose twenty-six books (all without printed date) have been the occasion of much controversy among bibliographers. By reason of some mannerisms of form in the types of other printers, it has been claimed that some of the more eminent printers of Italy may have been associates or pupils of this unnamed R printer whose face of Roman type is here facsimiled.

\[ \text{\textit{Scut narratur in historia tripartita: libro primo}} \\
\text{\textit{Constantinus}} \textit{actus christianus: cultum di-}} \\
\text{\textit{ninum in tantum dilexit}} \textit{et tabernaculum ad}} \\
\text{\textit{illar ecclesie factum secum deferri iubebat. Cui sacer-}} \\
\text{\textit{dores & ministri ecclesie assistebant: precibus inten-}} \\
\text{\textit{debant. Romanorum duellerie cohortes eius exemplo}} \\
\text{\textit{limiliter fecerunt: varium tamen diem secundum duer-}} \\
\text{\textit{fas opinions elegerunt. Vnde sacerdotes & diaconi do}} \\
\text{\textit{minicam diem coluerunt. Alii vero feriam sextam prer-}} \\
\text{\textit{ulerunt. Ga dominus in ea passus est. Vnde apud Ro-}} \\
\text{\textit{manos feria sexta prius celebrabatur; nec rationabili}} \]

The R Printer. Strasburg, 1465-70

From his edition of the Sophologium

That this Roman type was not approved by the ordinary German book buyer may be inferred from the R printer’s subsequent preference for Semigothic type. Hostility to the simple forms of Roman letter was widespread; the angular lower-case and the fantastic capital have ever since retained their preëminence in German print. There were, however, several German printers before the year 1500 who occasionally affixed Roman capitals to a Semigothic lower-case.
EARLY ITALIAN BOOKS

To study the best forms of early Roman letter the books of Italian printers need the closest examination. Proctor records the names of a large number of printers in different cities, towns, and monasteries of Italy before the year 1500, and has identified about seventeen hundred distinct faces and bodies of Roman form. In the facsimiles that follow many faces or styles appear, some from notable and some from petty printers. They show a remarkable zeal in typography and a general conformity to the old Roman model and to the Caroline minuscule then generally accepted for its mated lower-case.

Roman characters are to be found in greatest variety and of most pleasing form in books written or printed in Italy before the year 1500. In no other country were clerkly crafts that contribute to the making of books more diligently practised or held in higher esteem. Copyists of all grades from the plain scribe to the expert calligrapher, as well as illuminators, miniaturists, designers, and decorative bookbinders, there found their highest appreciation. Books were made in large quantity, in many sizes, and at various prices to meet the varying demands of poor and rich. The cheaper forms have been destroyed; those that have most celebrity and now survive are mainly on large paper or on fine vellum.

Early books were strangely unlike: choir books, huge in form and of heavy weight, written upon the skins of large sheep or calves, covered with large square-headed notes of music to be easily read at a distance; classical and church
Old books that survive are usually of merit

literature usually appeared in the form of portly folios with covers of oak, studded with bosses of brass; breviaries and manuals of devotion contained leaves of the thinnest vellum filled with minute lettering as distinct as that of fine modern print, bound in tooled leather, in velvet, or in silver covers that had been decorated with semi-precious stones. Most admirable for thoroughness of workmanship were the breviaries made as gifts for personal use, for many contained the designs of eminent artists and were prodigally illuminated on every leaf with gold and harmonious color. A collection of neatly written and sumptuously bound books was regarded during this period as one of the more desirable possessions of the man who wished to be rated as a collector of discernment or as a man of education and good taste.

Books written on paper were always abundant, for schools were many, and Italy was then making papers of excellence at relatively moderate price; but books of paper, not made for critical collectors, were for poor scholars and the larger number of general readers. Few of the written and printed books of small size, cheaply made for the needs of young scholars and poor buyers, are in existence now, for they were gradually thumbed to rags by persistent handling, and for that shabbiness have been kept out of neat collections, but enough have survived to indicate the existence of the larger number destroyed. The old books that are now made to serve for comparison with new books are of the better class.

Old printed books of celebrity are usually on large leaves, and have broad margins, supplemented with a few gaps of white space at chapter breaks for the future insertion of hand-painted initials. Provision was seldom made in Italy for added borders in the margin. The sizes preferred ranged from the large folio of 10 × 16 to the small quarto about
Early printers avoided profuse decoration

6×8 inches. The development of book printing had to wait for a fuller development of paper-making and press building; sheets of paper in size larger than 16×21 inches were not common. No press had then been constructed that would print at one pull more than one page of a large folio. Small sizes were tolerated for school-books and prayer-books, but the collector who intended to invest his shelves with proper dignity preferred the large book.

Some decoration seems to have been desired by publishers. The copyist who wrote only with plain letters expected that his handwritten work afterward would be generously ornamented by a following calligrapher or miniaturist, and it was largely for the latter's needs as well as for those of the scholarly annotator that he gave broad margins to every page.

The first type-printed books were intended to be copies of the more useful features only of manuscript books. Decorations that had been made in the manuscript by artist and illuminator were wisely put aside by the first printers as beyond imitation. Not all surviving printed books have received the decorative initials that were often desired by the printer or publisher; but even when they come to us without decoration or unprovided with blank spaces for intended initials or border, they are more pleasing than other books of a similar class that have been hastily treated by unskilled decorators or miniaturists, who attempted ornament beyond their ability. Unpretending print is never improved by inappropriate or tasteless ornament.

The skill of the expert Italian copyist is fairly shown in the facsimile that follows (plate 1), of a page from a manuscript of one hundred and forty leaves on vellum, by an unknown penman and illuminator, of the De Oratore of Cicero. Every page shows the same degree of painstaking care, and the
more important breaks in the discourse have graceful initial letters in many colors. A closer examination of some of the old methods of manuscript book-makers may be of service. Here one may begin to trace the early methods of forming letters that were afterward copied by the makers of types; round letters and low, like a and e, are unusually low and small; descending letters, like p and g, have noticeable protraction. This treatment compelled the provision of a wide lane of white space between lines that seems almost twice the height of the round letters. Ascending letters, like b and d, are also protracted. The capital letters are much like the series we now call small capitals; when used as initials for lines of poetry they were separated by a space and kept at a distance from the lower-case letters that follow. This aloofness of initial capital letters in early Italian poetry was maintained by Aldus Manutius and is not yet entirely out of fashion in Italy. The remarkable legibility of the text does not entirely come from the uniformity of its alphabetical letters; it is largely aided by the broad lane of white space between the lines which gives a proper relief to the eye.

Hyphens are not used for the division of words, nor are all lines spaced out to the right to uniform length and full width of the measure. The diphthongs æ and œ do not appear; but some letters have finials to indicate abbreviation. The vowel e occasionally has an attached flourish which may have been added as a grace, but not as an accent or for any other known reason.

The compression and close fitting of the lower-case letters is as remarkable as is the reduced size of the capitals. The general effect of the page is that of extreme lightness and delicacy, yet the hair-lines of letters are short, hardly perceptible in the serifs, and mainly visible in finial decoration.
dictorum: ad delibrationum usitaturar. et id uni
genus oratores reliquis: no complector in his libros
amplius: si qua huic gni requiratum: et multum
disputatum summorum hominum prope consensus est
butur. repetam: non ab incunabulis nis uteris puero
lis q: doctrine quendam ordinem precor: sed ea
que quandam accepit in nitium bomin eloquentissimos
et omni parte principum disputatione et uterata non
q: illa contemnans quae gresi dicendi artifices et doceto
res reliquentur. Sed quoniam illa patet in promptu
q: sine omnibus neq: ea interpretatione met aut orna
tius explicari: aut planius exprimi possible.
Dabis
hanc utiam mi frater: ut opinor: ut eorum qui quis
summa dicendi Laus a nostris hominibus concebbat
est auctoretem gresi ANTERONAM.

VM ignis uelhementus mesuretur in ea
ulam primatum consul Philippus, druiq.
Tribunatus pro senatus auctorisate suscep
tus, inscripsi tam dubitariqi uideretur me
muni dixi hujus ludorum romanorum die
bus L. Crassium quasi solvensi sui causae, se musu
larum constultis: venisset: eodem fectorum eius qui
fuisse q: Mutus dicebatur. et M. Antonius, homo et
consorum in r. P. fector: et summam cum Crasso sa
multatate conuenet. Exextante autem eum ipso
Crasso adolescentes et drusi maxime familiare: et
in quibus magnum cum sem maiores natu dignitu
nus sue collocariss c. cortam quis Tribunatus r. I. petebat
et p. sabitus qui demrops eum magnaturum petebere
rus putabantur. Hi primo die de temporibus illis: desq
universa: r. P. quam ob causam uenere multa inter
se usf ad extremum tempus huius collocati sunt qua qua

De Oratore of Cicero
The manuscript of an unidentified scribe
Description in note of the Sforziada

A more satisfactory exhibit of the thoroughness of Italian skill in book-making arts is presented in the facsimile (plate 2) which shows the art of an unknown illuminator with the type work of the printer Antonio Zarotto of Milan.¹

The types of this book are readable, but not so graceful as the letters in the manuscript Cicero (plate 1). When this book was published in 1490 printing had been established in sixty-five places in Italy, and in some were two or more printers. The limitations of typography had already been clearly discerned. Decoration and color work had been abandoned to the miniaturists and calligraphers. Printers had practically agreed among themselves to make books that should be useful more than ornamental. They followed as closely as they could the established mannerisms of the copyists; they compacted their print with thin spacing and few paragraphs, discarded hyphens for broken words, and

¹The title of the book is La Historia delle cose facete dallo invicissimo Duca Francesco Sforza scripta in Latino da Giovanni Simonetta et tradotta in lingua Fiorentina da Christophoro Landino Fiorentino. Printed by Antonio Zarotto Parmesano in Milano nell'anni del Signore MCCCCLXXX. The copy of the Sforziada from which this page was facsimiled is the Life of Francesco Sforza-Visconti, fourth Duke of Milan (1450–1466). It was translated into Italian by Cristoforo Landino from the Latin of Giovanni Simonetta, and published at Milan in 1490— one of three extant copies on vellum. It consists of 208 leaves of the finest white vellum, 14 inches in height by 9½ inches in width. The volume is in its original binding of wooden boards covered with crimson velvet, with clasps and bosses of silver. The emblems fastened on the cover show that the book from which this copy was taken originally belonged to Ludovico il Moro, who at the time it was printed, although virtual ruler of Milan, had not yet actually succeeded his nephew Duke Gian Galeazzo (1476–1494). Probably it was carried to France when Louis xi, on his expulsion of Ludovico from Milan, seized the Sforza library in the Castle of Pavia in 1499 or 1500. It passed successively into many hands and finally into the library of Thomas Grenville, by whom it was bequeathed to the British Museum in 1846.

The portrait on the left, inscribed FRAN[ciscus] SFOR[tia] VIC[ecomes] DVXX M[edio]L[an]i III, is that of Duke Francesco, whose life is the subject of Simonetta's work. The portrait on the right is that of Ludovico il Moro. At the top of the page is the emblem of the Moor's head; at the bottom Ludovico's arms. The shield is supported by a fine group of amorini, some of whom are engaged in the children's games of "Hot Cockles" and "Buck! buck! how many fingers do I hold up?"

This illustration, strictly accurate as to form, is imperfectly presented in black ink; the original design is enriched with many colors. From Illuminated Manuscripts of the British Museum, folio, 1889–1903. It is also shown in Kugler, Handbook of Painting, Italian Schools, 1887, ii, p. 385.
LIBRO PRIMO DELLA HISTORIA DELLE COSE FACTADE ALLO INVICTISSIMO DVCA FRANCESCO SFORZA SCRIPTA IN LA TINO DA GIOVANNI SIMONETTA ET TRADOCTA IN LIN GVA FIORENTINA DA CHRISTOPHORO LINDINO FIORENTINO

TEMMI CHE LA REGINA GIOVANNA SE
condita figliuola di Carlo Re regnaua:perche era sue ceduta nel regno Neapolitano a Latifo Re suo fra tello quale parti di uita fanza figliuoli:Alphonso Re daragona con grande armata mouendo di Cata logna uenne in Sicilia: Isola di suo Impero. La cui

venerata exito gli huomini del Neapolitano regno a

uar si favori:& di diuerti consigli:& non con piccoli
muuiimenti di quel regno:Impero che Giouana Regina per molii & uarri
suoi impudichi amorì era caduta in enam infamia: Et del perandosi che lei

femina potefi adempire lofficio del Re:& administrare tanto regno:sece a fe marito Iaco po di Nerbona Conte di Marcia:equale per nobiltà di fan
gue:& belleza di corpo:ne meno per uirtu era tra Principi di Franca excel-

lente. Ma accorgendosi in breue che quello desideraua piu essere Re: che
marito:& quella non molto stima:mofo da feminine leuita lo ripieno:
priuo digni administratorie. Questo fu cagione che il suo regno:quale per
sua natura & prono alle diffisione & discordie:arrogandousi e no honesti
costumi della Regina: ritorno nelle antiche facioni & partialita:& comin
cio ogni giorno piu a fluctuare & uacillare. Erano alcuni a quali nò dispu-
cena la signoria della dona:perche benché il nome sufi in let loro mented
meno comadauen:Altri desiderauano che Lodouico tertio Duca dangio:
figliuolo di Lodouico el quale era nomato Re di Puglia:& di uiolante:nata
della Reale stirpe daragonia: sufi adoptato dalla Regina. Costui poco auàt
pe conforti di Martino tertio somo Pontefice:& di Sforza Attendendo excel
teniuism Duca in militaire disciplina: & padre di Francesco Sforza de cu
egregi facti habbiamo a feruire era uenuto a litri di Campagna: Et cogiu
so Sforza hauea mosso guerra alla Regina. Ma quegli che repugnaua
a Lodouichometteuano uno industriva: che Alphonso sufi adoptato in fi
ghiullo della Reina: accio che in Napoli sufi tal Re:che con le sue forze &
di mare & di terra potefi restiire alla poifa de Francosi. Adunque in cosi
uethermente contensione de baroni:& piu huomini del regno: Alphonso chia
mato dalla Reina in herede & compagnio del regno: duine nò solo illuse
ma anchora horribile: Et el nome Catelano equale insino a quegli tempi
nò era molto noro & celebre fe non a popoli maritimi:ma intuiso & odo-
ocomincio a crescere: & farsi chiaro. Ma & da Lodouico & da Sforza tanto
ogni giorno piu erono oppressi: el Re & la Regina:che disfiddaosi nelle pro
pric force: conduxuno Braccio Perugino: el quale era el secondo Capitano
di militia in Italia in quegli ti piu molte honoruoci coddizioni: & maxime

Type work by Antonio Zarotto. Milan, 1490
The Sforziada
Illuminated border and decoration by an unknown miniaturist
General adherence to established forms of letter

restricted punctuation to the period and colon. Foreseeing
the frailty of fine types under strong impression, the grace-
ful shapes of condensed letters and hair-line strokes seem to
have been purposely avoided. The types of Zarotto (slightly
reduced in the facsimile), of wider form, are classified as
Roman letter, but serifs and hair-lines are wanting at the
end of thick strokes, and this defect gives to the print the
utilitarian appearance of the style now known in England as
Grotesque or Sans-serif, and in America as Gothic or Runic.
To the luxurious reader of the fifteenth century the charm
of this book and of others in similar style was in the artistic
work that had been lavished on illumination and binding.
Its print was not highly esteemed, nor would this esteem
have been merited, for the cut of the type, the composition
of words, and the presswork of the book were even then not
above the average typography of its time. Artistic design
and crude mechanical workmanship are here presented on
the same page in strong contrast.

Printers had already wisely decided that they could not
produce illuminated books of high merit, and that they must
be content to print those that would be useful and readable.
Letters of the text, not regarded as fit subjects for decora-
tion, were consequently drawn in simple style for use more
than for show. Some of the early printers, as will be seen
on advanced pages, were needlessly careless in designing the
shapes of their types for capitals and lower-case, but they
did not deviate seriously from the form already established.
Tracings of the old Roman model and of its many subsequent
changes are a needed introduction to a critical examination
of early Italian types.
SURVIVING remains of the written or sculptured letters of old Rome show but twenty-three alphabetical characters. They are always vertical and usually of uniform height, fairly lining at head and foot, seldom varied with the personal notions of the letterer who tried to improve them by artistic freedom or eccentricity. The F and L in the first line of illustrations of Latin uncial and minuscules are too high in line at the head, but this irregularity was uncommon. As usually written or cut, Roman capitals in a mass appear squared and regular in combination as a legion of Roman soldiers under drill. The captious critic may object to some forms as not correlated in true proportion; but in their distinctiveness, simplicity of construction, ease in combination and general effectiveness, Roman types may be confidently presented as superior to the alphabetical characters of any other language.

The rigid formality of old Roman letters had one demerit: the capitals as then made could not be written quickly, for each character had to be formed by repeated strokes. Scribes who wrote in haste made use of a form of shorthand that is now lost. Writers not expert in shorthand tried to make each letter with fewer movements of the pen, and in this way produced the writing known as Rustic. To many copyists the Rustic style of letter also proved troublesome; copying was made easier by constructing letters of fewer lines and more rounded forms, a treatment that produced the styles known as Uncial and Cursive. Penmen who could not neatly make curved lines revived the older method of repeated
Dr. Taylor about the Caroline minuscule

strokes for each character, and in so doing produced the angular style now known as Gothic or Black-letter. The square-set Roman capital, retained chiefly as an initial, gradually went out of use as a text letter in medieval manuscripts and the Caroline minuscule form of character, more readily formed by the penman, took its place.

Why, then, give the name of Roman to the text-types of this page and to the types of ordinary books and newspapers printed in England, America, and Latin Europe? The searcher will look in vain for modern shapes of letters in earlier Roman manuscripts or in old letterings on stone. If Cicero were revived he could not read with facility, perhaps not read at all, a printed edition of his works, for in his time inscriptions of importance and texts of neatly made manuscript rolls or tablets were in capital letters only. He would decipher without any trouble the capital letters of a modern title-page or at the beginning of sentences, or some of the smaller shapes of lower-case, but the combination in that lower-case of known with unknown shapes of letters would be a bewilderment.

The development of our present Roman lower-case letter is explained by Dr. Isaac Taylor, who says that the origin of our lower-case character is traceable to Alcuin of York, England, who had been invited by Charlemagne to preside over the Abbey of St. Martin, at Tours, France, and did so preside between the years 776 and 809.

"Alcuin's literary eminence, his Northumbrian training, his residence in Italy, and his position at the court of Charlemagne, had made him acquainted with the best calligraphic schools of Europe, and gave him the influence


30
This table has been compiled to illustrate the stages in the evolution of Latin minuscule. The alphabets are from the facsimiles of cardinal MSS. published by the Paleographical Society.

|---|---|

White-letter is resisted by Black-letter

for securing the adoption of his reforms. ... Owing to its manifold excellencies, such as the rapidity with which it could be written, the ease with which it could be read, and economy of parchment, the Caroline minuscule, as it is usually called, grew rapidly in favor, and being diffused by Alcuin's pupils over Europe displaced the older majuscule scripts—the monastic Uncials as well as the secular Cursives."

The Caroline minuscules, the models for modern Roman lower-case, were gradually accepted as an improved form by the copyists of southern Europe. As a new style of writing it was then known as the White-letter, to differentiate it from the Black-letter which had been used for some centuries as the proper letter for books of devotion. The scholars of Italy who aided in the revival of classic literature during the period now known as the Renaissance, preferred the White-letter, but they incurred some ecclesiastical hostility as practical revivers of classic paganism. The devout of all countries, and especially of Germany, looked askant on books in White-letter as possibly insidious conveyors of teachings that savored of infidelity. Prejudice against the newer style was strongest with the imperfectly educated, whose too scant familiarity with letters had been acquired through the reading of books of devotion appropriately written in Black-letter characters that added a proper degree of solemnity and gloominess to the page.

Roman capitals were occasionally used with Black-letter minuscules by German copyists, as alternates to the more irregular initial letters of Gothic form, but the simple forms were not entirely pleasing to the German reader. The texts of the Latin authors, printed entirely in Roman letter,
Printing brought to Italy by Germans

had proved the unsuccessful venture of a German publisher before the sixteenth century. Black-letter forms were preferred for ordinary books in every part of northern Europe for nearly a century after the invention of printing.

Early printing types of Roman form are to be found in greatest variety and of most merit in the books of the first Italian printers; but their early practice of typography was not the spontaneous outgrowth of Italian art and skill. Printing was there introduced by Germans, who are supposed to have abandoned Mainz after its sacking by the Swedes in 1462, and its printers had been dispersed in different directions. Many went to Italy. Numeister, a workman of Gutenberg, whose name appears in his suit at law with Fust, was a master printer at Foligno in 1470. John Peter of Mainz was a type-maker at Florence in 1472. The German names of Schott and Schoeffer of Mainz appear in some Italian lists of printers.

Mainz did not furnish all the teachers of typography to Italy. Gutenberg had practised printing at Strasburg before he went to Mainz. Mentel and Eggstein of Strasburg were prosperous printers at some early unfixed date. So was the R printer now supposed to have been an important typographer in Strasburg. Madden suggests that it may have been from these and other printing houses that Jenson and other printers who introduced printing in Italy received instruction in typography.

1There is a tradition that Pamfilo Castaldi of Feltrì, Italy, received the suggestion of printing from an early inspection of a book made by Fust, but there is now no relic of Castaldi's experimental work and the story is generally discredited. The Italian names in the lists of early printers of Venice are rated as the partners of or helpers to the German workmen with whom they were associated. The union of German skill and experience in typography with Italian refinements and taste in paper-making, wood-engraving, and bookbinding was of mutual benefit in the production of the best books. For about fifty years the typography of Italy was esteemed as of more beauty and accuracy than printing from any other part of Europe.
Printing types rapidly made in Italy

German printers went to Italy in the belief that there they would find financial helpers and a ready sale for their workmanship. It was supposed by them and the public that the profit to be had from typography must be large; but this assumption was coupled with small experience and much real ignorance concerning the delays and expenses of the business.

Apparently the printers had little difficulty in finding Italian capitalists who would advance the money needed. It was generally believed that the cost of a printed book would be much less than that of the cheapest manuscript copy, and that the print would be sure of meeting a purchaser if it were offered at a paying but reduced price.

Preliminary preparations were not adequately considered. Types had to be designed and cut and the cases planned to make types accessible; presses must be constructed and many minor appurtenances provided for the despatch of work. As a rule each printer had to attend personally to planning and to most of the construction. The first step was type-making, and that began in every direction with enthusiasm. Before the year 1500 printing had been established in more than seventy-three Italian towns or cities. Proctor has identified sixteen hundred and eighty distinct faces—Roman, Gothic, Semiroman, and Semigothic—produced during this brief period. This number does not include types from unknown printers and unidentified places. There are also evidences of the sale or transfer of types or matrices from one printer to another, but as a rule these distinct faces of type represent the workmanship of the printer who prepared them for his own books.

With the Roman model and the Caroline minuscule that had been selected as its alternate, there was a general
One disadvantage of Roman type

conformity to a recognized and established standard of form. Then, as now, type-founders made their new type faces thin or broad, small or large, but they made few experiments in eccentricity. Types were readable, wherever made. The arts of designing, sculpture, and painting were then highly developed, but it is not known that any artist attempted any important reconstruction of the alphabet.

Printers of Germany who carried the practice of their art to Italy during the latter part of the fifteenth century took with them an inherited preference for Black-letter, but soon discovered that texts in Roman lower-case were more acceptable to Italian buyers of fine or sumptuous books. Conforming to this taste, they modeled the types about to be made upon the lettering of approved Italian manuscripts. The writing of manuscripts in a Roman character taken for copy was usually of large size and of thin structural lines, but of broad shape, round, clear, legible, with open spaces between the stems of each letter and often with a wide space between the lines of reading matter. Lightness and openness gave attractiveness to the page, but this pleasing feature in a manuscript proved a disadvantage to the printer. Openness in print was wasteful of paper. A text in Roman lower-case often occupied in type about twice as much space as it would have occupied in the customary Black-letter. Large type permitted fewer lines to the page and compelled the selection of larger leaves and often the making of books that must be thicker or in two volumes. To reproduce desired lettering in type of full size and fair form, the letters often had to be cut for casting in type on the large body of 16-point. The grand book printed from large types was unavoidably of greater cost, and seemed to warrant a grand price.
Unseen disadvantages in Roman type

There are critics of printing who commend the Roman types first made in Italy as models of good form, and claim that the inferiority of our modern print is largely due to a departure from the early standards. This statement needs the examination and comparison of many styles. There is no agreement among modern readers as to the form of type for a faultless standard. Tastes differ. Types of Jenson receive the largest number of admirers, but they have never been strictly reproduced by any reformer of typography. Some of Jenson's mannerisms are obsolete, while the less valued types of Ratdolt, Renner, and Garamond have some peculiarities that are still repeated by all type-founders. A comparison of early types will show that it is not possible to select the product of any printer as the one that combines all features of merit. Even between the years 1470 and 1496 Italian types suffered some changes. A few came from the caprices of their designers, but more are due to changed conditions in other arts that contribute to type-making and to the necessity of adapting form as well as size to meet the needs of book buyers. Types were made then as they are now to be adapted to paper, presses, ink, and the convenience of the reader. Different sizes and faces have to be provided now for newspaper advertisements, catalogues of merchandise, and general job-printing, as well as for books of reference that require peculiar signs or symbols, and for pocket editions of the Bible and the classics. Books so printed must differ in size and in cost, but their types are unwisely classified when dogmatically called good or bad. It is not possible to have all types conform to an inflexible standard. The type that serves its purpose and is easily readable should be an acceptable type.
TYPES OF ROME

SWEINHEIM AND PANNARTZ

Roman lower-case characters are supposed to have been first cast in types about the year 1464, at the monastery of Subiaco, near Rome, by two German printers, Conrad Sweinheim and Arnold Pannartz, who had been invited there by its ecclesiastics to practise the art of printing. Their first production was three hundred copies of a child's Latin grammar known as the Donatus, of which one copy only is now known. The book in Roman type generally accepted as second in order of time but first in importance is the Lactantius of 1465. This new face shows the unconscious leaning of its designer toward Black-letter mannerisms in the compression, blackness, and modified angularity of its letters. The punches or model letters were engraved neatly, and the fitting up of the matrices to the mold for the even lining of letters seems the work of an expert, who assembled them with remarkable closeness. The engraver's work on the capital letters is not so clever; to modern readers they seem inharmonious, uncouth, and sprawling. The four lines of careless writing at the head of this facsimile and the painted initial letter show that even then the printers received occasional help from penmen. A few words of Greek in the copy were engraved. The paper of this book is hard and

1 The distinction of priority in Italian books, according to Madden, rightfully belongs to the De Oratore of Cicero, which possibly preceded the Lactantius a few weeks. See Lettres d'un Bibliograph, vol. iv, p. 480. Sweinheim and Pannartz probably began the equipment for their printing house not long after the dispersion of printers from Mainz in 1462. There is a possible priority for Germany. The facsimile of the Sophologium on page 20 shows that Roman types were used in Strasburg as well as at Subiaco.
The mannerisms of the Lactantius

strong and not too deeply indented by the impression of types. There are bibliographers who praise the presswork for the dense blackness of its ink, but blackness is variable in different copies of the book; in some there are lines and pages too black from types choked with excess of ink.

The types of this Lactantius were cast on a body a trifle smaller than 17 points of the American measurement.¹ The round or low letters like a, m, e, seem too low in height, for they are no taller than similar letters now made for a bold-faced Roman on 12-point body. They occupied the middle of the 17-point body, leaving blank spaces at head and foot that produced in lines of composed type the lanes of white blank that give proper relief to the type and promote legibility. The protractions given to ascending and descending letters like b and p are imitations of manuscript mannerisms then esteemed graces, as has already been shown in the facsimile of the manuscript De Oratore of Cicero (plate 1), and are even now maintained in ordinary current penmanship. These protracted letters on bodies of type proved an annoyance to the early printers when they diminished the number of lines to the page, for they increased the bulk and cost of a proposed book.

The names of Sweinheim and Pannartz do not appear in the colophons of the Lactantius or Cicero, as had been the custom of early copyists. The expense of producing these books had been borne by the monastery; they were not the mercantile ventures of the printers, and were not regularly published by them for sale by the bookselling trade.

¹ The American point or unit of measure is not based on an unchangeable standard; it is about one seventy-second of an inch. It is now used by American and English type-founders as the most satisfactory unit for grading sizes. The French point, by the Didot system, is a trifle larger, but it does not allow acceptable subdivisions of sizes for the regular type bodies in use by American printers and for that reason was put aside. The German point approximates that of France.
Sweinheim and Pannartz. Subiaco, 1465
A page of the Lactantius from the library of Robert Hoe
Scant 17-point
Early types not mechanically well made

For more than four centuries type-founders have tried to improve the appearance of the old Roman alphabet. The names of Jenson, Renner, Ratdolt, Aldus, Garamond, Tory, the Stephens and the Elzevirs, Van Dijck, Didot, Caslon, and Bodoni are those of the masters that at once present themselves, but imitations of their faces are really attempted alterations and improvements. The style of Van Dijck, approved during the seventeenth century, was reformed by William Caslon in 1731, but before the year 1800 the Caslon style was obsolescent. In 1844 it was revived by Whittingham and still retains its old popularity.

Few of the leading types were scientifically constructed. Early type-founders had no tools of precision, and no system for the graduating of sizes. Pressmen had to give to types unusual care to prevent their shallow counters from being choked by excessive ink. Many printers seemed indifferent to their neat construction. Types were not always even in the width of thick stroke nor in true alinement: the curved line was not always a true curve; the flat line not always truly straight; the requests for delicacy as in the hair-lines of copperplate printing seem to have been put aside as finical. The first type-founders preferred sturdy boldness.

The only attempt known to me as a fair reproduction of the Lactantius face of type has been made by Mr. C. H. St.J. Hornby of the Ashendene Press, who had the discernment to see in this type quaint and pleasing characteristics that had been somewhat obscured by its generally over-colored presswork. With this face of letter, recut by Mr. Emery Walker of London, Mr. Hornby has produced several reprints of value, among them the Divine Comedy of Dante. No other type-founder or printer has faithfully copied this face or repeated its striking peculiarities.
Quell’ anima lassù che ha maggior pena,
Disse il Maestro, è Giuda Scariotto,
Che il capo ha dentro, e fuor le gambe mena.
Degli altri due ch’ hanno il capo di sotto,
Quei che pende dal nero ceffo è Bruto:
Vedi come si storce, & non fa motto:
E l’ altro è Cassio, che par si membruto.
Ma la notte risurge; ed oramai
E da partir, che tutto avem veduto.
Com’ a lui piacque, il collo gli avvinghiai;
Ed ei prese di tempo & loco posta:
E quando l’ ali furo aperte assai,
Appigliò sè alle vellute coste:
Di vello in vello giù discese poscia
Tra il folto pelo e le gelate croste.
Quando noi summo là dove la coscia
Si volge appunto in sul grosso dell’ anche,
Lo Duca con fatica e con angoscia
Volse la testa ov’ egli avea le zanche,
Ed aggrappossi al pel come uom che sale,
Si che in inferno io credea tornar anche.

A reproduction of the types of the Lactantius, from
Mr. C. H. St. John Hornby’s reprint of the Inferno of Dante
Inferiority of Sweinheim and Pannartz's second Roman type

The book next printed by Sweinheim and Pannartz is St. Augustine's City of God (lib. xxii), which appeared in 1467. In its colophon neither the name of the monastery nor that of the printers appears. Whether the book was partly made at Subiaco and completed at Rome is an open question; but the type of the Lactantius soon went out of use. It had not been fully approved.

While Sweinheim and Pannartz were at work at Subiaco in 1467, Ulric Hahn, a formidable rival, was establishing himself as a printer at Rome. Three years of practice at a lonely monastery in the mountains, more than a day's journey from Rome, had proved that Subiaco was not a desirable place for making and selling large books in quantity. Sweinheim and Pannartz had other reasons for change. Ecclesiastical dignitaries of Rome had urged them to begin a more profitable practice of their art in the great city then full of books and with many ostensible patrons of education.

The threatened competition of Ulric Hahn and their belated perception of the Italian dislike of Gothic sombreness induced Sweinheim and Pannartz to make their next types more Roman in form, but the second types were not so symmetrical as the first. The new face showed grave imperfections of proportion; its imperfect lining of letters indicated that the cutting and casting of types had been done hurriedly and possibly by inexperts. Their new types were of lighter face, round and slightly compressed, without the diphthongs æ and ò, but not entirely free from Gothic features. The characters were not drawn in true proportion and the matrices were not neatly fitted to the mold. The short final s was not engraved, the old form of long f appearing at the end as well as at the beginning of a word. The i is not dotted; the lower-case a is squat and of an
unpleasing form; the capital letters have unusual width and are scraggy in combination. Some vowels carry accents, but there are not many abbreviations or logotypes. This renewed face did not meet with general approval. The Hieronymi Epistolae for which this type was designed was published in two bulky volumes of more than six hundred pages, 46 lines to the page, and each page of type is 6½ inches wide and 10½ inches tall. Foreseeing the bulk of the new work, the printers had the new face cast upon the smaller body of 16 points.

At Rome, favored by the approval of the Pope, Sixtus IV, who frequently visited their printing house, as well as by volunteered offers of assistance from his librarian and other learned ecclesiastics, Sweinheim and Pannartz began the practice of book printing with lively enthusiasm, but it yielded to them more honor than profit. On the 20th of March, 1472, the Bishop of Aleria, their editor and corrector of the press, writing then in the names of Sweinheim and Pannartz, begged for them some financial assistance from the Pope. He said that the printers were in dire poverty through the great cost and slow sale of their work. Many books remained unsold; in seven years they had printed more than fifty works, of which some were very large, amounting to 11,475 volumes.

The books selected for publication as specified in this petition were mostly in folio form, printed at high cost, to suit the taste of critical book buyers; their subject-matter did not invite the ordinary book buyer. The writings of classic authors had preference; the names of Virgil, Cicero, Caesar, Strabo, Ovid, Pliny, Quintilian, Aulus Gallius, and Suetonius appear in the list presented to the Pope. Ecclesiastical literature was properly preserved in an edition of
the Bible, and in the writings of Thomas Aquinas, Cyprian, St. Jerome, and Nicolas de Lyra. Books like these that could be relished only by the educated or devout must have been slow of sale in a city with many poor and illiterates.

There was another hindrance. The competition of other printers had damaged sales. Ulric Hahn was not the only formidable rival; a rapidly increasing number of printers in Rome, Venice, and other Italian cities were producing many books from types of more pleasing form and at lower price.

