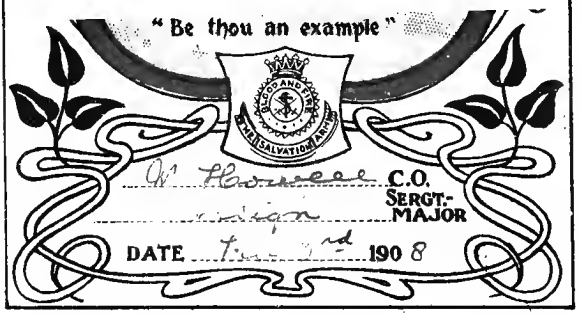
The Triumphs of the Printing Press

WALTER JERROLD



CAXTON SHOWING THE FIRST PROOF SHEET TO THE ABBOT OF WESTMINSTER.

1. Earl Rivers.
2. William Caxton.
3. The Abbot (John Esteney).
4. Wynkyn de Worde.

THE TRIUMPHS

OF

THE PRINTING PRESS

BY

WALTER JERROLD

AUTHOR OF "ELECTRICIANS AND THEIR MARVELS;"
"MICHAEL FARADAY: MAN OF SCIENCE;" ETC.

"Hereby tongues are known, knowledge groweth, judgment increaseth, books are dispersed, the Scripture is read, stones be opened, the times compared, truth discerned, falsehood detected and with finger pointed, and all (as I said) through the benefit of printing."—FOXE'S *Book of Martyrs.*

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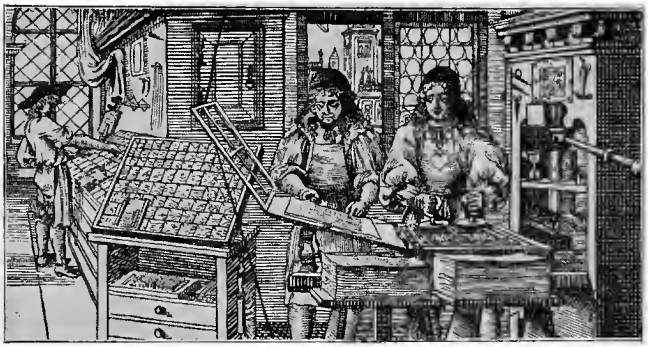


AN OLD PRINTING OFFICE.

PREFACE.

IT is a remarkable thing, as a French writer has pointed out, that the only art which can record all others should, practically, have forgotten to record its own history. The story of the invention and rise of the most potent factor in the spread of knowledge —one might almost say in the development of civilization—is marked by all too many gaps and surmises. Its origin, although so recent, is yet wrapped more or less in impenetrable mystery. The very name of the man to whom the world owes the art of printing cannot be decided with absolute certainty. It is generally agreed that the weight of evidence is in favour of Gutenberg as the inventor, and Mentz as the city in which he laboured to so good a purpose. This, the view most often accepted by

the typographical students, is the one which I have taken in this small volume.

The book, however, does not pretend to be in any sense a full record of the work which has developed from the discovery of the mid-fifteenth century; such full record would manifestly be impossible within the limits of a small volume, despite the scantiness of materials about some of the more interesting periods in the growth of the Printing Press. For, although printing has not troubled properly and connectedly to record its own development, there is yet a great wealth of varied materials concerned with its "triumphs." From among these I have chosen such portions as shall show the growth of the art, from the simple types and plain wooden press of the time of Gutenberg, up to the present day, when steam machinery works many thousand times as quickly as did the old hand-presses; when, indeed, the very art of printing from movable types appears likely to give way to a later development, in which the printing is almost directly done from the matrices themselves.

It will be noticed by the reader of the following chapters how few are the details which have come down to us of the lives of those men who are most intimately connected with the "triumphs" dealt with —Gutenberg, Caxton, Wynkyn de Worde, Aldus, Elzevir. Of these men and several others we would gladly learn much; we would like to know what manner of men they were, what lives they led, and what their contemporaries thought of them. The fifteenth and sixteenth centuries were not, however,

egotistical as the nineteenth, and no "memoirs," "reminiscences," "recollections," and such-like books, were issued either by notable men themselves, or, as nowadays, by those who had merely known the notable men. But if details of how these men lived are wanting, the evidence that they did live, and lived to good purpose, is plentiful. They are known to us by their works.

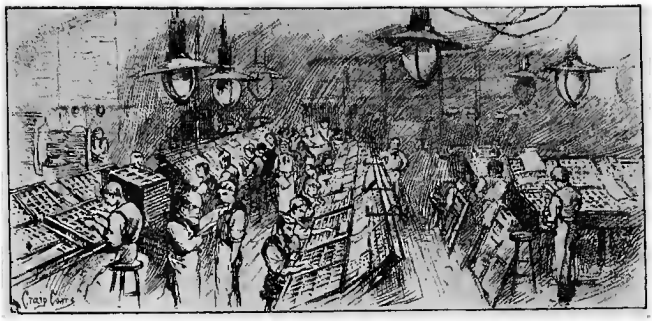
To deal at all fully with the developments of the printing press would require several volumes of this size, and all that has been attempted is to present, so far as is possible, sketches of the lives of some of those most prominently concerned in that development, along with brief mention of the kind of work to which they owe their fame; and also briefly to indicate the extraordinary progress which has been made during the present century, since the invention of the steam printing press. So great has been this progress, that printing is now carried on in quarters of the globe which, within comparatively recent years, were quite untouched by Western Civilization. To-day, indeed, the printing press may be said to have carried its triumphs into every corner of the world, and to be employed in the service of nearly all languages. Indeed, in some countries, native compositors are employed in setting up the type for English newspapers, although wholly unacquainted with the English tongue—and such compositors do their work too, I am told, with extraordinary accuracy. I learn from Mr. E. P. Nuttall, of the *Daily Telegraph*, who long edited an English paper in Japan, that it was so there; and Dr. Richard Garnett, of the British

Museum, tells me of a South African English newspaper in which the editor apologised for any errors of the press which might have occurred, owing to the matter having been entirely composed by Hottentots!

It may, perhaps, be of interest here, to mention several notable men of letters who have also been at one time in their lives practically connected with the printing press. Benjamin Franklin was brought up as a printer, and exercised the craft both in America and in London. Samuel Richardson, the author of *Clarissa Harlowe*, *Sir Charles Grandison*, and other celebrated eighteenth-century novels, was a practical printer. Honorè Balzac, the great French novelist, was at one time a printer. And Douglas Jerrold, after a brief period as midshipman in the navy, served an apprenticeship to a printer, and was, while struggling into the literary world, successively a compositor and printers' reader.

"The true University of these days is a Collection of Books," said Thomas Carlyle, and this small volume briefly tells of the growth of the art which makes it possible for us all to have such a University in our own homes. A further passage from Carlyle's writings may fitly close these prefatory notes. Printing he described as "this noble art, which is like an infinitely intensated organ of Speech, whereby the Voice of a small transitory man may reach not only through all earthly Space, but through all earthly Time."

WALTER JERROLD.



A MODERN PRINTING OFFICE.

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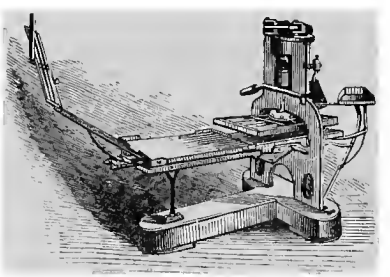


THE TRIUMPHS
OF
THE PRINTING PRESS.

CHAPTER I.

WHAT IS PRINTING?—MANUSCRIPT BOOKS—BLOCK-BOOKS—THE RIVAL "INVENTORS."

"That is an immense change, that one fact of Printed Books."
—CARLYLE.

ALTHOUGH at the present day printing is generally understood to be the art by which books such as this are prepared, the term really applies to the act or process of impressing letters, characters, or figures, on paper, cloth, or any other material. There are, indeed, various kinds of printing, more or less intimately connected with the art of bookmaking.

For example, some ancient nations understood the craft in a limited manner, and it was practised in Europe for some considerable time before the middle

of the fifteenth century, when the wonderful discovery was made which, more than any other single event in the world's history, may be said to have worked a revolution. The discovery is wonderful, looking at its results, but when we come to learn how much of printing was known *before* the invention of movable types, it seems so wonderfully simple that we may well be astounded at its not having been found earlier. Printing, as we deal with it here, is the art of taking many impressions off the inked surface of raised letters or types, which, having been once used, can be separated and re-set again many times. The term printing can, of course, be used with much wider significance; for example, in the taking of impressions of engraved pictures. Photography, too, has been called "sun-printing"; that is, taking the picture or impression of any given object by means of the sun's action. Here, however, we are concerned with printing as the art by which this book which I am now writing may be reproduced many times over, and may thus be read by a large number of persons who wish to learn something about the triumphs of the printing press.