Editions of Sweinheim and Pannartz were advanced in the regular proportion of 275, 550, 825, and 1100 copies. Of the Bible 550 copies were printed. The only books of 1100 copies were the writings of St. Jerome and Nicolas de Lyra. As some of the works appeared in two or three editions the complaint of slow sale needs an added explanation, for the list of books unsold specifies reprints of the same work. That they had overprinted some books is evident; but a third edition would not have been printed if the first and second remained unsold.

An unexpected rival made its appearance in the new art of copperplate printing which then was ushered in with the approval of Maso Finiguerra, a goldsmith of Florence. It seemed a much simpler process than that of typography, for it brought the designer in more direct communication with the perfect print. By this process the designing of separate letters for movable type, type-casting, and type-setting were dispensed with. Copperplate prints were more generally pleasing; there was a sharpness and clearness of outline on their lettering, and a receding in perspective in the pictorial subjects, then unattainable from movable types or engraving in relief. Sweinheim, who is usually regarded as the designer

---

The last type of Arnold Pannartz

and engraver of the punches for the types used by the firm, soon discerned the higher adaptability of the newer copper-plate process in the publishing of maps, a form of printing as yet not produced, which promised to be more salable than the classic and ecclesiastical works then made by all printers in excess. In 1472 Sweinheim was maturing plans for the publication of the Geography of Ptolemy, which he soon decided to engrave and print without the coöperation of Pannartz.

Arnold Pannartz continued alone the typographic work of the partnership, printing with types only, in the house of Peter de Maximis. Although he printed later many books in folio or quarto of classic authors and religious teachers, he did not share with Sweinheim the full favor and coöperation of the ecclesiastics. He died soon after 1476.

The facsimile of his new type on 15½-point body, as here shown in a page from his edition of St. Thomae Questiones de Veritate, Rome, 1476, is not a pleasing exhibit. The round letters of the lower-case are condensed and too low for their mated capitals on the body of 15½-point. The smaller body and condensed shape were undoubtedly selected with an intent to get more lines and words on the page. His new type had many peculiarities; he retained the short final s, discarded in the second type of the partners, and he made some new forms of accented letters and abbreviations, but did not use the diphthongs æ and oe. Ten years of practice had not improved his workmanship. In design, engraving, matrix-fitting, type-casting, and type-setting, this face of Pannartz shows no improvement; it is really a degradation from the standard of the Lactantius. With this book his activity ended.
QUESTIO VI
De Veritate.

I. [Text in Latin]

II. [Text in Latin]
CONRAD SWEINHEIM

In 1473 Conrad Sweinheim must have withdrawn from the partnership, for his name no longer appears on the books of Pannartz after this date. For the formidable task of engraving and publishing the old maps of the Geography of Ptolemy, for which he was well qualified, Sweinheim associated himself with his German friend Arnold Bucking. A translation in Latin had been provided by Jacobus Angelus Florentinus, as early as the fifteenth century. This newly printed book of maps, described by Brunet as “precious and rare,” contains twenty-seven maps engraved on copper: one general map, ten maps for Europe, four for Africa, and twelve for Asia.

The book had been planned on a grand scale, with maps to appear upon a wide leaf $22 \times 16$ inches. As it was impracticable at that time to print copperplates of double size at one impression, it was necessary to have each map of full size divided to appear in two parts on two facing pages. Each map was separately engraved and separately printed from two plates by separate impressions upon these sheets. The first half plate of each map had to be printed on the fourth page of a folded sheet, and the right half of the same map on the first page of another facing sheet. The preservation of visible connection between the two distinct prints was troublesome, but it was skilfully done in the bound book. When spread out the maps made an extension of nearly two feet, in an unhandy size and shape for binding and for the convenience of the student.
Neat work on the Geography of Ptolemy

To make the separated sheets sufficiently secure required the folding of each sheet through its center, by nesting one within another in quaternions or sections of four doubled leaves, which were afterward assembled and sewed by the binder, so that each half map should properly face its mated half. The back or verso of each plate was unavoidably blank. The proper putting together of these bisected maps was a difficult task.

Engraved lines on these maps, from a graver held and guided by the hand, are easily traceable in the outline of countries, rivers, mountains, seas, and marks of latitude and longitude, but they are not of a quality that calls for comment; it is the beauty and uniformity of the lettering in three distinct sizes of capitals which are used to give definite names to countries, cities, towns, rivers, seas, etc., that demands explanation. The three sizes of capital letters show an unexpected uniformity in each series, with remarkable graces of design that would not have been produced if each letter had been separately cut by the engraver.

Sweinheim had profited by his punch-cutting experiences and had applied one of its processes to the forming of letters upon a plate. To prevent the repeated engraving of the same alphabetical letter he decided to cut each letter once only, but with more than ordinary care, on the end of a steel rod and to use this rod as a type-founder’s punch. To form on the plate the word desired, the punch for each letter was separately selected, and each one was successively struck with a mallet and punched on the plate to the depth needed for the retention of printing ink. This treatment, opus mallei, an old process much approved by goldsmiths, gave to the letters of print absolute uniformity of face, with all the sharpness of the original engraving on the punch. These
HOC OPVS PTHOLOMEI MEMO
RABILE QVIDEM ET INSIGNE EX
ACTISSIMA DILIGENTIA CASTI
GATVM IV CONDO QVODAMCA
RACTERE IMPRESSVM FVIT ET
COMPLETVM ROMÆ ANNO A NA
TIVITATE DOMINI M.CCCC. LX-
XXX. DIE IV. NOVEMBRIS. ARTE
AC IMPENSIS PETRI DETVRÆ.

Conrad Sweinheim. Rome, 1478
Ptolemy's Geography. Edition of Peter de Torre. Rome, 1490
16-point
Planning of the Geography of Ptolemy

letters are of capital form only, but they show harmony with one another and a sense of carefully adjusted proportion much admired by all bibliographers. Bernard says that no capitals made by following typographers can compare with them for merit—not even those made by Nicolas Jenson.

This edition of the Geography of Ptolemy has distinction as the first book of maps illustrated with prints from copperplates; but Sweinheim did not live to complete his grand work, for he died before 1478, leaving his unfinished book to be published in that year by his successor, Arnold Bucking.

To explain these maps many pages of type work were provided. These pages, set in a lower-case type of about 16-point, were in two columns with a broad center band of white between, making a printing surface of $7\frac{3}{4} \times 11\frac{3}{4}$ inches, 53 lines to the page. Irregular fractions of Arabic form that must have been troublesome to cut are frequent. The type is of bold face, with few hair-lines and stubby serifs; the capital letters of the colophon are thick and close spaced in composition. Leaves are not numbered, but a running title of Roman numerals specifies the part of the book treated on the page below that title. Its paper is sized; not unduly thick nor of rough face, but white, clear, and strong. The bold letters of the text are in striking contrast to the light, neat, and graceful letters of the engraved maps.

Sweinheim is accredited as the designer not only of the lettering on the maps but of the types of the text, which are strong, clear, and readable, although inferior in grace to the letters used in the maps. The type-founding is above the average of its time. Lines are of uniform length, capitals are admirably proportioned one to another; hyphens connect divided words. Signatures to prevent the misplacement of leaves by the bookbinder appear in proper places.
ULRIC HAHN

ULRIC HAHN, born at Ingolstadt in Bavaria, afterward a citizen of Vienna, began to print at Rome in 1467. His first book was *The Meditations of Cardinal Turrecremata*, a folio of thirty-four leaves, printed from types of large size and Gothic form, that are supposed to have been brought from Austria. Attempt was made to give added attraction to the book by gracing it with rude engravings in outline.

Ulric Hahn's name appears in Hain's Repertory in the Latinized form of "Gallus"; and this Latinized name was frequently used by him in a punning way. He offered it as the proper synonym for the fowl or goose which according to tradition once saved Rome from barbarians. In some colophons he names himself Udalricus Barbatus.¹

In 1470 his printing house showed remarkable activity. He had engaged for his editor and corrector of the press the ecclesiastic, John Anthony Campanus, with whose aid he prepared and published soon after twelve volumes in folio, mostly of a theological nature. Campanus left Rome in 1471; but his duties were assumed by Simon Nicolas Chardella, with whose assistance Hahn undertook the publication of other large works. Chardella's enthusiasm for printing was as strong as that of Hahn. In one of his books he says, "Having compassion on the poverty of the poor, and considering the scarcity of the rich, he (Hahn) is resolved to make

¹ Anser Tarpeii custos Jovis, unde, quod alis
Constreperes, Gallus decidit. Ultor adest:
Udalricus Gallus, ne quem poscuntur in usum,
Edecuit pennis nil opus esse tuis.
Imprimit illa die quantum non scribitur anno.
Ingenio, haud noces, omnia vincit homo.
Printers induced to make smaller types

books after a careful revision of their texts by learned men." He also adds that Hahn was then producing three thousand volumes in a year—more than could have been done in the century before, so much did the new art of printing surpass the old method of writing.

Chardella ceased to be helpful at the end of 1474, but Ulric Hahn continued to print until his death in 1478. His last work was another edition of The Meditations of Cardinal Turrecremata, dated December 31, 1478.

Hahn was active as a type-founder as well as a publisher. Proctor accredits him with seven fonts of type, Roman, Semi-roman, and Gothic, that were used in printing some sixty books between the years 1468 and 1478.

The accompanying facsimile of a page of Hahn's edition of Summa Oratorum Omnium presents another indication of the desire of early printers to compress matter within a smaller space. Types previously presented were on 15-16- or 17-point bodies or their intermediates, but this is of 14-point. The additional compactness desired was secured by shortening ascenders and descenders so that more lines of print could be put on the page. The small letters of the lower-case are taller in height, but the round letters like o, e, and c have not been noticeably condensed. Its capitals, of unusual width, are not harmonious; E and M seem unduly wide for other letters that seem relatively pinched. Unlike other printers, Hahn made the final lower-case s of a full width; but his a, of which he made two forms, is only a slight improvement on the cramped a made by Sweinheim and Pannartz. Abbreviations, double letters, and accented letters are frequent. Hahn also made another size of Semi-roman type on the much smaller body of 12½ points, with which he printed an edition of Cicero in 1468.
LIBERTVS DE . EITB. S. D. N. PIII. N.
PON. MAX. SECRETARIUS REVT.
reditissimo in Xpo prici dni dio Iohanni dei gra epo
Monasterienli: Comiti Palatino Reni: ac Bauerii
duci Illustriissimo: Salorem plurimae dicit: & prsens
deduct opus. Optastii sepenumo Reuoreh pater
ac princeps Illustriissime: Heroicarum cultor virtut
ut si quado mihi adestat oedium: nollas artis Rhe:
torice prceptiones: diversas claufularum variationes:
ac plurimas tam oratorum: & poetarum: & Istoricorum
autroritates: diversis in volumibus sparsis: & vage disjectas:
dictu quide & memoratu dignissimae: que ad ornata.
cincinna: splendidam & resonantae
orationem: ac ad bene beatce viuendum admodum conducere: & expedire
rent: in vnam (ut documenta sumere uolentibus longe inquisitiis labor ab
esse) diligerem consontantium: atque in facie quend quaed rederere modum.
Es ti ea: super qua seremonem sepenumo in multam pluvium noctem:
Infiniti pene siti operis & immeni: adeo ut vnse: inicium: vnse mediis: & unde
deniq finem: in tante rei magnitudine summam: non injuria subfistam: Ac ta
sum autontatissimae: tantumqi dignitatis & excellentie contineat: ut no infinitus
aut mediocrem uirum defatigaret: sed summam: ac ppe diuimum oratem id
agredi perborrecere qur plurimum faceret: Tamen tuas ne preces: que se,
dulo imperii mihi loco sunt & que hoc conficiendi opus meis modo ratione
bus alligarum: videar declinare: (tibi enim quicceq possim deobo: & me non
modo buic rei: veru cuicceq posibili dieuectum obnoxium:q tenes) materi
am longe patentem: angustiss finibus terminabo: & in uerba q potero: (N
eniz cuncta complectendae mihi cupido inceffir) conseram pascissima: uixa
Ouidii uerba. Quicquid scipies isto breuis ut cito dicta: percipienti dociles
teneantq fideles. Ad hoc enim instituendum opus: nulla magis meres ex
licitaut pater humanissime: q utue imprimes clementie: q iam pridem vnae
ataq religiosissime colui complererem: tametfi nobis ipse me gloria moue:
bat: que si meritis: aut uirtute pta extitit: semper est a summis uiris magno
studio quista: & a sapientibus hominibus maxime laudata. Nonnihil etiam
exercendam ingenii urium me causa induebebat: quia quedmodum trieste
ere diuiti decedere sine herede: sita miserrimum est babenti a deo summo gra
tia intellecd: posteris suis: id est studiois nihil ornatum dimittere: quo pos
fint ueluti heredes intellectus aliquidet consolari. Est 1ec tot in omni scien
tia: & in primis in oratorie artis facultate scripsirent: utiam mundu pene il
luminauerint: adhuc tii inueniendi inuenta no obstant. Instar enq folis oriu
princeps clementissime: quoc fer animo uelim: ut mei buic sist operi cosecrat,

Ulric Hahn. Rome, 1475
Albertus de Eyb: Summa Oratorum Omnium
14-point
JOHN PHILIP DE LIGNAMINE

JOHN PHILIP DE LIGNAMINE was an early printer at Rome who also had a local reputation as author, editor, and chronicler. For the literary side of his duties he had been well qualified by the good fortune of noble birth and a liberal education in the profession of medicine, but there is no record of his tutelage at typography.

De Lignamine began to print in 1470 and continued until 1476. Then followed a period of inactivity. A few books are known to have been produced by him between 1481 and 1484, of which the facsimile of S. Bonaventure is a fair exhibit, but his edition of Laurentius Valla, of 1471, is the best specimen of his press. Many of the books and pamphlets that followed are of a smaller size and of inferior present value, apparently produced to supply temporary requirements. The facsimile here shown is from a thin pamphlet of twenty leaves, entitled Oratio in vitum et merita divi S. Bonaventure, which was printed in 1482. Its small face of type, on 16-point body, was apparently made by inexpert; its presswork, here pale, there overinked and uneven, is on unsized paper of dingy tint.

His Cronica Pontificum Imperatorum (1474) contains de Lignamine’s version of the German invention of printing in Mainz, and specially notes the names of Gutenberg, Fust, and Mentel as printers between the years 1458 and 1464.

De Lignamine held an honorary office under Pope Sixtus IV, and worthily received distinction as a learned man; but he cannot be classed with the masters of printing in Italy. In sixteen years he made about forty books.
VDITE HEC OMNES GEN,
tes: auribus percipite qui habitatis orbem. Qui terrigena & filii ho-
minum simul in unum diues & pau
per. Os mei loquet sapientia: & meditatio cors.
dis mei prudentia. Sapientia inqua & prudencia.
sanctissimi dini nostri dui Sixti quarti pon. max
qui cum esset ab ipo natali divina quadam pros
uideatia & in humani genus benignitate religio
ni minorum,q ordini destinatus in ea adultus id
efectit: ut uere sibi sapientie laudem compararet:
& quod tam a nostris q a ueteribus doctissimis
ac sanctissimis philosophis acceperat re ipsa osté
deret: ut le hominem meminisset: ad hominum uti
litatem esse natum operam dedit quantum in eo
fuit in quocuiq dignitate gradu ut quatuor illis
rebus: quibus ex platonis sententia beneficentie
operationes exercentur opera sicilicet & uiribus;
oratione ac opibus multis egentibus ideo oibus
opem ferret eamq uite rationem semp tenuit:ut

John Philip de Lignamine. Rome, 1482
Oration in vitum et merit divi S. Bonaventure
16-point
George Herolt of Bamberg has distinction as a careful type-founder and printer, as will be more plainly perceived in the accompanying facsimile of a page of his Origenis Prææmium contra Celsum, etc. Lairol commends his "elegant Roman letter," which was more carefully designed and neatly cut than the type of any rival of his time in Rome: in symmetry and alinement his types are as harmonious as those of Jenson of Venice. Following the prevailing fashion, his types are fitted to one another with great closeness, but not to indistinctness. The capital letters have thick strokes that give them the needed prominence, but they do not seem too bold in combination with their mated lower-case letters. The final lower-case s is of fair width, much more pleasing than the pinched s of more famous printers in Venice; but the cramping of structural lines in the a and e is in obedience to old usage repeated. But few characters were used. The diphthongs æ and œ seldom appear. . and ? are the only points of punctuation. The hyphen is not used for a divided word. As was then customary, there is no separate type for v, but there are many accented, abbreviated, and conjoined characters. Judged by modern standards the types here shown of Herolt are insufficient for the exact rendering of a classic text, but the general effect of his page is admirable for neat workmanship, as noticeable in presswork as in the designing, engraving, and casting of types.

Proctor credits Herolt with thirty-seven books in the British Museum. In four others he was aided by Sixtus Riessinger, who had been a notable printer at Naples in 1471.
ORIGENIS PROAEMIVM CONTRA CELSUM ET IN FIDEI CHRISTIANAE DEFENSIONEM LIBER. I.


George Herolt. Rome, 1481
Origenis Proaemium contra Celsum
154-point
GEORGE LAUER

GEORGE LAUER, a native of Würzburg, Germany, began his work as printer at Rome in 1470 at the Eusebian Monastery, invited there by ecclesiastics of eminence. It is not known where he acquired his knowledge of printing. He was assisted in the monastery by Pomponius Laetus and Bartholomew Platina, who were the editors and correctors of the monastery press. Between 1470 and 1472 he produced twelve books. In 1472 he associated himself with Leonard Pflügl, a German printer then at Rome, and they worked, sometimes together, sometimes independently, until 1474, but did not produce many books. Between 1474 and 1481, printing without a partner, Lauer issued more than forty books, but several of them have no date.

The books of Lauer have earned merited praise from early bibliographers for their accuracy, but Lauer cannot be commended for superior mechanical workmanship. Haebler identifies ten faces of type, Roman and Gothic, used by Lauer and Pflügl, but all are rude. In 1482 these types were in the possession of Guldinbeck, another German printer then at work in Rome.

Laire, in his History of the Typography of Rome (1778), specifies twenty-seven printing houses in or near that city before the year 1500. Research has increased the number. Proctor, in his Index to the Early Printed Books in the British Museum, specifies thirty-eight presses in Rome during the same period, with mention of many undated books that cannot be traced with exactness to the proper printer,

George Lauer. Rome, 1470
Joannes Chrysolomus
Scant 18-point
but are known to have been printed there at an early date. Panzer estimated the production of Roman printers before 1500 at one thousand distinct works. It is probable that others have been lost and are now unknown. Adam Rot, John Reinhard, John Schurener, Barth. Guldinbeck, Wolff Hahn, John Bulle of Bremen, Andreas Freitag and John Besicken are the names of other Roman printers of note. The names indicate German birth and education. This conclusion is warranted by their occasional use of Gothic types for devotional books of inferior size. A few unnamed Italians were connected with these early printing houses, but mainly as patrons or money-lenders. They did not desire to have their names appear as partners.

Stephan Plannck succeeded to the business of Ulric Hahn. Between 1479 and 1500 this printing house issued more than one hundred and fifty books with assignable dates. About one hundred undated books have been identified as in the types of Stephan Plannck, who had at least twelve sizes and faces of Roman and Gothic types. Few classic authors appear in the list; the larger part are ecclesiastical or scholastic.

Eucharius Silber was another prominent printer at Rome after the year 1480. He produced many books from faces and sizes of type not inferior to those of Plannck.

There were some other printers of merit in Rome at the close of the century, but that city had lost much of its attractiveness to the craft. Venice took the lead and kept it. Florence, Milan, Naples, and some small towns and cities were as eminent as Rome for their printing. The sons of Aldus Manutius were induced to go to Rome. The work they did there maintained, but did not increase, the Aldine reputation.
Plate 13

Promisitque diem tanta dulcedine captos
Afficit illa animostantaque libidinose ulgi
A uditur spe cum fremit subsellia ueruf
S ustitio temp paridi nisi undat gaueni
I llet miliat multus largiturn honorum
S em flutuum digito et circunligat auro
Quod nō dāt proceres: dabit histrion tu camē nō
Et barēas: tu nobilium magna utria curas
Refectos pelopia fecit: philomena tribunos
Haud tamen inuidijs uati: quem pulpit aescunt
Quis tibi mecanas? quis nunc erit aut proculieus
Ut fabul: quis cotta iterum: quis lentulus alter
Unc per ingenio precium: unci utile multis
Aller: et unum toto nescire decumbi
V ester porro labor secundior historiam
S criptores: petit hic plus téporis arque olei plus
Naque oblitam modis millesima pagina surgit
Nonibus: et crescit multa damnosa papro
Ic ingens rerum numerum ubert: arque operul lex
Quern tamen inde seges terrae quis fructus aperit
Quis dabit histrion: quantum daret acta legēti
Et genus ignau: quod tecta gaudent et umbra
Dicit ignis quid caudiceo ciuitate praestant
Officiae: et magno comites in fave libelli.

Roman edition of Satires of Juvenal

The facsimile (plate 13) on the preceding page is from an edition of Juvenal's Satires, neatly planned and carefully bound in tooled red leather, but it is without the specified name of printer or place of printing. It contains the printed date of 1474, and in a paragraph intended as a substitute for the colophon are these words: "Editi Romae." Brunet (vol. iii, column 628) states that this is the folio edition with the commentary of Calderinus which incloses the text on three sides. Deferring to Audiffredi, Brunet leans to the belief that this edition, although published at Rome, was really printed at Venice, and probably by Jacob Rubeus, who had issued an edition of which this is a fair counterpart.

Hain catalogues under the number 9690 a resembling edition of Juvenal, as published at Rome, but hazards no statement about the printer. A Juvenal of Rome is credited to Wendelinus de Wila, who is registered as the printer of a few works.

The text of this edition is in a Roman type on 16-point body. The commentary around the text is on a body of 10½ points. An alphabetical letter of small size is used in the text over the low or round letters as a mark of reference. This must have made troublesome work for the compositor, for it compelled the cutting down of the upper shoulder of any round letter so treated. I have never seen this method imitated by any other Italian printer. It does show the anxiety of the printer to be exact, but it increased the liability to error, for an inserted reference mark not properly braced was liable to drop out. The types of this book are compressed but clear, and they show the thick lines and stubby serifs then in vogue. The fitting up of the matrices to the mold seems to have been done by an expert founder, although some letters are out of line.
TYPES OF VENICE

JOHN AND WENDELIN OF SPEYER

On the 18th day of September, 1469, the College of Venice granted to John of Speyer, a new-comer and recently made citizen, an exclusive privilege of five years for printing the Letters of Cicero and the Natural History of Pliny. Little is known of the early life of John of Speyer; but the patent recites that he came to Venice with his wife and family to print books in the "most beautiful form of lettering." Speyer is midway between Mainz and Strasburg, the two reputed cradles of typography, and at early date some men in this city should have had a knowledge of printing. Santander says there is evidence that printing had been done there before 1469. John of Speyer had certainly acquired fair proficiency in printing before he went to Venice.

He began to print, not as a novice but as a master of the art, with uncommon activity. In less than one year (for he died in 1470), he and his brother had produced the Familiar Letters of Cicero, the Natural History of Pliny, the first volume of the Roman History of Livy, and were busy upon St. Augustine's City of God. Of the Familiar Letters and the Natural History he printed one hundred copies within three months. Of the second edition of Familiar Letters he printed six hundred copies in two issues of three hundred each, within four months. Work was then in progress on the Livy and on St. Augustine, but he left us no record of the number of copies.
Print preferred for its legibility

The illustration annexed is the facsimile of a page of the Livy which was printed in two large folio volumes in 1470. Its type was cast on a body a trifle larger than 15-point, but it appears in print as bolder than the Roman type of that body made by other printers. It has mannerisms that even a hasty reader will note, especially in the sparsity of hairlines and of serifs at the ends of thick strokes. Its general effect is that of the style of type now known in America as Old-style Antique. The ruggedness was then unusual. Italian writers of manuscripts had tried to make letters attractive by lightness and delicacy of stroke; in this Livy the letters were plainly cut on the punch with intent to make them more than usually thick and black in print. The thick lines and general ruggedness of the letters were not produced entirely by these designers and engravers. Haste in production may have been a contributing cause. Punches rudely struck in the metal for matrices, letters hurriedly cast, and types overinked and too forcibly impressed on over-dampened paper very often increased the desired boldness beyond the intent of the designer. This boldness was not caused entirely by blunting of types through wear, for the presswork of the second volume of this thick book shows types not inferior in clearness to those of the first volume. Their even lining in print indicates that the matrices had been fitted up by an expert.

The type of this Livy is the only size and face of Roman made by John of Speyer, but, rugged as it now appears, it was attractive to the book buyers of its time. It has merits that are still commended; there are readers now who regard it as little inferior to the types of Jenson—inferior by reason of its needless boldness and ruggedness, but equally meritorious in its roundness, clearness, and easy readability.
PERIENextension of the previous text.
WENDELIN OF SPEYER

The early death of John of Speyer annulled the privileges granted to him by the authorities of Venice, but his brother Wendelin, who had been associated with him from the beginning, took up his unfinished work. He completed the four books then in press and matured grand plans for an enlargement of the business. To carry out these plans he admitted to a partnership John of Cologne and John Manthen, whose names appear in many following imprints of new books. They enlisted in service eminent scholars as correctors of the press, and published many editions of the classics that are now famous. Nearly fifty dated and several undated works, largely scholastic, mainly in folio or large quarto, are recorded as their work between 1470 and 1473.

Then came a halt. It is probable that Wendelin was visionary, or unfit to be a manager or financier, and that John of Cologne and John Manthen, who had valid claims as partners, desired more control of the mechanics of printing as well as of its finance. There is no record of mortgage or suit at law, but the types and material of the partnership after 1473 passed into the hands of the recently made partners, who managed their business with zeal and intelligence, for they added largely to the old stock of types. Proctor identifies seventeen faces of type used by the remaining partners. Within the years 1474 and 1480 they produced numerous works. It does not appear, however, that the business was profitable, for their work then ceased and they left no successor of marked merit. The disappointment of the Speyer brothers and of their seceding business partners

68
Small Roman type first made unsatisfactory

seems to have been caused by the same error of judgment that produced the failure of Sweinheim and Pannartz at Rome. They had catered too submissively to the tastes of the wealthy and luxurious. Their books were too big, high in price, and unavoidably slow of sale. The book buyer of small income needed and insisted on books of smaller size and at lower price.

Wendelin of Speyer, who, in 1475, began afresh as printer and publisher, this time without partners, undertook to meet the demand for the smaller book. It was not then an easy task to print compactly in Roman type. It seemed necessary to make some serious change in the accepted form. Round and low letters had to be made a little taller, ascenders and descenders had to be shortened, broad characters visibly condensed, and abbreviations lavishly employed. By no other method did it seem practicable that the text of a folio in type of 16-point body could be crowded in a small quarto with type of 12-point body. It was believed that these changes, with the customary thin spacing of words and the provision of two columns to the page, would compress the matter of a bulky book within handy dimensions. The book selected for this experiment was the Commentary of Dr. John Scott on the Four Books of Sentences, which was published in 1475. A facsimile of the last page appears as plate 15 on a following leaf. The new book was an unfortunate venture. The names of the designer of the type and its type-founder are unknown, but Wendelin has to bear the discredit. It may be assumed that Wendelin, planning to establish a new printing house with little delay, or to meet the threatened competition of an announced work by a rival publisher, was induced to make use of this imperfect type and composition. The critical reader cannot repress
Wendelin unsuccessful as a maker of books

astonishment that this uncouth type could have been made for and published by the surviving partner of the house that had printed grand editions of Livy and Pliny.

This edition of the Commentary of Dr. John Scott appeared in double columns in the form of a quarto of more than three hundred printed leaves inclosed in stout boards of wood and secured with four clasps of riveted leather; its broad back, three inches thick, was protected by a wide band of leather, stamped in the fashion of the Venetian bookbinders of that time. Its paper is white, strong, and firm. The presswork is uneven; some types are overcolored and inky, but more are pale and clean.

The book has no title-page, running title, or even Roman numerals for paging, but an index of twenty-two pages in front is replete with Arabic figures.

Many devices to compact composition are here apparent: capital letters, sparingly used for proper names, are sometimes omitted at the beginning of sentences; hyphens are not used for broken words; superiors, or small letters above the line, appear on every page. Annotations with pen are frequent, probably made by an early buyer of the book.

This experiment with a smaller size of type for a cheap book, judicious as it promised to be, proved a complete failure, probably by reason of haste and scamped workmanship. The clumsy type did not appear again in any other book. Wendelin soon returned to the older practice of printing books of merit in large form, of which he made a few before 1478, when he finally abandoned printing. His last book, the Divine Comedy of Dante, was not in Roman letter, but in a style of type described by Proctor as Italian Gothic.

1 It may seem ungracious to point out the occasional shortcomings of early masters of the art, but some comment is unavoidable. Deference is unwisely paid to types that are merely old, regardless of their merit or of their acceptability to the reader.
Plate 15

[Wendelin of Speyer. Venice, 1475]

Commentary of John Duns Scotus on the Four Books of Sentences

12-point
VENICE, in 1470, offered many inducements to printers. It had large libraries and educated and wealthy book collectors; it was the largest market in Europe for the sale of manuscripts; it offered facilities for cheap transportation by sea; artists and mechanics were numerous and of unusual ability; paper was cheap and excellent. Appreciating its advantages, Nicolas Jenson of France went to Venice in 1470 and became a competitor of the Speyer brothers. He had served apprenticeship in the mint of Paris, afterward became master of the mint in Tours, and was well qualified to superintend fine workmanship in metal. There is a legend that Charles VII, then king of France, sent him to Mainz in 1458 to acquire a knowledge of typography, and that the death of the king at his return in 1461 prevented his earlier practice in Paris of the new art. Madden discredits the legend, and intimates that he obtained his knowledge of printing in a monastery at Cologne; but the evidence of this tutelage is not entirely satisfactory. It is probable that Jenson brought his model types to Venice; they are designed and engraved with too much care for hasty work. He settled there in 1470 and soon began to print with diligence.

Controversy exists concerning the title of his first book, but there is now general agreement that its true date is 1470. A little book entitled Decor Puellarum declares in its colophon that it was printed at Venice by Nicolas Jenson in the year 1461. The type is that of Jenson but the date is doubted. There is reason to believe that one Roman numeral, x, has been dropped from the types of the date, which should read 1471. No other book of Jenson produced

Nicolas Jenson. Venice, 1471
Quintillianus: Institutiones Oratoriae
16-point
Jenson’s merit as a designer of type

between 1461 and 1470 is known, and it may be assumed that his press was not idle for nine years before he began work in earnest as a printer at Venice, and that he planned books that are now lost or unknown. Although John of Speyer clearly had earned an enviable reputation, Nicolas Jenson is now generally regarded as most deserving of early Italian printers.\(^1\)

The type that earned him distinction was planned for a body of about 16 points, and he never made any other face of Roman, but in 1475 he was induced to cut and cast for cheap books of devotion smaller sizes of Gothic letter. His reputation as a designer of letters is based on the type here shown in the facsimile of a page of his edition of Quintilian (plate 16). It is not so bold, but is more neatly engraved and carefully founded than the type of John of Speyer. Its great merit is not so much in the design of individual letters as in the perfect accord and general symmetry of all characters when they have been combined in a page. To use an artist’s phrase, they hang together. Neither in capitals nor lower-case does any one character dominate or belittle another.\(^2\)

The edition of Quintilian from which plate 16 has been facsimiled has a note by its editor and corrector, Omnibonus

---

\(^1\) Nicolas Jenson is one of the most celebrated artists on the honor roll of typography. His types are of great beauty and his impressions are true masterpieces. The style of letter he devised is the one we are using, if we submit to some trivial changes introduced by fashions which did not disturb its general effect. Bernard, vol. ii, p. 192. This claim for superiority is generally admitted. William Morris is said to have accepted the Jenson style of Roman as the model for his Golden Type.

\(^2\) A correspondent writes: “I can easily make a drawing for one letter in a satisfactory manner, but I find it difficult to make a second letter of the alphabet that will be in all features its proper mate.” How much more difficult was it for a designer to make two complete series of capitals and lower-case with abbreviations and points, and adjust every one so that all should be pleasing in every combination!

Brown, in a note on page 17 of his Venetian Printing Press, specifies differences in the structure of letters made by Jenson and by John of Speyer; but the general effect of the printing produced by these printers was not caused by small differences in structure. Jenson had instinctively a nicer sense of the exact harmony that should appear in types, and was more intent on their legibility than on their conformity to a standard.
Active as printer, but not as type-maker

Leonicenus, in which he gives credit to Nicolas Jenson as the inventor of printing. This untrue statement could not have been inserted in the book without the knowledge of Jenson, who in some other books has allowed himself to be described with undeserved praise.

Jenson's Roman types do not appear in all of his books with the full effectiveness that should have been produced by his superior designing and engraving. In many books the presswork is pale or "under color," as printers describe this treatment, deficient in ink and impression. It may be that Jenson ordered this under-coloring to produce what he believed would be a closer imitation of the lightness and delicacy then practised by copyists and generally admired by the collectors. He seemingly intended to enforce at first glance the great difference between the openness of Roman and the somberness of Black-letter.

Light-faced Roman type had some disadvantages. To secure the needed openness types had to be designed of large size and of full rounded form, with abundant relief of white space within each letter, as well as between composed lines and in the margin. Without this proper relief of white the types would be huddled and ineffective. Large types compelled a making of large books, unavoidably of larger price. The ordinary book buyer, accustomed from childhood to the compactness and boldness of Black-letter in school-books and manuals of devotion of small size, was not entirely content with large books and pale print. The needs of these book buyers compelled Jenson to cut and cast smaller types of Black-letter face, that were as meritorious as the types of the Quintilian. There is no record of his attempt at the making of a Roman type on a small body. It is not credible that he had any share in the 12-point Roman of Wendelin.
Jenson had many associates in business

The facsimile (plate 17) that follows is a page from an edition of John Duns (Scotus) on the Third Book of Sentences, "printed at Venice in 1481 by John of Cologne, Nicolai iençon, and their associates." The type of the text is a Black-letter on 10-point body that may be accepted as a design approved by Jenson even if all punches were not cut by his own hand. The presswork of this book shows vigorous blackness of ink with a sharpness and clearness of outline in every type that is in strong contrast with the paler presswork of the Quintilian. It leads a student to the conclusion that Jenson purposely made his Roman types too pale and his Black-letter overblack, for the books so treated proved much more acceptable to the buyers of his time.

Jenson's period of activity was between the years 1470 and 1480. Sardini says that in ten years he and associate partners produced one hundred and fifty-five books that have been identified and described by librarians. His editions were large, but he never specified the number of copies.

Jenson had many partners and allies, and he seems to have maintained friendly terms with all. John of Cologne and John Manthen are conspicuous. Their articles of partnership are not known, but the mutual business relations seem strange to modern usage. John of Cologne was the successor in 1474 to the business of Wendelin of Speyer, and John Manthen was John of Cologne's partner until 1480, during which period they printed many works, but within the years 1470–1480 Jenson was active as a rival printer and publisher.

The colophon of a book of 1480 recites that it was printed by John of Cologne, Nicolas Jenson, and associates. The precedence of John of Cologne warrants the inference that he was the senior partner with the larger interest; but in a book dated 1481, one year after Jenson's death (plate 17),
do, qf si fer nova prineat dia moralia qf leq verus. t addar alia uel salt e addar a liqua explicationem aliquam ad quf sorte ipri no tenebat qf quanti ad hoc et grau s. t hoc et tiam grauat sit ex alia pte grauat ceronielus multitudo qf judicialia. Ex pte aut legia nove plus alleia multitudo qf efficacia auxilioqf qf ella modica grau tae qf sua qua et mai to in moralibus no pponderat grau tae t in alia. t hoc pen tariff auxilia his in.


Explicit scriptus super tertio sententiam editum a fratre Ioanne duno: old nis fratrum medio doctore subtilissimo et omnium theologorum praeipe. Per excellensissimum sacre theologiae doctro rem magistrum Thomae penketh anglici odinis fratrui heremitaru sancti Augustini in famosissimo studio Paternae ordinaria legentem maxima cum diligentia emendatum.

John of Cologne and Nicolas Jenson. Venice, 1481
John Duns Scotus on the Third Book of Sentences
Jenson's high reputation as a printer

though the imprint appears as "John of Cologne, Nicolai iençon, and their associates," at this time the business was managed by John of Selingenstadt, near Mainz (also known as John Herbold), who had some previous experience as a master printer at Padua in 1475. It is probable that John of Cologne and John Manthen were most efficient in the partnership as booksellers or financiers. When Jenson died, John of Selingenstadt began alone in Venice as a master printer in 1481, printing largely but independently for John of Cologne & Co. His work ended in 1484.

The merits of Jenson as a designer of type, and of his printing house as a maker of books, were loyally proclaimed by his successors. Torresano says of a book printed by him in 1481 that it was in the famous types of Jenson, than whom there is no better artist. John of Cologne said that the Jenson types were sublime reproductions of letters. John Herbold said that the Jenson type was the most charming letter. Other printers were equally outspoken in praise. Chevalon said that the Jenson faces were most admirable forms of type. Prévost said they were in the most beautiful style. The Jenson types had a wide reputation before the close of the fifteenth century. Printers in Flanders and Theodore Rood of Oxford commended books printed by them as in the genuine Venetian characters.

Pope Sixtus IV invited Jenson to Rome and conferred on him the honor of Count Palatine. He accumulated money with fame and died September 7, 1480, rated a wealthy man. By his will he provided for his four children with their mother, and made bequests to friends. The provisions of his will concerning his punches, which were not then held by John of Cologne, had been executed in 1481.
IT is not probable that Torresano received practical training in the mechanics of typography, but it is certain that he was interested as a partner in book-making with the printer de Blauis in 1480, and that he then or soon after bought types or matrices of Jenson. Torresano’s name appears for the first time in the colophon of a book dated 1481, but in association with the printers de Blauis and de Paterbonis. His imprints indicate that he had no partners in 1486, but he was then active as a publisher. Before the close of the century he and his partners issued nearly one hundred books, largely on ecclesiastical subjects. Although he had a greater interest in publishing, he must have given unusually close supervision to the making of types, for Proctor identifies twenty-two distinct faces of type in books that bear his imprint. His sons followed the work of their father. The name Torresano appears in old records of the trade in Venice and Paris.

Brown suggests that the reported sale of types by Jenson to Torresano was a sale of matrices from which fresh types could be constantly renewed. This practice was common; matrices were eagerly bought by the printers of England, Flanders, and France.

Torresano may be considered as the practical successor to the business of the Jenson printing house. John of Cologne, John Manthen, and John Herbert discontinued their activity as publishers or booksellers in a few years after Jenson’s death, but Torresano, who had acquired much of the Jenson plant, was eminent as a publisher as late as the year 1500. As the classics of Jenson had not proved so
Liber

CLtu ex officio suo te neantis cogregatio situorum negotia procurare.

Mibi forte abagis cœtus negotia cerni non differant.

Mibi in archiepiscopio non magis

Processus tæcubis per litteras suturetias irrianar: sed factum corra formam scripturit ritus initiales, capitulis.

Q. Am vident, in quo his, in quo negotia ca.

B. Quoniam situris, descripti et illi non sunt ambos, situs ploca civitatis sit in his.

V. Nescio quid inhis, quod res, quod.

Z. Nescio quid in his, quod res, quod.

D. Nescio quid in his, quod res, quod.

N. Nescio quid in his, quod res, quod.

A. Nescio quid in his, quod res, quod.

C. Nescio quid in his, quod res, quod.

Teneant, sed genetitia, non habent

habet, situa intelligentia, situ latis monasteriis.

G. S. D. U.

H. A. M.

E. T. O.

Andrew Torresano. Venice, 1498

The Decretals of Gregory

Larger type, 7½-point. . . Smaller type, 6½-point
salable as his ecclesiastical publications, Torresano gave most attention to religious literature.

The well-printed Epistles of St. Jerome, Venice, 1488, in two folio volumes (leaves 10½ × 16 inches) is one of the more imposing of Torresano’s books. It comes to us from Roman types cast in the matrices of Jenson, but they were fitted to a smaller mold of 15½-point body. Its page of type, 5½ × 12¼ inches, is too large for reproduction on this leaf, but the type is unmistakably that of Jenson. The book is notpaged in Arabic figures, but it has Roman numerals at the foot of the page in close proximity to the signature marks. Composition is solid, thin spaced, with few breaks. Its presswork is clear, firmer than that of Jenson, and of uniform color.

A large number of Torresano’s books of smaller form are printed in the Black-letter types that had proved more pleasing to the ordinary book buyer. The Gregorii Decretales, Venice, 1498, a book of 658 leaves, numbered with Arabic figures in front margin and carefully rubricated, of which a facsimile is shown in plate 18, is a fair exhibit of Torresano’s skill in Black-letter printing. In the trimmed copy before me the leaf is 5 × 7 inches, the page of type is 3½ × 6 inches. Two faces of type are used: the larger for the text is on a body of 7½ points; the smaller for notes, on a body of 6½ points. The exceedingly troublesome composition of this page has been done with much discretion. The presswork is very black, but is clean and readable in every character. The paper is thin, smooth, and unsized. The red ink, a scarlet vermilion, is not so uniform in color as the black. Register of colors is exceptionally good considering that presswork was done in two-page forms, probably by different pressmen on many presses, and on unsized paper.
BARTHOLOMEW OF CREMONA

The facsimile on the next page is from the preface matter of an edition of Virgil, described by Brunet as the work of Bartholomew of Cremona, printed at Venice in 1472 in the form of a folio of 232 leaves. Its similarity to the type of Jenson is suggested at first glance; it has the open form and lightness of face, the feeble superior dot on the right side of the i, and other mannerisms of that master. It was cast in the mold for 16-point body, as was used by Jenson in his books of Roman letter, possibly from matrices struck from the same punches. Proctor says it is almost indistinguishable from the Jenson type. There is no record of a sale or transfer to this Bartholomew, but it is possible that Jenson may have sold to him matrices of this face, and that he made slight changes on some characters.

Bartholomew has approved himself a careful printer, for the presswork of this book is neater than that of Jenson’s Quintilian published the year before. Brunet commends this edition of Virgil as very good; de Bure honors it as very beautiful. A copy on vellum, not often used by early Italian printers, was bought from the McCarthy collection at the price of 2440 francs when old books were held at much lower prices than they are now.

Bartholomew’s career as a printer in Venice was short. He began in 1472 and had completed at least six books in folio or quarto at the end of the following year. In 1474 he was associated with Bartholomew di Carlo, and printed one book. Bartholomew di Carlo succeeded, but he produced little.
quidam mediocris: tacentibus aliis sibi ascriptis. Qua ob rem donatus: honoratusq; ab Augusto fuit. Quod aquo animo non ferēs Virgilius iisdem parietibus afs
fixit quater hoc princiū. Sic uos non uobis. Postula/
bat Augustus ut hi uersus cóplerétur: quod cù fruistra
aliqui conati essent: Virgilius præposito dìsticho sic
subiunxit.

Hos ego uersiculos feci tulit alter honores.
Sic uos non uobis nidificatis aues.
Sic uos non uobis uellera fertis uues.
Sic uos non uobis mellificatis ãpes.
Sic uos non uobis fertis aratra boues.

Quo cognito aliquamdiu Bacyllus Romæ fabula
fuit: Maro autē exaltatior. Cum Enniun in manu ha/
beret Virgilius: rogareturq; quidnā faceret: respondit
se aurū cōlligere de stercore Enniū. Haber.n. poeta ille
egregias sententias sub uerbis non mū tum ornatis.
Interrogantī Augusto quo pacto quītas fœliciter gu
barnatur. Si prudētiores inquit temonem tenuerit: &
boni malis prepōnāt. Itemq; optimi suos habeant ho/
nores: nullū tamen aiorū inuistle qęq sīat. At Mēcē/
nas Quid inq; o Virgili facietatem homini non affert?
Omnium reg; respōdid aut similitudo aut multitudo
stomachū factūnt prāter intelligere. Itē rogauit quo
pacto quis altā fœlicitas: eiūsq; fortunam seruare po
rēt: Si quārum honore ac diuitis ahīs prestātīor fīs;
tanto liberalitate: & iiustīria alios supare nītarīs. Sō
litus erat dicere nullū uirtutem cōmodoirem esse hōi
patientia: ac nullam asperam adeo esse fortunam: quā
prudenter patiendo ui fortis non uincat. Quam sen/
tenātīm in quinto Aeëridorum inferuit. Nate dea:
quod fata trahūt: retrahuntq; sequamur. Quicq; erit:
uinceda omnis fortuna serendo eft. Cum qādā eius
amicus: Corniściī ei eīi malediētā: & inimiciēs enarrat:
Quā puras inquīt huiusce maliuolentia cāuā?
Nā neq; unq; Corniściūm offēdī: & eum amo. An iqt
Hēsiodi sentētīa non meminīstī: ubiāt. Architeктū
Architecto inuidere: & poetam poētā: de malis inquit
græus ille itellexit nam boni eruditiores amant. Sed
magna cum mea gloria: & laude uindīctām in manu

Bartholomew of Cremona. Venice, 1472
Vergili Maronis Opera
16-point
Ad diunum Alfonsum Aragenuin & utriusq; Sicilie regem in libros ciuitii bellorum ex Appiano Alexandrino in latinu traductos Preffatio incipit felicissime.


Nicolaus papa quin
Libycus. (tus.
Syriu.
Parthec.
Mithridaticus.

Anneus Seneca de
rege parthorum.

Ratdolt, Loslein and Maler. Venice, 1477
Appianus Alexandrinus de bellis ciivilibus
18-point
ERHARD RATDOLT

ERHARD RATDOLT, the second son of a worker in wood of Augsburg, Germany, was another famous printer of Venice. The dates of his birth and of his mechanical training as a printer are unknown. He left Augsburg about 1474 and was at Venice in 1476. His first book in that city was the Calendarium of John Müller of Nuremberg, a small quarto of thirty leaves, which has distinction among early printed books for the novelty of an engraved border of high merit around words that then served for the title-page.

The facsimile of his type (plate 21) is from his edition of the Chronicles of Eusebius, which fairly illustrates his style of typography, then much unlike that of preceding printers in Italy. Fourteen introductory pages of this book are in Roman type, but all following pages are in Gothic, some on 12-point and some on 11-point bodies. The composition of the chronicle part of the book was carefully done in approved table-work style, with horizontal lines or rules between the lines, and vertical rules dividing the matter in columns. Red ink fairly registered with the black is freely used throughout as a means of display or distinction. The most attractive features of this facsimile are the engraved initials which he used freely in all his books. Other printers of his time left blank spaces for the decorator, which were not always worthily filled by hand painting; Ratdolt tried to make the book complete as to decoration when it left his hands. His initial letters and borders show a beauty of design with a clearness of form
EVSEBII CAESARIENSIS EPISCOPI CHRONICON I N D E S T   T E M P O R U M B R E V I A R I V M I N C I P I T  F O E L I C I T E R Q U E M H I E R O N Y M V S P R A E S B I T E R D I V I N   O E I V S I N G E N I O L A T I N V M F A C E R E C V R A V I T; E T V S Q V E I N V a l e n t e C e f a r e m R o m a n o A d i e c i t E l o q u i o . Q u é   E T   P r o s p e r d e i n d e M a t h e s p a l m e r i ? Q u i e a q u e c o l e c t u s s i t a d i i c e r e c u r a u r e c i d e p o s i t o s u b s e q u a n t . A t p r i m i H i e r o n y m i   i n b u x i   c o d i c i s a l i q u á d o  d e s c r i p t o r e s u t   a r c h e t y p u s d e s c r i b a t a d i u r a t i o . V E R B A D I V I L I T T E R A R V M P R I N C I P I S H I E R O N Y M I

Diuro te quicic horas descripsis libros
p. dominii nostri scriptis et gloriosi
 eius aduertit unuo ueniet judicare ui
uos & mortuos ut coperas quod scripti
ris & emedes ad exemplaria ea de quibus
scripti diligentem. Et hoc adiuratiois
genus transcribas & transfers in eum
codicum quem descripsis.

Chronica Evsebii Hieronymi Incipit.
Prefatio Hieronymi

Viebiius Hieronymus Vincentio & Galieno suis
Salutem. Vetus iust disertorum mos fuit ut exercen
di ingenii causa greecos libros latino sermone abfol
ueret. Et quod plus i e difficultatis habet poemata
illiusuiuoraddita metri necessitatem transseret.
Vnde & noluer Tulius Platonis integros libros ad
urbu interpreptatus est. Et cux Aratu i Romanu bexanmetis ursib
edidisset in xenopontis economico luft. In quopere ita fepe au
reallud flamce eloquie quibus a scabris & turbulentis obici
rtaat ut qui interpretata nesciuit a Cicerone dicta nõ credat. Diffi/
cile est eni alienas linguas insequente nõ alicubi excidere arduum
que in aliena lingua bene dicitus: eundem decorum in translatione
coveret. Significatu est aliquid unius urbi proprietate nõ habeo
mei quod efficia: ë dum quero implere lentientia longo ambitu

Erhard Ratzdolt. Venice, 1483
The Chronicles of Eusebius
19-point
Ratdolt a designer as well as a printer

rarely attained by the ordinary illuminator. His Roman types on 13-point body had been neatly designed and truly aligned in the matrices carefully fitted to the mold, and were properly printed with even color of ink. Redgrave says that in its mechanical workmanship his type-founding is superior to that of Jenson or John of Speyer. As a decorator Ratdolt easily surpasses other early Italian printers.

Redgrave catalogues sixty-seven books by Ratdolt alone or in partnership with his early associates, Bernhard Maler and Peter Lösslein. Other printers had selected for publication the works of classic or ecclesiastic authors and printed them in folio size; Ratdolt preferred the smaller size of quarto. He did print a few editions of classics and canon law, but he was more successful as the publisher of small school-books. Some of them concerning astronomy and geometry were illustrated with neatly added printed color. The most remarkable of Ratdolt's books is his edition of Euclid's Geometry, which shows a beautiful border and admirable diagrams. The entire work comprises one hundred and thirty-eight leaves and contains 420 engravings on wood, and about 200 diagrams constructed with lines from rules of brass or type metal.

Ratdolt's work in Venice came to an end in 1486, during which year he returned to Augsburg and in that city printed a specimen sheet of all the types he had made.¹

¹ Erhard Ratdolt and His Work at Venice. A paper read before the Bibliographical Society of London, November 20, 1893, by Charles T. Redgrave.

Fifteen of the types which are shown in his specimen sheet, on different bodies ranging from 9-point to 36-point, are of the more popular rounded Gothic form. There are two faces only of Roman: one on 12-point and the other on 13-point body. Ratdolt brought to Augsburg many of his Italian woodcuts and initial letters; but the printing he did there does not show the care that was bestowed upon similar work done in Venice. His later work was to some extent inferior, but he must be rated as one of the masters of early typography, for his versatility is shown not only in the designing and engraving of letters, but in niceties of composition and presswork never attained by any of his rivals, some of whom were the printers of more famous books.

87
FRANZ RENNER

FRANZ RENNER, of Heilbronn, Germany, was another able printer of Venice, in which city he began the practice of his art as early as 1471. I find no record of his education in typography, but he was soon approved as a thoroughly qualified master. Within two years he planned and printed four books of remarkable merit. In 1473 he took for a partner in business Nicolaus of Frankfort, with whose aid he produced some sixteen large books before 1476. Then Petrus de Bartua succeeded Nicolaus, but this partnership produced only a few books in the two years that followed. In 1478, freed from partners, Renner resumed printing and produced at least seventeen books. No book bears his imprint or is accredited to him after 1483, although he is supposed to have been living in 1494.

During this short period of twelve years he had made for the use of his printing house nine faces of type—three of Roman and several sizes of Gothic form. All indicate a designer of remarkable ability and refined taste. Two of the Gothics were of very small size. His most characteristic type, not shown in his specimen, is that of the Quadragesimale of 1472 (plate 22), which does not betray imitation of or indebtedness to any rival printer of his period. The extreme lightness of structural lines in all characters, the smallness and roundness of lower-case and the grace of the capitals give to this type strongly marked individuality. It is plainly the outcome of an intent to produce in easily readable type some of the delicate features of fine Italian penmanship, but it did not prove popular as
Sacre theologie magistri necnon sacri eloquiuii preconis celeberrimi fratris Roberti de Licio ordinis Minorv, professoris opus quadragesimale putilissimum quod de penitentia dictum est. Feliciter incipit.

Dominica in Septuagesima. De facilitate bono operis eu bene operandi quia peccatores ad plam redire debent. C Sermo. i.


Primo pp ciam origine. Q facile est unicuiq opari bonum proprie cautia SOCIO pp adiutorii dinale. originalem quæ est hominis voluntas libera que Tertio pp plmiu eterna. non cogitur. C Cap. i.


Franz Renner. Venice, 1472
Quadragesimale de penitentia
a type, for it was too frail and slender for the ordinary book, and four books in this type seem to have been enough for the book buyers of this time.

One of the largest and most meritorious books of the partners is the Biblia Sacra Latina, of 1476, the second edition of the Bible printed in Venice. It is a chunky folio of four hundred and fifty-four leaves (including the index), on a paper that probably measured $8\frac{1}{2} \times 12$ inches before it was trimmed. Each page has two columns composed in a neat condensed Gothic type on a body of about $11\frac{1}{2}$ points, and is printed on very strong paper with an evenness of color and impression rarely produced by any contemporary. In the copy before me initial letters for each chapter have been neatly and tastefully inserted after printing by an apt calligrapher of good taste.

The desire among book buyers for new faces of type seems to have been as great in the last quarter of the fifteenth century as it is now, for it induced Renner to devise a new style of large Roman, which is here shown in the facsimile (plate 23) of his edition of Johannes de Sacrobosco Anglici, otherwise known as John Holywood. It is a thin and small quarto, and it indicates that a stronger and plainer face of Roman letter was more generally acceptable to readers. The new face has few peculiarities of his first style; the characters are taller, bolder, and more condensed. As he then had no smaller face of Roman, this type on 17-point body had to serve also for the side-notes as well as for the text.
unicuiq. 360. graduī tot stadijs terreni orbis ambitus inuentus erit. Ex bis autē iuxta circuli & diametri regulam: terre diametrum sic inuentirī poterit. Auser uigesimā secundā partē de circuitu terre: & remanētis tertia pars, hoc est. 8018. stadia & semis & tertia unius stadij erit terreni orbis diameter siue spissitudo.

Capituli secundum de circulis ex quibus spera materialis componitur: Et illa superēq. lestis que p išam imaginae cōponi intelligit.

Orū autē circulorum quidā sunt maiores; quidā minores; ut sen sui paret. Maior enim circulus in spera dicit qui descriptus in superficie sperē super eōs centrum: diuidit speram in duo equalia. Minor uero qui descriptus i superficie sperē eam nō diuidit in duo equalia sed i portiones inequa-les. Inter circulos uero maiores: primo dicens dum est de equinoctiali. Eft igitur equino-ctialis circulus quidam diuidēs speram in duo equalia secundū quamlibet sui partemque disitans ab utroq. polo. Et dicitur equinocta- līs, quoniam quando sol transit per illum: quod est bis in anno i principio arietis solitum & in

Franz Renner. Venice, 1478
Johannes de Sacrobosco: Sphæra Mundi
17-point
There had been in Venice before the year 1501 more than two hundred master printers, and two million volumes is regarded by Bernard as a reasonable estimate of their performance during this short period of thirty years. Many of the owners or managers of the new printing houses were Germans, but Jacob Rubeus, the printer of the Herodotus, of which the first page (plate 24) appears in facsimile, says in the colophon that he was from France. This type on 16-point body, more compressed but apparently modeled after the bold style of John of Speyer, is not quite so black of face, but it was more carefully designed and founded. It shows at first glance the desire of the engraver to produce a type that should be easily read, and it follows the prevailing fashion of closely fitted and compressed letters. Neatness in composition and presswork appears on every page of the book, but it is thoroughly medieval in style; it has no running title, catchwords, signature marks, or paging figures. Abbreviations occur frequently, but they have not been made needlessly by the mangling of words to confusion, as was the practice then by the printers of cheap books. Attempt seems to have been made to help the reader with hyphens for broken words at the end of lines. Diphthongs æ and œ appear in words as justified by present usage.

Rubeus printed over twenty books of merit at Venice between 1473 and 1478, and some in other towns or cities of Italy, to which he afterward removed. Notices of the man and his works are scant. Although a careful printer, he has not received generous appreciation.
Type of compressed face that would enable the compositor to put more letters in a line of print was another experiment of early printers, but this expedient did not add to the clearness of the print when very thin spaces were put between words. Thinnest types on bodies of 12-10-8- and 6-point were really needed for the side-notes of a text in larger type which sometimes inclosed this text on three or four sides.

Plate 25, the facsimile of one page of type from the edition of Silius Italicus, printed by Baptista de Tortis of Venice in 1483, shows that Italian type-founders were steadily increasing in skill and experience. Here are two sizes of type of similar face—one on 16-point and one on 11½-point body—that show harmony in design, although the larger seems fairly open while the smaller is too compact.¹

The old Italian mannerism of keeping apart with a space the initial capital letter of each line of poetry is here maintained. Improvement in the shape of these capital letters may also be noticed. The side-notes on 11½-point body, of bold face, set solid, show the printer's desire to crowd a large amount of reading matter in small space. A student of type will also note that the serifs of letters are always short and stubby, and that there are few hair-lines worthy of the name. Every type is bold and distinct.

De Tortis was more skillful as a printer than some of his contemporaries who now have a higher reputation. Many

¹Each series is pleasing when viewed apart or in connection with its mated size. Its closely fitted letters on 11½-point body apparently served as models for a lighter face in the same style as copied by the Elzevirs of Leyden in 1634. A similar face is now made in America under the name of Elzevir or Cadmus.
Baptista de Tortis. Venice, 1483
Silius Italicus: Punica

Larger type, 16-point . . . . Smaller type, 114-point
Growing demand for small books

of his books, on subject-matter of slight interest now, are obsolete and in small request, and consequently his service to printing is undervalued. He was an industrious publisher; Burger names one hundred and eighty books printed by him between 1480 and 1500.

Smaller types, as used by de Tortis (plate 25) and de Zanis (plate 26), are indications that printers of that time were discovering that types cast on large bodies were too big for the page. Although they made the book of too high cost, printers could not put aside the traditional respect that had always been paid to the imposing folio. They tried to meet the wishes of economical book buyers by maintaining the large leaf and by crowding it with more words in smaller letters. To make the smaller size of type that was desired, compression had to begin with punch-cutting. The vertical strokes of ascending and descending letters were made shorter. The change from a body of 16-point to 12-point, with a corresponding sidewise compression for each letter, largely increased the number of words that could be put on a page. Four hundred or more could be compressed within a space previously occupied by less than two hundred, but the narrowing of the relief of white space between lines and the crowding together of the side lines of each letter made the print harder to read, when type had been set in a measure five inches wide. A resetting of the type for a page in two or three narrow columns made print more easily readable, but the student had to wait some years for the small type and small leaf made popular by Aldus Manutius. Four centuries have attested the correctness of Dr. Johnson’s dictum that the most serviceable books are those that can be held in one hand.
THESEI VITA PER LAPVM FLORENTINVM EX PLVTARCHO
GRAECO IN LATINVM VERSA.

VEMADMODVM IN ORBIS TERRA ESITV DESCRIBENDO HISTORICVM SOLENT: UT AD QVE IPSI COGNITIONE ASPIRARE NON POSSUNT: EXTREMIS TABULARVM PARTIBVM SUPPRIMENTES QUBUIDAM ADVICUVM LOCOS ESS VASTOS ARENOSS & CELO TERRAM PENITAM AQUARVM AUT LIMITVM INSEPABVM: AUT MONTVM FLUMVM; AUT ASTRVM FRIGORE PONTVM: SITAM & NOBVM IN HAC VIIRVM COLLATIONE PERPETUA REGO.

HISTORIA QUANTVM PROBAESI ORATIONE AEQUI POTESTVM: DE HOC QVE SURA MEMO.

RAVIMUS URIS REPORA PERCIN.toBeS UEBE LICITUM AFFIRMARE. QUAM IN VERO ANTQUARVM AC ENEUSTORMIA VETRIG: TRAGICA & MOETRICA POETAE & FABULAE SCRIPTORS OCCUPANT: NEX ULTRA FIDE ULLAM NEC CERTIDNUM PRÆFERUNT. CUM IGIITUR LYCURI LEGUM LATOR & NUMRE REGIS RES ELEMENTS MAEAUMERIVS: HADABRE SUERIT AD ROMULVM ORATIONEM CONVERTERE: QUANDO HISTORIA IPVA AD EUS TEMPORA GROPE AECEMUS. SED MIHI DIU COGITANTUR HOC URIO (UT INSQUIX: AECHILVS) QVIS COVENIT QVIS ILLI OPPONEREM: QVIS DIGNUS FECUM IN COMPARATIONE CONIVITU: ULLUM EST TANDEM FACIEHDM ESSE: UT A QVO CELEBRA AThENAEVM CIUITES AMPLIFICATA EST EUM CUM.
WHEN printers discovered that large types and leaves made books slow of sale, they sought the aid of artists in the hope that decoration might give them proper attractiveness. Illustration had been tried, but in a timid manner. Ratdolt had printed some of his smaller engraved diagrams in color; Renner had made initial letters to be printed with the text-types that were much superior in design to those of the average calligrapher. De Zanis, the printer of an edition of Plutarch’s Lives (plate 26), attempted a bolder venture. Its first page contains a large engraving in outline of the combat between Theseus and the Minotaur, and he inclosed this full page with a broad border. Each page was provided with initial letters of small size, but of real merit. De Zanis could not free himself from traditional methods of compactness. Chapters of this Plutarch begin with huddled capital letters and the text-types that closely follow are always preceded with an initial neatly designed and engraved. These initials were needed, for they gave a proper relief to the density and somberness of the closely spaced words and closely fitted types on 11½-point body. These types have thick strokes of unusual width for their height, with stubby serifs and few hair-lines, that combine to give the general effect of Black-letter to the gloomy print. The scamping of white space between lines and words was a practical return to the old disproportion of black to white that is found in many Gothic manuscripts and books printed in Black-letter. In nearly two hundred pages of solid composition there is not one paragraph. The chapter is the paragraph.
Very small types find greater favor

De Zanis met the demand for less costly editions half-way; he reduced the size of types, but he retained the large leaf. This was not a wise choice, for small type set solid and closely spaced in lines five inches wide is difficult to read. He had crowded in one volume the words that filled two volumes in other editions. This treatment was of economy in cost but not a convenience to the reader.

The black background for the initials and border of the de Zanis edition of Plutarch's Lives illustrates a mannerism of engraving in relief that did not long continue in favor. A folio Bible printed in Hebrew type at Soncino in 1488 with a solid border more than two inches wide shows the culmination of this style. Printers everywhere were taught by many failures that sufficient pressure could not be given to the frail hand press then in general use to transfer ink properly and in solid mass to ordinary paper. The outline style of the Theseus was more generally adopted.

Other printers in and out of Italy were experimenting then with small type. Black-letter of thick face had been made by Jenson, Ratdolt, and Renner on small bodies, but few printers had tried at that time to crowd the round-faced Roman letter on a very small body. There was a general belief among many printers that the condensed lines of Black-letter were more adaptable to the required compression. As early as 1490 John Froben of Basle made and used for books a Black-letter type on 6-point body. Not long after a 6-point type of Roman face was made in Venice, which was then regarded as the extreme limit of compression. The new size was imitated by type-makers in all printing countries, and was much admired. In all languages this size was known by the name of Nonpareil.
ALDUS MANUTIUS

ALDUS MANUTIUS, most famous of early Italian printers, fairly earned this distinction during his lifetime for the good service he gave as editor, educator, and publisher. He was born at Bassiano, Sermoneta, in 1450, and showed a predilection for books and study at an early age, serving through his early manhood as a tutor. When forty years old he went to Venice to edit and prepare for printing the writings of Greek authors previously neglected but then held in more esteem. His duties as editor made him acquainted with the
Aldus preferred Greek authors

bookseller Torresano, with whom he and his son afterward had close business and social relations. His chroniclers do not plainly say that he began as an editor for Torresano, but that inference is warrantable. Aldus was his associate for several years; he married his daughter Maria before

1499, and Torresano, as father-in-law, afterward managed and preserved the printing business for the sons of Aldus.

As early as 1495 Aldus was an active and independent publisher. Burger accredits him with the publication of thirty-seven books before 1501, of which the four earliest issued were in Greek type. One is an Aristotle in folio, from which the above facsimile has been taken.

101
Duties of an early publisher and printer

To the prudent man of business the reprinting of Greek authors must have seemed the most quixotic of enterprises, for printing in Italy had already been overdone. When Aldus reached Venice, there were, or had been, one hundred and thirty-three printers and publishers in that city; all of them were diligently engaged in glutting the market with books of uncertain sale. The state of the trade at Rome and in other Italian book markets was no better.

The duties of a printer and publisher of the fifteenth century were more arduous than they are now. The modern printer waits for orders to print; a modern publisher invites or accepts the works he publishes; few pretend to edit the books to be produced. The early printer had to hunt up a fair copy of the volume to be printed and have it wisely edited; his merit as printer was largely rated by his ability as an editor. The manuscripts he needed were scarce; many had errors made by unqualified copyists; all of them called for critical reading and correction before a true copy could be given to the compositor. To buy or borrow different copies, to compare them, and prepare a new text for printing, could not be done without much time, money, and scholarship.

One difficulty in Aldus's path was his ignorance of the mechanical details of printing and publishing, for he did not enter the trade through the regular door of apprenticeship. There is no evidence, no probability, that he ever composed a page of type or printed a quire of paper with his own hands. From the technical point of view, he was not a printer, yet he was better qualified for this work than any of his rivals. Printing, as then practised, did not suffer for lack of mechanical skill. There was then no need of steam presses, type-setting or paper-making machines. In every branch, from type-founding to presswork, the machinery was amply good
Duties of an early publisher and printer

To the prudent man of business the reprinting of Greek authors must have seemed the most quixotic of enterprises, for printing in Italy had already been overdone. When Aldus reached Venice, there were, or had been, one hundred and thirty-three printers and publishers in that city; all of them were diligently engaged in glutting the market with books of uncertain sale. The state of the trade at Rome and in other Italian book markets was no better.

The duties of a printer and publisher of the fifteenth century were more arduous than they are now. The modern printer waits for orders to print; a modern publisher invites or accepts the works he publishes; few pretend to edit the books to be produced. The early printer had to hunt up a fair copy of the volume to be printed and have it wisely edited; his merit as printer was largely rated by his ability as an editor. The manuscripts he needed were scarce; many had errors made by unqualified copyists; all of them called for critical reading and correction before a true copy could be given to the compositor. To buy or borrow different copies, to compare them, and prepare a new text for printing, could not be done without much time, money, and scholarship.

One difficulty in Aldus’s path was his ignorance of the mechanical details of printing and publishing, for he did not enter the trade through the regular door of apprenticeship. There is no evidence, no probability, that he ever composed a page of type or printed a quire of paper with his own hands. From the technical point of view, he was not a printer, yet he was better qualified for this work than any of his rivals. Printing, as then practised, did not suffer for lack of mechanical skill. There was then no need of steam presses, typesetting or paper-making machines. In every branch, from type-founding to presswork, the machinery was amply good
Irregularities of manuscripts in Greek

enough for the work to be done, and was worthily used. But there was sore need of greater scholarship—need of a printer who could do something more than servilely multiply the texts he handled. Aldus was the first of the craft who dignified it with marked editorial ability.

Aldus had to create the Greek types he needed. Clumsy Greek types had been made at Rome, Milan, and Florence; one series was fitted to capitals more Gothic than Greek; another was entirely in Greek capitals; all were meanly provided with accents and full of badly formed and almost unreadable characters. It was difficult to get a good model. Some copyists wrote in uncials, some in cursive, some in the old mural capitals, and some combined different styles and added mannerisms of their own. The old saying, "It's Greek; skip it," came not merely from the strangeness of the language but from the capriciously varying forms of the written letters. Aldus thought it necessary to design, cut, and cast an entirely new character, in which he tried to combine the legibility and grace of the small cursive letters then made by Demetrius of Crete, as shown in the Greek grammar printed in 1476 by Paravisinus of Milan, with the severe dignity of the old capitals as they were soon after shown in the Anthology printed at Florence in 1494. This was a harder task than designing types for a text to be printed in Roman or Gothic character. A text in Latin or Italian could be acceptably printed from a few letters with signs for punctuation and abbreviation, in all about sixty characters; but a text in Greek, with its complex accents and ligatures, according to Aldus's ideas of propriety, required about six hundred distinct characters. At the outset he fairly reproduced all the accents, and, as soon as he could, all of the ligatures. To reduce the rude
Aldus's wonderful industry as editor

Greek characters of the manuscript copies to symmetrical proportions, to adjust them on squared bodies so that each letter would be in harmony when combined with any other letter, was a great undertaking. He did the work fairly, but not to his own entire satisfaction. He seems to have been painfully conscious of the defects of his early Greek types, for his first books convey the notion of preliminary practice work. To him, the greatest defect was the sparsity of ligatures, which his poverty and his novice-like eagerness to do quickly something of real merit did not allow him to present with the finish or in the profusion he desired.