And "triumphs" they assuredly are, which have been effected by this agency. We have only to recall the fact that before the middle of the fifteenth century all books existed only in manuscript, and that any king or rich nobleman who wanted a copy of the Bible, or of any of the famous works of the ancients, had to employ a scribe to copy it for him. The preparation of these copies was, it may be imagined, a lengthy and a costly matter. One

monk—the scribes were mostly monks, ordinary folk being unable to write—would sometimes devote years to the copying of one book. Writing itself, too, was then a much more laborious work than it is to-day. The letters were much larger than those which we generally employ, and they were mostly completed, each letter by itself, instead of being run one into another in whole words, as we write them nowadays. So long did many of these manuscript books take in their preparation, that no expenditure was considered too great in beautifying them. Gorgeously painted and gilded, or "illuminated," as they are called, initial letters began each page or division of the work; while a small fortune was sometimes spent in decorating the covers. Books, then, were treasures in more than a literary or transcendental sense. They formed no inconsiderable portion of the property of their fortunate owners, and were jealously guarded accordingly. Indeed, a story is told that on one occasion, when the King of France, Louis XI., was desirous of borrowing a book from the Faculty of Medicine at Paris, that body would not allow the king to have it until he had deposited a quantity of valuable plate in pledge for it, and had also given a joint bond with one of his nobles guaranteeing the safe return of the precious volume.

The mere purchasing of a book in those "good old days" was in itself a serious matter, to be entered upon with due solemnity; and, further, the transaction was duly certified in a formidable receipt such as the following one, which is dated 1332.

"*Jeffry* of *St. Liger*, one of the Clergy-Men Booksellers, and so qualified, acknowledges and confesses to have sold, ceded, quitted and transported; and sells, cedes, quits, and transports upon Mortgage of all & sundry his Goods, & the Custody of his own Body, a Book entitled *Speculum Historiale in Consuetudines* Parisienses, divided and bound up in Four Volumes, covered with redd Leather, to a Nobleman, Messire *Girard* of *Montagne*, Advocate to the King in Parliament, for the Sum of 40 Livres of *Paris;* whereof the said Bookseller holds himself well content and paid."

Yet one more example of the value which was placed upon these manuscript volumes may be given in the following passage from a letter, which a certain lover of books named Panorme wrote to Alphonsus, King of Naples and Sicily: "You wrote lately to me from *Florence*, That the Works of *Titus Livius* are there to be sold in very handsome Books; and that the price of each Book is 120 Crowns of Gold. Therefore, I intreat your Majesty, that you cause buy for us *Livius*, whom we use to call *The King of Books*, and cause it to be sent hither to us. I shall in the meantime procure the Money, which I am to give for the Price of the Book. One thing I want to know of Prudence, Whether I or *Pognis* have done best: He, that he might buy a Country-House near *Florence*, sold *Livius*, which he had writ in a very fair Hand: and I, for to purchase *Livius*, have expos'd a Piece of Land to Sale. Your Goodness and Modesty have encouraged me to ask these Things with Familiarity of you. Farewel & triumph."

Towards the close of the fourteenth and in the early part of the fifteenth century, the revival of learning, which is known as the Renaissance or re-birth, caused a very considerable demand for books, and out of that demand the invention of printing may be said almost naturally to have sprung. In all the countries of Europe, men of wealth and of learning were seeking to possess themselves of copies of famous works written by ancient authors. One of the best known of these collectors of manuscript books in England was Richard de Bury, who wrote a delightful little work, which he entitled, *Philobiblon: a Treatise of the Love of Books.* This little treatise the worthy book-lover completed shortly before his death, which occurred rather more than a century before the invention of that art which was destined to increase the world's book-lovers by hundreds of thousands. Richard de Bury waxes eloquent over the power possessed by books, at a time when a volume, as we have seen, was a valued rarity only duplicated at the expense of much time, patience, and money. All that has been written in praise of books by poets and authors would more than fill the pages of this small work, and pleasant as it would be to transfer some of the *Philobiblon's* golden sentences to my pages, I must content myself with one short passage: "The library of wisdom is more precious than all riches, and nothing that can be wished for is worthy to be compared with it. Whosoever, therefore, acknowledges himself to be a zealous follower of truth, of happiness, of wisdom, of

science, or even of the faith, must of necessity make himself a lover of books." Even in these present days, when truly it may be said that "of making many books there is no end," too many people are prone to get their volumes by any means rather than by purchase, and for them we may quote from the third chapter of the *Philobiblon*, entitled, "Books ought always to be bought, except in two cases," wherein the worthy old Bishop of Durham says, "that no expense ought to prevent men from buying books when what is demanded for them is at their command, unless the knavery of the seller is to be withstood, or a better opportunity of purchasing is expected."

The Renaissance received in a measure its vivifying impulse, if Hallam is to be believed, from the poet

> "Petrarch pale,
> From whose brain-lighted heart were thrown
> A thousand thoughts beneath the sun,
> Each lucid with the name of one."

"The first real restorer of polite letters," says Hallam, in his *Literature of Europe in the Middle Ages*, "was Petrarch. His fine taste taught him to relish the beauties of Virgil and Cicero, and his ardent praises of them inspired his compatriots with a desire for classical knowledge. . . . It has been thought by some, that but for his appearance and influence at that period, the manuscripts themselves would have perished, as several had done in no long time before; so forgotten and abandoned to dust and vermin were those precious records in the dungeons

of monasteries." The taste and discrimination of one man thus gave rise to a widespread interest in "the New Learning," and during the latter part of the fourteenth and early part of the fifteenth centuries the movement grew with ever increasing rapidity. Monarchs, noblemen, and students vied with one another in rescuing, and having copied, old manuscripts from the corners in which they had long lain neglected. This new impulse made the scribes' work profitable for a time, and is no doubt responsible for the efforts at rapid multiplication of books, which were finally crowned in 1455 by the publication of the first grand product of the printing press, as perfected by the use of movable types, and by the discovery of the method for rapidly multiplying these by moulding them in a matrix, instead of cutting separately by hand each letter employed.

It is not necessary here to recall the various methods which have been employed by mankind, in different ages and in different parts of the world, to keep their records. Ancient Egyptian hieroglyphic writings on papyrus and on stone are familiar to most; other ancient nations cut into blocks of clay the writings which they wished to preserve; then—a great advance—came parchment made from the skins of animals, on which writing could be made and kept for a long while; and then, in the tenth century, it is said, came a significant forerunner of the modern art of printing, in the very important discovery of how to make paper out of old rags. Block-printing, too, was a notable step forward. This was the carving of pictures and, later, of words

on flat blocks of wood, and then taking off impressions from the inked surface. These books, so laboriously prepared, never exceeded a few leaves in size, but were reprinted many times during the first half of the fifteenth century. Italy, Germany, and Holland, each claims to be the first European country in which block-printing was practised, but in this matter, the Chinese really seem to have been far ahead of Western peoples, for it is said that both they and their Japanese neighbours had practised block-printing for centuries before it was heard of in Europe. In the tenth century, the Chinese canonical books were engraved, printed, and sold throughout the empire. Chinese records of block-printing go back, it is said, even as far as the sixth century of our era. Marco Polo, the celebrated traveller, who returned from his long wanderings in Asia in the year 1295, refers to these Oriental block-books. The earliest recorded use of this method of printing in Europe is in the ninth century, when it is known that figures of saints were designed and multiplied in this fashion. The next step was in the engraving of playing-cards upon wood; printing from these is recorded in Germany as early as 1376, but the very earliest block book of which anything is known in Europe, is dated 1423 (see fac-simile wood-cut on opposite page). A somewhat doubtful story is told, however, which, if true, places this use of the art of engraving nearly a century and a half earlier. It is said that a brother and sister named Cunio, who lived in Venice, in 1284, carved on wood the pages of a small book, dealing with the heroic

actions of Alexander the Great. The work is supposed to have consisted of woodcuts of eight large paintings made by Alessandro Alberino Cunio and his sister Isabella, which they reduced in size, and carved with explanatory reading matter, and printed to give to their friends. No copy of the

ST. CHRISTOPHER CARRYING THE INFANT SAVIOUR.
The earliest recorded specimen of Block-Printing.

book is in existence, and opinions are divided as to the authenticity of the story.