The Aldine edition, in five volumes folio, of the works of Aristotle, was in the largest and most legible Greek type that had then been printed. Its first volume, the Organon, was published in November, 1495. Its superiority was acknowledged by Greek scholars, and Aldus was encouraged to go on with other large work. Before the year 1500, he had printed editions, in folio, of Theocritus, Bion, Moschus, Aristophanes, Dioscorides, and four more works of Aristotle, and others. To produce these books, he had to direct the making of three fonts of Greek and two of Roman types, to organize a great printing house, and superintend the work of many men, from the composition of the types to the binding and selling of the books. This was work enough for a man of extraordinary ability; but Aldus did more. He prepared the copy for the books, rewrote two Greek grammars and a new Greek lexicon, read all the proofs, and kept up an extended correspondence. The difficulties he met in preparing the copy were most discouraging. In his preface to the Theocritus, he says the texts he consulted were so mutilated and transposed that the author himself, if living, might not have been able to unravel the tangle. It does not surprise
one, in view of the great work he did, to read this pathetic confession in the preface to his Thesaurus of 1496: "In this seventh year of my self-imposed task, I can truly say—yes, under oath—that I have not, during these long years, had one hour of peaceful rest."

Like other early printers, he began to print in the belief that the broad-margined and large-typed folio was the true model for good books; but he and they soon discovered that this form was not readily acceptable or salable. There is a flavor of querulousness in his prefaces before the year 1500, which indicates that his books did not find eager purchasers. To get the buyers he desired, he must make cheaper books. To do this, he must make smaller types, and put the matter of a large page on a small leaf. He did not shrink from the innovation. He was thoroughly saturated with the spirit of the Renaissance and was ready to give up any method of book-making which hindered a wider spread of knowledge. When fairly awakened to the necessity for changing the size of popular books, he was also prepared to change the form of the letters. Some printers at Rome and at Venice had made their earlier books popular by rejecting Gothic and printing them in light, clear, Roman letters. Why might not he be as successful with a type of entirely new shape? The model for the desired form he found in

---

1 All of Aldus's earlier books had been printed from large, round, open types, with broad margins—in all points fair imitations of the best manuscripts of his day, and in the style now commended by bibliographers. But he was not fortunate in getting the approval of all critics. One of his literary friends, Urenus Codrus, in a letter written by him in 1498, said that he was pleased with the workmanship and the accuracy of the Aristotle, but was indignant at the price. He thought Aldus was too prodigal of paper, and plainly said that he would deal more fairly were he to give more type and less margin. To prove that he was aggrieved, he adds that with the money paid for Aldus's five volumes of Aristotle he could have bought ten of the largest and best manuscripts in Latin. Alas for the mutabilities of fashion in book-making! A fair manuscript of the fifteenth century is now valued more than the printed book of the same period—not that the manuscript is more legible or more accurate, but because it is rarer. The broad margin which Codrus disparaged is now assumed as evidence of the book's rarity and superiority.
The beginnings of Italic type

the thin, sharp, inclined handwriting of the poet Petrarch. It was smaller, clearer, simpler than the Gothic, more condensed and paper-saving than the round-faced Roman. It promised to be the needed character to present to a reader the most matter in the least space.¹

He took this writing to Francesco Raibolini of Bologna, an expert goldsmith at Venice, and had him redraw the characters in typographical proportion, and cut the punches for the types he wanted. The cutting of the new character was not so tedious as the cutting of punches for Greek, but it had its own difficulties, especially in the adjustment of inclined letters on square bodies. Labor would have been lighter if Aldus had been content with one form only of a letter. He was not. The vitiated taste which induced him to make ligatures for Greek, compelled him to conjoin two letters on one body. His idea of a popular character was a close imitation of stiff or set penmanship, the beauty of variety, not of uniformity.

The first work that was printed in the new character was an edition of Virgil, in octavo,² published in April, 1501.

The introduction of Italic type only is conceded to Aldus, but his service in contributing another useful series in the small capitals that now constitute a part of every modern font of Roman book type has been overlooked and undervalued.

¹The first attempt at an imitation of the marked peculiarities of quickly written letters was made in 1491 by Alessandro Paganino, who set up his press first of all at Toscolana on the Lake of Garda, but subsequently removed it to Venice and printed there as late as 1531. His earlier types were not what we now call Italic. Brown defines them as a "peculiar upright Italic," having nothing in common with the Aldine Italic; but the type he used in 1527, of which Brown shows a facsimile, is slanting and like the Italic of Aldus. Paganino had preceded Aldus in adopting the octavo page for printed books, but did not succeed in making it an established size. Horatio Brown, The Venetian Printing Press, p. 33 and note on p. 48.
²It was correctly called an octavo, for the leaf is one eighth of the sheet on which it was printed; but the unschooled reader, who is more familiar with the larger size (six by nine inches) of the modern octavo, would rate it as a small eighteen-mo, for the leaf of this Virgil, slightly trimmed, does not measure four by six American inches.
Aldine Italic was soon counterfeited

The three correlated series of tall capitals, small capitals, and lower-case of Roman, with inclined capitals and lower-case of Italic, now provided by all type-founders for our text-type, enable the printer to make easy the changes in the appearance of words that are demanded by many writers.

With this Italic Aldus printed his little books almost to the entire exclusion of Roman lower-case, and his preference for this style was continued by his sons when they removed to Rome. Italic was a rival to Roman for about a century as a proper text letter for books; afterward it was reserved for prefaces and introductions; it now meets steadily diminishing use as an emphasizing letter or in side-notes.

The new character was successful. By Italians it was called Aldino or Aldine, in honor of the maker. In France, where it was counterfeited, and where there was a motive to suppress the name of the maker, it was called Italic, the name by which it is now known to French and English readers. In a decree dated November 14, 1502,¹ the senate of Venice gave Aldus exclusive right to the use of this character, and threatened counterfeitters with fines and the confiscation of printing materials. This patent, which was confirmed by Pope Alexander VI, on December 17, 1502, was subsequently renewed for fifteen years by Pope Julius II in January, 1513, and by Pope Leo X in the next year. These patents gave no real protection. The punch-cutter, Raibolini, made duplicates for the rival printer, Girolamo Soncino, of Fano, which he at once put to use in an imitated edition of Aldus’s Virgil, stealing in one venture not only the new form of letter but the editorial work of Aldus. The Giunta, a printing association at Florence, also made an imitation of Italic, with which they printed many books.

¹A patent of July 23, 1500, is noticed in Didot’s Alde Manuce, p. 166.

107
Aldine Italic is open and readable

A printer at Lyons reproduced this Virgil, with other Aldine classics, in a close imitation of this Italic, and with the trademark of Aldus, and sold the books wherever he could as the work of Aldus's presses. Aldus could not prevent this piracy, nor could the state help him. He could do no more than publish a protest and a warning against counterfeiters, which first appeared under date of March 16, 1503.¹

The facsimile of a page of Statius, a book (plate 27) of the same size as Virgil, and printed from the same types in 1502, when the types were but slightly worn, will fully show the peculiarities of his early Italic. The printed page has the appearance of leaded types (or of types separated by enlarging space between the lines) but it is not leaded. The characters were cast on a body nearly as large as that known to American and English printers as 12-point, but the short letters, like the m and a, which constitute the greater part of the font, are at least two sizes smaller than is now usual for text-types on this body. The new Italic character was cut with plain intent to get many letters in a line. All the

¹ "When I undertook to furnish good books to lovers of letters, I thought that I need only see that the books issued by our Academy should be as correct as care could make them. . . But four times within the past seven years I have had to protect myself against the treachery of my workmen. . . . I have defeated their plots and punished their perfidy. Yet, in the city of Lyons, books are fraudulently printed under my name. These books do not contain the name and place of the real printer, but are made in imitation of mine, so that the unwary reader will believe them printed in Venice. . . . Their paper is inferior and has a bad odor. The types do not displease the eye, but have French peculiarities and deformed capitals. The letters are not connected, as mine are, in imitation of writing." The Lyons type-founder shunted the capitals as is now done.

As Italic types did not appear in print before the Virgil of 1501, Italic may not be classified as of the fifteenth century, but it was surely not devised in haste with little thought and study. It was probably planned by Aldus and matured by the punch-cutter for at least a year before the printing of the Virgil.
THEBAIDOS

T alia iactant crudelis Diva feueros
A duerit vulsus inamœnum forte sedebat
C ocytoniuxt a resoluta quae vertice crines
L ambere suluresas permissas anguibus undas
I livet igneus lapideq atantor astris
T risti bus exilijs ripus disceper inane
V ulgus et occasus dominæ pauet ulla per umbras,
E e salientes animarum examine campos,
T aurea limen petit irremeabile portæ.
S ensit adesse dies piceo nox obvia nimbo
L uentes turbauit equos procul ardus Atlas
Horruit et dubia cœlum servie remisit.
A rripit extemplo Maleæ de vallis surgens:
N oum iter ad Thebas neq enim mecostor illas
I tæq redita quia cognataq Tartara mutant.
C enum illi astantes umbrabant ora Cerastre,
T urba minor diri capitis sedet inuit abacis
F erra lux oculis quals per nubila Phoebes
A tracia rubet arte color suffusae meneno
T enditor ac sanguine fixt ortis igneus atro
O re vapor quo longe sitis morbisq. fameq.
E t populos mors una ueniit. riget horrida tergo
P alla, et coœrulc revelunt in pectori nodi.
A tropos hos atq. ip fannoat Proserpina culus.
T un geminæ quant illa manus hæc igno rogi
F ulgurat hæc uius manus aera surberat Hydro.
V tisset, abrupta qua plurimus arcæ Cytheren
O currat cælo, fera sibila, crine uirens
C ongeminat signum terræ unde omnis Achaei
O ra maris late, Pelopeiaq regna resultant

Aldus Manutius. Venice, 1502
Statius
12-point
short letters are angular and pinched. Two letters are often put together in one type, making the tied, condensed character which Aldus most admired. Tying and pinching were overdone, for, although the Aldine Italics are of firmer face, and have an open, leaded appearance, they are not so easily read as modern Italics of the same size. Over-nice criticism might note defects of proportion and fitting, but every typefounder will admit that for a first experiment the Aldine Italic was well done.

The composition is good in its comparative freedom from the abbreviations then in common use, but not so good, perhaps, in its bewildering use of punctuation points. One marked peculiarity is the abbreviated height of the capital letters at the beginning of each line. They are little higher than the short letters of the text; they do not incline, but stand up straight; they are separated from the words to which they belong by a wide space. No reason has been given for this use of dwarfed capitals. It is probable that this peculiarity was caused by the reverence of Aldus for classic models. He had no scruples about altering the shapes of Petrarch's letters to suit the needs of type-founding, but he did shrink from meddling with the general form of classic letters. To incline the capitals as we do, and make them harmonize with the text, he may have regarded as literary vandalism. He would as soon have altered the words of Cicero as the general contour of Cicero's letters. His title-pages are in capitals smaller than those of modern bastard titles.

The paper of this edition of Statius is thin, of smooth face, and of fair color, but it is unsized and not fit for writing on with ink. It came, as did most of his paper, from the mills of Fabriano, a place that long maintained a good reputation
for paper-making, for the Fabriano papers were honorably mentioned by a jury of the World’s Fair, of which Firmin-Didot was chief, at London in 1851. For special copies, Aldus selected finer papers.\textsuperscript{1}

Other printers have produced work of merit, other typefounders have made decorative types more or less pleasing, but no printer or founder since Aldus has invented even one original style of printing types which has been adopted and kept in use as a standard text letter for books.

This remarkable success was not had without effort. His first Greek types were inferior and were discarded. The second font was better, but imperfect. A steady improvement may be noted in the four fonts that followed.

Aldus was never entirely satisfied with the first designs made for his types; every year he made a change in some character. Type-founding was his ruling passion. He was not successful with his first Roman types, which are inferior to those of Jenson and Ratdolt. The

\textsuperscript{1}His friend Lorenzo, writing to Aldus’s patroness, Isabella d’Este, tells her that the promised copies of Petrarch and Ovid are delayed by Aldus’s inability to get fine, pure white linen paper; that only fifteen choice copies each of these books will be printed; that the printed sheets of her copies will be carefully selected by Aldus himself, and that the price of the Ovid will be five ducaits. These special copies, on finer paper, elegantly bound, and ever since carefully preserved, may have led to the error that Aldus always printed on full-sized paper. As full-sized paper was expensive, and demanded more care in printing, it was selected for choice copies only.

The price of the new octavos, sewed, but in a plain wrapper, was a little less than fifty cents in American silver. Compared with the earlier editions in folio, they were marvels of cheapness, but the result of sales proved that they were too cheap for the time.

Cheap as this may seem, the book has been made at a lower price. In 1806 Pierre Didot, of Paris, published a Virgil of the same size, the first of a stereotyped edition of classic texts, ornamented with vignettes on copper by Andrieux, and beautifully printed, for the paltry price of one franc. This, also, was an unprofitable venture. The cheapening by stereotype was deceptive.
second font was worse. The third, designed by Raibolini, has remarkable beauty. The fourth was bad; the fifth very good. Of Italic he made but two sizes. The type of the Virgil was the size first made and the one which was most used. It is here shown in plate 27. A smaller size was afterward made for notes. One line of a larger size with slanted capitals appears in plate 28.

Aldus did not excel in everything. His presswork, always good, is not superior to that of Jenson, nor of Renner and

\footnote{Aldus's types were extravagantly praised by his admirers. Some said, in all seriousness, that their beauty was owing to the silver of which they were made. They had noted the white, silvery appearance of his newly cast types, and had concluded that they were made of that precious metal. Aldus was too practical for this folly. His types, like those of his contemporaries, were of lead and tin, with possibly a little antimony. In speaking of his printed books, which were in imitation of handwriting, Aldus says that they were made “with a hand of tin”—meaning that the types were largely composed of tin.}
The device of Aldus Torresano. His skill in the printing of woodcuts, and even in showing to advantage the beauty and delicacy of well-cut type, was inferior to that shown by the printers of illustrated missals and books of devotion. Aldus had no enthusiasm for this department of printing. His first experiment in this difficult field was his last. This experimental book, the Reveries of Polyphilus, a stout folio of two hundred and thirty-four leaves, fully illustrated with designs from an unknown but able master, possibly Benedetto Mantegna, was published in December, 1499. The amatory sentiment is extravagant, yet that is subordinate to the author's desire to display his knowledge of art and mythology.

Among the illustrations of this book is one of a dolphin twining about an anchor. It pleased Aldus, who at once adopted it as his trade-mark, showing it for the first time in his edition of Dante of 1502, and afterward in many fine books. Erasmus, explaining the device, with the motto (added subsequently) Festina lente, says the dolphin signified speed, the anchor deliberation, and was an exemplification of the aphorism, “Make haste slowly.” This illustration is taken literally, faults and all, from the Statius of 1502. Four variations of this design were afterward made; two are more ornate, but none is better than this.

Aldus died in 1515 in comparative poverty. He had the money-getting but not the money-keeping faculty. Whether he sold folios at high price, or octavos at low
The Aldine house had worthy successors

price, the result was the same. Directly or indirectly, he gave to the book buyer quite as much as he received.

In 1529 Andrew Torresano died. His sons and those of Aldus continued the work of their fathers, but did not agree, and published few books. In 1540 the sons of Torresano withdrew; the books of the house after this date bear the imprint of Aldus’s sons. Paul Manutius, the youngest, then twenty-eight years old, was manager. He drew about him many learned men, and kept the favor of eminent Italian ecclesiastics and princes. He reopened the Academy, and with its aid published valuable books. But wars and the waning commercial prosperity of Venice caused his removal to Rome, where he was cordially received and provided for by Pope Pius IV.
Plate 28

PRAESTANTI. VIRO
IVRIS. VTRIVSQUE. SIN

gulari cognitione ornato
FRANCISCO. MORANDO

Aldus Manutius Paulli F
S. P. D

VMQVAM eorum institu-
tum probau, qui eo animo se
ad litteras conferunt, ut, praes-
ter suam utilitatem, nihil cu-
rent. quo enim pluribus communica-
tur, eo nobilior est Virtus. Accedit il-
lud, quod fama nominis nostri & pro-
pagatur scriptis, & perpetuo custodi-
tur: qui est uberrimus, ac praestantissi-
mus litterarum fructus. quamobrem
eo semper cogitationes meae specta-
runt, ut ea praestare possem, quae stu-
diosis omnibus utilitatem aliquam af-
ferrent, meumq. nomen posteris etiam
proderent. in quo Aui mei, Parentisq
uestigia cum sequar; si me dignum utro-

A 2 que

Paul Manutius. Venice, 1566
Preface to Orthographiae Ratio
14-point
cōuerlus continuo dimicās ad extremū in facie corrūit. Erat sērē sexta diei hora, cum Theias occubuit. Gothi tamē ob regis mortem nequaē deterrii usq; ad noctē pugnauerunt, quā pedem referentes factis denigote nebris pūgna célāuit. ĉū primo solis ortu cepta fuisset. Ea noctē utrig; armati steterūt, utq ĉū dies apparuit rur- sūs in pūgnam reditum ĉū, et usq; ad solis occasūt ĉū magna strage utriusq; partis dīmicātū. Tandem uero Gothi ad Narsetem oratoribus missīs uelle ūt ĉū Italia excedere obtulerunt, quā incolūmēs abire asportareg; sua permittantur. Sin ĉū hec sībi non pemit Narles, ĉū diu uiuant tam diu pungnare non desituros esse. Quē ĉū ĉū itellēxisset Narles ĉū cōsilio re discussā, illīs pemitere decreuit- ĉū aduersūs dispātos homines magnō suq; detrimentō victorian ĉū adipsōtūr. Inter ĉū ad mille equītes ex Gothoq; castrīs au fugerat magnīsq; itineri- bus Bapiam, et alia trāspadum oppida petierūt. Relīq- ĉū fādere cum Narsete ĵcto sua priuātim asportantes Italia excedere ac nūq; aduersūs Romanī imperium bellū gerere promiserunt libertate tamen retenta ĉū ulla Romanī imperii saecietio. Quō factō Cumas ĉū cetera quē superāt oppida Narles recept, Finīs ĉū fuit anni Decimīoctauī ĉūnius belli.

Hunc libellum Emilianus de Orfinis Fulginas & Iohannes Numeister theutunicus: eiusq; lotii feliciter impresserunt Fulginei in domo eiusq; Emilianī anno domini Millesimoquadringētē, limoseptuagesimo feliciter.

John Numeister. Foligno, 1470
Aretinus: De Bello Italico
18 point
TYPES OF OTHER CITIES

JOHN NUMEIESTER

John Numeiester apparently obtained his knowledge of typography in the printing house of Gutenberg and Fust, for he was called as a witness in their suit at law at Mainz in 1455, but it is not known how or where he was employed after the dispersion of printers from that city in 1462. In 1470 the book De Bello Italico was printed at Foligno in northern Italy, and it says in its colophon that it was "felicitously printed by Emilianus de Orsinis of Foligno, Johannes Numeiester of Germany and his associates." 1

In 1480 Numeiester was at Albi, Languedoc, France, where he practised printing for four years, making use of a Black-letter type of the style used in the Bible of Forty-two Lines. In 1485 he appears as a master printer in Lyons, France, where he produced three books of merit, but he was not a successful printer and soon gave up its practice. In the city records he is registered in 1507 as out of business and poor. The date of his death is unknown. 2

1 Claudin specifies these associates: John Ambrecht, who set the types; Kraft, who attended to type-making; and Stephan, the inventor of a new process for type-founding. With the types so made were also then printed Ciceronis Epistolae Familiaris and the first edition of La Divina Commedia di Dante, 1472. The types made for these books are on 18-point body, closely fitted, but the matrices were inexactely justified to one another and to the mold. It was not a pleasing letter to Italian readers, and the Foligno printing house made no books after 1472.

2 Claudin, to whose The Peregrinations of J. Neumeister, Paris, 8vo, 1880, I am largely indebted for this information, says that Numeiester may have been at Rome with Ulric Hahn, and their independent use of similar designs for the illustrations of their mutual publication of The Meditations of Turrecremata (first printed by Hahn and afterward by Numeiester) leads to this belief. Numeiester's ventures in printing and publication with Orsinis and other associates at Foligno were not successful, for he returned to Mainz in 1479. Orsinis went to Rome in 1474, and apparently had no further connection with typography. The facsimile (plate 29) on page 116 is copied from Hawkins's Titles of the First Books, 4to, New York, 1884.
On oblivor quobrem nec paertis tui nec filii simile qeac has Lysicles. Non enim Lysiclati filii nec nepetolomi prae. Quod tamen et vixere multij siculis affirmasse aiunt et propertia maximae laude obsecutae. Vni enim hoc eum et numero quae laude meret ut memini maxime his quos noua metiamur.

On peccare merito fortasse et ture spondei existimati peccare hoc et idco post hae cautioe fieri potest. Qui aut nec cunec cai adiuvat idem fortuna fibi cauet. Ne circi an alius existimari possit qui oio malo Turpislimi iigit e adiue enim sone accedemus eum qui multicid exemplum factus sit ne sua quidem ipsius calamitate bonum ficer.

Ersus si sumus tae eciu nullam abste sua ria accipisse si singulis accusatiobi no leus i crine fuis deprehensis. Szi qle te esse vellem9 teq erga nos esse decuit tale arbiiti sumus et accusantii crimina eo q timimus deprehendit de te quatere falta duxim. Certo tame siq nihil aliquando malo comiserunt cu illata metuit crimina exs fortune iniquitate visos no iniuria puni. Cura iigit ne aut mores q te inimici arguaut aut fortunae exibas.

Sixtus Riessinger. Naples, 1471
Phalaridis Epistole
15-point
SIXTUS RIESSINGER

PRINTING was introduced to Naples in 1471 by Sixtus Riessinger, a priest from Strasburg. Nearly twenty books are attributed to him in Naples before 1481. Most of them are in Roman letter, undated, and in folio, but the facsimile here presented, Phalaridis Epistolae, is a small quarto, with leaves 6 × 8½ inches.¹

It is boldly printed in a type of 15-point on thick paper. It has no hyphens to show broken words, but abounds in abbreviations and accents. The type-founding is inferior; the types are not in line and show amateur workmanship everywhere. It has no running title, nor paging figures, nor signatures, but it has many paragraphs, widely separated by white space. Initial letters for these paragraphs have been painted in red, but in some other features it deviates from the conventional monastic style of book-making.

King Ferdinand held Riessinger in high favor and wished to attach him to Naples. He would have made him a bishop and invested him with other ecclesiastical dignities, but Riessinger left Naples in 1480 and went to Rome.

Arnold of Brussels began in 1472 to print at Naples; yet Matthias Moravus from Olmütz has distinction as the most important printer in that city between the years 1475 and 1491, for Naples was never prominent for making or selling books. The product of the Moravus Press is recorded as about thirty-five books.

¹This book of 48 leaves does not accord exactly with the description given in number 12,882 of Hain, who ascribes it to Guldinabeck. But Hain concedes in two following numbers that this Phalaridis Epistolae was twice printed in two editions by Riessinger. The book before me comes certified as the work of Riessinger, Naples, 1471.
ANTONIO MISCOMINI

ITALIAN birth and training are indicated by this name. When and where Miscomini acquired the ability that enabled him to establish and direct a printing house in Florence is not on record, but he soon proved an efficient manager. He began his work as printer at Venice in 1472 with two partners or financial associates. Four years afterward he was continuing this business in the same city, but without partners. Neither his name nor those of his partners appear in the books that he is known to have printed at Venice. In 1481 he removed his printing house to Florence, where he printed some sixty books of value during the following thirteen years. Apparently he had close relations in business with the Ripoli Press, and with booksellers of Florence, who often suppressed the names of the printers.

This facsimile of Miscomini's type and page is from a rare first Italian edition of St. Augustine's City of God. The book does not give the name, date, or place of its printer, but Proctor decides "at Florence, not after 1483." The type of this book of three hundred and twenty-four leaves is a compressed Roman of firm face on 11-point body, apparently intended to imitate the firmness of contemporary devotional works in Black-letter. The composition and presswork are of merit. They reveal the increasing desire of readers for simplicity and more compactness in print.

1It has signatures, but no catchwords or running titles. Paper is sized and of fair color. Chapters have large pen-made initials at appropriate headings. Hyphens at the end of lines to indicate a divided word are rare, but Arabic figures for paging are used.

2Proctor has identified five distinct faces of type in his collection of Miscomini's books, but this St. Augustine is printed with one face only. Capital letters in a mass appear only in the Deo Gratias on the last page.
PII SECUNDI PONT. MAX. DE CONVEN TV MANTVANO EPISTOLA PRIMA.

IVS EPI SCOPVS SERVVS SER

orum dei universalis & singulis Christi fideli
bus has nostras litteras inspecturis salutem &
apostolicā benedictionem. Vocavit nos pius &
misericors deus ad sacram beati Petri sedem;
uiceque dilectissimi filii sui domini nostri Ihe
su christi debilibus humeris nostris comitit in
terris: pasturam gregis sui credidit: & alto fluctuantem pelago
fidelis populi regere nauiculā iussit. Grauis haec nobis sacrina
est: nec nostrae uires sunt: quae tanti regimenis ferre molem
sufficient. Procellosum est ulde mare atq. infestum: per quod
nobis nauigandum est. Nutat & fatiscit carina: qua uelimur.
Trepidant ac deficiunt remiges: uentique aduersi sunt: & in
borda tempestare iactamur. Nam posteaquam Constantino
princep pax reddit a est ecclesiis: nunc quam dominici gregis ea
pressura fuit: quam modo cernimus: nuncquam adeo coartatos
capti sibici fidei limites superiæ atas uidit. Exit olim in omné
terram sones apostolorum: & in fines orbis terræ uerba eorum.
Subiecerunt omnes reges terræ: omnes tribus: omnes populi
collae sua Christo domino: & salutaris fidei sacramentis imbui
ti gloria & excelsis deo per unigenitum filium eius: & in terris
pace bonæ voluntatis hominibus acclamauere. Surréxit de
inde annos iam supra ostingentos pseudo propheta Mahumet
thes in Arabia: qui blasphemās sacratissimam trinitatem: non
solum contrubes suos: sed ægyptios atq; omnem Syriam &
uaera & orthodoxa religionem auertit: officinam nostræ salutis,
in qua deus nostrer pro nostra redemptione pretiosum sanguinem
fudit: barbarus hostis insanit: lectum illum purpureum
& suaissimis flagrante odoribus, in quo propter nos uta
nostro obdormiuit in domino: spuriissimæ sarrbacenox man?
ANTONIO ZAROTTO

PRINTING in Italy had attractions for the enterprising in business as well as for the studious, and promised to be a profitable industry to Filippo de Lavagna, an educated and prosperous citizen of Milan, who in 1470 induced Antonio Zarotto of Parma to leave that city and establish a printing house in Milan, where there were then one or two master printers doing petty work. It is not known when or where Zarotto acquired his knowledge of typography, but he impressed his associates with the belief that it had been acquired by extended practice in the different departments of designing, engraving, and type-making.

The books published by Lavagna and Zarotto before 1472 appeared as edited or made by Lavagna. Zarotto’s name was suppressed. As these books had been planned and paid for by Lavagna, he was then and afterward supposed to be the printer, although his contribution to the enterprise was that of owner of the plant, editor, and publisher.

The new printing house prospered, but Zarotto was not content with a subordinate position and the suppression of his name as printer. He aspired to leadership and with that purpose organized a joint-stock printing company in 1472, which began with five and soon after was enlarged to seven associates. An abstract of the articles of agreement then made, which gives us an insight into the business usages of that period, will be found on page 186 of this book.

In this agreement Zarotto promised to supply the house with all the printing types it might need, whether of Roman,
Lavagna’s association with Valdarfer

Gothic, or Greek, and to compound all the printing ink required. The other partners undertook to find constant employment for seven hand presses. This partnership came to its end in 1475, Zarotto retaining possession of the printing plant as had been agreed. Books bearing Zarotto’s name in the colophon are abundant after 1472. Proctor specifies nine faces of type and Burger names one hundred and twenty-two books as the product of his press before the year 1495. Zarotto continued to print in Milan until 1514, which is understood to be the date of his death.

The facsimile on a preceding page of Zarotto’s Roman type on 16-point body does not carry with it any internal evidence of his superiority as a designer of type. It is a strong and readable letter, of firm face but without the minor graces then in use by some printers of Venice. It shows few points of punctuation; the hyphen is not used at all for broken words at ends of lines. It is to Zarotto’s credit that he made few accents and abbreviations; but he thin-spaced words according to usages then prevailing. He followed Jenson in placing the dot obliquely over the i; he made V serve for U in capitals, according to classical usage, while u regularly appears in his lower-case series for both u and v.¹

Lavagna’s purpose to publish books was not defeated by the withdrawal of Zarotto. Christopher Valdarfer, a master printer at Venice in 1471, was induced by Lavagna to transfer his plant to Milan in 1472, for Lavagna proposed with other booksellers of Milan to provide Valdarfer with work enough in 1473 to keep two presses in steady employment. The following facsimile is from a book of about 1476.

¹The Sforziada (plate 2) shows another face of the Zarotto type, but it has been reduced a trifle in the facsimile to keep print and illumination within the limit of the leaf. It is a plain and readable type, but not notable for good form.

Icicpit liber cronicæ Eusebii Hieronymi cum superadditis diuis hieronymi & Prosperi. Praefatio Hieronymi.


Filippo de Lavagna. Milan, c. 1476
Eusebius, annotated by Hieronymus
15-point
che sia legato con filo vergine & posto adosso
da fanciullo vergine o che sia scripto o posto
più in uno tepo che in uno altro o quando dice
chi la porta non può perire in acqua ne in suo-
cho & simile cose sono illecite & captive & si si
debbono ardere Obseruatione de tepi

Obseruatione de tepi nò si debbono fare
unamète come e di guardarsi di nò principi
are una cosa più in uno di che in uno altro p
che sia di otiacho & diffeso o calem di gennai
o fare alcuna cosa quel di p che e capo dano o
el di di sancto giovanni decollato o altri di
Tucte queste supstitutione sono peccato. Et
quando la udito da pone a chi ha cagione di
credere & pure vuole stare obstinato in quelle
o farle o farle fare o consigliare o credere che si
eno licite e peccato mortale. Et sono come
dice sancto: Agustino reliquie de pagani &
però si può dire essere contro al primo coman
dameto della legge onde e comandato dado
rare & honorare uno dio uero e p queste obser-
uatione si honora el demonio o altre creature
Ancora farne larte notoria p i parare e peccato

The Ripoli Press. Florence, 1477
S. Antoninus: Confessionale Volgare
10-point
THE RIPOLI PRESS

In the year 1474 the Order of St. Dominic determined to establish at Florence a printing house in the monastery of St. Jacob of Ripoli. Dominic of Pistoia, a priest who had acquired some knowledge of printing by residence in Rome, Venice and Milan, was made its general manager. He found an active associate in Peter of Pisa, and immediately began the work of constructing tools and utensils for this press. In 1476 they were producing in a petty way schoolbooks and devotional manuals from a crudely made Gothic type on 12-point body.¹

The Ripoli Press printed a few large books, but more were of small size. The facsimile on the facing page is from St. Anthony on Confession, a book of 1477, in the Italian language. It is printed on a leaf $5\frac{3}{8} \times 8$ inches, on paper uneven in color but thick, strong, and well sized. The type is a bold Roman on 16-point body, but the book shows amateur and inferior workmanship in type, composition, presswork, and binding. It has signatures but no catchwords, and is not paged with Arabic figures. Accented letters and contractions are few. This book was made to the order of the bookseller Zenobi, who had agreed to pay for one hundred copies 110 livres, he furnishing the paper.

¹To please book buyers who did not like this style of letter they bought matrices afterward for a font of Roman letter from John of Mainz for ten florins of gold. In a short time they agreed with Bartolo, a bookseller, to have him publish their books, and he also aided them financially in founding the new corporation of the Ripoli Press. In 1478 the goldsmith Benvenuto (not Cellini) engraved for them two new faces of Roman and one of Gothic letter, for which he was paid 110 livres. Another goldsmith, Banco, made for the Ripoli Press in 1481 one hundred little letters, three grand letters, ornamented, and three vignettes on copper, for decoration of books. Fossi, an Italian bibliographer, estimates the production of the Ripoli Press at nearly one hundred distinct works. After 1476 Proctor credits this press with five kinds of type and nineteen books.
ABOUT a dozen books are accredited to this printer at Bologna between 1495 and 1500. The facsimile that follows is a page from the one last published, the Statuta et Decretar Communes Genuae, with leaf $7\frac{3}{4} \times 11\frac{1}{4}$ inches. There are more than one hundred and twenty of these leaves, some paged with Arabic figures and others unpaged—apparently a collection of statutes made at different dates. The type is a compressed and bold Roman letter of $12\frac{1}{2}$-point body, carefully designed and more neatly printed than was then customary with the minor printers of the time. Hyphens, accents, abbreviations, and diphthongs are used in a logical manner, showing a desire to make composition easily readable. The text closes with an engraved device containing the letters K L, whose meaning cannot be explained. It also contains the written statement that the book was made for Ant. Maria Vin dominus, who probably was its publisher.

Although the facsimile fairly shows the designing of the type and the quality of the type-founding, it may be misleading in producing an impression of monastic compactness in the composition and general make-up of the book. Many pages of the book are very open. The running title is well placed at the head of the page. A generous amount of white space is used for the separation of paragraphs and for the subheadings. In many features it conforms to modern methods of book-making, with obvious intent to make the subject-matter more accessible and readable. This book is one of a few early indications that some printers were beginning to perceive the need of reforms in composition.
& aliqua acta & scripturar facta fuerint coram dictis Consulibus in eorum sit arbitrio compellef partes uel aliquid earum ad solvendum pro expensis dictarum scripturarum uel actorum illam quantitatem pecuniae: quam taxauerit: dum tam non excedatur dictus numerus: quae pecunia perueniat ad manus Sindicatorum: & de ipa sit ut de alius & pecunia sic exacta pro scripturis non restituatur aliei partium.  

CQui denarior sex & tres ut supra soluen-dii dentur per Vræg partem. Ita quæ Vræg partium solut & deponant statum facta contraditione sindicatoribus antedictis dictos denarios. In fine autem q

sionis refutis debant parti uietici illud quod deponeret a Sindicatoribus i
totu uel p: pre. quæ obinuerint uel uicerit secündu quæ cognituri fuerit p dictos 2

sules. Et si eisset tutor uel Curator Minorum uel bonorum uel haereditatis uel litis uel alius administrator qui iurare corporatiter se non habere nec pos

se habere de bonis tutellæ Curæ uel administrationis dictam pecuniam de

ponendam iunc ille talis administrator non teneat soluere dictam pecuniam uel aliquid deponere. Sed tamen alius litigans cum talis tutor e administra

tor re non excutetur a depositione prædicta.  

CQui litigans cum prædictis si obtinat in causa non relinquat eius depositorum penes sindicatores: si non i

bonis tutelle Curæ uel administrationis sint bona aliquis gnis ultra illud qd

in sententia deductum fuerit: in quibus posse Consequi Solutionem de dicta pecunia: ad quam consequendam magistratus fauere posse uti: et coram co

fulibus: et coram qualibet magistratu: at id magistratus siibi praeterit fauo

rablem iustitiam.  

CSi uero dictus uietor ante sententiam petierit talem fauorem: teneantur dicti Consules in sententia diffiniti: quam ferrent tuto

rem Curatorem uel administratorem in quantitate dicti depositori etiam con-
demnare.  

CQuod si talis tutor uel administrator inueniendu habere uel

debere habere penes se de bonis mobilibus tutellæ Curæ uel administrationi

nis: uel Comitiss in prædictis dolum uel fraudem Cuius comissio: fustur

dicto: et declarationi consulum puniatur de suo piuio in tanta quantitate de

quanta uidebitur ipsis consulis exigenda de facto per eos sine aliqua con-
demnatione fienda. Quæ pecunia colligenda non debet nec possit ex-

pendi seu converti in alios usus uel in alia Solutione q prædictis. 

In Soluto

ne & asserfatione & Sallariis dictorum Consulum & cartularis dictæ curte

papiri candelarum pro examinandis procefsibus et scrivendi: Et si qui super

erit detur & solutur Maflariis alibus comunis & nomine Comunis: Et si

pecunia dictorum denariorum sex & erium colligendorum non ascenderet ad

summam Sallariorum iorum consulum deficientia sui Sallari: Si qua fueri

suppleatur is de quacum alia pecunia comunis lanae ad quam habediam

& recipiendam & si solutam dominus quiipator & Consilium & Mafla

rii Comunis lanae: fauorem debitur praestet illis.  

CNotarii uero iper i

orum Consulum teneat dare in scriptis officio Sindicatorum nomina & p

omina litigantium coram consulis prædictis & diem quæ lis uel quaestio

fuerit incepta singulis diebus Sabbati singulari hebdomadari illud (q ped-

rit sub poena Sindicato arbitrio.  

CQuot notarii iel sciberat non obstatibus

dictis uel i scriptis quæ fuerint regissi uel aliiquis eogur debeat e dictis

cosulis esse prêtes ad examinndi qitios & pecuss ecos scriptorss tecente

& debeat interesse ad mandatù iopf Consuli sem in locis diebus & horis p

Caligula Bazalerio. Bologna, 1498

Statuta et Decreta Communis Genuae

123-point
mor ad alias ptes corpis itelli gē aia q ë pncipiū vīte in corpe. c Cātabo.ore. d Et psallā. mētē:sm illē ps.lxxxii. Cor meī et caro mea exultaerīt in deī. e In glā mea. Glā ë est clara noti cia cū laude. Daud aut int aliōs sphen habuitvalde clarā noticiā et phetīā fuam ptult p modū diuine laudīs:vt deīn fuit ë pncipiō bēli bri diffusī; ppt qō pphe tra fuā:bn vocā hic glā f Exurge psalterīt cī thara.qa dd ps. suos cā tabat voce. ppāx musī cīs istrumēt g Exur gā diulculo. Illa eī hora hōies deuotī surgōt ad laudē dei:vi ë ágeli ë dū laudātes dirī astra matutīna. Iob.xxxviii. Cū me laudarēt astra ma tutā cī nubilarēt oēs fī li dei. Et ge.xxxii. ágē lus dni lectās cū iacob dixit ei:Dimitte me: iā ei aecedīt aurora. qī d. iā eī hora laudādi deī n ductādi sic dēc fuit ibi de. h Cōsitebor tibi pselīone laudīs. īn ppēs cē. ūdīt ei iṣpū φ ps. suī forēt i fūris ge neratōb cēcātādi cīvī
dempletū i eccō. k Quia mag. è s cemī tūa. q ē aligbągēl ō cēlo cādērbq aliī ēmanētes fuerī phīmatī. pcessit ex mia dei. l Etvsg ad nu. vi. tua. vitas iustitie tue p quā ágeli supbiētes cecidēt i k aere caliginoqvbi gānē nubes:ppq qō dicūf aereē ptēsēs n Exaltare tē. cēlū tā tra ë intelligēt ois creāq quā excellētia dei excedit i isīnūt. n Vt liberē. Hic icīpitvsg i he. i tra. he. vbi dd dēdit rōes fue exitaētis q ē ēstitūtī qīnī isrī miēq quā exprīt pmo p modū petītions a deo dicēs. n Vt liberēnt tē. tē explo natī īnă lra vsq ad finē ps. scit supra exposita est ps.lxi

G.iii

Ulric Gering. Paris, 1483
Postils of Nicolas de Lyra on the Psalter
14-point and 12-point
TYPES OF FRANCE

ULRIC GERING

Small types as signs have always been needed to serve for the marks of reference to guide the eye of the reader from a word in the text to its explanation in the side-note. These reference marks or letters, now known to printers as supersiors, appear in the text of the accompanying facsimile of the edition of the Postils made by Ulric Gering of Paris, but they do not appear in the notes. The types of the text are on 14-point body; the notes are on 12-point body. In the side-notes of small type a large space was left by the compositor for a mark of reference, which it was intended should be filled in with pen by the buyer of the book, who was expected to make a red-ink ring or other visible mark in the right place before the note. In this edition of the Postils the design, proportion, and fitting up of matrices to the molds have not been quite so adroitly done as in some books of Italian printers of that period, but the general effect is pleasing.

Manuscript books of the fifteenth century showed graces of penmanship in finials and flourishes that were impossible of reproduction in type, and the early printers wisely declined to imitate them or even to make varied forms of the same letter. They appreciated their beauty but shunned their additional expense, for each new character compelled the making of a new punch and matrix, and each new character was a hindrance to the type-caster and the compositor. It
was then wisely decided that two or more forms of the same letter would not be of service to the reader, and that an inflexible uniformity in the appearance of the same letter was of more importance than an exhibit of the graceful fancies of the penman or designer. Utility more than artistic caprice was the object sought. The letters long f and final s were exceptions to duplication. Type-founders rightfully thought it enough to cut punches for the abbreviations of syllables then made by recognized copyists. Even the diphthongs æ and ōe were represented occasionally by the addition of a stroke over the e.

In discarding the finical graces of penmanship, Sweinheim, Numeister, and the Speyer brothers may have gone too far toward sturdy simplicity. They intended to make a print plainer and bolder than manuscript, in the belief that boldness would be more acceptable to the reader. They studiously avoided hair-lines and other features of indistinctness, but their letters, easily discerned, were needlessly bold and rough. Sturdy types always had the merit of legibility; yet they were disliked by collectors of taste for lack of neatness.

Typography had met already a formidable competitor in the new art of copperplate printing, which was then producing pictures and decorations in a style unattainable from types. It was soon found, however, that copperplate was the slower and more expensive process, and that it could be most wisely applied to the reproduction of maps and pictures. Yet there were readers who did see that it was possible to print more neatly from cleaner types—to transfer to paper lines free in movement and as sharp and delicate as those made by an expert penman. Contrasted with prints then made by some engravers on copper, the engraving of Jenson, Ratdolt, and Renner seemed relatively coarse.
Beginning of the feminine style of typography

Renner's Quadragesimale letter is an attempt to imitate in type the fine lines of a penman. In other books by Renner we find initial letters designed and carefully engraved on wood, and even attempts at pictures, as in his representation of the Doge's palace at Venice, but they were inferior to many copperplate prints of that period.

The German style of engraving on wood did not prove attractive to Italian readers: figures and draperies were stiff and angular; few attempts were made to show roundness of form by conventional shading. A new style of engraving on wood was introduced at Florence in 1490. It had thin outlines and great openness and showed many refinements of delicacy, much to the improvement of all pictorial subjects. Designers of type were made to see from the new style that type was not made more intelligible by thick lines, and that white space for relief was really needed in types.

Copperplate could not and did not supplant typography, but it did exert at the outset a wholesome influence on its improvement. It showed that characters to be legible need not be coarse, and it did stimulate designers of types to be more careful in drawing and proportioning letters.

Copperplate was long regarded as an indispensable adjunct to the best typography. Architectural title-pages, initials, and head-bands were made by this process to the neglect of engraving on wood. Writers on typography like Moxon in 1683, and Fournier in 1766, preferred copperplate to wood for illustrations of their tools. For many years engraving on wood was regarded as an inferior art, and artistic merit was conceded almost exclusively to engravers on copper. Type-founders were induced to make types needlessly light, delicate, and faint almost to indistinctness.
CLAUDE GARAMOND

The rapidly increasing popularity of Italic suggested to a few type-founders that the lightness and openness produced by its thin lines might be wisely repeated in a reconstruction of upright Roman letter. Experience had proved that thick-stemmed and black-faced types, whether of Gothic or Roman forms, did not favor easy reading or produce pleasing print. They grew tiresome. Ratdolt and Renner had shown that it was possible to cast and print types that contained some thin hair-lines and that a more cunning union of the thick and thin lines of each letter would be helpful in producing a type that would show some of the delicacy of fine penmanship even if it did not exhibit its full freedom. The unusual sharpness of printed line so easily produced by the new art of copperplate engraving had also increased a growing dissatisfaction with the coarser lines of typography. There were some readers who thought that touches of grace could be safely added to needlessly rough types. Why must they be so offensively sturdy? Why should curves be stiff, lines uneven in thickness, and letters out of true proportion with one another?

It was not in Venice or Rome but in Paris that the more graceful Roman types desired by the critical reader first appeared. Improvements in Italian printing and book-making arts had culminated with Aldus. During the first quarter of the sixteenth century Italian typography declined from good to bad, from bad to worse. France became the leader in all the departments of printing, and
La découverte de l'imprimerie sépare le monde ancien du monde moderne.

**FIRMIN DIDOT.**

Roman type of Claude Garamond, Paris
About 42-point
Exact date for the cutting of these types cannot be given.
It was probably about 1520

La découverte de l'imprimerie sépare le monde ancien du monde moderne.

**FIRMIN DIDOT.**

Italic type of Claude Garamond, Paris
About 42-point
Claude Garamond was everywhere conceded as the true master in type-founding.¹

These facsimiles of Garamond’s type have been copied from the Histoire Économique de l’Imprimerie of Paul Mel-lottée, who certifies them as impressions from types cast in the original matrices swaged by Garamond and now preserved in the National Printing House at Paris. The letters, too few fairly to present the full merit of his alphabet, are enough to indicate his skill and good taste. Adherence to established usage is noted in the cramped s and a. The thick-stemmed large capitals and the dwarfed small capitals may be even now offenses to typographical critics, but the general effect of the Roman and Italic is that of lightness and clearness, with a symmetry attained by no previous designer. Each series shows the sharp hair-line and serif admired by lovers of copperplate prints. The Roman is large, round, and easy to read; the Italic has pen-like graces; they are worthy rivals of the best work of Jenson or Van Dijck, Caslon or Bodoni.²

¹Garamond, an enthusiast about types, still affectionately known in France as the “father of type-founders,” was the first to make type-founding a separate department of typography, and he gave it his exclusive attention. He had been taught the scientific construction and combination of letters by Geoffroy Tory, a French artist of Italian education and the author of Champfleury, a book written to give exact rules for their correct form. Garamond was commissioned by Francis I in 1515 to make the caractères regii for the Imprimerie Royale (still surviving as the Imprimerie Nationale) and did make many sizes and faces of Roman, Italic, Greek, Hebrew, etc. Bernard, in his Histoire de l’Imprimerie Royale, pp. 11, 12, ironically quotes the following extract from the writings of Antoine Vitre of 1655: “Garamond ended his life [1561] in extreme misery, but he has been put on the honor roll of illustrious men, and has been recompensed with many beautiful eulogies after his death.”

²Another French improver of Roman type was Robert Granjon, attached to the Laco-longe type-foundry of Lyons, who designed a new style of Roman type about the middle of the sixteenth century. It was of lighter face, even more open and graceful than the style of Garamond. Granjon made designs for or furnished types to Christopher Plantin of Antwerp and the printing-house of the Vatican, but they proved of frail form and soon went out of service. Tastes change capriciously. After two centuries of neglect the Granjon face was revived for a short time during the first half of the nineteenth century by Louis Perrin of Lyons, a printer of marked ability now almost forgotten, who printed a few books and pamphlets of merit, but his types have since been put aside for modern types of inferiority.
LARGE AND SMALL TYPES

Engraved initial letters, some of admirable design, are to be found in a few books printed during the last quarter of the fifteenth century; but the type-founded Roman capital letters of plain form and of a larger size than the types of the text are not common. They were not needed, for it was not then customary to print the title of the book on a separate leaf preceding its text. When this practice of giving a separate leaf for the title-page did begin, the capitals of the text were set up in the middle of the first blank page, but rarely at its top or head, and this treatment made what printers now call a bastard title. The small capital letters so used for the bastard title now seem insufficient as to prominence, and but paltry ushers to a book of value.

The title-page that gives in large type and on a separate leaf in the front of the book its name in full, with that of author, editor, illustrator, and the place and date of printing, is now an indispensable part of every book, but the earlier printers did not foresee the importance of this information. Following the usages of the copyists of the time, whose
Full titles and bastard titles

names usually were of small value to the buyer of the book, the printers put their own names, with place and date, in a little paragraph of small type at the end of the text, where it was often obscured by index matter that followed too closely. Some printers added their device or trade-mark; others omitted all information. It often happened that the buyer of the old book searched through many leaves near its end before he could be sure of its proper title and of the names of the author and printer.

The new craft of printing compelled many changes in fashions of book-making. Book buyers wanted the name of the book, as well as that of the printer and publisher, exposed in large type on the first leaf of the book, so that all could be seen at first glance. By general consent the name of the book always had the most conspicuous type, but the name of the printer was not always prominent. In some books this name was suppressed. To secure the needed buyers a publisher of resources was needed.

Bastard titles in Black-letter, sometimes beginning with a huge intricate initial, had been made at early dates in Germany, France, and Holland; but the full title-page upon a separate leaf, that also specified the name of the book, its author and publisher, place and date, sometimes with a punning or inappropriate device, was not in common use before the middle of the sixteenth century. The Froschover facsimile\(^1\) of 1543 on the following page is of a form then approved; but its large Roman types were modeled more after the style of Garamond than of Jenson. In these letters note the longer protraction of the thick strokes before they change to a thinner line, the sparsity of true thin strokes or

\(^1\) The device of the frog in the title is a pun on the name of Froschover (in German, croaker or frog), intended to assist the buyer in identifying an edition of the book with the name of its printer. Punning devices were frequently used by early English printers.
BIBLIA

SACROSANCTA TESTA
mētī Veteris & Noui, è sacra Hebræorum lingua Græcorumque fontibus. consultis simul orthodoxis interpretibus religiosissime translatæ in sermonem Latinum.

Authores omnem totius operis rationem ex subiecta intelliges Praefatione.

PAVLVS ROM. XV.
Quaeque scripta sunt, ad nostram doctrinam scripta sunt, ut per patientiam & consolationem scripturarum spem habeamus.

TIGVRI EXCVDEBAT, C. FROSCOHERVS
ANNO M. D. XLIII.

C. Froschover. Zurich, 1543
Why large types are rare as book texts

hair-lines, and the stubbiness of the serifs. The types had been designed for wear as well as to be easily read and not at all to show the fancies of the designer. For more than two centuries the full title-page then coming in vogue showed large and light-faced types in all lines intended for prominence. Types with thicker strokes and bolder face were occasionally made, but they did not meet with equal favor; they were disliked by the critical as too suggestive of the gloomy Black-letter or Gothic, which was gradually passing out of use in southern Europe and Great Britain.

Large types of capitals with lower-case on bodies of about the sizes of 24-28- or 32-point had admirers in the sixteenth century, but they could be used only for the texts of the very large books then produced to please readers who valued them for show more than service. The small book that could readily be held in one hand, preferred by readers, was then amply provided by printers. Large text-types are rarely selected now, for they make books expensive and unhandy.1

Another hindrance to the selection of large types for small pages was caused by the increasing width of the new styles of type then in favor. The types of Caslon that had been

1The present neglect of the 16-point body for text-type by American and English typefounders and printers may need explanation. This size and the larger size of 18-point can be seen in many small octavos and duodecimos of the seventeenth and eighteenth centuries. If adjudged too large for the text itself, it was selected for the preface and introduction. Every author and publisher appreciated the attractiveness of large letter and made use of it when it was practicable; but in the nineteenth century type on 18-point body rarely appeared upon a small leaf. Typesetters disliked it and properly asked an increased price for its slower composition; it made the even spacing of lines more difficult and largely diminished their earnings. It was decided by compositors in America and Great Britain that all types larger than pica should be measured and paid for as if set in pica, the name then given to the 12-point body. By this rule the composition of relatively few words in 18-point would cost more than the composition of many more words in 12-point. When authors and publishers found that large type largely increased expense of composition as well as that of paper, presswork, and binding, large types went out of fashion for the ordinary book.
Large text-types make books large and unhandy

approved for many years were thin and closely fitted to one another, permitting many letters to be put in one line; but the newer styles of Bodoni and Didot, as modified by English founders, that followed the Caslon fashion, were rounder and wider, and they permitted fewer letters to the line. This increased width often compelled wider and uneven spacing between words, with the frequent occurrence of the "hound's teeth," or irregular gaps of white space between words in proximate lines, that were an offense to critical readers. A type of smaller body seemed the readiest way to avoid this blemish. Authors and publishers who desired an open and readable page for a small leaf had to be content with 12- or 14-point, leaded or double leaded. In their grading of book sizes type-founders skipped from 14-point to 18-point. The intermediate body of 16-point, often used now by Continental printers, has been neglected for many years in America and England as a text-type for books.

Large types for texts are now in slight request: the body of 18-point is reserved for occasional quartos and folios; 16-point is a size unknown in many large book printing houses; 14-point and 12-point are approved for sumptuous books in quarto and large octavo; but 10-point and 11-point are oftener selected for the ordinary book. Although small types are common, largeness of type is still considered a feature of merit in a comparison of old with new books. Even when admirably planned and printed the duodecimo of 10-point type is rated by many critics as but a petty production; it is the portly folio in great type that is the grand book. The old masterpieces, so-called, in large type, overshadow smaller books, as may be more clearly understood after a comparison of two editions of Livy—one of the fifteenth and the other of the seventeenth century, of which facsimiles
Plate 39

Liber XXXIII. 319

nebris velitum forent ad portam cum duobus comitibus ignaris consiliis eis

egredietur.

Cap. XLVIII. Quum igitur in loco jurament praeux fuisse, no-
dete via cita regionem quamvis agris

Vacantis transferretis, pottere di male

inter Achailliam & Theopliam ad

quorum juramentum presenti. & cum, eum

partibus quam variis eventus miferatos. Eo die in Ceclena

memoriam traditum. ubi quot in portu

aviserat omnibus cum mercibus

inveniret, & ad ejusdem cum ea-

ce concursus salvum esse factus eum,

percontatiss, legum & Tyrim

dicti juris, veritates tamen

sequentes, eum opere visita Tha-

bii munitis, quae Cervina

vivum, Saliens aperiri hunc

ilium naviei mercatorisque in-

vitiis juramentum non esse factos &

vela cum annis &

navibus corrigati, ut urbra (erat

medio ad altum ferte erat) celebratione

in littera fercet. Quantum res &

tempus palirebatur apud celeberrim

equi dixit eum quin: multosque

vino in forum non est convivaque

conclusa. Annibali, quam primum fol-

lendi eos, qui in portu erant; tempus

habuit, naves solent, eum sopiri

quod poterit die tantum ex fomento

pleni cratula nittererent, id quod

ferebat. & eum non comparer eum

vulgarum esse in forum ubi convenit, princi-}

pium clericis quiescit. & aliis fugam

confessi (quos deus requiescat) alii

fratres Romanorum interfecti, idque

magnis. ferebant: varioque nullus cre-

nerat ut in civitate aliquam aliquem

venturus futurius. Illa

Cervina cum, tandem alli-

um erat.

Cap. XLIX. Romanorum legati quum

in senatu exspectabant, Consulaturn

Tarvisium Romanum esset, &

regem pagum ante Annibalis mae-

ste assemcrium, bellum populi Romano

foictio, & necum litteras massacrar,

ab eo ad Antichum regem professissi

bant sustinentium ante, quern bellum

est, absque tenuere convivium. Erat

deberere impune esse, & satisfacere Car-

thagonis populo Romano ordinat,

nirn etiam in bac illud, quod

publico consilio factum esse. Cathag-

nenses rei pendentur, quiculquae

quum confissent Romanis, eum

esse. Annibalis prospero cursu Tyri
derent: exceptuque in consolatri-

mus Carthaginis, ut aliu part

tum clarum omnium genere honorum

paucos moras dies, Antiochum

navi.
Crudeity of many early types
here appear in plates 14 and 39. The Livy_1_ neatly printed by Daniel Elzevir of Amsterdam, in 1678, on a leaf 3\frac{1}{4} \times 5\frac{3}{4} inches, seems of small merit to the collector when compared with the grand Livy of John of Speyer, in two volumes folio. In neat mechanical workmanship and accuracy of text the Elzevir Livy is much the better book, even if it is in petty type and on thin paper; it contains more matter, and has been more carefully planned and made.

Early types may be justly admired as the praiseworthy work of inexperts under peculiar difficulties; but no lover of exact handicraft can commend them as faultless, or even as close approximations toward ideal perfection. The types made by Sweinheim and Pannartz of Rome and by John and Wendelin of Speyer at Venice suffer in comparison with those made soon afterward by Jenson and Ratdolt, de Zanis and de Tortis. A gradual improvement in every department of typography is noticeable in the facsimiles. Types of 1485 are, as a rule, more carefully designed and founded than those of 1470, even when they appear in books that have been damaged by too careless composition and presswork. Brown says that, after 1480, the presswork, paper, and binding of Italian printers were often inferior. This is true; but the types of more expert printers of the next generation in France and Holland show steady improvement in design, engraving, and casting.

_1_ The Elzevir Livy is in two columns, and the closely following chapters are graced with engraved initial letters. Its type, on a body then rated as diamond (about 4\frac{1}{4}-point), is of light face and good design, equally meritorious and harmonious in its capitals and Italic. Presswork is even in color and impression throughout its seven hundred and eighty-eight pages; paper is hard, thin, snappy, tough, and opaque; it is carefully sewed, sections are flexible, and all leaves open easily.

This edition of Livy, made to be sold at low price to poor buyers, was then held in light esteem and somewhat condemned. Its editor, Gronovius, thus wrote to Heinsius: “I do wish that my Livy had been published in another form.” Heinsius replies that the “petty types of this book give great displeasure to the scholars of your city.” Another critic, Le Fèvre, adds this: “I care nothing for the white Elzevir paper, or for the beautiful printing; I see only petty type on a niggardly leaf.”

143
NOTES AND COMMENTS
TYPE-FOUNDING

Few early printers received thorough training. Proficient as some were in the practice of one or two departments of printing, more had but slender knowledge of the details of the diverse crafts required for the making of books. Many of the German printers were type-setters or type-casters only. They began their purposed practice of printing in Italy by seeking the aid of wealthy men who would be helpful as partners or money-lenders, and provide for the payment of skilled mechanics in other useful crafts.

Implements needed for the full development of the art were necessary, but could not be bought in stores of merchandise. Types modeled after letters of manuscript selected for their adaptability to type printing must be made to order and symmetrically engraved on hard metal punches. Their reversed duplicates in the form of matrices must be swaged in copper, and all matrices accurately fitted to one another and to one general mold of hard metal, which was quite difficult of construction. These manipulations compelled the printer who knew only how to set and print the types that had been made for him to seek the services of a goldsmith or worker in fine metals. The casting of types from the mold and their composition in lines and pages were subsequently done in the improvised printing house, and usually by inexperts who began their work with small knowledge of the theory or practice of printing. The compositors must have had some knowledge of Latin to enable them to read Latin texts. Considering that the work was new, it is a wonder that the novices did so well.
As he had to create the types he needed, the first step of the master printer toward book-making was the selection of a model style of lettering for the book to be made. He might find a model in any reputable library. Italian copyists had an enviable reputation for neat penmanship, but the intending type-maker soon discovered that the pretty lettering of an admired book could not be correctly repeated in squared type. He must compare the letters of many books before he could select one for its adaptability to the squared shape. Simplifications had to be made; the curvetings of the penman were curbed to keep flowing strokes on the squared bodies demanded for movable types; the letter that could not be curbed was sometimes conjoined with a frequently following letter, as in æ and œ, so that the two would appear in one type. Our &, fi, fl, ff, ffi, and ffl, still made by type-founders, are the survivors of conjoinings rated by old copyists as real graces in lettering. There were also many abbreviations in old manuscripts that were afterward rejected. The long f and its double are no longer tolerated in modern print; even classical scholars now advise more sparing use of the diphthongs. The tendency is to simplicity.

Many famous early books show one size of type only. The 16-point Roman in the facsimile page of Quintilian was the only size of Roman cut by Jenson. This font of type had but twenty-three capital letters, for J, U, and W were not then in use. His lower-case characters were twenty-six in number: u served as a substitute for v, i for j; w had not then been accepted in the Roman alphabet; s was duplicated—long f serving as an initial or medial letter, short s for the final letter. The diphthongs æ and œ and some doubled characters were added, as in ffl, ft, ff, et, and &. Jenson
Many characters caused needless trouble
did not abbreviate words in print with the freedom of his contemporaries, but he did use accented vowels that served for abbreviations. The period, colon, and interrogation point were his marks of punctuation. Bernard says that for an ordinary book seventy-three characters constituted his regular font of book type, without Italic or small capitals, but for scientific work he did make a few physical signs.¹

Discretion was needed by the copyist selected to draw or design a series of model letters. Exact imitation was impossible, but a cramped or distorted letter might prove a deformity. There is no evidence, however, that a qualified artist was ever invited to remodel the lettering of a manuscript selected as a model. Italy then had many artists who painted grand pictures, but it does not appear that any one gave consideration to the forms of letters used in type-making.² To design or remodel the two series of Roman in capitals and lower-case on squared bodies of type so that they could be combined pleasingly in the endless combinations of typography, called for an amount of study and experiment then probably regarded by the artist as mechanical drudgery.

In the older printed books types were set together with marked closeness, but each letter of the regular alphabet was unmistakable in shape, easy to read and understand. Varying forms of the same letter made by the calligrapher were rarely repeated by the type-maker, who noted too many forms in manuscript. The cost of cutting a separate punch for each character was great, and there was no

¹In number this is but about one third of the characters now required for the regulation font of book type, which will vary for different books from 240 to 250 characters.
²The sixteenth century came before artists or theorists studied lettering. Attempts to give to types the claimed “divine proportion” of Paccioli of Venice began with him in 1509. The geometric rules formulated by Albert Dürer for their scientific and artistic construction did not appear before 1524. After that came Geoffroy Tory of Paris in his Champfleury of 1529. Other theorists followed, but their rules, too often arbitrary and dogmatic, have never been precisely followed by practical type-founders.
corresponding advantage to printer or reader. The long å and final s had been accepted for centuries as established mannerisms, and the combinations of these and other letters on one body were unavoidably so made to prevent hindrances in type-casting and type-setting. Graces of calligraphers had to be scrupulously avoided. Head-bands, side borders, center bands, and initial letters were occasionally attempted for composed pages at an early date, but it was generally understood by all novices in printing that utility was of more importance than decoration.

Nor was the eye of the reader distracted and the intent of the writer confused by unexpected changes in the form of the letters. Italic types and small capitals did not appear before 1501, and there was no other form of display letter. Greek characters were often written in by hand or separately engraved when presented in a few words. Although made by Sweinheim, Arabic figures were not then rated as the needed constituents of a font of Roman type. The few characters then produced by Jenson were supposed to be enough for the proper presentation of written thought. Arabic figures and medical and astronomical signs were made only when sorely needed.

Early Italian printers of the first class avoided the profuse use of contractions, signs, and abbreviations. When it could be done, words were spelled out at length with precision; they did, however, make irregular use of the diphthongs åe and òe, and did occasionally abbreviate to prevent the overturn of broken words.

Printing was then rated as one of the liberal arts, but its allowed place was at the bottom of the artistic scale. The calligrapher, decorator, and illuminator were appraised as superiors of the typographer. Collectors of taste already
No record of studies or experiments with types

had shown an aversion to printed books as too mechanical. Neither the printers nor their moneyed partners ever purposed a competition with calligraphers and miniaturists; their object was to print books that would be salable and useful. Decoration of manuscript by rubrication and illumination was wisely adjudged out of reach.

It may be assumed that Jenson, Ratdolt, and Renner were competent to remodel manuscript letters for service as types; but the greater number of early master printers who had no aptitude for design or engraving went to the goldsmiths, who were supposed to unite, at least in some degree, the taste of the artist with the skill of a mechanician. Even to the goldsmith type-making presented many difficulties. To cut on steel an alphabet of capitals and lower-case for types with squared bodies, he had to make the two series accord as proper mates. He had to fit meeting characters with great closeness, yet not too close, so that they could be readily interchangeable and be pleasing in every new arrangement. To make the structural lines of different letters at apparently equal distance and yet preserve harmony and symmetry in the endless combinations of types was not an easy task. Many types had to be made by geometric rules, but some letters were unavoidably drawn in evasion or in partial disregard of these arbitrary rules.

The engraver of the punch imitated the letters of his copy as closely as type-founding allowed, but he imitated largely in the spirit of the type-setter who is told to follow copy. The merit of the letter engraved depended largely on his skill and good taste, but his work was more of imitation than of design. No record has been preserved of experiments supposed to have been made by any early printer to test the intended effect of a proposed face of letter. The notion that
ANTONIO ZAROTTO

Printing in Italy had attractions for the enterprising in business as well as for the studious, and promised to be a profitable industry to Filippo de Lavagna, an educated and prosperous citizen of Milan, who in 1470 induced Antonio Zarotto of Parma to leave that city and establish a printing house in Milan, where there were then one or two master printers doing petty work. It is not known when or where Zarotto acquired his knowledge of typography, but he impressed his associates with the belief that it had been acquired by extended practice in the different departments of designing, engraving, and type-making.

The books published by Lavagna and Zarotto before 1472 appeared as edited or made by Lavagna. Zarotto's name was suppressed. As these books had been planned and paid for by Lavagna, he was then and afterward supposed to be the printer, although his contribution to the enterprise was that of owner of the plant, editor, and publisher.

The new printing house prospered, but Zarotto was not content with a subordinate position and the suppression of his name as printer. He aspired to leadership and with that purpose organized a joint-stock printing company in 1472, which began with five and soon after was enlarged to seven associates. An abstract of the articles of agreement then made, which gives us an insight into the business usages of that period, will be found on page 186 of this book.

In this agreement Zarotto promised to supply the house with all the printing types it might need, whether of Roman,
No record of studies or experiments with types

had shown an aversion to printed books as too mechanical. Neither the printers nor their moneyed partners ever pur-
poused a competition with calligraphers and miniaturists; their object was to print books that would be salable and useful. Decoration of manuscript by rubrication and illumin-
ation was wisely adjudged out of reach.

It may be assumed that Jenson, Ratdolt, and Renner were competent to remodel manuscript letters for service as types; but the greater number of early master printers who had no aptitude for design or engraving went to the goldsmiths, who were supposed to unite, at least in some degree, the taste of the artist with the skill of a mechanician. Even to the goldsmith type-making presented many difficulties. To cut on steel an alphabet of capitals and lower-case for types with squared bodies, he had to make the two series accord as proper mates. He had to fit meeting characters with great closeness, yet not too close, so that they could be readily interchangeable and be pleasing in every new arrangement. To make the structural lines of different letters at apparently equal distance and yet preserve harmony and symmetry in the endless combinations of types was not an easy task. Many types had to be made by geometric rules, but some letters were unavoidably drawn in evasion or in partial disregard of these arbitrary rules.

The engraver of the punch imitated the letters of his copy as closely as type-founding allowed, but he imitated largely in the spirit of the type-setter who is told to follow copy. The merit of the letter engraved depended largely on his skill and good taste, but his work was more of imitation than of design. No record has been preserved of experiments sup-
posed to have been made by any early printer to test the intended effect of a proposed face of letter. The notion that
The systematic grading of sizes overlooked

a new face was the outcome of a study of types made for experiment only, under changing conditions of composition; that letters were made tall or short, wide or narrow, from repeated castings of different model letters, to give the general effect produced by large or small faces, by solid or leaded composition, by different widths or extensions of thick stroke and hair-line, by tall or short letters; and that experimental types so made were compared in trial proofs of composition from types specially founded for this purpose only, will not stand critical examination. There is no record of experimental trials, but there is abundant evidence that new fonts were often made in haste too great to permit of any experiment.

The construction of the mold of brass or steel in which all the types of a book must be cast and the exact fitting of the matrices to one another and to the mold were fairly done by goldsmiths, for our facsimiles show truly squared bodies, even when their height to paper is apparently uneven. They failed mainly in fitting matrices to one another, and in the neglect of a visible uniformity. There was no concert of action between different type-makers; a generally accepted standard for determining with system uniformity in the bodies of type was never considered. Every maker of a mold was a law to himself, and determined the size of his type without regard to the practice of rivals. Types cast from one mold could not be combined with those made in another mold. It was impossible then to foresee the mischief that this independent action would afterward produce; but it now seems strange that a systematic grading of the sizes of type was not attempted before it was devised by Fournier of Paris in 1737, and that the adoption of his system of points, afterward modified by Ambroise Didot of Paris, and
still later by the American Type Founders' Company in 1886, was so long delayed. This irregular and independent action of type-founders, persisted in for centuries, has produced a confusion from which printers are not yet fully free.

We know but too little about early type-making, yet, if the manuscript of the Cost Book of the Ripoli Press, here often noticed, had not been preserved in the Magliabecchi Library at Florence, we should know less. In 1781 P. Vincenzo Fineschi collected the more noteworthy items and published them with comments in the form of a thin octavo under the title of Notizie Storiche Sopra la Stamperia di Ripoli, which has been accepted as a document of value by all writers on printing. The names and prices of the metals used in the type-foundry of the Ripoli Press, as recorded in this Cost Book, are specified in the annexed table.