Early in the fifteenth century, then, we see that the block-printing of books was becoming known and practised in Europe. First efforts were, however, chiefly devoted to making the books consist

mainly of pictures. Many difficulties stood in the way, as may be supposed, of cutting out a whole page of letterpress; it would have taken much more time than writing, and the demand for impressions of it would, in those days, have been small indeed. The earliest existing book of the kind is *The Poor Man's Bible*, which consists of a series of rude wood-cuts, with a few words of text. Before we come to consider the discovery of printing from movable types, and the claims of the rival discoveries, it may be interesting to notice the following story, by which it will be seen that the Chinese claim also to have been the original users of the movable types for printing. "In the period of King-li, one of the people, a blacksmith named Pi-ching, invented another manner of printing with *ho-pan*, or tablets formed of movable types. He took of a fine and glutinous earth, which he formed into plates, and engraved on them the characters most in use. Each character was a type. These he burnt in the fire, to harden them, and then placed them upon a table of sheet iron, coated with a fusible gum composed of resin, wax, and lime. When he wished to print, he took a frame of iron, divided interiorly and perpendicularly by strips of the same metal; and having laid it on the sheet coated with gum, inserted the types, placing them one close against the other. Each frame, when filled, formed a tablet. This was brought near the fire, to make the gum melt, after which a level piece of wood was pressed forcibly on the surface of the types, and pushed them down into the gum, by which means they became firm and even as a stone."

MATTHEW.

IN tho daies ioon baptiſt cam & prechid in the deſert of iudee & ſeide/ do ye penaunce for the kyngdom of heuenes ſchal nyz/ for this is he of whom it is ſeid bi Iſaie the profete ſeiynge/ a vois of a crier in deſert/ make ye redi the weyes of the lord/ make ye riyt the pathis of hym/ and this Ioon hadde clothing of camels heris/ and a girdil of ſkyn aboute his leendis/ & his mete was hony ſoukis and hony of the wode.

Thanne ieruſalem wente out to hym and al iudee/ & al the cuntre aboute iordan/ & thei werun waiſchen of hym in iordan/ & knowlechiden her ſynnes.

But he ſiz many of fariſees & of ſaduces comynge to his baptem/ and ſeide to hem/ generaciouns of eddris/ who ſchewid to you to

A PAGE FROM THE "POOR MAN'S BIBLE"

We thus see that printing of a sort was known and practised in Europe, and had been employed for a very long period in the far east of Asia, to multiply some of the writings for which there was the most widespread demand. Obviously only those works which could be completed in a very few pages, and of which, comparatively speaking, many copies would be required, could be printed in the manner which was employed, that—as we have seen, of literally cutting out, or engraving, the whole page of writing, and taking impressions from it. This, as some of the authorities point out, can scarcely be looked upon as printing, in the sense in which we use the word when we talk of the triumphs of the printing press. While it necessitated the engraving of whole pages at a time, the usefulness of the art was necessarily confined within very narrow limits. When we speak of printing, we generally mean typography, or the art of printing from *movable* types. The character of typography, as Dr. Van der Linde has insisted, is not in the taking of impressions, but in the "mobilization" of the letters. The phrase is an admirable one; for just as soldiers, scattered higgledy-piggledy, without any controlling spirit, are but of little value, so the scattered letters of the alphabet are only a potential power. Mobilization takes place, and as under the guiding spirit of an Alexander, a Cæsar, or a Napoleon, the soldiers are irresistible, so with the types, which, "mobilized" in the printing office, are issued therefrom as poems, stories, treatises, to conquer the realms of human thought. *The*

discovery which caused as great a revolution in the world as any which history records was, of course, this of type which was capable of being "mobilized." The inventor or discoverer surely deserved well of his generation, and deserves that his memory should continue to be honoured by all succeeding generations, which in an ever-greater degree reap the benefit of the art which he started upon its conquering way.

Who then was this man? and when and where did he make this remarkable discovery? These are simple questions to ask, and yet the asking of them puts us face to face with a problem which some persons consider still unsettled, while some consider it settled in one way and some in another. "The name of the inventor of printing, and the date of his invention," says Lord Macaulay, "are both unknown." Most authorities will tell us that the name of the inventor is John Gutenberg, of Mentz, and that the date is 1450. Others will tell us that the man was Laurens Coster, of Haarlem, and the date more than a decade earlier. Rather more than a quarter of a century ago quite a war of words was waged on this very subject. The evidence, however, in favour of the so-called Haarlem inventor is of the flimsiest, while that adduced in favour of Gutenberg is so far conclusive, that it is to him most people agree that we should do honour as the inventor of printing. In our next chapter, when we come to the story of Gutenberg's life, we shall have more to say of his rival claimant, and of the men whose assistance made it possible for the inventor to perfect his invention and to bring it into practical use.

Here it may be of interest to read the earliest historical reference to Gutenberg as the inventor, a reference made but little more than a quarter of a century after his death, in the *Cologne Chronicle* in 1499. The article was entitled, "When, where, and by whom was found out the unspeakably useful art of printing books?" and the passage of special interest in this connection runs as follows:

"This highly valuable art was discovered first of all in Germany, at Mentz on the Rhine. And it is a great honour to the German nation that such ingenious men are found among them. And it took place about the year of our Lord 1440, and from this time until the year 1450, the art, and what is connected with it, was being investigated. And in the year of our Lord 1450 it was a golden year, and they began to print, and the first book they printed was the Bible in Latin; it was printed in a large letter, resembling the letter with which at present missals are printed. Although the art, as has been said, was discovered at Mentz, in the manner as it is now generally used, yet the first prefiguration was found in the Netherlands, in the *Donatuses*, which were printed there before that time. And from these *Donatuses* the beginning of the said art was taken, and it was invented in a manner much more masterly and subtile than this, and became more and more ingenious. One named Omnibonus, wrote in a preface to the book called Quinctilianus, and in some other books too, that a Walloon from France, named Nicol. Jenson, discovered first of all this masterly art; but that is untrue, for there are those

still alive who testify that books were printed at Venice before Nicol. Jenson came there and began to cut and make letters. But the first inventor of printing was a citizen of Mentz, born at Strasburg, and named Junker Johan Gutenberg. From Mentz the art was introduced first of all into Cologne, then into Strasburg, and afterward into Venice. The origin and process of the art was told me verbally by the honourable Master Ulrich Zell, of Hanau, still printer at Cologne, anno 1499, and by whom the said art came to Cologne."

Such an account would satisfy most persons, unless overwhelming evidence could be brought against it, and this certainly cannot be done in favour of Laurens Coster.

In an old pamphlet published in 1660, under the title of *The London Printers Lamentation, or, the Press oppprest, and overprest*, there occurs the following account of the beginnings of the art of printing. The anonymous writer, after pointing out all the known ancient methods of making records, continues as follows: "But at the length, this vast expence of Time and paines enforced men's wits (by a cogent necessity) to enquire into, and search out the more occult and secret Mysteries of Art, for their better convenience and communication of their Writings: And thereupon, by the blessing of Almighty God, upon the study and industry of *John Cuthenburge*, the rare and incomparable mystery and science of Printing of Books was invented, and practized at *Mentz* in *Germany*, above 200 years agone: And soon after that Art was brought over into *England*

by one *William Caxton*, a Worshipfull Mercer of the famous City of *London*, and there put in use with meritorious approbation of the Religious and Virtuous King *Henry* the sixth, and all the Estates of this Kingdome. Since which time (being about 220 years elapsed) that ingenious Mystery, splendour of Art, and propagatrix of Knowledge hath been duely countenanced and encouraged with so much favour and respect of all our *English* Princes, that it is by laudable succession of time, arrived at that exquisite perfection, as we now see it in itself. For true is the Character of a Printer, to wit

> "In one dayes time a Printer will Print more,
> Than one man Write could in a Year before."

CHAPTER II.

THE "INVENTOR" OF PRINTING—JOHN GUTENBERG.

"Praise and Prayer were the first voices of the press. The press ought ever to be proud of it."—LAMARTINE.

DESPITE all the efforts which have been made to displace John Gutenberg from a high place in our regard, as the inventor to whose industry and skill we owe the printing press, he yet retains that position in the judgment of most of those specialists who have examined the evidence brought forward in support of Coster of Haarlem, which was briefly referred to in the preceding chapter. Who was the actual discoverer of the practicability of printing from movable types, is a question which it is now impossible finally to decide. All that can be said is that the weight of evidence is so much in favour of Gutenberg that we are perfectly justified in regarding him as the discoverer, until some more conclusive testimony can be brought forward in favour of another.