Some of the facsimiles here presented show types of an irregular width of face and a ruggedness of outline that seem to indicate a careless engraving of the model letter on the punch, but roughness of face in print was then as effectively produced by the too strong impression of properly cut but overinked types upon overdampened paper of uneven thickness. In some books this apparent roughness of type was caused by types largely of lead, cast to uneven height from

1Lead, which has always been the chief constituent of type metal, was used liberally, if not excessively, by early Italian printers. Least in price, it was greatest in quantity. The blunting of types after wear indicates the weakness of soft metal. Steel, brass, and copper were needed for punches, molds, and matrices; tin and "metal" (not clearly specified, but supposed to be antimony) were of service as alloys in hardening soft metal and in making more exact casts of type. Brass, at 12 lire, is written down as of greatest cost, but the "metal," at 11 lire, is only little less. The prices seem small, but the purchasing power of money was then much greater. Equivalents in American currency are impracticable, for authorities on fifteenth-century currency seriously differ.
Cheapening of methods and materials

matrices of soft metal. Punches of steel, matrices of copper, and molds of brass or iron were approved at a very early date as the proper metals for these tools for type-making, but there were then amateurs who tried to invent quicker methods and cheaper materials, to use softer metal and even hard wood for the punch and hardened lead for the matrix. With these imperfect implements it was intended to manufacture types at greater speed and reduced expense that could be used with advantage for cheaper books. Matrices of lead were not unknown even in the eighteenth century.\(^1\) Ruggedness in types would soon come from a matrix of soft metal even when it had been struck from a carefully engraved punch of hard metal.

Though much admired, the new art of copperplate printing did not supplant nor even diminish the demand for type. The copperplate method did produce beautiful prints, maps, and decoration, but always in the form of single leaves. It could not make readable books, but it did this good service: it compelled printers to be more careful and to plan their books with new features of attractiveness. Woodcuts with clear lines gradually followed the appearance of neat prints from copperplate; borders and initial letters of greater delicacy became more frequent, and the needless roughness of the earlier types received new refinements. Punches were

\(^1\)"Leaden matrices" are specified in a description of these tools for making types of large size in the printed catalogue of the auction sale at London in June, 1782, of the type-foundry of John James of that city. They are also specifically mentioned, "typi ænei et matrices plumbeae," in the catalogue of John Enschedé, Haarlem, 1768. In his Autobiography Benjamin Franklin says he made "punches" and struck them in lead, with which he produced matrices for the casting of a few types that were deficient. Bernard in his De l’Origine et des Débuts de l’Imprimerie, vol. i, p. 42, gives illustrations of types cast with imperfect material and by rude methods, at the rate of one thousand in one day.

The sturdy ruggedness of some early types was not of set purpose to produce an intended superior artistic effect in print. There are evidences that this ruggedness was caused by a desire to cheapen the cost of types. The advantages of printing were imperiled at the start by this desire to hasten and cheapen production. The meanness of some modern printing is due to the same cause.
Light and bold faces alternately in vogue

engraved with sharper lines and thinner stems; matrices were more truly justified and accurately aligned, and types were cast with sharper edges and of even height to paper. The hair-line of the copperplate, so easily produced on that surface, had been the envy and despair of the type printer, who in attempting imitation too forcibly impressed types largely of lead against damp and rough paper; but Renner and Ratdolt showed that although a perfect imitation was out of reach, it was possible to engrave punches with more delicacy, and to produce acceptable prints from types that were of metal softer than copper.

Many of the small types produced at the close of the fifteenth century were black, bold, and compact, yet not entirely satisfactory to the reader. The 11½-point of de Zanis in his edition of Plutarch’s Lives, and the still smaller sizes then made by other printers, fairly indicate a preference by some readers for more firmness of face. Familiarity with the Gothic character had induced the erroneous belief that to be distinct types must be very black.¹

Attempts were occasionally made to found types that would repeat the delicate lettering of expert penmen and engravers on copper, but the imitation did not go far enough.

¹The need of a relief of white space within and without each type to serve as a proper contrasting background for thick strokes of black-faced types, was imperfectly understood by some early type-founders. The relatively broad lane of white between lines of composed type that had been produced by the early printers of large types was effectively narrowed by their shortening of ascenders and descenders for bodies of 12-point and smaller sizes. The round letters of the Roman lower-case were compressed laterally by many type-founders, but not always to improvement. This compression of letters was given only to the lower-case characters; capitals were never made visibly thinner or condensed; to many founders this change then seemed an unwarrantable liberty.

The bold and black types of de Zanis and of rivals in Italy who imitated his bold-faced style did not long remain in fashion. Letters of lighter face returned to meet renewed favor and ever since have had capricious approval—liked to-day, disliked to-morrow. Yet the fallacy is frequently revived that the readability of print depends largely on a quantity of ink. At intervals some new bold face of type will be produced to please a critical publisher because it is new and supposed to be more distinct than any prevailing light face and is an acceptable change from the old monotonous uniformity.
The very slight compression of the lighter-faced Romans afterward made by Ratdolt and Renner did not receive from buyers the full approval expected.

The letter that seemed beautiful in the manuscript that contained the model of a desired type did not always prove so beautiful in its imitation in type, for goldsmiths who undertook to draw letters, cut the punches, and fit up the matrices were sometimes unequal to the task.

The facsimiles here presented display unequal ability. Some letters were roughly cut on the punch, imperfectly struck in matrices, badly justified and fitted to the mold, and cast therefrom with similar carelessness. Yet books were occasionally produced by men who gave an intelligent supervision to type-founding in every stage, from the drawing of the letter to the printing of the types. There were printers of no celebrity who made or had made for them types with a clearness, sharpness, and precision greater than that of others who stand higher on the honor roll. It must be noted that some types of Hahn and Herolt of Rome, Miscomini of Florence, and of Ratdolt and Renner in Venice, were more correctly made and carefully printed than those of the printers of more famous books.

Unsuccessful practice in type-making had to be continued for many years before it was plainly demonstrated that type-founding should be a distinct craft controlled by specially educated workmen. The separation of printing from type-making was accomplished during the first half of the sixteenth century in Paris and by Claude Garamond. Printers then discovered that they could practise printing with more success if they did not have to attend to the minor details of type-making and that they could be benefited by the experience of the few men who made types a life study.
Old books enough have been preserved to permit the study of their mechanical construction, but the printing types that made them books have disappeared. Many were destroyed as old-fashioned and no longer acceptable to book buyers, but more were condemned to the melting pot as hopelessly worn out even when they were still rated as of good style. A study of old types from the types themselves is, therefore, difficult. The Plantin-Moretus Museum at Antwerp contains a scant but probably the fullest exhibit of types in use after 1600. A critical examiner of these types will admire the ingenuity of the old designer of letters, but he will not be favorably impressed with the work of the punch-cutters and type-casters. He will object to their rough workmanship and especially to the shallowness of the counters or hollows in the faces of the letters. This would not be a new complaint. Fertel, a French printer\(^1\) of 1723, says that the counters of some new types of his time were of no greater depth than the thickness of a sheet of strong paper. Fournier records that the counter for ordinary book types should be “one fourth of a geometric line.”\(^2\) This depth of the counter, about the fiftieth of an English inch, was tolerated by all the early printers, but it would not be allowed now in any type-foundry of reputation. So treated, open letters like a and e, with a central cross-stroke, were liable to be filled with excess of ink; they would soon flatten and be indistinct when cast with soft type metal.

\(^1\)Fertel, Martin Dominique, La Science pratique de l'Imprimerie, 4to, St. Omer, 1723.


This work, generously planned and carefully treated, does not mention a micrometer or any tool of precision. It is to be inferred that distrusted types were tested largely by sight and touch.
PRINTING INK

Every early printer had to compound with his own hands, or have compounded for him, the ink he needed for his books. He could not buy ink ready made as merchandise. More than a century elapsed before the manufacture of printing ink became a distinct trade. The mechanical mixing of smoke-black and other ingredients with linseed oil previously prepared by boiling, a most disagreeable part of the business, was a duty not to be hurried or unthinkingly intrusted to a heedless workman. To produce an ink that would be permanently black, smoothly coating inking balls and easily applied to types, sticking to paper after impression, drying quickly and not transferring grime to the fingers or to the facing leaf, demanded the intelligent supervision of a fully qualified master printer.

Experience in practical presswork was needed. Ink had to be compounded to meet the requirements of the paper. The stiff ink that might produce clear print on rough-faced and hard-sized linen paper would not be suitable on soft and cottony fabrics that were unsized. Papers dampened too much or too little, and vellum skins alternately with greasy and limy surfaces, taxed the resourcefulness of the pressman and often compelled him to retemper his ink.

Linseed oil, after its proper preparation by boiling, had then been used for a short time by artists of the fifteenth century as the most serviceable vehicle for the carriage and transfer of colors, and early printers readily accepted it as the best substance for incorporation with smoke-black. There always were different formulas for the manufacture of
Approved constituents in early printing ink

Printing ink, but its more important ingredients were then well known and are here repeated in the following extract from the Cost Book of the Ripoli Press.

Every printer compounded these substances, and possibly some others, to suit his own notions of appropriateness. As these ingredients had no chemical affinity one for the other, the mixture was truly mechanical, exacting skill, patience, and a regulated heat for the production of a satisfactory ink, but the mixture had to be varied to suit different kinds of paper. In many early books the printing ink has withstood hard tests of time and exposure, keeping unchanged its needed blackness. Other old books there are in which the ink, seemingly black enough and sometimes excessively black, does not fairly stick to the paper; in some, the ink “offsets” and is partially transferred to the facing leaf; the black color soils the fingers, and print so produced may even now be seriously weakened and defaced by a moist sponge. These faults betray an unwise selection of cheaper materials, or show ignorance, haste, and carelessness in manufacture. One fault of ink is of later date, the yellow stain of spreading oil about each letter, a fault not common before the seventeenth century, being almost unknown in early books.

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linseed oil, barrel</td>
<td>3 10</td>
</tr>
<tr>
<td>Turpentine, per lb.</td>
<td>4</td>
</tr>
<tr>
<td>Resin pitch</td>
<td>4</td>
</tr>
<tr>
<td>Pitch, black¹</td>
<td>1 8</td>
</tr>
<tr>
<td>Marcasite²</td>
<td>3</td>
</tr>
<tr>
<td>Cinnabar</td>
<td>5</td>
</tr>
<tr>
<td>Resin, per lb.</td>
<td>3</td>
</tr>
<tr>
<td>Varnish, solid</td>
<td>8</td>
</tr>
<tr>
<td>Varnish, liquid</td>
<td>12</td>
</tr>
<tr>
<td>Gallnuts³</td>
<td>4</td>
</tr>
<tr>
<td>Vitriol</td>
<td>4</td>
</tr>
<tr>
<td>Gum lac</td>
<td>3 4</td>
</tr>
</tbody>
</table>

¹Smoke-black, the important ingredient of black ink, is not specifically mentioned, but it is to be supposed that the printers made it from burning the pitch.

²The utility of marcasite, a sulphurous oxid of iron, is not apparent.

³Gallnuts were then a necessary ingredient in writing ink and may have been regarded as of value for producing a needed permanency in print. Cinnabar, a red sulphid of mercury, was the base of the early red ink. It is now better known as vermilion.
It should never be forgotten that blackness or paleness of print is not entirely due to the ink; it was largely controlled by the pressman and by the selection and preparation of paper that should have been purposely made or selected to imbibe and retain color. Impression was another controlling factor; an inexpert workman could make the print of a proper ink seem smeary and grimy, or gray and feeble; he was expected to regulate impression to suit differing resistances of hard, soft, or damp paper.

Superior blackness has been claimed for early print, and there are old books that justify this praise; but in most examples offered the ink seems blacker because it was too liberally applied to types of large size with thick lines that favored the reception of dense color. The same ink applied to our modern thin-faced and sharp-lined type would seem relatively pale or gray. All the ingredients specified by the Ripoli Press are known to modern manufacturers of printing ink, who have added to them other substances approved by long experience, with improved machinery and methods of value. The compounding of printing ink is now a separate trade, to the greater benefit of book printing. He who works at ink-making daily for years to meet the different requirements of different kinds of paper should make ink more satisfactory in quality than could have been produced by the early printer to whom ink-making was an occasional duty.

The inking of early types was often accidentally irregular. The types of the Lactantius printed at Subiaco are overcolored, really thick and muddy on many pages. In the Quintilian of Jenson the types have not been inked enough. It may be that Jenson directed the hand pressmen to underink the types, by which treatment they would more clearly show in print the clear, sharp lines of his clever engraving and the
more inviting openness of his cut of Roman letter. In books he afterward printed on types of Gothic form he designed and engraved them to show black ink with prodigality. Differences in the inking of types humored popular prejudices. The buyer of a devotional manual craved the blackness in print that seemed to give to it the somberness suitable to the subject-matter; to a buyer of different taste a book in Roman letter was more acceptable when it was relatively pale in color and conveyed a feeling of lightness and delicacy that was much desired.

In compounding their colored inks early printers were not entirely successful. Rubricated words and lines in a text of black are often of dingy color, showing types choked with a pasty ink, the ingredients of which had not been properly mixed. The register of red ink with black ink in a rubricated text is remarkably good when we consider the crude process and the defects of the old hand press then in common use for printing in two colors. Pleasing color in red ink presswork appears to most advantage in broad surfaces, as in the device of Jenson (plate 17) or in the larger letters used for initials. On types of small size the red may be smeary, as in the Decretals of Torresano (plate 18).

Ink was dabbed on the types from stuffed leather balls, as may be seen in the annexed illustrations of the hand press (page 189). Their curved surfaces when forcibly rocked against one another equally distributed the ink, but the quantity applied was largely at the discretion of the inker; it might be too much or too little, and the color might be variable on the pages of the same book.

\footnote{The types of the Decretals of Gregory, shown in a facsimile (plate 18) on another page, probably made by John Herbolt of Selingenstadt under Jenson's direction, were printed by Andrew Torresano in the blacker style of Jenson and are consequently blackened too much in print, but this gloominess was probably pleasing to the buyer.}
PAPER

Without paper typography could have given small service; it came fitly before printing. In the fifteenth century old and crude writing materials were out of use; writers of the fourteenth century had put aside forever the brittle papyrus of Egypt and the wax tablets of old Rome. Parchment and vellum, never in a full supply, were becoming scarcer. For more than a century there was no proper substitute at hand. The only substance in every way adapted for printing was the paper that then had begun to come from the Far East. Fabrics of slender and elastic vegetable fibers, thin and of smooth surface, known as satin paper, had been used in China for printing purposes at an unfixed early date, probably 170 B.C. In Persia this satin paper afterward became an approved material for manuscript books, and was there made up in the convenient form of folded and sewed leaves which the Western World soon learned to imitate. The practice of making paper gradually spread to Europe through Arabia, Constantinople, Spain, Sicily, and Italy. Between the years 1000 and 1400, in the hands of European paper-makers, cotton rags were accepted as the most available substitute for the barks or fibers of the Orient.

This new cotton paper was purposely made to resemble parchment in smoothness of surface and flexibility; it was known as charta bombycina, Greek parchment, and parchment cloth. When properly sized it was used for ordinary writings and correspondence, but I do not find trustworthy testimony that cotton paper was taken for manuscript books of merit at an early date. Linen paper has always been preferred for its claimed superior durability.
Linen and cotton, sized and unsized paper

At what date paper from linen rags was first made is still in controversy;\(^1\) but it is generally conceded that during the latter half of the fourteenth century linen paper was largely made and well made in the mills of Italy.\(^2\) The most valued feature of writing-paper was its adaptation to the service of the penman, for which purpose it was “sized” in manufacture by washing or bathing it with a very thin film of glutinous water. Each sheet, during an early stage of its manufacture, while still moist but firm enough to be safely handled, was separately dipped in a tub of gluey water and afterward dried in airy lofts from overhead bars or poles. This dipping and drying treatment, known as sizing, added to the cost of the manufacture, but it gave additional strength and hardness to the paper, and enabled it to take fluid ink from the pen in clear lines without blotting. The phrases “tub-sized” and “loft-dried” are still used to describe thorough workmanship in the making of writing-paper.

Sizing, although of service to the penman, was of slight benefit to the printer; it materially increased the cost of paper and added a hard surface wearing upon types.

\(^1\)A fragment of paper from a document dated 1216 is in the possession of Mr. Arthur D. Little of Boston. A micro-photograph proves that this paper was of linen fiber.

\(^2\)Printing paper made in Italy was not like that of northern Europe. The thick and rough-faced papers of Germany and Holland are rare in early Italian books. Thomas Fuller (1608–1661), an English historian and divine, thus describes the different qualities: “Paper participates in some sort of the character of the countries which make it; the Venetian being neat, subtle, and courtly; the French light, slight, and slender; and the Dutch thick, corpulent, and gross, sucking up the ink with the sponginess thereof.” This last clause fairly indicates that during the sixteenth century unsized paper was in common usage. See note on page 111.

The paper in the Gutenberg Bible of Forty-two Lines (c. 1455) is of cardboard thickness, while that of Eggstein’s Decretals (c. 1471) is thinner but of a rough face. The large types and thick leaves of the bulky books made by Koburger, Zainer, Richel, and other famous printers of Germany, gradually compelled the giving of more attention to greater thinness in printing paper, but the German paper-makers were somewhat slow to imitate the very smooth papers made by the Italians. The sturdy roughness, humpiness, and the needlessly visible wire marks of the “laid” papers that are now frequently found in many of the reprints of old books, or in imitations of old mannerisms of paper-making, are seldom noticeable in books from the early Italian presses. A list of papers used in Italy will be found on page 166.
To lessen the wear and make the sheet more pliable under impression, printers had to dampen sized paper before it could be neatly printed; but dampening was not always successful. If the dampened sheet was unevenly thick, if it had a rough face and was overdamped, and if a thin ink had been used with strong impression, the sheet would show a mussy print, damaging to the appearance of the type and to the reputation of the printer or type-founder. Paper-makers were gradually induced to make paper for new books with weaker sizing and sometimes to omit all sizing. Half-sized or unsized paper did not call for so much care in its preparatory treatment for work on press. Properly treated by the printer, unsized paper showed the impression of type with even greater sharpness and clearness. In the production of cheaper books unsized paper was of service. To readers who did not intend to annotate the margins with a pen, it was especially welcome. A growing demand for cheap books compelled the use of unsized paper even in the editions that are now rated as of real value. Time proved that under ordinary conditions unsized paper maintains desired durability.

The hard, rough surface and tough fibers of modern handmade papers are now disliked by copperplate printers, lithographers, and color printers by any process; their superior workmanship is best shown on unsized paper that is pliable and easily adaptable to every stroke of the graver.

Paper made from cotton rags was the common staple for years, but it has always been adjudged inferior to linen. Papers made from grass and prepared wood are now serving in place of the old cotton fibers. The old papers had greater strength, for early makers knew little about and made small use of the chemical agents now used, quick in action, but that may seriously weaken the fibers of paper
Papers supplied to early Italian printers

stock. Linen rags were always preferred by the old papermakers when they had been sufficiently prepared for pulp by protracted bleaching in the sunlight.

Vellum and parchment were also used by the scribes or writers of manuscripts, but their cost was greater, and they were not pleasing surfaces to early printers, for some vellums resisted ink and produced a needless waste. The collector of vellums finds but few copies among early editions.¹

<table>
<thead>
<tr>
<th>(In folio per ream)</th>
<th>lire</th>
<th>soldi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grand paper of Bologna</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Middle-size paper</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Small paper</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Paper of Colle</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Fabriano paper, mark of cross-bow</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Paper of Prato</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Fabriano paper, mark of cross</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Pescia paper, mark of spectacles</td>
<td>2</td>
<td>18</td>
</tr>
<tr>
<td>Pescia paper, mark of gloves</td>
<td>2</td>
<td>8</td>
</tr>
</tbody>
</table>

Paper selected for the early book, always of small size, was seldom exact or fairly square. It always had deckle or ragged edges. Dipped up from a tub of semi-fluid pulp upon

¹In 1568 Christopher Plantin of Antwerp began a grand edition of the Polyglot Bible in eight huge volumes, for which, to please different tastes, many kinds of paper had been selected. There were to be twelve hundred sets on different kinds of paper and thirteen sets on vellum; but the vellum sets had been reserved for the King of Spain and a few ecclesiastical dignitaries. The Duke of Bavaria had requested a copy on vellum and had offered to Plantin one hundred florins to cover the extra cost of the vellum. Plantin declined the proposal, saying that all of the copies on vellum had been previously pledged to subscribers. He offered the duke one of the copies on the imperial paper of Italy, which he said were more beautiful and even better printed than were the copies on vellum. Max Rooses, Christophe Plantin, deuxième édition, Anvers, 4to, 1890, p. 138.

²As the sizes and weights of the papers are not specified, a comparison of prices cannot be made with papers of modern manufacture.

³The paper mill which is at Fabriano is supposed to have been established in the fourteenth century; it still continues its service in an acceptable manner to many publishers and readers. It has frequently furnished the paper for some of the publications of the Grolier Club of the City of New York.
Hand-made papers of rough edges

an inclosed mesh of woven wire (through which the surplus of water escaped), the retained pulp strayed outward irregularly toward the inclosed rim. The deft hand and trained eye of the workman kept this irregularity within acceptable bounds, but they could not make the sheet exact as to size. As hand-made paper is still manufactured according to old usage, a perceptible variation in the dimensions continues to be noticeable. A ream of modern hand-made paper sold as 16 × 20 inches will show variations of from one eighth to one half inch in width and length, and in some reams the variation may be greater.

Early papers were not only irregular as to size but were somewhat rhomboidal as to form. Deckle edges were tolerated as an unavoidable attachment, as is the fringed end of a rug or the colored strip on the side of a bolt of broadcloth. They were not needed by old printers, for they made folded paper thicker at the outer edges than in the middle of the sheet and consequently unsightly on the fore edge of the book. They were relentlessly cut off by the binder, with the approval of printer and book buyer, and are seldom found in any old bound book. It is only in the modern édition de luxe, which publishers propose to give to buyers as the printed leaf just as it comes from the pressman, that the deckle edge is preserved as a voucher of the genuineness of its hand-made fabric. This fad declined in favor when it was shown that an imitated deckle edge could be produced on machine-made paper.

Although the deckle edge was of no advantage to any one, wide margins were approved by the studious, for they were needed for annotation and correction. An early professor at Paris said that the manuscript books of his time were becoming corrupt and sometimes unintelligible through the
ignorance or carelessness of their copyists. The only remedy was correction with the pen of the buyer. In one of his letters Erasmus says: "They do not love books who neglect to correct errors in the text and do not busy themselves by night and day in making needed annotations in the margin."¹

The size of paper selected by the early printer of a book may be determined by Pollard’s² method for computing the amount of blank paper with its deckle edge that successive generations of binders have succeeded in cutting away from the margins. "If a half (or rather less) be added to the height of a type page, and a half (or rather more) to its breadth, we have a very fair approximation to the size of an uncut copy."

The admitted inferiority of much recent printing is largely owing to the inferior constituents of our cheaper printing papers. During the last fifty years straw, grass, wood, and other vegetable fibers have been successfully treated for this purpose. To the inexpert, papers from these substances may seem sightly, and promise to be as serviceable as those made from linen and cotton. They are to be had in many styles, and always at a tempting reduction below the price of better paper. Other sophistications have been successful. A very thin web of wood fiber can be thickened with a coating of burnished whitewash that gives to it the smooth surface of satin, or a thicker web can be cunningly roughened up with wire marks in parallels, stiffened with sizing and frayed at its edges so that it may pass for a genuine hand-made paper. These, and many other kinds of paper, will receive printing ink, but not to equal advantage: on one kind of paper the ink penetrates below the surface and becomes an inseparable

portion of the fabric; on another kind the ink is but a gray stain on a surface for which it has no affinity. Fair printing can never be produced when paper and ink are not mutually adapted one to the other.

Haste is another factor in the production of mean paper. For the cheaper papers the old method of sun-bleaching paper stock has been put aside unavoidably for quicker processes. Chlorine gas, caustic alkalis, and steam boiling are preferred agents for the softening of harsh fibers. Manipulations that once called for months of attention are now confined within a few days. For the use intended, the paper stock so treated produces an acceptable fabric, but as a rule it is not to be compared with paper that has been more slowly made. It is a mistake, however, to assume that honest paper with sufficient strength and of high merit cannot be made by machines. There are machine-made papers fully equal and sometimes superior to the modern hand-made in every desirable feature. The prejudice against all papers not of linen is equally unwarrantable. Esparto grass and selected wood fiber can be acceptably and admirably treated by a skilled manufacturer who does not grudge time and expense.

Papers of high grade, whether made by hand or machine, are never common or cheap, but they still continue to be made by men who have pride in their product. Paper was never better made, never worse made, than it is now.

A commission recently appointed by the German government, constituted of experts with scientific training, has examined modern papers to test their strength and durability. The results were disappointing to some collectors of books. It was demonstrated after an examination of specimens of paper from many countries that hand-made papers were not always the strongest or the best. An
abstract of this report is to be found in the Journal of the Royal Society of Arts, London.

In the planning of a new book there is a need, greater now than ever before, for an intelligent adaptation of properly selected paper and ink to the types, woodcuts, or photo-engraved plates which have been provided for the book. The selling price of the paper fixes its value, but it does not determine its appropriateness for every purpose. Printing ink will stick to any kind of book paper, but some papers will take it kindly and pleasingly, where others will show it harshly and disappointingly. Practical tests by presswork are needed to prove adaptability, which cannot be determined in any other way.

The cheapness of paper in the latter part of the fifteenth century has been noticed by many writers of that time.¹

¹ Books, written and printed, were sold at low prices as early as 1470. The Bishop of Aleria, in the preface to Sweinhein and Pannartz’s edition of Hieronymi Epistolae, makes these comments on the change in a letter addressed to the Pope:

“In your days, amongst other divine blessings which the Christian world enjoys, it may congratulate itself on the facility with which books may be purchased, even by the poorest student. It reflects no small glory on the reign of your holiness, that a tolerably correct copy of a work that formerly cost more than a hundred crowns may now be purchased for twenty; those which were heretofore worth twenty, for four at most. It is a great thing, holy father, to say that in your times the most estimable authors are attainable at a price little exceeding that of blank parchment or paper. Some monarchs have gloried, not without reason, that under their administration the price of corn hath scarcely exceeded that of the empty sack; of wine, that of the cask. With equal exultation I record it for the praise of posterity, that persons exquisitely skilled in the typographic art first began to exercise their calling at Rome under the auspices of Paul 11, the Venetian; that by means of that supereminent pastor of the church, Heaven gives us, in these days, to purchase books for less than would formerly defray the expense of the binding.”

At the end of his Ars Versificatoria, printed by Peter Keysere and John Stol of Paris (1473–77), Robert Gaguin addresses the reader in the four distichs here rendered from J. P. A. Madden: “Each time, honored reader, that you may reread this book, you will the more appreciate the talent of our printers. Instead of one year or more that a swift copyist then required, one month is now enough for the new art to produce a new book without fault. Not long ago the paper needed for the writing of a book cost more than one pays at this day for an enormous volume. Happy Germany! It is to thee that the world is indebted for this invention.”
COMPOSITION

In the old books most prized by collectors and librarians, large types with suitably broad margins were always adjudged most appropriate to the dignity of the subject-matter. They were made to be imposing at first glance. This led to mistakes; the surface that would be covered by large types was not always correctly estimated, and very thick books in one volume or in two stout volumes were not infrequent. To keep reading matter within a proper limit, printers followed the practice of the earlier copyists: they avoided paragraphs, put thin spaces between words, and made free use of abbreviations. Readers who had been accustomed to the compact writing of manuscript books did not find annoying this thin spacing of printed words. Taste has now changed; the solid type-setting of old printers is not approved by modern publishers of books purposed to be readable and salable.

The solidity of early composition was partly remedied by the long ascending and descending letters then made by the early printers for large Roman lower-case, which unavoidably produced lanes of white space between the printed lines and gave to a weary eye a proper relief to the compactness. The need of a relieving white space between lines was most noticeable when two or more lines of type were set in capital letters that nearly filled the body of the type. The first paragraph of the Eusebius of Ratdolt (plate 21) fairly illustrates the obscurity produced by this able printer in his huddled composition of capital letters.

Leads or blanks of white space between lines too close for proper perspicuity were not unknown to the early printers.
Huddling of lines and of words

They were freely used in Schoeffer's edition (1466) of the De Officiis of Cicero and in an occasional colophon of Jenson, but respect for the old methods of arranging words and lines was a stronger force. The value of leads to open a huddled composition and make it more readable was not so clearly discerned and was generally neglected.

The proper width of the white space between printed words is even now controlled by the rule that compels the division of words on syllables only. To comply with this rule, spacing may be irregular, wide in some lines, narrow in others. The average thinness or wideness of the text-type in use to some extent determines the width of white space between printed words. Words should be kept apart visibly: in condensed Black-letter the space may be very thin; in round and relatively broad Roman lower-case letter it should be wider. If Roman capitals only are used in two or more consecutive lines, the space between words should be twice as wide as the space selected for the lower-case, and the lines, to be made more readable, should be widely leaded.

Spaces of different widths were unknown or little used. All the earliest printed books show ragged endings on the right side of the page or column, as is now unavoidable in type-writing. The spacing out of a short line of words so that it should be full and in symmetrical lining with lines above and below was a later improvement.

The general avoidance of paragraphs was a serious fault. Many early printers made but one paragraph of each chapter, regardless of its length or of frequent changes. Even in the notes in Gering's edition of the Postils of de Lyra (plate 36) and the side-notes of the Silius Italicus of de Tortis (plate 25) paragraphing is entirely suppressed, and the composition is huddled in a manner that must have been troublesome to the
student. In the Postils the superior reference letters of text as repeated in their notes are kept apart by a white space, apparently so made by the compositor in the belief that the reader would add a red ring or a dab of red ink to indicate the beginning of a new subject. It must have been expected by the printer that the student would voluntarily accept the annoyance of a slow search for the proper place of the desired reference.

Poetry was the form of text matter that was fairly allowed a proper relief of white space, as may be noted in the Silius Italicus (plate 25) and in the preface to the edition of Virgil printed by Bartholomew of Cremona (plate 19).

When the printer was provided with one size only of large type, and much reading matter had to be kept within a predetermined number of pages, a certain compactness of composition was unavoidable, which the early printers did not regard as a fault.\(^1\)

Foreseeing the gloominess of his composition, de Zanis tried to make his Plutarch attractive by a graceful border, by initial letters quaintier in design than those of the hack illuminators, and by the remarkable engraving of Theseus and the Minotaur; but these graces were not enough to make the text pleasingly readable. There is a running title in

\(^1\) The Livy of John and Wendelin of Speyer, in two volumes (plate 14), has one chapter of twenty-eight pages, forty-eight lines to the page (\(5 \frac{3}{10} \times 10\frac{1}{10}\) inches), set up as one paragraph, without a white line or even the break of a half white line to indicate a change in subject-matter. The Quintilian of Jenson (plate 16) has one chapter of twenty-five solid pages, without any break or sign; and other chapters almost as long are frequent. This method of huddling together lines of closely spaced words was maintained for some years. The admirable Latin Bible in Gothic type of Renner (1476) shows the divisions with Roman numerals of chapters at each proper cross-line, but it has no breaks for verses, not even for the irregular books of Job and Psalms. The room required for any relief of white space was apparently grudged. The Bible of Robert Stephens of Paris (1545) does make paragraphs for the verses of Job and Psalms; but other parts of the book are huddled together in the old fashion without breaks. The text of this edition, in a 6-point type of thin face and printed with weak ink and feeble impression, is made more obscure by marginal side-notes in a narrow measure.

The edition of Plutarch's Lives printed by de Zanis in 1496 (plate 26) fairly exhibits the repulsiveness produced by compacting a book intended for two parts in one folio volume of 578 closely printed pages. The
capital letters over each page, that properly indicates the subject-matter below, and its leaves (but not its pages) are consecutively numbered with Arabic figures. The recto of the first leaf has a small bastard title, Plutarchi Vitae, in capital letters of the text-type, and the verso of this leaf has a table of the chapter headings.

The earlier books do not have the complete title-page now required—not even a short and small bastard title upon a separate leaf. A few explanatory lines may go before the first page of text, but it is oftener a dedication. As a rule the printer began the text of type abruptly, at the top of the page, leaving but a small square of white space for the insertion of a written or painted initial letter. When the text had been printed a few introductory words were written, but not always with neatness, at the head of this first page. It was supposed by the printer that the buyer of the book would write or paint in the needed initial. This was not always done; and even when it had been done this initial so made might prove a real blemish to the type work, for there always have been clumsy letterers to degrade print with careless drawing. In all books of devotion with versicles and responses, it was expected that the owner of the book would

facsimile of its first page, shown on page 97, with a broad black border and a large woodcut, imperfectly shows the compactness of its following page of solid composition (6½ inches wide and 9¾ inches high). Each full page consists of sixty-two lines of a bold-faced 11½-point type, but in all lines the words, frequently abbreviated, are separated with very thin spaces. Even the chapters are huddled together. Each of its sixty-seven divisions begins with one or two lines of the capitals of the text and an engraved initial letter of neat design; but there is rarely a thin white line to show separation between contiguous chapters. The compositors must have been told to crowd letters, words, and lines to the extreme of closeness, so as to get much matter on the page. The breaking of a line to form the small square of white space that marks the beginning of a new paragraph was purposely neglected. One of the chapters has nineteen solid pages of full lines, or more than seventeen thousand words. To read types or study writings so composed must have been wearisome; to refer to an imperfectly remembered word or phrase in solid composition must have been difficult almost to impossibility.

Other examples of the compactness of early printing are de Tortis's edition of Silius Italicus (plate 25) and the Livy printed by Daniel Elzevir (plate 39).
mark change of subject-matter with dabs of red ink over the initial letters of a sentence, and this method of indicating a new paragraph was gradually adopted in secular books.

This treatment of title-page matter was convenient to the early buyer of books, but it seemed petty when set in types too small for the subject-matter. Other printers began to consider the value of larger types for the name of the book, and the assembling of useful information about the edition upon one front page where it could be read without further search. The facsimile of the title-page of the Bible by C. Froschover (plate 38) is a fair illustration of a style then approved by printers of the early sixteenth century. It shows two sizes of very large type—too large for the text of any ordinary book and apparently made only for service on title-pages.

Paging was another improvement tardy in development. The numbering of leaves with Arabic figures gradually supplanted the clumsy and uncertain Roman numerals, but it was a paging only on the recto or the right side of the folded leaf; the verso, or left-side page, was not numbered. The value of this neglected aid to ready reference in a search for an indistinctly remembered passage in the text needs little comment. It was convenient then and now to insert the paging figure by the side of the running title at the head of the page, but the page figure is clearer at the foot.

Catchwords and signatures were not used by the earlier Italian printers, although manuscript copyists had found them of service, for they were safeguards against the accidental displacement of detached sheets before they had been prepared for sewing in consecutive order.

Some recent reformers of typography have tried to avoid the use of signatures and Arabic figures for paging, but
Running titles and chapter headings

William Blades has proved that all these safeguards were used by copyists before they assembled and sewed the different folded sections of a book. As first planned, signatures were placed on the margin of the first page of each folded section close to the lower edge of the leaf. When the sections had been properly sewed and the possibility of a misplacing had been prevented, these signature marks were trimmed off by the binder. The signature mark, whether of letters or figures, is often regarded by the casual reader as an obtrusive and offensive addition to the print on the page; it is an offense, but it is a serviceable mechanical device that may not safely be neglected. To assemble and keep in consecutive order the different sections of books of same size of page and leaf and in two or more volumes without the aid of signatures is always a risk. The chances of error are many in any bookbindery that has to keep exposed in folded sections thousands of detached sheets for different books.

Running titles at the head of pages are of value to every reader. When it indicates the subject-matter of the print below, the running title prevents a needless scrutiny. It appears in a few books printed at the close of the fifteenth century, but its improvement to the appearance of the page, even when it uselessly repeats the title of the book, has led to its general adoption. A page without a running title is not a novelty now, but the page without it seems bald and imperfect.

Numbered chapters or chapter headings in some form have been approved guide-posts for a reader ever since books were written. For this purpose the Roman numeral still keeps its prominent position, but largely because its letters are broader and plainer than the thinner characters of Arabic figures. Numerals of Roman letters mate neatly with the capital letters that precede them in the line. The modern
practice of beginning a chapter with a fresh leaf, with a broad margin at its head, and of ending that chapter with a blank that shows its finish at the end of its last page, was unknown in the fifteenth century. For many years it was customary to have one chapter follow its predecessor without any intervening lane of white space, as must still be noticed in all compact modern editions of the Bible. This huddling of print, without a rest for the eye in the form of blank space, made study fatiguing and the print repelling. Early writers of fine manuscript books were more considerate, and provided blank space for added decoration in the shape of borders, center bands, initial letters, or illustrative miniatures. Initial letters were most frequently employed, for they permitted an infinite variety of ornamentation. It was not possible for any typographic printer to imitate the gold and bright color and beautiful designs of the calligraphers, yet Ratdolt and others did engrave initial letters of merit spanning and filling in height two or more lines of text-type. Initial letters of large size, whether plain or engraved, were a pleasant relief to eyes wearied with the monotony of compacted composition, and were as effective in arresting the attention of a hasty reader as numbered chapter headings. This time-honored device for adding to the attractiveness of a page has been for many years undervalued, but largely so because the letters now furnished for this purpose are seldom good mates for the text and are hackneyed by repetition. They are often inferior in design to the approved initials of the fifteenth century.

Summaries of chapters, sometimes in the form of a single line, but oftener in a recapitulation of every paragraph in the chapter, are modern additions to the printed book which have been claimed as improvements, but this is questionable.
Notes on the margins of the page

A short summary may be of service, but the long summary that occupies a large portion of the page is not an improvement on early practice, for it is seldom properly examined.

The inclosure of a page of text on three or four sides with explanatory notes in a smaller size of type, as is here shown in the facsimiles from Torresano, Gering, and de Tortis, is a peculiarity of early composition that has fallen into general disuse. In our modern practice of composition, long notes are always put at the foot of the page or in an appendix; short notes that specify authorities, dates, or cross-references, and that need short lines only, are sometimes added to the outer margin of the page; but verbose notes on the inner margin or at the head of the page are ruled out by authors and printers as impracticable. The method of keeping long notes on the same page of text had been practised for centuries by the copyists of manuscripts, but it called for much discretion and intelligence. What was troublesome in copying was much more difficult in the composition of type. To keep notes and text together on one page or on facing pages, it was necessary that the width of the measure for the broader lines of the text and for the narrower lines of notes should be altered and readjusted at every succeeding page. Type-setting could not safely begin before the words of each proposed page had been counted and the space to be occupied on each page had been correctly estimated and these proportioned one to the other. This drudgery, which could be satisfactorily performed by the author only, largely increased the cost of composition, and this added cost soon led to the discontinuance of the page surrounded by notes. The liberty to abbreviate long words, granted to the early compositors, but properly denied to the modern workman, has made this old method impossible.
Copyists of the early fifteenth century found the standard Roman alphabet insufficient for the expression of thought as then written. Capital letters were only twenty-three in number; V served for U, I for J, and W was not needed in a Latin book. The lower-case characters had been enlarged to twenty-six by the addition of the long f and the diphthongs æ and œ. The desire to put many words in small space, to shorten the drudgery of writing, or to save paper and keep a proposed book within a predetermined limit, were motives that induced the copyists to take great liberties in contractions and abbreviations. For some liberties they found warrant in the lapidary inscriptions of old Rome that were still in evidence, but clipped words were not enough. They added signs, accents, conjoined letters, and ligatures of long syllables in profusion. This laxity in practice worked mischief. Abbreviations devised for his own convenience by one copyist might be unknown to another copyist, and be deciphered with difficulty by a student. A French scholar of this period said that manuscript books were becoming unintelligible through the carelessness and presumption of the copyists. Two critical readers might give entirely different meanings to the same sentence written by two copyists.¹

It was not practicable for the early printer to reproduce in type many of these ligatures or conjoined letters. A new character compelled the cutting of a separate punch, the making and justifying of a separate matrix and its casting as a distinct type at much delay and needless extra expense. Printers of the better class, now famous through their quartos

¹The annoyance produced was great enough to lead Martin Flach of Strasburg in 1499 to prepare and print a book of explanations for the common abbreviations. His book, helpful in its time, is almost forgotten now. The modern decipherer of early manuscripts consults the Dizionario di Abbreviazioni Latine ed Italiane (Milan, 1899), which contains more than thirteen thousand abbreviated expressions in use during the fifteenth century, but only for Roman characters.
and folios, shunned this expense and tried not to expand but to simplify the characters then written in manuscripts. To the twenty-three capital and twenty-six lower-case letters type-makers added only the three points of punctuation. The annoyances made in type-casting and type-setting by the overhanging beak of the f and f compelled the casting of these combinations on one body: ff, fl, fi, ffi, ff, ft, ct. Wendelin of Speyer used an accented e instead of the diphthong æ and the types of o and e for ò. Swenheim and Pannartz in their edition of the Epistles of St. Jerome rejected the short s and made the long f serve for a final letter. Small capitals, Arabic figures, and reference marks were not then in any scheme or assortment of regular book type. To please the tastes of readers who had been long accustomed to the accented letters and ligatures of the copyists the early type-makers occasionally provided some of these characters, but they did it grudgingly.

Bernard says that the fame of Jenson’s Roman is based on the seventy-three characters used in his ordinary books. This scant collection is in marked contrast with the scheme for book type now in use, which consists of four correlated series of capitals, small capitals, Italic, and lower-case, with many points of punctuation, figures and fractions, marks of reference, braces, dashes, leaders, and commercial signs—in all about two hundred and forty-seven distinct types.

Abbreviations, as then practised by copyists and by some printers, were prompted by a desire to keep within proper limits the contents of a bulky book, and poor scholars may not have seriously objected when they cheapened its price. The license then allowed in condensation may be seen in the notes in the Postils of Nicolas de Lyra by Ulric Gering, in the Silius Italicus of Baptista de Tortis, the Decretals of
Book-making an attractive industry

Gregory by Andrew Torresano, and, most flagrant of all, the Four Books of Sentences by Wendelin of Speyer. In the book planned for notes to surround the page of text on every side, abbreviations were unavoidable. In a text of large size, words often appear at length, but in the notes the clipping of a word too long for the line was common.

Uniformity of style in the spelling of words, and especially of proper names, does not seem to have been regarded as of importance. In the Jenson printing house Jenson's name has been spelled in the colophons iençon and ienson. A proper name had one capital only, and that was at the beginning of the baptismal name; the first letter of the family name was usually in lower-case both in Germany and Italy.

The number of editions printed in Venice before the year 1500 is estimated by Bernard at nearly three thousand, with three hundred copies as a fair average for each edition. Some of them were in two or more volumes. If a proper allowance be made for books now lost or unknown, the total product will largely exceed one million volumes.¹ Books were also printed in other cities, towns, and monasteries. Eagerness to acquire a practical knowledge of some department of printing was shown by all artistic crafts. Merchants were anxious to hazard money in the new business of typography, which then

¹It is not possible to arrive at an exact estimate of the number of books printed in Europe with movable types during the fifteenth century. Down to the present time between 24,000 and 25,000 of these have been described; but books hitherto unidentified continue from time to time to come to light, and it is by no means improbable that the total number extant may be about 30,000. Fortescue, Catalogue of Books Printed in the Fifteenth Century.

It was my intention to show the activity of the printers here named by a count of their books, as set forth by accredited authorities. The authorities differ, for bibliography is not one of the exact sciences. Pollard has furnished a striking illustration of these differences. Bartolommeo de Libri, a printer of Florence, was credited by Hain, most painstaking of cataloguers, with but three books, and this number was accepted by Burger, equally careful, in his Index to Hain of 1891. Soon afterward bibliographers accepted the teaching that types are a safe guide in determining the paternity of a book. Following this teaching, in his edition of 1902 Burger ascribed one hundred and twenty books to de Libri.
Ingenuity of many early compositors

promised to be exceedingly profitable. Hundreds and thousands of workmen must have been employed at type-making, type-setting, presswork, and bookbinding, and the practice of each craft was soon made a distinct trade. Type-setting demanded the largest number.

When we consider that the introducers of printing in Italy were for the most part workmen who had expertness in one or two branches of typography only, and that the proper practice of the art demanded an intelligent acquaintance with the details of many different trades, yet that these details had to be intrusted to relatively inexperienced workmen, it is wonderful that the novices did so much work and did it so well. The Cost Book of the Ripoli Press tells us that some of its compositors were women from near-by convents who did their work well and were commended. As the books printed were largely in the Latin language, it was important that the compositor should have a decent knowledge of Latin to enable him to read manuscript copy full of abbreviations, and in his turn to abbreviate words with discretion when they had to be rearranged for narrow lines and side-notes.

It was the practice of all early printers to set up each page by itself, and this page was separately printed. Two pages were put together side by side on the bed of the press, but each page had to be separately impressed by special pull of bar.¹

Many of the early type-setters showed much ingenuity in composition. Some tried to make the book attractive by fantastic arrangements of type. The closing lines of a

¹ Presswork was thus immensely slow as compared with composition, and to meet this difficulty it was usual to have four or six presses employed on a large book simultaneously. The copy to supply each press was set up separately, and the problem was to make the end of each section of copy coincide with the end of a quire. This accounts for some of the variations in the number of sheets in different quires. Pollard, Catalogue of Books Printed in the Fifteenth Century now in the British Museum, p. xii.
chapter were sometimes set in lines of gradually decreasing width, to present the appearance of a funnel. Colophons and imprints were arranged in geometrical forms of simplicity, as in the shape of wine cups, crosses, diamonds, circles, etc. To get a statement within a prescribed space a compositor was often required to abbreviate a sentence to three fourths or even one half of its proper length in spelled-out words. It was supposed that the reader would have wit enough to conjecture the meaning of words so abbreviated. Regret is sometimes expressed that modern compositors do not show the skill of their predecessors in curious arrangements of type; but it is not so well understood now that the older fashion of inclosing a page of text-type with notes that surround three or four sides of the text matter has always been troublesome and expensive, and is now seldom practicable. It can be done with satisfaction in narrow measures when very small type is used and the compositor has the liberty (now properly denied to him) to abbreviate words at his discretion. In no case can it be done pleasingly unless the author prepares the copy for this treatment by counting the letters and words intended to come within the prescribed width of line. The author must be equally vigilant in supervising the work and correcting the proof for the adjustment of unforeseen irregularities that will surely occur.

Contracted forms of expression in types, abbreviations, and broken lines of verse were partially prevented by the more extended use of the thin, slanting Italic, but it was gradually discovered that the Roman characters could be condensed with equal legibility.

In some features of book-making the early Italian publisher was more particular than his modern successor in trying to give a neat and trim appearance to pages of type.
Margins may be broad in some books and narrow in others, but the adjustment of the page of type to the shape of leaf and margin was usually satisfactory. The early printer’s limited collection of types compelled him to select wisely the size of the leaf of paper on which the page was to be printed, and he avoided the needless breaking up of lines of poetry. Modern sense of propriety is not so nice. There are recent editions of poetry deformed by a broad border about too narrow pages, and by the occasional addition within that border of a very large engraved initial letter. This treatment compels the breaking of one or more lines of verse in two or more short lines with ragged endings, the mangling of the rhyme and the disfigurement of the page. A rashly predetermined combination of a large size of text-type with a big initial and a wide border which is not adapted to the shape of leaf and amount of matter is always a damage to the general effect of the page. It is not possible for a printer, working under rigid instructions, to reconcile incongruities in plan which should have been foreseen by author or publisher. The decorator, unintentionally but effectively, may belittle the intent of the author and annoy the reader. The space that must be occupied by types that are absolutely incompressible is seldom considered as it should be.

A Spanish printer of the sixteenth century devised an ingenious method to prevent frequent overturns or breaks in full lines of poetry which merits modern imitation. He had made for this purpose two series of a similar face of type on the same body. One was broad, one was narrow, but the types of both series were of same height, same thickness of stem, and neatly alined. He used the narrow series only for the relatively unimportant words that would have made the line too wide and caused a needless break.
Practical workmen preferred as managers

Early editions are often valuable for mechanical merit, but praise can be given to few for their accuracy. Proof-reading as now practised was then unknown or much neglected. The liberty given to compositors to abbreviate freely, and the scant time allowed to an author or editor for the scrutiny of proof, practically led to serious errors. In one of his writings Erasmus has put on record his anger at the perversion of his words printed from manuscript copy. Prosper Marchand\textsuperscript{1} calls the corrector for Sweinheim and Pannartz a presumptuous meddler with texts; he quotes Schelhorn, Maittaire, Nandé, and other bibliographers as expressing similar judgment.

The facsimiles previously presented, which include some of the best and worst of early printing, fairly indicate the variety of early Italian styles, but more information would be of service. The customary methods of organizing and managing a new printing house, the relations between masters, workmen, and rival publishers, are scantily noticed by early bibliographers. It is impracticable to collect from these notices facts enough to give exact information about the methods then in general use.

This gap is partially supplied by Paul Mellottée of Paris, “docteur ès-sciences politiques et économiques,” who published in 1905 the first volume of his Histoire Économique de l’Imprimerie. It contains some curious matter in condensed form.

Our information about the duties and rights of partners in new printing ventures is scant, but the following notes of an agreement made between Zarotto and his associates, which have been copied from Bernard, throw additional light on the subject. They show that the chosen leader

\textsuperscript{1} Histoire de l’Imprimerie, vol. i, pp. 97–103 and notes.
Agreement between Zarotto and his associates

was not a speculator or financier, but a man who had earned a deserved reputation as a practical workman—planner of books, maker of types, and compounder of ink.

SUMMARY of an agreement made by and between Antonio Zarotto, the priest Gabriel de li Orsoni, Colla Montano, Antonio de Parma, Pedro Antonio de Burgo de Castillano and Gabriel Paver de Fontana for a partnership of three years, dated 20th May, 1473.

1 Zarotto promises to furnish to this association all the types needed, Roman, Greek, or Gothic, and to compound the ink for all the presses required.

2 The four associates first named after Zarotto agree to furnish money for the expenses of the association. De Burgo will at once advance 100 ducats, on condition that it shall keep four presses constantly at work.

3 The associate who shall hinder the work of the house shall forfeit all his rights.

4 The rental of the house occupied for printing shall be at the expense of the association.

5 The profit made shall be divided in three equal parts: one part to Zarotto and the remaining two parts equally among the other four associates.

6 Zarotto, from his one third share of the profits, shall repay the four associates the moneys advanced by them for the making of presses and other equipments, which shall become his property at the termination of the contract.

7 The priest Gabriel shall have custody of the books, and shall be the cashier and general financial agent of the association. He will account for all property confided to him, and he shall be entitled to one copy of every book printed by the association as compensation for this duty.

8 The selection of books to be printed shall be made by the associates in open meeting.

9 The recompense of the corrector and the copyist [probably preparers of copy and not professional readers or compositors] shall be in the books printed.

10 Every workman before admission to the printing house shall make oath to keep its secrets. Workmen and the associates also are hereby forbidden to give assistance to other printers of the city, but if any associate purposes to have a book printed at his expense, and cannot agree on terms with the association, he may be specially authorized by the association to have it printed by another printing house in Milan or Parma. [This indicates the existence of rival printing houses.]

Soon after the signing of this contract the associate de Burgo made an additional agreement with his brother Nicolas. They agreed to install and keep at work three or more presses on books of medicine or civil or canon law and to pay more than one half of the rental of the general printing house. They also promised to give to the associates one fourth of the profits accruing from the sale of their books and at once to pay 25 ducats to them. They also agreed to give to each of the four associates one copy of every book they printed, and not to sell their books below prices fixed by the associates. At the end of the three years specified they would withdraw from the association, leaving with it all money they had advanced, and would convey to Zarotto all their equipment at a price fixed by experts.

On their part the four associates agreed with de Burgo and his brother not to print on their own four presses any books on law or medicine without special permission, under a forfeit of 200 ducats for each infraction. Seven presses were kept under the control of the association.
THE HAND PRESS

The press of the fifteenth century was of simple construction, usually made by the local joiner and blacksmith to the order of the printer who would use it. Its platen or impressing surface was a solid block of beechwood, large enough to cover one folio page, but it seldom exceeded the size $9 \times 14$ inches, and was sometimes smaller. The strong spindle of iron that gave impressing force to this platen was grooved at its head with threads of the screw that communicated proper pressure to the platen. This spindle was securely nested in a vertical collar that allowed no side twist, and was firmly attached to a bent protruding lever, known as the bar, by which the pressman operated the screw. An iron plate protected the platen against wear of the spindle point. The spindle at its top was supposed to be provided with a sufficient resist upward, from the squared heavy timber firmly placed over it, against any waste of pressure.

The supports of the press at the sides were also heavy beams of wood. It was foreseen that the press might leak applied pressure at many joints. Rigidity of construction in the fitting together of its many parts was planned, but was never entirely secured. Largely constructed of parts that were often not truly adjusted, the press was consequently shackly and weak. It was properly described by Moxon in his Mechanick Exercises of 1683 as "a makeshift, slovenly contrivance." It had to be braced with beams diagonally placed against the ceiling, as is shown in accompanying illustrations from old books, to confine the pressure intended
The old method of printing books

for type only, but these resists were insufficient. Its platen could not receive impression enough to transfer properly to paper the ink upon the surface of more than one folio page of type. Types first made were often of unequal height. To make fairly readable in print those that were too low or much worn, a thick blanket of wool was put between the platen and the paper to be printed. When the iron bar that gave the impression was pulled down, the spongy blanket was expected to diffuse equal pressure to all types that were under standard height.

To make a strong book in workmanlike style, the sheet had to be kept of the full size furnished by the paper-maker, and yet must go to the binder fully printed on each side. As the platen could cover at one impression but a portion of one side even of a small sheet, provision had to be made for printing the types on each side by distinct impressions. The press must have a bed twice as wide as the platen and large enough to hold all the pages for one side of the sheet. The bed, usually of stone or slate, was run in and out on a carriageway to receive the impression of the platen.

Two pages of type planned to be printed on the same side of the sheet for a book of folio size were put together side by side on the bed of the press. As the press could not print the two pages simultaneously, each form received two movements of the bed to bring each page under the platen, and two pulls of the bar to complete the impression. A sheet of $16 \times 21$ inches, then rated as a large size, required four separate impressions to complete its four folio printed pages.

Three hundred small sheets a day printed on each side were considered a proper performance for the two men who worked the press, but this product required twelve hundred distinct impressions and as many separate pulls of the bar.
Presswork and Composition as done in 1520
(Device of Jodocus Badius of Paris)

Presswork and Composition as done in 1564
(From Jost Amman)

Early Inking Balls
(A Playing Card of the Sixteenth Century, from Chatto)
The points of the hand press

For a day of ten hours the printing of only three hundred sheets of four pages in folio would now be considered a very trifling performance when it is compared with the thousands of impressions on large sheets produced in the same amount of time by the cylinder press which is now generally employed for book work.

Two men were needed to work the press—one to distribute the ink on the balls and dab it neatly upon the face of the type; one to place the sheet in position to receive impression from this inked type, to move the bed holding the type accurately under the platen, and to pull down the bar that would transfer the ink to the sheet.¹

It was not an easy task for the pressman to place the paper for the first page of a new sheet in correct position, to keep it an even distance from the central fold (as yet undetermined), and harder yet to print the backing page, or verso, so that it should register exactly with the recto page. The sheet was not square, for it had the rough deckle edges, and might have been dampened too much or too little to prepare it for impression. To prevent irregularity of margin and of page position the printer attached to this first page pins that perforated but did not blacken the paper. For the second, third, and fourth pages of this sheet pins in a corresponding position were fastened to the tympan, and the sheet was adjusted on these pins, so that the print would appear in proper place.²

¹Moxon's Mechanick Exercises, 8vo, London, 1683, contains two full-page engravings by copperplate process of the early press: plate 3 shows its early form, and plate 4 the improvements made by Willem Jansen Blaeuw of Amsterdam in 1620. This scarce and valuable treatise on printing was published in two volumes in 1896 by the Typothetæ of the City of New York. Volume II contains, on pages 399–430, notes that convey additional explanation of technical terms that are obsolete.

²"In the 42-line Bible there are said to have been as many as ten of these pin-points to each leaf, four at the top, four at the foot, and two on the outer margin. Each of these pins left its mark on the paper in a little hole, but many of these pinholes have been cut off, and others closed up by the heavy pressure used by modern binders. Often, however,
Modern printers continue to use, but not so lavishly, pinholes as safeguards against irregularities of margin and faulty register, not only in the printing but in the folding of large sheets on machines. When presses have strictly accurate movement, and sheets are square with neatly trimmed edges, it is practicable to get exact register and true margins by placing the sheet truly against guides that do not vary in position. The early printers soon found that excess of pinholes was a hindrance. Two pinholes perforating the central fold of the sheet at proper distance were enough to secure accuracy. In this position the pinholes were obscured by the sewing of the folded back and were not noticeable to reader or librarian.

Superior merit has been claimed for books printed on the hand press, as if the press gave to print distinctive characteristics. This claim is not warrantable. The hand press has produced admirable printing and can continue to do so, but it has oftener produced workmanship that is decidedly inferior. It has merits of its own, but it is not the apparatus preferred by the modern experienced master printer. He rightfully says that it is deficient in strength, speed, and productiveness. These are grave defects, yet it continues to be rated as available apparatus for taking a quick proof or impression. Its merit began with its slow movement, its constant exposure of type, paper, and machinery to the unremitting supervision of two operators who could arrest the

they are distinctly visible, and sometimes very unpleasantly so. . . . A combination of damp paper and a pull against the pin in taking it off the press greatly enlarged the puncture and sometimes resulted in a tear. Hence the object of a careful printer was to reduce his pinholes to as few as possible. At a very early date the ten pinholes mentioned above had been reduced to four, and in the case of several printers the further reduction from four to two, and the final abandonment of pinholes altogether, form very useful landmarks. Schoeffer appears to have changed from four pinholes to two in the second half of 1474 and to have given them up at the beginning of 1477. Mentelin on the other hand made the first change as early as 1466; the second probably some time in 1473." Pollard, Catalogue of Books Printed in the Fifteenth Century, 4to, London, 1908, p. xiv.
Hand presses now made of iron
press at any time to correct or prevent a noted fault in print. Impression could be varied in any part of the form of type, and more or less ink could be put upon any part of the page. Every part of the press or form of type could be approached with little inconvenience.

Many presses were needed by the first printers, but their very simple construction made them relatively inexpensive. What was deficient in the press and its product had to be supplied by adding to the number of presses and pressmen, and by insisting on a greater show of skill and resourcefulness from the workmen. He was a petty printer who had but one or two presses. The Ripoli Press began its work with seven presses. Koburger of Nuremberg is said to have made use of twenty-three. When the pressmen were skilled, watchful, and had proper materials, and their hearts were in their work, they did well; but if they were unskilled, hurried, or careless, they did their work badly. It was then as it is now, the man more than the press is the factor that produces neat presswork. As a rule the early pressmen did their work with ability.

The hand press now bought and used by amateur bookmakers is much unlike its prototype: the frame is all of iron, three or four times larger, and ten times as powerful, but it is still much inferior in strength and general efficiency to the cylinder printing machine that in turn has supplanted it.

There is a tradition that a press of iron of large size was made in France at the close of the eighteenth century, but the first useful press of iron was devised by Earl Stanhope about the year 1800. It had a platen large enough to cover all the type on its bed, so that one side of the sheet could be perfectly printed at one impression. It secured immediate approval from printers everywhere. Soon after
came other forms of hand press and a useful machine platen press (Adams) of American invention. The cylinder printing machine followed, and by this apparatus books are now swiftly printed on sheets three and four times larger than those of the early press.

The following illustration (plate 41) of Death seizing a compositor and two pressmen, with a bookseller, is from La Grant [sic] Danse Macabre des Hommes et des Femmes, 4to, Lyons, 1499. The certainty of death was a favorite subject for moralists of the fifteenth century, and often appeared in paintings on the walls of convents and churches, as well as in books for the illiterate. This crude representation of the interior of an early printing house and bookseller’s shop cannot be accepted as accurate in detail as to the construction of the early hand press, but it fairly enough suggests its rude joints and its need of upright braces to prevent a waste upward of the purposed downward pressure. It shows also the old inking ball, and the artist’s dim recollection of the case of type and the composing-stick for type-setting.¹

¹ Improvement in construction came slowly. In his prosperous days Christopher Plantin (about 1576) had the platens of his seventeen presses faced with sheet copper to cover the cracks and dents that gradually developed in the beechwood. In 1620 Willem Jansen Blaew, a mathematical instrument maker of Amsterdam, made other reforms in construction that were generally adopted. His most important improvement was the attachment of an iron shaft across and below the bed, with a drum of wood in its center on which were fastened strips or girths of leather that enabled the pressman by the aid of a crank at the end of a shaft to move to and fro with more facility the type on the bed under the platen. In the older form of press the pressman had to shove in and pull out the form of type on the bed to receive or release its impression from the platen by gripping the side of the carriage that held the bed.

Greater productiveness from the press does not seem to have been seriously attempted until near the close of the eighteenth century. The detailed description of a new press was read before the French Academy in 1783, and it was approved by the government. The inventor, M. Anisson le fils, Director of the Imperial Printing House, introduced a bed of sheet copper \(18 \times 22\frac{1}{2}\) pouces, and a platen cased in copper \(19 \times 23\) pouces. (The ponce is \(1\frac{1}{2}\) American inches.) Copper, iron, and steel were freely used in other parts. The press so reconstructed was much larger and stronger, more carefully adjusted and fitted for printing more pages, but it was unavoidably more expensive, and for that reason did not supplant the press of Blaew beyond France. A full description of this new press was published at Paris in 1785, in a quarto of 40 pages, with four large copperplates explaining its mechanism.
Old and new methods of presswork

Critics of authority adjudge the ordinary book printing of our time as mediocre and commonplace, decidedly inferior to that of fair Italian books of the fifteenth century. To a limited extent this judgment is just. Modern presswork does lack the clearness, firmness and blackness then readily obtained in the older book by the use of large type, damp paper, and an elastic impression that often covered not only the face of the types, but a small part of their shoulders, making the shoulders of the letter appear in print really thicker and blacker than was intended by the punch-cutter. The broader surface produced by the spongy impression of a woolen blanket favored a generous display of ink.\(^1\) A page of type on 16- or 18-point body would retain more ink than one on 10-point body; the ink that would appear full black on the larger type would seem gray or feeble on the small type. The scant surface of the platen on the early press favored a closer scrutiny by the pressman of the print it produced. An early notion was that clearness and blackness could be best attained by a “dwell on the bar” — that is, by staying for a few seconds the impression at its maximum, so the ink transferred to paper could be forced not merely upon but below the surface of the pliable paper.

\(^1\) The presswork in incunabula is much less uniformly good than is generally admitted. There is no shorter way of becoming convinced of its deficiencies than to look through a book to find a passage which will yield a satisfactory facsimile, for while it is comparatively easy to make a perfect reproduction of a perfect original, the smallest imperfection is exaggerated at every stage, and the remedy of “touching up” is not one which can safely be employed, except under the most stringent precautions. The difficulty caused by bad presswork is greatly increased by the relentless activity of the rubricator in putting his little stroke or dab of color on every majuscule as it caught his eye. The little dabs of color are nearly always in red, occasionally in yellow, and both red and yellow photograph black! Where the rubricator was heavy-handed, reproduction becomes impossible, and several books may have to be searched through to find a choice of pages where his zeal has flagged and the obscuring color-spots are absent. A considerable choice of pages is almost a necessity, for the specimens to be reproduced will lose all their utility unless they contain all or most of the characteristic letters which distinguish a font as used by one printer from similar fonts in the possession of other firms.” Pollard, Catalogue of Books Printed in the Fifteenth Century, p. xxiii.
Old and new methods of presswork

Critics of authority adjudge the ordinary book printing of our time as mediocre and commonplace, decidedly inferior to that of fair Italian books of the fifteenth century. To a limited extent this judgment is just. Modern presswork does lack the clearness, firmness and blackness then readily obtained in the older book by the use of large type, damp paper, and an elastic impression that often covered not only the face of the types, but a small part of their shoulders, making the shoulders of the letter appear in print really thicker and blacker than was intended by the punch-cutter. The broader surface produced by the spongy impression of a woolen blanket favored a generous display of ink.\(^1\) A page of type on 16- or 18-point body would retain more ink than one on 10-point body; the ink that would appear full black on the larger type would seem gray or feeble on the small type. The scant surface of the platen on the early press favored a closer scrutiny by the pressman of the print it produced. An early notion was that clearness and blackness could be best attained by a “dwell on the bar”—that is, by staying for a few seconds the impression at its maximum, so the ink transferred to paper could be forced not merely upon but below the surface of the pliable paper.

\(^1\) The presswork in incunabula is much less uniformly good than is generally admitted. There is no shorter way of becoming convinced of its deficiencies than to look through a book to find a passage which will yield a satisfactory facsimile, for while it is comparatively easy to make a perfect reproduction of a perfect original, the smallest imperfection is exaggerated at every stage, and the remedy of ‘touching up’ is not one which can safely be employed, except under the most stringent precautions. The difficulty caused by bad presswork is greatly increased by the relentless activity of the rubricator in putting his little stroke or dab of color on every majuscule as it caught his eye. The little dabs of color are nearly always in red, occasionally in yellow, and both red and yellow photograph black! Where the rubricator was heavy-handed, reproduction becomes impossible, and several books may have to be searched through to find a choice of pages where his zeal has flagged and the obscuring color-spots are absent. A considerable choice of pages is almost a necessity, for the specimens to be reproduced will lose all their utility unless they contain all or most of the characteristic letters which distinguish a fount as used by one printer from similar founts in the possession of other firms.” Pollard, Catalogue of Books Printed in the Fifteenth Century, p. xxiii.
Imperfections in modern printing

A comparison is often made unwisely between an old book of the first class and a modern book of the second class, produced under different conditions although by similar mechanical methods. The modern cylinder press takes on its bed from sixteen to thirty-two pages of the ordinary book, which it inks automatically and prints at the rate of seldom less than eight hundred impressions an hour, and sometimes at more speed. With so many pages, and at any high rate of speed, it is impossible for one modern operator to give to the work the unremitting scrutiny that was once required of two pressmen.

Unfit paper is a steady and frequent hindrance. Modern paper is usually machine-made, from wood pulp, nearly always dry, and often harsh, and not so pliable or responsive to impression as is better paper properly dampened. The types of the ordinary modern book of 10-11- or 12-point body are for the most part of light face, and no art of the pressman can make these thin types transfer to paper the blackness easily had from old types of 16-point body. More detrimental to the desired effect of blackness is the required speed of about eight hundred impressions an hour.

Equally unfortunate is the erroneous belief of many authors and publishers that distinctiveness in print can be secured by the use of a new face of type which has marked peculiarities. Perfect printing is not due entirely to perfect types, but the arts of type-making have not degenerated, and modern book types are as a rule properly made. Tools of precision, unknown to early founders, are in daily use in all modern type-foundries. Roman types are now scientifically planned and accurately graded by a system of points that conduce to precision. Engraving, fitting, and casting were never more exact. If some of our recent styles are
not pleasing to the critic, their peculiar features may be traced to the desire of the designer to obtrude his personal conceits, or to his endeavor to please the vitiated taste which demands a letter different from any in use, in the hope that its novelty will captivate a listless reader. Many of these novelties are failures. The types now most approved are those that are simplest, plainest, and most readable.

In the infancy of printing typography was planned as a strictly masculine art. Its types were occasionally rugged; but their sturdiness was pardoned for their great clearness. Typography did not become seriously dainty and feminine before the last century. At that period imitations were attempted of the more delicate features of copperplate and lithography. "Razor-edged hair-lines," as Hansard called them in 1825, extended serifs, and a skeleton structure for Roman lower-case letters were greedily accepted as features of good form by the printers of that period, and this preference has not yet gone entirely out of fashion. One reason for this enduring preference has been the greater facility with which light-faced types are impressed and printed. Thin types give less resistance under impression, and they do not require so much watchfulness from the pressman in his regulation of an even flow of ink. Printing in paler color than is proper too often passes muster and is accepted by publishers and readers. To aid the quick presswork of types of light face, the elastic blanket of wool and its successor, the thick blanket of India rubber, are rarely employed in the modern book printing house, and only on worn types or plates. It is now required that fine impressions shall be against a hard, inelastic cardboard, and that they shall show but little or no mark of indentation on the surface. This can be attained only after a tedious preparatory
Typography most useful with movable letters

leveling of impression by overlays or underlays, so that the
effect intended may be that of the delicate copperplate.

Weak presswork has been made common by the general
use of coated paper for half-tone photo-engravings. The
coated paper is a thin web largely of wood pulp, covered
on each side with a whitewash that gives to it the smooth-
ness and polish of satin, and it is now accepted as the only
proper paper for the finer half-tone illustrations.

Valuable as is the new art of photo-engraving for its
accurate reproduction of pages of old books and prints, it is
not altogether satisfying to bookish men. It is compre-
hensive in application—equally serviceable in the repro-
duction of the sketches or color washes of artists, and now largely
employed in that field by newspapers and magazines, to the
practical destruction of the older art of engraving on wood,
for which there appears no indication of a possible revival.
The collector of old books who admires the boldness, clear-
ness, simplicity, and distinctness of early printing is not
content with the combination of delicate and hazy photo-
engraving with clear-cut founded type, nor with the alliance
in the same book of plain and polished paper. Typography
is strong enough to stand on its own feet; it has proved and
will continue to prove of most service in its earlier function
of expressing thought with movable letters.