Several stories of a more or less mythical nature have sprung up around the invention of printing. Laurens Coster, say some of the supporters of the claims of the Haarlem tallow-chandler, was shortly before his death walking in a wood near his native

town, cutting letters on the bark of the beech trees, to amuse his brother's children. He noticed that the sap from the wounded bark made marks upon paper, and was so led to the idea of making wooden types for books. He cut out some of these types and, tying them together with string, succeeded in printing from them. The tellers of this fable—it may reasonably be doubted if it be anything better—go on to add that Coster printed several small tracts in this manner, by pressing the sheets of paper upon the surface of the type, thus printing on one side only (as the Japanese do at this day), and then pasting the two sheets together. Other versions of the same tale say that Coster was doing the cutting to amuse his grandchildren, but the whole evidence which has been adduced in favour of the Dutchman is of a most contradictory character. Inventive Germans, not to be behindhand in the matter of story telling, and crediting the invention to the wrong person, say that printing was first suggested to Faust—Gutenberg's partner, as we shall see a little later on—by his noticing the hoof marks of a horse in the soft mud of a road along which he was walking!

To come now to Gutenberg, the man whose invention was to revolutionise the world, we shall find that there are contradictory reports as to *where* he perfected the new "art and mystery." It is certain that he was born at Mentz, but the date of his birth is doubtful; it was somewhere between 1393 and 1400, although some German biographers hazard a definite date and confidently name it as 1399. His father, Friels Gensfleisch, belonged to a noble family

of the city of Mentz, and his mother was Else zum Gutenberg. It may be noted in passing that *gensfleisch* means "gooseflesh," and that it has been

JOHN GUTENBERG.

pointed out as a curious circumstance that the man should be so named whose work was to supersede the goose-quill then employed by the monkish scribes,

Gensfleisch, however, the inventor did not call himself. His mother was the last representative of her family, and a German custom in such circumstances permitted a woman's son to take her name instead of that of his father.

Very scanty indeed are the facts which have come down to us with respect to the early life of Gutenberg. Of his bringing up and education we learn nothing. Early in the fifteenth century a good deal of violence was directed by the lower classes of his native city against those of higher rank. The trouble became so great that in 1420 we find Gutenberg, then a young man of little over twenty, quitting Mentz and taking up his abode in Strasburg. It is true that some years later he was free to return, but he did not do so for a long time, as we shall presently see. Nothing definite then is known of Gutenberg's youth, and but very little about his early manhood. One or two incidents during his stay at Strasburg point to his possessing considerable wealth. One of these is worthy of mention. The city of Mentz had to pay the exiled Gutenberg a certain yearly sum of money, failing which he was at liberty to have certain of the authorities arrested; and, indeed, the money having been long overdue, he did so arrest one of the Mentz city officials who happened to be visiting Strasburg. However, Gutenberg proved placable, and not only let the arrested man go free, but was sufficiently well off to be able to afford to forgive the city of Mentz the debt owing to him. It has been suggested that, among other things, he was a goldsmith, but his occupation and position are both

shrouded in mystery, upon which the research of many biographers has hitherto failed to throw any real light.

The first definite information which history gives us about the man, whose whole life-story we should like so much to know, is that in 1436 an action for breach of promise of marrying was brought against him by Anne zur Eisernen Thür (Anne of the Iron Door). Here, again, history tantalisingly gives us a scrap of information, and leaves us to guess at the next step in our hero's career. Gutenberg, according to some writers, lost his action, while others say that the suit was withdrawn, and that a marriage subsequently took place between the parties to the action.

Again conjecture has to take the place of properly ascertained facts. It is said by some authorities—it must be confessed that they are but few—that Gutenberg had, by 1438, so far perfected the discovery of printing, by means of movable types, that he then printed certain books from them in the city of Strasburg. The statement is made and upheld by those partisans who wish to claim for the town of Strasburg the honour of being the place where printing was first practised. The evidence adduced in favour of this theory is very flimsy indeed. No existing example of type-printing executed at that early date can be produced, and on this, one critic pertinently asks, parodying the well-known lines about Peter Piper, "If John Gutenberg printed books at Strasburg, where are the books printed at Strasburg, which Gutenberg did so print?" No

answer can be given to the question, and the most that can, with any degree of certainty of its truth, be acknowledged, is that probably Gutenberg had had awakened within him a desire to discover some rapid method of multiplying the manuscripts for which a steady demand was arising all over Europe.

It is of course impossible definitely to say when Gutenberg began to ponder over his invention; he may have spent many years over experiments before he finally discovered it, or the idea of typography may have come to him as a happy thought. The year which is generally associated with the invention is 1440, but the upholders of the Strasburg theory claim on the evidence of a lawsuit, brought against Gutenberg in 1439, that he had already proceeded far with, if he had not already completed, his discovery before then. The lawsuit was one brought by the friends of a man who had been Gutenberg's partner, and who had recently died. The evidence in the case is so indefinite in the expressions used by the many witnesses, that the reader cannot really determine what the business was in which the partners were occupied. They appear to have been concerned in the polishing of mirrors—a profitable undertaking at that time—and further to have been engaged in some indefinite inventions, which may, or may not, have been connected with printing. The plaintiffs in the case against Gutenberg wished to force him by law to take one of them as successor to his deceased partner. The judgment of the court was, however, in favour of the defendant.

After this second case we learn nothing definite

about the movements of our hero for a period of ten years, and then, as we shall shortly see, we find him re-established in his native city of Mentz. The actual date of his return is not known, but it is conjectured that the years between 1438 and 1448 were spent, whether at Strasburg or at Mentz, in experiments destined to end in the establishing of the new typographical art, with which, so long as books exist, his name will always be associated.

The next truly authentic item of information which we have about Gutenberg is that, in 1448, he was again at Mentz, and that he then borrowed, through the kindly offices of a relative, a sum of one hundred and fifty guilders for the furthering of his experiments. His work must assuredly have progressed far by this time, for inventors do not as a rule find it easy to raise money to help forward any merely indefinite scheme in which they may happen to be concerned. Gutenberg, we may well suppose, was able to show that the work upon which he was engaged was at least no illusory idea, but a really practical thing likely to have far reaching and profitable consequences.

A couple of years later still the work may be said, so far as Gutenberg was concerned, to have been completed. The labour of years had been brought to a most successful issue, and the discovery of a method of printing from movable types was a really accomplished fact.

A good many stories, mostly of an apocryphal nature, have gathered around the work of the inventor—he is said, for example, in the enthusiasm

of the moment, to have melted his drinking cup for type-metal—but these stories probably owe their origin to the imagination of biographers, who have found it difficult to build up their works out of wholly authentic materials. Before continuing the history of the art, it may be interesting to quote what is *supposed* to be an account given by the great printer himself, of a dream which he experienced immediately after having perfected his wonderful invention.

"I heard," Gutenberg is reported to have said, "two voices which were unknown to me; each voice had a different tone, and each voice spoke in turns to my soul. One voice said to me 'Rejoice, John, thou art immortal! from this time forth shall all knowledge be spread by means of thee over the world. Nations which are thousands of miles distant from thee, which are strangers to the thoughts, opinions, and ideas of the people of thy country, shall read and understand thoughts that are yet to come into existence, but which shall in future times spread and be reproduced by means of thee and by thy invention, as rapidly as the bright flames spread during a great fire. Rejoice, John, thy name is immortal! because thou art the interpreter for whom the nations are waiting before they can exchange ideas and information, and commune and confer with one another. Thou art immortal, because thy invention will bestow immortality upon the works of genius, which otherwise would remain unknown and be forgotten; and the gratitude which genius will show thee, in return for thy gift, will be to make

the name immortal of him by whom genius is made immortal.'

"The voice became silent, leaving me filled with ecstatic joy, produced by the prospect of fame and glory.