Pale print from weak impression has made much of our
modern book work decidedly feminine. This feebleness has
been attributed wrongfully to the type or to the press and
the ink, but the firmness of modern presswork is not now
entirely under the control of author, publisher, or printer.
Book buyers who insist on cheap books support the paper-
maker in asserting incorrectly that his low-grade and hastily
made paper can be treated by the printer to serve the purpose
Defects caused by haste and economy

of the best paper. The artist who designs and the engraver who finishes his illustrations for books claim the right to control the measure of ink and the amount of pressure upon the type surrounding the pictures. They demand that possibilities of merit in an illustration shall be brought out, even if the clearness of type has to be dimmed. Types are subordinated to engravings. The printer has to defer.

The readable printing of old time is not produced now because it is not desired. It is not necessary to examine old books for specimens of really masculine presswork; the good books made in England during the last century by Whittingham and Bulmer, and even by a few printers in America, will as clearly prove by contrast the increasing paleness and effeminated presswork of the ordinary modern book. It is a mistake to assume that typography is now in its dotage and unable to pursue methods that have been approved for centuries, or that it will be improved by imitating all features of beauty and refinement from sister arts that are radically different in theory and practice. The defects of modern print do not come so often from mean type and thin ink as from unfit paper, undue haste, and feeble impression.
AUTHORITIES


BERNARD, AUGUSTE. Histoire de l'Imprimerie Royale du Louvre. 8vo, Paris, 1867.


COPINGER, W. A. Incunablica Biblica. 4to, London, 1892.


DIDOT, AMBROISE FIRMIN-. Alde Manuce et l'Hellénisme à Venise. 8vo, Paris, 1875.

ENSCHEDÉ, CH. Fonderies de Caractères. Folio, Haarlem, 1908.


FUMAGALLI, GIUSEPPE. Lexicon Typographicum Italiae. Dictionnaire géographique d'Italie. 8vo, Florence, 1905.


HAIN, LUDOVICUS. Repertorium Bibliographicum. 2 vols. in 4, 8vo, Stuttgart, 1826–38.


Vol. I (1677) treated of carpenters' and joiners' work.


REED, TALBOT BAINES. A History of the Old English Letter Foundries. 4to, London, 1887.


INDEX
Abbreviations, 149, 150, 178-181, 183; explanations of, 179 (note)
Academy at Venice, 108 (note); reopened by Paul Manutius, 114
Aeluin of York, our lower-case character traceable to, 30, 32
Aldine type. See Italic of Aldus
Aldus Manutius. See Manutius, Aldus
Aleria, Bishop of, editor and corrector for Sweinheim and Pannartz, 44; his letter to Sixtus iv, 44; to Paul ii, 170 (note)
Alexander vi, Pope, and Aldus, 107
Alphabet, Roman, reformers of, 19, 40; methods of manuscript book-makers, 24; the older forms of, 29-32, 40. See also Types
Ambrecht, John, associate of Numeister, 117 (note 1)
American Type Founders’ Company, point system, 153
Anisson le fils, M., inventor of improved hand press, 193 (note)
Anthology printed at Florence (1494), 103
Anthony, St. See Antoninus
Antoninus, St., Confessionale Volgare, edition of the Ripoli Press, 127
Antwerp, Plantin-Moretus Museum at, exhibit of types, 157
Aretimus, De Bello Italiclo, edition of Numeister, 117
Aristotle, edition of Aldus Manutius, 101, 104, 105 (note)
Arnold of Brussels, printer at Naples, 119
Ashendene Press of C. H. St. John Hornby, 40
Augustine, St., City of God, edition of Sweinheim and Pannartz, 42; edition of John and Wendelin of Speyer, 65; edition of Miscromini, 121
Bancon, goldsmith of Florence, 127 (note)
Barbatus, Udalricus. See Hahn, Ulric
Bartholomew di Carlo, printer at Venice, 82
Bartholomew of Cremona, printer at Venice, 82, 173
Bartolo, bookseller of Florence, 127 (note)
Bartua, Petrus de, printer at Venice, 88
Bastard titles, 137, 138. See also Title-pages
Bazalerio, Caligula, printer at Bologna, 128
Benvenuto, goldsmith of Florence, 127 (note)
Besicken, John, printer at Rome, 62
Bible, edition of Sweinheim and Pannartz, 45; edition of Renner, 90, 173 (note); printed in Hebrew, 99; edition of Froshover, 138, 175; edition of Robert Stephens, 173 (note). See also following editions
Bible of Forty-two Lines, price paid for, 17 (note); types of, 18; paper in, 164 (note 2); pinholes in presswork of, 190 (note 2)
Bible, Polyglot, edition of Plantin, 166 (note 1)
Binding of early books, 16, 22, 26 (note), 70, 176
Black-letter, early preference for, 18, 19, 33, 35, 37; present use, 19; how produced, 29, 30; an early form, 31; Jenson’s, 74—76; Torre-
Index

Coddus, Urcues, critic of print, 105 (note)
Cologne, John of. See John of Cologne
Color printing, in Radvolt’s books, 87; early, 81, 162
Composition, devices to compact, 70; solidity, 171; leading, 171, 172; huddling of lines and words, 172; spaces, 172; avoidance of paragraphs, 98, 172, 173 (note); poetry, 173, 184; title-pages, 137–140, 174, 175; paging, catchwords, and signatures, 175, 176; running titles, 176; chapter headings, 176, 177; initials, 173, 177; summaries of chapters, 177, 178; notes, 178; abbreviations, 178–181, 183; ligatures, 179, 180; proper names, 181; ingenuity shown in, 182, 183; trimness and symmetry, 183, 184; inaccuracy, 185; a partnership agreement, 185, 186
Compositors, women as, 182; ingenuity of early, 182, 183
Contractions. See Abbreviations
Copperplate printing, introduction of, in Italy, 45; used in Ptolomy’s Geography, 50, 52; influence on type-founding, 132–136, 154, 155, 197; on presswork, 198
Copyists, Italian, 21, 23, 24; methods of, 24, 26, 29; most Caroline minuscule, 32; practices of, 103, 137, 167, 168, 171, 175–179
Cost Book of Ripoli Press. See Ripoli Press
Counterfeiter, Aldus, Aldus’s protest against, 108
Cronica Pontificium Imperatorum de Lignamine, 56
Cursives, 29, 31, 32
Cylinder press, 193, 196. See also Presswork
Dance of Death, 193
Dante Alighieri, Divine Comedy, edition of the Ashendene Press, 40; edition of Wendelin of Speyer, 70; edition of Aldus, 113; edition of Numeister, 117 (note 1)
Decor Puellarum, book of wrong date, 72
Decoration, early printers avoided profuse, 23, 26, 98, 150, 151; Radvolt’s work, 87. See also Borders, Design, Initials
Demetrius of Crete, Greek letters made by, 103
Design, artistic, in the Sforziada, 28; Mantegna a master of, 113
D’Este, Isabella, patroness of Aldus, 111 (note)
Diagrams, Radvolt’s admirable, 87
Diderot, Ambrose Firmin, 40, 107 (note), 111, 141, 152
Diderot, Pierre, edition of Virgil, 111 (note)
Diphthongs, irregularly used, 24, 150; how they arose, 148; Wendelin’s substitute, 180
Dominic, St., Order of, establishes Ripoli Press, 127
Dominic of Pistoia, manager of the Ripoli Press, 127
Donatus of Swinemund and Pannartz, 37
Duns Scotus. See Scott, Dr. John
Durandus, Gulielmus, edition of the Rprinter, 20
Durer, Albert, his rules for construction of types, 149 (note 2)
Ecclesiastics, encourage printing, 37, 42, 44, 56, 60, 78, 107, 114, 127, 136 (note 2), 170 (note); employed as editors and correctors, 44, 53, 60
Eggstein, Heinrich, printer at Strasburg, 33, 164 (note 2)
Elzevir or Cadmus face, 94 (note)
Elzevir, Daniel, his edition of Livy, 143
Elzevir family, the, 40, 94 (note)
England, introduction of Roman type, 19; reproduction of the Lactantius face of type, 40; good books made in, 199
Engravers. See Passe-partouts
Engravings, wood. See Wood-engraving
Enschedé, John, type-founder at Haarlem, 154 (note)
Erasmus, Desiderius, his explanation of Aldus’s device, 113; his views of correction and annotation, 168, 185
Estienne. See Stephens
Euclid, Geometry, edition of Radvolt, 87
Eusebian Monastery at Rome, 60
Eusebius of Caesarea, Chronicles of, edition of Radvolt, 85, 171; edition of Lavagna, 124
Ey, Albertus de, edition of Ulric Hahn, 54
Fabriano, reputation for paper-making, 110, 111, 166 (note 3)
Facsimiles of early types, often unsatisfactory, 13, 194 (note); kinds of, needed, 14; Black-letter, 18; unequal ability displayed in, 21, 143, 153, 156, 185
Ferdinand I, King of Naples, his approval of Sixtus Riessinger, 119
Fertel, Martin Domini, French printer, 157
Fifteenth-century books, types, 13, 14, 16, 18–20, 24, 34, 137–143, 157; appearance, 15; standards of value, 16; mannerisms, 17, 18; prices paid for to-day, 17 (note); classification, 21, 22; survival of the meritorious, 22; sizes, 22, 23, 70, 96, 105; how regarded by early collectors, 150, 151; time required to produce, 170 (note); sold at low prices, 170 (note); number produced, 181 (see also note); presswork, 194 (note). See also Binding, Illumination, and Types
Fifteenth-century printer and publisher, duties of, 102
Finchesi, P. Vincenzio, his book on the Ripoli Press, 153
Finiguerra, Maso, goldsmith at Florence, 45
Firmi–Didot. See Didot
Flach, Martin, his book of explanations of abbreviations, 179 (note)
Florence, printing done at, 121, 127, 181 (note)
Florentinus, Jacobus Angelus, translator of Ptolomy, 49
Foligno, printing done at, 117
Fortescue, George Knottesford, on the number of incunabula, 181 (note)
Fossi, bibliographer, 127 (note)
Fournier, Pierre-Simon (Fournier le jeune), preferred copperplate to wood-engraving, 133; systematic grading of type sizes first devised by, 152, 157 (see also note 2)
Fraktur, its use in Germany, 19
France, types of, 117, 130–136; leads in printing in the sixteenth century, 134
Franklin, Benjamin, as a type-founder, 154 (note)
Freitag, Andreas, printer at Rome, 62
Froben, John, his small Black-letter, 99
Froschauer, Christopher, printer at Zurich, 138
Fuller, Thomas, quoted, 164 (note 2)
Fust, John, 33 (see also note), 117; mentioned by de Lignamine, 56

206
Index

Gagonin, Robert, quoted, 170 (note)
Gallus. See Hahn, Ulric
Garamond, Claude, ‘father of type-founders,’” 36, 40, 134–136, 156
Gering, Ulric, printer at Paris, 19, 131, 172, 178
German printers in Italy, 33, 35, 62
Germany, Roman types in, 20, 37 (note); invention of printing in, 56, 65, 170 (note)
Giunta, printing association at Florence, imitate Aldus’s Italic, 107
Golden Type of William Morris, 74 (note 1)
Goldsmiths, as punch-cutters, 106, 107, 112, 127 (note); as type-makers, 151, 156
Gothic. See Black-letter and Kunic
Granjon, Robert, type-founder at Lyons, 136 (note 2)
Gratianus, Decretals, 164 (note 2)
Greek manuscripts, irregularities of, 103
Greek types, 103, 104, 111, 150
Gregorii Decretales, edition of Torresano, 81, 162 (see also note), 178, 180, 181
Gronovius (Johann Friedrich Gronov), editor of the Elzevir Livy, 143 (note)
Grotesque or Sans-serif type of England, 28
Guldinbeck, Bartholomew, printer at Rome, 60, 62
Gutenberg, John, 18, 33, 117; mentioned by de Ligna, 56
Hahn, Ulric, printer at Rome, 14, 53, 54, 156; rival of Sweineheim and Pannartz, 42, 45; active as a type-founder, 54; possible connection with Numeister, 117 (note 2)
Hahn, Wolff, printer at Rome, 62
Hand press, mechanism, 187, 188; old method of printing books, 188, 190, 191; points, 190; limitations, 99, 191; merits, 191, 192; now made of iron, 192; improvements made in, 193 (note); followed by Adams press and cylinder press, 193. See also Presswork
Hebrew type of Soncino (1488), 99
Heinsius, Nicolaas, critic of types, 143 (note)
Herbert, John, or John of Belingestad, associate of Jenson, 78, 79, 162 (note)
Herodotus, edition of Rubenso, 92
Herolt, George, printer at Rome, 14, 58, 156
Hieronymi Epistolae, edition of Sweineheim and Pannartz, 44, 45, 170 (note), 180; edition of Andrew Torresano, 81
Holywood, John (Sacrobonosco Anglico), edition of Renne, 90
Homor of Florence, price paid for, 17 (note)
Horbury, C. H. St. John, 40
Hyphen, irregularly used, 24
Hyphenotomachia, edition of Aldus, 113
Illumination, 23, 24, 26, 28, 194 (note)
Imprimerie Royale at Paris (afterward Imprimerie Nationale), 136 (note 1)
Incunabula. See Fifteenth-century books
Initials, illuminated, in the De Oratore of Cicero, 24; engraved, Rubnet’s, 85, 177; de Zanis’s, 98, 173; Renner’s, 98, 133
Italian Gothic type, 70
Itale, of Aldus, 106–110, 112; Garamond, 136
Italy, early prosperity in bookish crafts, 21–24, 26, 33 (note); zeal in typography, 21, 26; printing introduced by Germans, 33, 35, 62; its rapid progress, 34; culminates there with Aldus, 154; type-founding, 34, 53; copper-plate printing introduced, 45; number of books produced in, 181 (see also note)
James, John, founder at London, 154 (note)
Jenson, Nicolas, printer at Venice, types in, 14, 36, 40, 74–76, 81, 82, 87, 99, 124, 136, 143, 148, 150, 151, 180; possible German training, 33; types compared with those of Herolt, 58; of John and Wendelin of Speyer, 66, 74; work at Venice, 72–78; first book, 72; number of books produced by him, 76; partners and allies, 76, 78; merits and honors, 74 (note 1); 78; Torresano his practical successor, 79; his presswork, 75, 76, 112, 161, 162; his engraving compared with copperplate, 132
Jerome, St., Epistles. See Hieronymi Epistolae
John of Cologne, printer at Venice, partnership with Wendelin of Speyer, 68; with John Manthen, 68, 76, 78; with Jenson, 76, 78; discontinuance of activity, 79
John of Mainz, punch-cutter, 127 (note)
John of Seligenstadt, 78, 79, 162 (note)
John of Speyer, printer at Venice, 65, 66; his only Roman font, 66; a competitor of Jenson, 72, 74; his type compared with that of Rubeus, 92; his types, 132, 143
Johnson, Dr. Samuel, his preference for small books, 96
Juvenal’s Satires (1474), 64
Keysere, Peter, printer at Paris, 170 (note)
Koburger, Anthony, printer of Germany, 164 (note 2), 192
Kraft, associate of Numeister, 117 (note 1)
Lacolonge type-founding at Lyons, 136 (note 2)
Lactantius Firmianus, edition of Sweineheim and Pannartz, 17 (note), 37; its type examined, 38, 161
Lactus, Pomponius, corrector for Lauer, 60
Laire, Francois-Xavier, History of the Typographia of Rome, 58, 60
Lauer, George, printer at Rome, 60
Lavagna, Filippo de, associate of Antonio Zanotto, 123; associate of Valdarfer, 124
Le Febvre, critic of types, 143 (note)
Leonincenus, Omnibus, credits Jenson with invention of printing, 74, 75
Libri, Bartholomew de, printer at Florence, 181 (note)
Lignaume, John Philip de, printer at Rome, 56
Literature, lost children of, 17
Livy, edition of John and Wendelin of Speyer, 65, 66, 143, 173 (note); edition of Daniel Elzevir, 143
Logotypes, survivors of graces of penmanship, 148, 179, 180
Luslein, Peter, associate of Radvolta, 87
Lower-case letters, Roman, development of, 30, 31; when first cast, 37; Ulric Hahn’s, 54; Herolt’s, 56. See also Alphabet
Lyrna, Nicolas de, 45; Postils, edition of Ulric Gering, 131, 172, 180
Madden, J. P. A., 33, 37 (note), 72, 170 (note)
Mainz, dispersion of printers from, 33, 37 (note); invention of printing in, 56, 65
Mainz, John of, 127 (note)
Majuscule scripts (quotation of Dr. Taylor), 32
Maler, Bernhard, associate of Radvolta, 87
Mantegna, Benedetto, a master of design, 113

207
Manthen, John, partnership with Wendelin of Speyer, 65; with John of Cologne, 68, 76, 78; with Jenson, 76, 78; discontinuance of activity, 79
Manuscript books, abundant, 22; De Oratore of Cicero, 23; copied by printers, 23, 26, 35, 155; graces of penmanship generally neglected by type-makers, 24, 26, 131, 148–150; methods of making, 24, 29; irregularities of Greek, 103; preference for, 150, 151. See also Illumination
Manutius, Aldus, printer at Venice, 24; small type and small leaf made popular by, 96; early life and marriage, 100, 101; activity as a publisher, 101–105; Greek types, 103, 104, 111; industry as an editor, 104; Italic type, 106–110, 112; introduces small capitals, 106; adopts octavo page, 106 (see also note 2); price of his octavos, 111 (note); protest against counterfeiters, 108 (see also note); Roman types, 40, 111, 112; type-founding his ruling passion, 111; paper used by, 111 (note); presswork, 111; type metal, 112 (note); device, 113; death, 113; successors, 114; removal of his sons to Rome, 62, 107, 114; printing in Italy culminates with, 134
Manutius, Paul, son of Aldus Manutius, published valuable books, 114
Maps, engraving and printing of, 49–52
Marchand, Prosper, cited, 185
Matthias of Olmütz, printer at Naples, 119
Maximil, Peter de, patron of Pannartz, 46
Mellotté, Paul, facsimiles of Garamond’s type, 136; on methods of conducting early printing houses, 135
Mentel, John, printer at Strasbourg, 33; mentioned by de Lignamine, 56; pinholes in presswork of, 191 (note)
Milan, printing done at, 123, 124
Minuscules, Latin, stages in evolution of, 31; Caroline, 21, 30–32. See also Alphabet
Miscomini, Antonio, printer at Venice and Florence, 14, 121, 156
Moravus, Matthias, printer at Naples, 119
Morris, William, Golden Type, 74 (note 1)
Moxon, Joseph, preferred copperplate to wood-engraving, 135; his opinion of old hand press, 187, 190 (note 1)
Müller, John, Calendarium, Ratdolt’s edition, 85
Naples, printing done at, 58, 119
Nicolas of Frankfurt, partner of Renner, 88
Nonpareil type (6-point), made before 1500, 99
Notes, composition of, 64, 81, 94, 131, 172, 178, 180, 181
Numeister, John, printer at Foligno, Albi, and Lyons, 33, 117; his types, 132
Old English type, used in books of devotion, 19
Old-style Antique, type of John of Speyer, 66
Olmütz, Matthias of. See Moravus, Matthias
Opus mallei, a goldsmith’s process, 50
Origenis Proserpin contra Celsum, etc., edition of Herold, 58
Ornament, avoidance of, by early printers, 23, 151. See also Decoration
Orsinis, Emilianus de, associate of Numeister, 117 (see also note 2)
Ovid, edition of Aldus, 111 (note)
Pacciolli of Naples, attempts to give types “divine proportion,” 149 (note 2)
Paganino, Alessandro, printer at Venice, 106 (note 1)
Paleographical Society, MSS. published by, 31
Pannartz, Arnold, his partnership with Conrad Sweinheim, 37–46; partnership dissolved, 46, 49; his last type, 46. See also Sweinheim and Pannartz
Paper, size of sheets, 22, 23, 49; cheapness in fifteenth century, 22, 170; sized and unsized, 52, 111 (note), 164, 165; small leaf made popular by Aldus, 96; use by Aldus, 111 (note); use in the Far East, 163; satin, 163; cotton, 163, 165; linen, 164, 166; sizing, 164; “laid,” 164 (note 2); different qualities of, 164 (note 2), 168, 169; grass and wood, 165; vellum and parchment, 163, 166; kinds supplied to early Italian printers, 166; deckle or ragged edges, 166–168; hand-made and its imitations, 166–170; inferior printing produced by inferior, 168, 196; examined by German experts, 169; tests by presswork needed, 170; unif, 196, 199; coated, 198
Paragraphe, early neglect of, 98, 172, 173 (note); method of indicating, 174, 175
Paravisinus of Milan, Greek grammar printed by, 103
Paris, Jenson’s connection with, 72; connection of Torresano, 79; graceful Roman types first appeared in, 134
Partnership, summary of an agreement, 186
Paterbonis, Mapheus de, associate of Torresano, 79
Paul II, Pope, patron of printing, 170 (note)
Penmanship, Italian, delicate of, 24, 88
Perrin, Louis, printer at Lyons, 136 (note 2)
Peter, John, type-maker at Florence, 33
Peter of Pisa, associate of Dominic of Pistoia, 127
Petrarch (Francesco Petrarca), his handwriting model for Aldus’s Italic, 106, 110
Petrus de Bartua, associate of Renner, 88
Pflügl, Leonard, associate of Lauer, 60
Phalaridis Epistole, edition of Sixtus Riessinger, 119 (see also note)
Photo-engraving, influence on printing, 198, 199
Pinson, William, introduces Roman type into England, 19
Pistoia. See Dominic of Pistoia
Pius iv, Pope, patron of printing, 114
Plancx, Stephan, Hahn’s successor, 62
Plantin, Christopher, uses a Granjon style of type, 136 (note 2); edition of Polyglot Bible, 166 (note 1); improves his presses, 193 (note)
Platina, Bartholomew, corrector for Lauer, 60
Pliny (Ca'ius Plinius Secundus), Natural History, edition of John and Wendelin of Speyer, 65
Plutarch’s Lives, edition of de Zanis, 98, 99, 155, 173 (see also note), 174 (note)
Poetry, composition of, 94, 173, 184
Point, a modern unit of measure for types, 38 (note), 152, 153
Pollard, Alfred, William, quoted, 168, 181 (note), 182 (note), 184 (note 2), 191 (note)
Polyphilus, Reveries of, Aldus’s engagement, 113
Presswork, 159, 161; color printing, 161, 162; black or pale print, 161, 162; red ink, 162; tests by, to prove adaptability of paper, 170; output, 182 (note), 188, 190, 196; old method, 188, 190, 191, 194; use of pinholes, 190 (see also note 2), 191; the factor that
produces neat, 192; in incubacula, 194
(note); present-day methods, 194, 196–199;
influence of copperplate printing on, 198. See also Aldus, Jenson, Renner, Torresano
Prévost, Jacques, commends Jenson types, 78
Printing, early, 17, 18, 21; brought to Italy
by Germans, 33, 35, 62; rapid progress in
Italy, 34; Jenson wrongly credited with inven-
tion, 75; no lack of mechanical skill in,
102; editorial ability needed, 103; culmi-
nates in Italy with Aldus, 134; leadership of
France, 154; low in the artistic scale, 159;
separation from type-founding, 156. See also
Composition, Copperplate printing, Presswork, Type-founding, Typography
Printing houses, in Rome, 60; in Venice, 92;
methods of conducting early, 185, 186
Printing ink, experience in presswork needed
in compounding, 159; constituents in early,
160; compounding of, now a separate trade,
161; compounding of colored, 162; leather
balls used in inking, 162
Proof-reading, 185
Proper names, lack of uniformity in spelling,
181
Psalter of 1457, price paid for, 17 (note)
Ptolomy’s Geography, edition of Schweinheim,
46, 49–52
Punch-cutters, goldsmiths as, 106, 107, 112,
127 (note); Raibolini, 106, 107, 112; John of
Mainz, 127 (note). See also Type-founders
Punch-cutting, 66, 151, 153–155; compression
in, 96. See also Type-founding
Quadragesimale de penitentia, edition of Ren-
er, 88, 133
Quintilian, edition of Jenson, 74, 75, 148, 161,
173 (note)
R printer, his Roman type, 20; at Strasbourg, 33
Raibolini, Francesco, goldsmith and punch-
cutter at Venice, 106, 107, 112
Rarity a standard of value, 16
Ratdolt, Erhard, printer at Venice, 30, 40, 45–87;
superiority as a type-founder, 14, 87 (see
also note), 151, 155, 156; engraved borders
and initials, 85; color printing, 87, 98; Black-
letter type, 99; Roman types, 111, 134, 156;
everning compared with copperplate, 132;
capitals, 171
‘Real character,’ 19
Redgrave, Charles T., commends Ratdolt’s type-
founding, 87
Reference marks, 64, 131, 173
Reinhard, John, printer at Rome, 62
Renner, Franz, printer at Venice, 14, 26, 40,
88–90, 155; most characteristic type, 88, 134,
151; large Roman, 90, 156; Latin Bible in
Gothic type, 90, 173 (note); engraved initials,
98, 133; Black-letter type, 99; presswork,
112; engraving compared with copperplate,
132, 133
Richel, Bernhard, printer of Basle, 164 (note 2)
Riessinger, Sixtus, printer at Naples, 58, 119
Ripoli Press, printing house at Florence, 121,
127; Cost Book of, 150, 160, 166, 182; names
and prices of metals used in type-founding of,
153; ingredients of ink used by, 169; papers
used by, 166; presses used by, 192
Roman type, preference for, 19, 29, 35; intro-
duction into England, 19; disapproved in
Germany, 20; faces and bodies of, 21, 69;
why so named, 30; resisted by Black-letter,
32; disadvantages of, 25, 36, 75; first cast at
monastery of Subiaco, 37; efforts to improve
face, 40; Caslon face, 40, 136, 140; compre-
sion of, 69, 99; reconstruction of, 134; Gas-
mond’s, 136; Granjon’s, 136 (note 2); Jen-
sen’s, 14, 75, 76, 148; John of Speyer’s, 66;
Miscomini’s, 121; Ratdolt’s, 111, 134, 156;
Renner’s, 90, 156; Zaratotto’s, 28, 124
Rome, types of, 37–84; printing houses at,
69; production of its printers, 62
Rood, Theodore, printer at Oxford, 78
Rot, Adam, printer at Rome, 62
Rubeus, Jacob, printer at Venice, 64, 92
Runic or Gothic type of America, 28
Running titles, 173, 174, 176
Rustic capitals, 29, 31
Sacrobosco, Johannes de, or John Holywood, 90
Sans-serif type, 28
Santander, Charles-Antoine La Serna de, 65
Sardini, on Jenson’s productivity, 76
Schoeffer, Peter, printer at Mainz, 33; edition
of Cicero’s De Officiis, 172; pinholes in press-
work, 191 (note)
School-books, 22, 37, 87, 103, 127
Schott, John, German printer in Italy, 33
Schurener, John, printer at Rome, 62
Scott, Dr. John, Four Books of Sentences, edi-
tion of Wendelin of Speyer, 69, 70, 181;
Third Book of Sentences, edition of Jenson, 76
Scotus, John Duns. See Scott, Dr. John
Selingenstadt, John of, associate of Jenson,
78, 79, 162 (note)
Semigothic type, 34; of Ulric Gering, 19; of
the R printer, 20
Semiroman type, 34; of Ulric Hahn, 54
Sforzziada, edition of Antonio Zarotto, 26 (see
also note), 28, 124 (note)
Shakespeare, First and Third Folios, price paid
for, 17 (note)
Signs, medical and astronomical, 150
Silber, Eucharius, printer at Rome, 62
Silius Italicus, Caius, edition of de Tortis, 94,
172, 173, 180
Simonetta, Giovanni, Sforziada, edition of An-
tonio Zarotto, 26 (note), 124 (note)
Sixtus iv, his approval of Schweinheim and Pan-
nartz, 44; patron of de Lignamine, 56; commended Jenson, 78
Size of early books, 22, 23, 44, 49, 69, 70, 81,
96, 105, 106 (see also note), 140
Sizes of types. See Types
Small capitals, introduced by Aldus, 106
Soneino, Girolamo, issues imitated edition of
Aldus’s Virgil, 107
Soneino, its famous Bible, 99
Sophostogium, edition of the R printer, 37 (note)
Sprey, early practice of printing, 65
Stanhope, Charles, third Earl, his press, 192
Statius, Publius Papinius, edition of Aldus,
108–110, 112
Statuta et Decretum Communis Genuae, edition
of Caligula Bazalerio, 128
Stephan, associate of Numeister, 117 (note 1)
Stephens, Robert, edition of Bible, 173 (note)
Stephens family, the, 40
Stol, John, printer at Paris, 170 (note)
Subiaco, monastery of, Roman lower-case first
cast there by Schweinheim and Pannartz, 37
Index

Summa Oratorium Omnum, edition of Ulric Hahn, 54

Superiors, 64, 70, 131, 173

Sweinheim, Conrad, his partnership with Arnold Pannartz, 37–46; punch-cutting, 45, 46, 50, 52, 132; capitals, 52; Arabic figures, 52, 150; neat work on Ptolemy’s Geography, 49, 50, 52; associated with Bucking, 49–52. See also Sweinheim and Pannartz

Sweinheim and Pannartz, printers at Subiaco and Rome, Roman lower-case first cast by, 37; their types examined, 37, 38, 42, 44, 143; list of books published by, 44, 45; their corrector, 44, 185; failure at Rome, 44, 69. See also Pannartz, Arnold, and Sweinheim, Conrad

Table-work, approved, 85

Taylor, Dr. Isaac, The Alphabet, quoted, 30–32

Theocritus, texts of, consulted by Aldus, 104

Thesaurus of Aldus, extract from preface, 105

Theseus and the Minotaur, an early Italian woodcut, 98, 173

Thomas Aquinas, St., Questiones de Veritate, edition of Pannartz, 46. See also Scott

Time required to produce written and printed books, 170 (note)

Title-pages, development of, 137–140, 174, 175

Torresano, Andrew, praise of Jenson, 78; publisher at Venice, 79–81; presswork, 81, 113, 162 (note); connection with Aldus, 101; death, 114

Tortis, Baptista de, printer at Venice, 94–96, 143, 172, 173, 178, 180

Tory, Geoffrey, 40, 149 (note 2); his influence on Claude Garamond, 136 (note 1)

Trot, Bartholomew, counterfeiter of Aldus’s Virgil, 108

Turrecremata, Johannes de, Meditations, edition of Ulric Hahn, 53, 54; edition of Nu- meister, 117 (note 2)

Type-founders, neglect graces of penmanship, 24, 26, 131, 148–150; masters, 40; goldsmiths as, 151, 156

Type-founding, in Italy, 34–36; casting of first Roman lower-case, 37; early deficiency, 40, 42, 157; increased skill in, 94; Aldus’s ruling passion, 111; influence of copperplate printing on, 132–136, 154, 155, 197; improvements of Garamond and Granjon, 134–136; in Laeolonge foundry, 136 (note 2); manipulations required, 147; type-casting, 147, 155, 157; simplicity of design favored, 148; Dürer’s rules, 149 (note 2); no record of experiments with types, 151, 152; systematic grading of sizes, 152, 153; mold-making, 152; metals used in, 112 (note), 153; cheapening of methods and materials, 154; vogue of light and bold faces, 155; its honor roll, 156; tools in use to-day, 196

Types of early books, 13, 14, 16, 18–29, 24, 34, 35; meritorious, 14; sizes of, 21, 54, 59, 99, 137–141, 155; manuscript letters copied, 23, 24, 35, 155; adherence to established forms, 28; manufacture in Italy, 34, 35; crudity, 40, 143; legibility, 66; Hebrew, 99; Greek, 103, 104, 150; critics of, 143 (note); discretion needed in designing, 149; provision of characters, 149 (note 1), 180; ‘divine proportion,’ 149 (note 2); Dürer’s rules for construction of, 149 (note 2); experimental, 152; ruggedness, 153, 154 (see also note); exhibit at Antwerp, 157; inking, 160, 161; a safe guide in determining pater- nity of books, 181 (note); of modern book, 196, 197; feminine, 197. See also Black-letter, Caslon, Ezelvier, Fraktur, Frac-sc, Golden, Grotesque, Italian Gothic, Italic, Nonpareil, Old English, Old-style Antique, Point, Roman, Rome, Runic, Semigothic, Semiroman, Venice, and under names of printers

Typography, Italy’s zeal in, 21, 26; limitations of, 26; beauty and accuracy of Italian, 33 (note); profit from, 34; reputed cradles of, 65; feminine style of, 133, 197–199; imperfections in, 196; cause of defects, 154 (note), 168, 199; most useful with movable letters, 198; influence of photo-engraving, 198, 199. See also Printing

Uncials, 29, 31, 32

Valdarfer, Christopher, printer at Venice and Milan, 17 (note), 124

Valla, Laurentius, de Lignamine’s edition, 56

Van Dijck, Christopher, type-founder, 40, 136

Vatican, printing house of the, 136 (note 2)

Venice, types of, 65–115, 121; inducements to printers, 72; editions printed at, 181

Vindomaries, Ant. Maria, at Bologna, 128

Virgil, or Vergil (Publius Vergilius Maro), price paid for Aldus’s edition, 17 (note); edition of Bartholomew of Cremona, 82, 173; edition of Aldus in Italian type, 106, 112; edition of Pierre Didot, 111 (note)

‘Visual alphabet,’’ 19

Vitré, Antoine, quoted, 136 (note 1)

Walker, Emery, engraver of type, 40

Wendelin of Speyer, printer at Venice, 65, 68–70, 181; partnership with John of Cologne and John Manthen, 68, 76; types, 70, 132, 143; a competitor of Jenson, 72, 75

White-letter, resisted by Black-letter, 32. See also Roman type

Whittingham, Charles, Caslon style revived by, 40; masculine presswork of, 199

Wila, Wendelinus de, at Rome, 64

Wilkins, John, his ‘real character,’’ 19

Women as compositors, 182

Wood-engraving, early Italian, 87, 98, 112, 173; new style introduced at Florence, 133; follows introduction of copperplate printing, 154; superseded by photo-engraving, 198

Zainer, Gunther, printer of Germany, 164 (note 2)

Zanis, Bartholomew de, early user of smaller type, 96, 143, 155; at Venice, 98, 99; wood-engraving, 98, 173 (see also note), 174 (note)

Zarotto, Antonio, printer at Milan, 26, 28, 123, 124; agreement between him and his associates, 123, 185, 186

Zenobi, bookseller of Florence, 127
Notable Printers of Italy During the Fifteenth Century