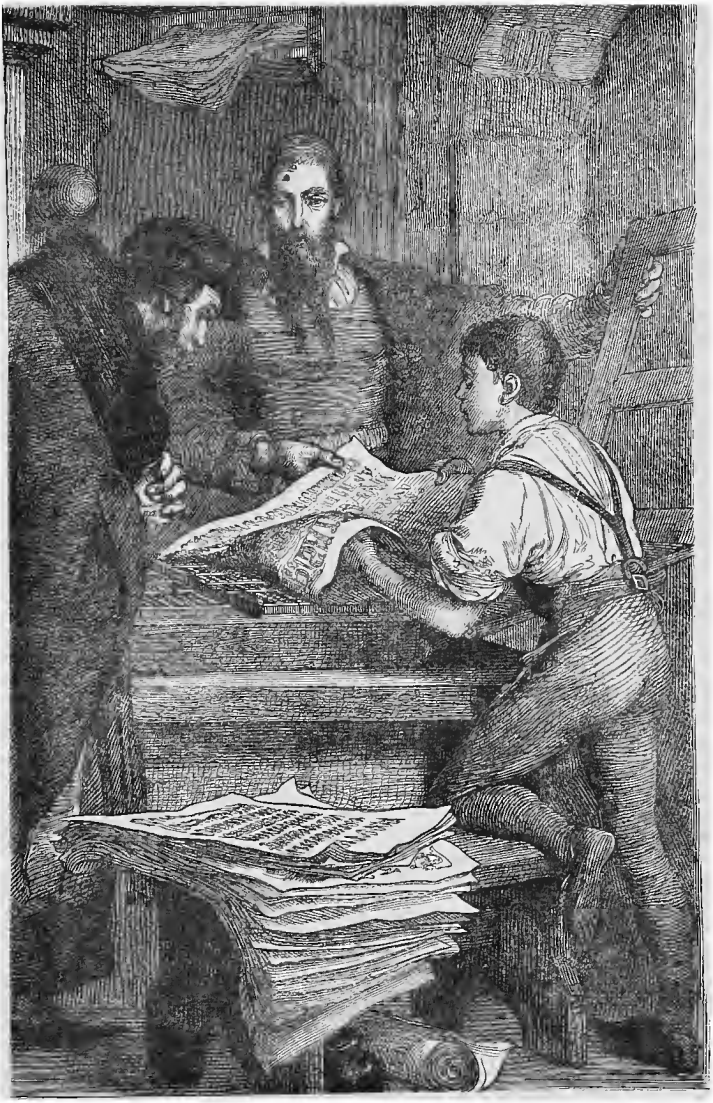
"Then I heard another voice that said: 'Yes, John, thy name will be immortal! but at what a price! Are the thoughts and opinions of thy fellow-creatures always so holy and pure, that they are worthy of being presented to the eyes, and uttered in the ears of the human race? Are not many of these thoughts and opinions—perhaps the greater part of them—such as deserve rather to be suppressed, and to remain unknown, than to be repeated and circulated over the world? Mankind are more frequently perverse than wise and good. Man will make a profane use of thy gift; he will make a bad use of the new sense with which, as it were, thou wilt endue him. During many a century thou shalt be cursed, instead of blessed, by many people. There will be men who will have minds that will be attractive by their strength and intellectual power; but the hearts of these men will be proud and corrupt. Without thy invention, they would otherwise remain in obscurity, and would be confined to a small circle, doing evil only to those around them, and during their own lives. By means of thy invention, they will cause an increase of madness, misfortunes, and crimes among mankind during all future ages. Think of the number of souls that will be polluted by the corruption of one soul. Young people will become demoralized and perverted by the poison

which their minds will extract and receive from the pages of bad books. Young girls will become immodest and unbelieving, and will be unfeeling to the poor, owing to the evil influence of the contents of the pages which will have poisoned their minds. Behold, mothers will weep and mourn on account of the misconduct of their sons, and fathers will feel ashamed and blush on account of the evil behaviour of their daughters. John, will not immortality be too dearly obtained, which will cause such tears and anguish? Wilt thou purchase glory at such a price? Dost thou not dread the responsibility which will weigh upon thee? Believe me, and live as though thy invention were never made. Look upon thy invention as an attractive, but highly dangerous dream, which, if it were really to take place and be fulfilled, would be useful, and would advance the cause of righteousness and holiness, in the case only of mankind being good; but mankind are evil; and to lend arms to the wicked, would it not be to partake of their guilt?

"I awoke in a state of mental agony caused by doubts. I hesitated for a short time concerning that which I ought to do; but the thought came into my mind, that the gifts of God, though often put to a bad use and perverted by sinners, are never evil, and that I should open a more extensive field for the exercise of intellect and virtue—both of which are divine attributes—if I were to furnish another instrument to aid reason, and to promote the glorious liberty of mankind. I continued to go on with my invention."

By 1450, as we have seen, the contrivance of printing by means of movable types was an accomplished fact. In that year, Gutenberg had the good fortune to find a fellow citizen of Mentz, who was not only sufficiently discerning to see the value of the new invention, but was also rich enough to find ample means for putting it into actual practice. This citizen was Johan (John) Faust, or Fust, and in August of this year, 1450, he and Gutenberg entered into partnership, forming the very first firm of typographical printers. Gutenberg was, by means of this alliance with a capitalist, enabled to largely increase his stock of types, and to start upon printing his first important book. A couple of years later than this, in 1452, one of the men employed by Gutenberg and Faust, Schœffer by name, had a happy idea, by which the progress of the art of printing was considerably accelerated; this was the discovery of what are known as the punch and matrix. Gutenberg's types are said by some writers to have been cast in moulds, made of plaster of Paris, but Schœffer invented the better system, by which the type was originally cut on the end of a piece of hard metal (the punch), which was used to impress another piece of metal known as the matrix, and in that impression the type actually used in printing was cast. At the incidents in the careers of Faust and Schœffer we shall glance in our next chapter; here we are more directly concerned with the original inventor himself, John Gutenberg.

Within three or four years after his joining with Faust, Gutenberg is supposed to have printed



GUTENBERG SHOWING FAUST A SPECIMEN OF HIS EARLY PRINTING.

several small works; but no proof of this is known, except in the case of two or three "indulgences" granted by the Pope to all persons who should support the war against the Turks, and similar movements. These "indulgences" were printed by Gutenberg in 1454 and 1455; but, during these years, he and his partner were busy pushing forward such a great work as was to startle the whole cultured world of the time. The first really important undertaking of the new press was the printing of the entire Bible in two large folio volumes. The historian Hallam, in his *Literature of Europe in the Middle Ages*, commenting upon this fact, says in an oft-quoted passage, "It is a very striking circumstance, that the high-minded inventors of this great art tried at the very outset so bold a flight as the printing an entire Bible, and executed it with astonishing success. It was Minerva leaping on earth in her divine strength and radiant armour, ready at the moment of her nativity to subdue and destroy her enemies."

This great Bible was completed by 1455, in two volumes of 324 and 317 pages respectively; each page being set in two columns of forty-two lines apiece. The ink with which it was printed is supposed to have been made of soot and gum. This magnificent work, the appropriate first-fruit of the new invention, was entirely lost sight of for a long period, until about the middle of last century, when a copy of it was found at Paris, in the library of the Cardinal Mazarin. From this circumstance, this edition is often spoken of by collectors as the Mazarin Bible;

it is also known as the "forty-two line Bible," from its being printed, as mentioned above, in forty-two lines to the page. Of this Bible at the present day no fewer than sixteen copies are known to exist, seven of them being printed on vellum and nine of them on paper.

The completion of the Bible was, of course, a great work; it put the hall-mark of success, so to speak, on the Mentz citizen's happy discovery. Printing by movable types was proved by demonstration to be not only possible, but to be a much cheaper method of producing books than by the old laborious work of the monkish copyists. To have written a single copy of the Bible by hand would have entailed a long period of continual labour by the scribe engaged, but Gutenberg and his partner had produced a great number of copies, "as clear as hand-writing," in a comparatively short period, and, of course, at a very much smaller cost. "We may see in imagination," says Hallam of this first printed Bible, "this venerable and splendid volume, leading up the crowded myriads of its followers, and imploring, as it were, a blessing on the new art, by dedicating its first-fruits to the service of Heaven."

It is to be regretted that we should have to chronicle, at the very moment of Gutenberg's success, a dispute between him and his partner Faust, which ended in breaking off the partnership, and in Faust being left in possession of the printing establishment and all the materials for carrying on the newly discovered art. It is impossible at the present day to say quite how it was that friction arose between

the partners, but from what is known of the law-suit that took place, it seems to have occurred in respect of the repayment of the money which Faust advanced to Gutenberg, to permit of his establishing, on a practical basis, the world's first printing house. Poor Gutenberg! as we have seen, his life is largely known to us through the records of the law-courts, but it is painful to find that, after vindicating his new art, he should have been "robbed of all the fruit of his exertions during many years, at the moment that it was ripe to be gathered."

Ousted by the stern voice of the law from his old place, he was but little daunted, and immediately looked about him for a second capitalist. Such a person he met in Dr. Conrad Humery, and with him he immediately began to work again, and to set up another press. The preparation of this, and the founding of new type, occupied some time, and it is not until 1460 that we find Gutenberg's second volume published. This was a fine *Catholicon of Balbi*, a work which, apart from its interest as one of the earliest specimens of the art of typography, is of especial interest to us here as containing Gutenberg's own statement of his position as inventor of the art of typographical printing. In the same year Gutenberg also published the *Clementine Constitutions*, part of the canon law. Before and after this date he may have issued from his second press some smaller works, but as a number of books of the time were published without any date or any record of their place of issue, it is often

difficult to ascertain to whose credit they should be placed.

"Gutenberg sank into obscurity, even amidst the blaze which he had kindled." All that we know of his later years is that in 1464 Adolph, Archbishop of Mentz, admitted him to his court as one of his "gentlemen," and that he died before 1468. This latter fact is ascertained by the following statement made by Dr. Humery, on February 24th of that year:

"I, Conrad Humery, Doctor, acknowledge by this letter that . . . Adolph, Archbishop of Mentz, had given me a great many formes, types, instruments, tools, and other things connected with printing, which Johan Gutenberg left when he died, and which have been my property and still are; that I have bound and bind myself by this letter to use those formes and instruments only for printing within Mentz, and nowhere else; if I had occasion to sell them, and a citizen were willing to give me as much for them as a stranger, I shall give the preference to an inhabitant of Mentz."

The last clause in the Doctor's letter is amusing, for while he evidently wishes to display a patriotic preference for the welfare of Mentz, he goes on to show that that preference would soon be overridden by a higher bid from a stranger.

We have seen that Gutenberg is the man whom the world has agreed to honour as the inventor of printing from movable types, and that, so far as the truth is now definitely ascertainable, the world is probably right in its decision. Some critics, jealous

of the honour of the rival claimant, declare that the idea of printing was gained by Gutenberg from studying the Dutch *Donatuses*, which were nothing more nor less than block-books. The claim is manifestly ridiculous. It is as though the discoverer of a clay field should claim to be the inventor of the art of making bricks. Dr. Van der Linde, who was briefly quoted on an earlier page, has written a book against what he calls *The Haarlem Legend*, and in it he speaks with some scorn of the claims that have been put forward on behalf of the Dutch merchant. The book is, of course, one that appeals only to the student taking a deep interest in the matter, who is prepared to read all the voluminous writings which have been put forward on both sides. Here, where we are concerned with a broader survey of the triumph of the printing press, we have not occasion to go into all the critical minutiæ put forward on behalf of either claimant, but must be content in doing honour, as the majority of students have done, to Gutenberg as the originator of the great art of printing. Before closing this chapter, it may not be amiss to quote a couple of passages from Van der Linde's brightly-written volume. "In Gutenberg's mind," says his Dutch supporter, "the grand idea arose that all words, all writing, all language, all human thoughts, could be expressed by a small number, a score, of different letters arranged according to the requirements; that, with a large quantity of those different signs, united to one whole, a whole page of text could be printed at once, and repeating this process continually, large manuscripts

could swiftly be multiplied in as great a number as was wanted. *This thought, this idea, begot the invention of typography.*"

Later on, in criticising the statement of Ulrich Zell (see page 25), Van der Linde convincingly shows how different was printing as invented by Gutenberg, and as previously used in the block-books. "Granted," he says, "that Zell's explanation of printing by 'Dutch' *Donatuses* is perfectly correct, then these *Donatuses* stand in the same relation as the traditional apple stands to Newton's theory, as the dancing lid of the kettle with boiling water to the discovery of steam. But a statue to a gardener who shakes a fruit tree empty, or to an honest girl who brings the tea-kettle into the room, would be, notwithstanding the universal importance of gravitation and steam, a somewhat foolish whim."

In 1837 Mentz erected, at the cost of 25,000 florins, a fine monument to Gutenberg, from a design by Thorwaldsen, one of the very first of modern sculptors. The simple inscription on it records how this statue was erected by the people of Mentz, with the concurrence of the whole of Europe.

And now we must take leave of John Gutenberg, and proceed to learn what work was done by his colleagues and his immediate successors, and how his newly invented art and mystery of printing has grown, so that at the present time news which was disseminated in the slowest fashion by word of mouth, is now placed each day, for the price of

STATUE OF GUTENBERG AT MENTZ.

one penny, in the homes of tens of thousands of people. And we cannot better bid farewell to the noble inventor than by repeating an "epigram," written in 1499 at Heidelberg, by one Wimpfeling:—

"Blessed Gensfleisch! Through you Germany reaps glory everywhere: for you, Johannes, supported by divine knowledge, printed first of all with letters of metal. Religion, the wisdom of Greece, the language of the Latins, is much indebted to you."

CHAPTER III.

JOHN FAUST—PETER SCHŒFFER.

"The mightiest engine of the human intellect, the great leveller of power, the Demiurgus of the moral world—the Press."

BULWER LYTTON.

WE come now to the other members of the "grand typographical triumvirate."

The origin of printing is, as has already been seen, not very clearly known, and although an overwhelming balance of the evidence is in favour of Gutenberg, still there are not wanting champions of the cause of the Dutchman Coster. The difficulty of finally deciding as to the authorship of the invention is considerably increased by our knowing so very little of the lives of the men concerned in controlling "the mightiest engine of the human intellect," during its earliest years. Of John Gutenberg history affords us but the briefest glimpses; and of the men with whom he was associated we know but little, if any, more. John Faust, or Fust, with whom he had entered into partnership, was a wealthy goldsmith, banker, and money-lender, of about his own age—somewhere, that is to say, between fifty and sixty. Of Faust's life, up to the time of his entering into partnership with Gutenberg, but little is known, and

it does not really concern us here. In 1455, as we learned in the preceding chapter, Faust brought an action against his partner for the recovery of interest on the moneys advanced to forward their joint concern in the new printing business. Gutenberg, as we have also already seen, lost this case, and Faust, as their agreement permitted him to do, took possession of the greater part of the printing-house stock, and, in partnership with Peter Schœffer, continued the business.

This Schœffer is the man to whom we are said to owe the invention of casting types in a matrix, formed by a punch of hard metal, with the letter to be cast cut upon it. Schœffer, who was born at Gernsheim in 1430, is variously spoken of as Faust's son-in-law and grandson-in-law. He was probably the latter, for one authority definitely states that John Faust married in 1420, that his son Conrad married in 1445, and that *his* daughter Christina married Peter Schœffer in 1465. If Schœffer invented the method of casting type in a matrix, as is generally believed, in 1452, he must have been a sharp young apprentice to the new art and mystery, and well worthy of the advancement which befell him. Some writers affirm that he did not make his happy invention until after the completion of the Gutenberg-Faust Bible, which they further suppose to have been printed from hand-cut types.

A romantic story which is told in connection with Schœffer's invention may well find a place here. It may be that it is but one of the many pleasant fictions which surround the new art, but it is such

a pretty little piece of romance as one would like to believe a veritable scrap of history. It is said that the apprentice had become deeply attached to Faust's only child (or grandchild) Christina, but, as a mere apprentice, did not dare to avow his passion. He therefore toiled night and day to perfect the notion which he had, that so he might strengthen his position in the printing house, and at the same time

JOHN FAUST.

his chances as a suitor for the hand of the fair Christina. "Love inspired his efforts," says one narrator of the story, "and we may imagine the trembling eagerness with which he looked forward to the day when, if successful in the discovery so dear to his master's heart, he might venture to press his suit. At length, having cut *matrices* for the whole alphabet (this seems to show the story as a not very clever fiction, for it was the punches which were cut, to impress softer metal, so as to form the

matrices), he showed Faust the letters made from these moulds; and we may conjecture that Christina was no indifferent spectator when, in the moment of exultation at seeing his vague ideas made a reality, her father embraced his apprentice, calling him his

PETER SCHŒFFER.

son. Schœffer was shortly after united to Christina; and that love was no impediment to industry is proved by the fact that the celebrated Psalter was published so early as the year 1457." This, again, does not tally in date with the statement that Schœffer married in 1465.

Schœffer, having been instructed in all that pertained to the art of typographical printing by the

inventor of that art, was of course just the man to act as chief assistant to, and later a partner with, John Faust. Together they produced a number of works, notable among them being the Psalter mentioned in the previous paragraph, and worthy of special note as being the first book printed with a complete date. Indeed, until the middle of last century, when the first copy of Gutenberg's Bible was found in the library of Cardinal Mazarin, at Paris, this Psalter was looked upon as the first-fruit of the printing press. Next in importance to this Psalter is a fine edition of the Bible, which Faust and Schœffer completed by 1460. The knowledge of the new art cannot have become very widely disseminated, for tradition says that Faust took several copies of this edition of the Bible to Paris, where he disposed of them at various prices as though they had been written by hand. When written by hand, such a large volume as a complete Bible took a very long time to produce, and the price it fetched was of course a high one. About the time of which we are writing, this price was as much as 750 crowns, but Faust, with a number of copies, sold some of them at what were then looked upon as ridiculously low prices, going indeed so low as thirty crowns. Superstition, which the printing press has done so much to banish, was then a very important factor even in civilized life, and suspicions were aroused that Faust could not possibly have obtained such a number of manuscript Bibles, and be able to sell them at such ridiculous figures, unless he were in league with the devil. He was promptly arrested

and cast into prison, and was only set free again on explaining that the books were not written, but printed by a new and remarkable method. This explanation, and the fact that there was already Gutenberg's rival establishment, would probably have been sufficient to widen the sphere of the new art, despite the oaths of secrecy under which all the workpeople are said to have been at first employed. But a yet more potent means of spreading a knowledge of printing was at hand. In 1462, during the squabbles of the rival Archbishops of Mentz, the town was sacked, and Faust's house and printing materials were destroyed.

Despite this reverse, Faust and Schœffer re-set up their printing establishment, and in 1465 published the first edition of the work of any Latin author, in *de Officiis* of Cicero. This was a significant publication, when we come to learn how eager during succeeding years became the desire to recover and print everything of the ancient classics that was then recoverable.

When the fourth centenary celebrations in connection with the invention of printing were being carried out, sixty years ago, Gernsheim, the birthplace of Peter Schœffer, raised a statue to the memory of the youngest of "the grand typographical triumvirate." And, indeed, some writers would have us believe that too much honour has been done to the memory of Schœffer, that he was no more to be credited with the improvement on Gutenberg's invention than were Faust and Gutenberg themselves. Schœffer has, however, long re-

ceived such credit, and no real evidence has been brought forward to prove it undeserved. One writer, a supporter of the Coster legend, who ignores even Gutenberg's name, celebrated Faust and Schœffer in verse close upon two hundred years ago:

> "Faustus, a German (happy by his name),
> Grudg'd here no cost or charge for printing's fame.
> Coster and he first wooden letters made
> By untaught ways, and diff'ring forms they laid.
> Nile's fertile banks the paper did bring forth,
> (And then new books became of newer worth.)
> The cuttlefish's blood as ink prepared,
> And this impress'd, the letters straight appear'd.
> But still the thus fix'd types could never bring
> A change of this unto a diff'ring thing.
> Schœffer, the most ingenious of his art,
> By his engraving acts a nobler part,
> And, Phœnix-like, from wooden ashes brings
> The matrice—parent of succeeding things—
> In which the letters punch'd they quickly made
> Millions of helpers to this new-born trade."

The writer evidently depended, as a wit has put it, upon his imagination for his facts. He seems to show—for his verse is none of the clearest—that Coster and Faust "first wooden letters made" by the cutting of block-books, for

> "The thus fix'd types could never bring
> A change of this unto a diff'ring thing."

How wrong this is we have already seen. The making the first printers dependent upon "cuttle-fishe's blood" for their ink is ingenious and amusing. The old lines serve to show, however, how very vague and inaccurate is much which has been written of the beginnings of this noble art.

CHAPTER IV.

THE FATHER OF ENGLISH PRINTING—WILLIAM CAXTON.

"O ALBION! still thy gratitude confess
To Caxton, founder of the British Press;
Since first thy mountains rose, or rivers flow'd,
Who on thine isles so rich a boon bestow'd?
Yet stands the chapel in yon Gothic shrine,
Where wrought the father of our English line;
Our art was hailed from Kingdoms far abroad,
And cherish'd in the hallow'd house of God;
From which we learn the homage it receiv'd,
And how our sires its heavenly birth believ'd;
Each printer hence, howe'er unblest his walls,
E'en to this day his house a Chapel calls."

—JOHN M'CREERY.

IT is only fitting that a chapter of this little book should be devoted to the life and work of the man who set up the first printing press in England, and whose name is probably in many English people's minds that which is most intimately associated with the history of the origin of printing. If, however, we learn that William Caxton was not the inventor of printing, we must not, therefore, think he does not merit the position which fame has accorded him. He certainly does merit that fame, as we shall see, for he, a middle-aged merchant, fully recognised the value of the new art, and set to work with much

labour and expense to learn its mysteries, so that his native country, from which he had long been absent, might be no less fortunate than some of those on the Continent in possessing this ready means of multiplying books.

It is curious to find that the memory of this worthy citizen was long neglected in England, and that a really wide-spread interest in him and his work was only aroused when attention was specially drawn to his name, by the falling down, in 1845, of the printing house in which he had laboured three hundred and fifty years earlier. A lively interest was then taken in Caxton, and this was considerably strengthened when the four-hundredth anniversary of the introduction of printing into England was celebrated in 1877. An exhibition was then got together, a number of books and pamphlets on Caxton were printed, a statue to his memory was erected, and the name of William Caxton took its fitting position in the history of the development of the country.

William Caxton, mercer, translator, author, ambassador, and printer, was born about 1421, somewhere in the Weald of Kent. He is supposed to have been the son of a farmer, but his parents were evidently enlightened folk, although they lived in what was then a very wild portion of English country, for their son, in one of the gossipy comments which he was wont to write in the books which he published, referred gratefully to them for having sent him to school. It is perhaps worth noticing here, that it was only about half a century before the birth of

Caxton that English began to be taught in the schools. French had hitherto been the polite language of the country.

The passage here referred to occurs in Caxton's

WILLIAM CAXTON.

Life of Charles the Great, and is as follows: "And though so be there are no gay terms, nor subtle nor new eloquence, yet I hope that it shall be understood, and to that end I have specially reduced it after the simple cunning that God hath lent to me, whereof I

humbly and with all my heart thank Him, and also am bounden to pray for my father's and mother's souls that in my youth set me to school, by which, by the sufferance of God, I get my living I hope truly. And that I may so do and continue, I beseech Him to grant me of His grace; and so to labour and occupy myself virtuously, that I may come out of debt and deadly sin, that after this life I may come to His bliss in Heaven."

Early in life, this young man of Kent is said to have been distinguished as a clever penman. Writing was then no common accomplishment, and the man who could do it well had a pretty certain passport to the consideration of wealthy folk. Whether Caxton's father was a farmer or not he must, it would appear, have been a man of some means, for besides giving his son such a good education as was then possible, he further apprenticed him to one of the leading citizens of London, a mercer named Robert Large. This apprenticeship took place in 1438, and at the close of the following year, young Caxton's master was elected to the highest civic office in the city, and became Lord Mayor of London. In 1441 Large died, and among a number of other legacies left a sum of twenty marks (about one hundred and fifty pounds of our money to-day) to his young apprentice.

It was probably immediately after the death of his master that Caxton went abroad, for in *The Recuyell of the Historyes of Troye*, finished in September 1471, he says, "I have continued by the space of thirty years for the most part in the countries of

Brabant, Flanders, Holland, and Zealand." During this period, it is probable that he paid several visits to London, and also to Cologne and other Continental cities.

In 1453, at any rate, he revisited London, as in that year, with a couple of other merchants from Bruges, he was admitted a member of the Mercers' Company. He evidently prospered in his capacity of merchant, and was looked upon as a thoroughly just and reliable man, for in 1462 he was elected "Governor of the English nation residing abroad" at Bruges.

He had already apparently made note of the newly-discovered art of printing at Mentz, although he was not yet practically concerned in it. In one of his later writings referring to the years 1456–7 he said, "Also aboute this tyme the craft of empryntyng was fyrst founde in Magounce [Mayence or Mentz] in Almayne [Germany], which crafte is multiplyed through the world in many places, and bookes ben had grete chepe and grete nombre by cause of the same crafte."

Caxton, as we have just seen, had become a person of considerable importance among the English merchants on the Continent. The "Governor of the English nation residing abroad" is said to have occupied the position of a kind of ambassador, and to have had the assistance of a "jury" of twelve other merchants.

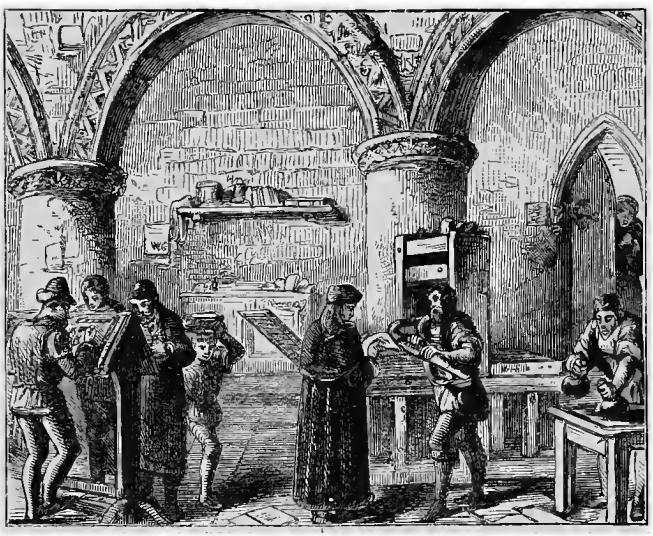
Mentz, as we saw in the preceding chapter, was sacked in 1462, and then the workmen and materials of the printing-house of Faust and Schœffer became

scattered abroad. Some writers would have us believe that this moment afforded Caxton the opportunity of securing printing materials, and also the services of a number of workmen who had been engaged at the Mentz printing-house. Seeing that, so far as is ascertainable, Caxton's interest in printing was not awakened until about ten years later, this story is highly improbable. The sacking of Mentz was no doubt the indirect cause of Caxton's learning the methods of practising the new art and mystery, just as it was the means of spreading a knowledge of those methods throughout the more cultured parts of Europe.

In October, 1464, Edward the Fourth, King of England, issued a commission to two of his trusty and well-beloved servants, Richard Whitehill and William Caxton, "to be his especial ambassadors, procurators, nuncios, and deputies, to his most dear cousin the Duke of Burgundy," for the purpose of confirming an existing treaty of commerce, or, if necessary, for making a new one. The new treaty was concluded in 1466. Caxton had probably by this time made sufficient money to be able to retire from active work as a merchant, for he records that he began the translation of *The Historyes of Troye* as occupation for idle hours, and this work, as he circumstantially said when he came to print it later on, "was begun in Bruges in the country of Flanders, the first day of March, the year of the incarnation a thousand four hundred sixty and eight." This same work was "ended and finished in the holy city of Cologne, the 19th day of September, the year

of our Lord one thousand four hundred sixty and eleven."

About this last named year, 1471, the father of English printing, then a man fifty years of age, abandoned commerce, and attached himself—pro-



CAXTON PRINTING IN WESTMINSTER ABBEY.

bably in some secretarial capacity—to the household of the Duchess of Burgundy, Margaret, sister of Edward IV. of England, a princess who was probably only too glad to include in her retinue a clever countryman of her own, especially one who was noted as an adept penman and as an unusually good linguist. It was chiefly owing to the encouragement of

the Duchess that Caxton completed his English translation of *The Recuyell of the Historyes of Troye.*

It is not known how or when Caxton learned the art of printing, but it is supposed that while in Bruges he gained the requisite knowledge from Colard Mansion, a well-known printer of that city. However he attained the knowledge, we find that in 1471 he set up a press at Cologne, and printed his *Historyes of Troye.* Some other less important publications were also issued by him from the same press, notably an address delivered by Dr. John Russell, co-ambassador with Earl Rivers to the court of Burgundy. That Caxton became intimately acquainted with the unfortunate Earl Rivers may be taken for granted, from the fact that the first dated book issued by him in England was a work by the same nobleman.

The historian Gibbon, in recording Caxton's removal of his press to his native country, and his subsequent work, is unjustly severe upon the printer, owing to the character of the principal works which he issued.

"It was in the year 1474 that our first press was established in Westminster Abbey by William Caxton: but in the choice of his authors that liberal and industrious artist was reduced to comply with the vicious tastes of his readers; to gratify the nobles with treatises on heraldry, hawking, and the game of chess, and to amuse the popular credulity with romances of fabulous knights, and legends of more fabulous saints."

Gibbon, in this passage, names 1474 as the year in which Caxton set up his printing press in the

Almonry within the precincts of Westminster Abbey, but the date of the printer's settlement there is not definitely known. One thing is certain, however, and that is, that at some date between his setting up his press at Cologne, in 1471, and his publishing his first dated book "at Westminster the yere of our Lord" 1477, he must have come back to England, and brought with him Wynkyn de Worde, one of the fugitive printers from Mentz, and other assistants, who subsequently set up presses for themselves in the English metropolis.

Within about a quarter of a century of the perfecting of movable types, we find that the new invention had spread to England, and in the hands of a strong, clever man, encouraged by powerful nobles and churchmen, had taken up a firm position in the grand old Abbey of Westminster. There is something fitting in finding so mighty an engine of progress as that of Printing, taking its start from so important a centre; from a place which is associated in our minds with many other high and ennobling memories. Some writers say that the press was set up in a disused chapel of the Abbey—whence they derive the term "chapel" still applied to every printing house.

Caxton, no doubt, became a personage of considerable importance in the city of Westminster, and it is supposed that his family lived there; for the parish records show that a William Caxton was buried in St. Margaret's, in May, 1480, and this it is conjectured was the printer's father, who must have attained to a great age. Other entries from

old parish accounts which concern our hero are as follows:

		£	s.	d.
"1478	The day of burying of Mawde Caxton for ii torches and iiii tapers at low mass	0	1	8
1491	At the burying of William Caxton for iiii torches	0	6	8
	For the bell at the same burying . .	0	0	6
1497	In books called Legends of the bequest of William Caxton . . .	0	13	0
1506	iiii printed books, ii of them the life of St. Kateryn and other ii of the birth of our Lady, of the gift of the executors of William Caxton". .			

From these entries we learn the date of the great printer's death, and from the first of them we probably get our only glimpse at his wife. For long it was supposed that he was never married—this reference might be to his mother's death—but a record was discovered in 1874 showing that in May, 1496, "Elizabeth, daughter of William Caxton," was separated from her husband. From this it has been assumed, with some show of reason, that the illustrious printer married before he left Bruges.

Close upon one hundred works are known to have been printed by Caxton, the great majority of them, of course, after he had set up his press in Westminster, "At the sign of the Red Pale." Of these hundred works many are known to us only by fragments which still exist, and by unique copies. A detailed list of these works would interest but few, if any, of my readers; it may, however, be as well

CAXTON'S HOUSE IN THE ALMONRY, WESTMINSTER.

to make passing mention of some of the more important ones. The first work published with a date, and the first known to have been printed in England, was the *Dictes* of Lord Rivers, already referred to, issued in 1477. Many authorities, how-

THE PRESENTATION OF THE *DICTES* TO EDWARD IV. BY EARL RIVERS.

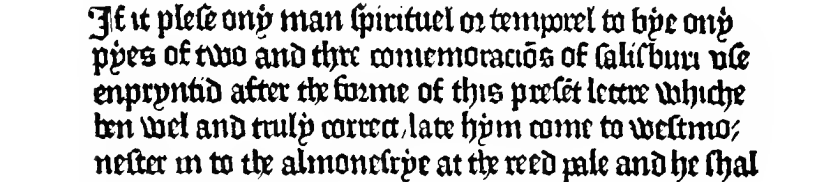
ever, agree in looking upon *The Game and Play of the Chess* as the first book printed in England, and further suppose that Caxton had completed it by 1474. The following year the printer is supposed to have had ready *The Book of the Whole Life of Jason;* in 1477 came Earl Rivers' translation of the *Dictes or Sayings of the Philosophers;* in 1480 the

Chronicles of England; in 1481 a translation—*The Historye of Reynart the Foxe;* in 1483 Gower's *Confessio Amantis,* and "*The Subtil Histories and Fables of Esop* translated by William Caxton from the French"; and in 1485 the book familiar to us as Sir Thomas Malory's *Morte d'Arthur,* under the title, "*A Book of the Noble Historyes of Kynge Arthure* by me, William Caxton, deuyded into xxi bookes chapytred and enprynted and fynyshed in thabbey Westmestre."

These are some of the more notable works which were issued from the first English press. The types in which the books were set was what we nowadays call "Black Letter," and an example of it may be seen on the opposite page, in a facsimile reproduction of the earliest known handbill advertisement. The original of this precious document is in the Bodleian Library at Oxford. It will be observed that the type is not at all difficult to read, also that punctuation, as we know it, was not employed by the first printer, and that words which we should begin with capital letters, as Salisbury, Westminster, and "Reed Pale," (the "Red Pale" was the sign which hung out, as was then the custom, over the printing house), were printed entirely in the same character. The only attempt at punctuation is a short dash, by way of comma after the word "correct," and the only capital letters are those which begin the first word of the handbill, and the Latin sentence at the end. For the convenience of those who may have any difficulty in following the black letter type, the advertisement is repeated here in the same type as that in which the rest of this book is set.

"If it plese ony man spirituel or temporel to bye ony pyes of two and thre comemoraciōs of salisburi vse enpryntid after the forme of this presēt lettre whiche ben wel and truly correct, late hym come to westmonester in to the almonesrye at the reed pale and he shal haue them good chepe. Supplico stet cedula."

This advertisement, it may perhaps be as well to mention, refers to an *Ordinale* of the Church of Salisbury, a collection of rules to show how to


Jf it plese ony man spirituel or temporel to bye ony pyes of two and thre comemoraciōs of salisburi vse enpryntid after the forme of this presēt lettre whiche ben wel and truly correct, late hym come to westmonester in to the almonesrye at the reed pale and he shal haue them good chepe . . .

Supplico stet cedula

CAXTON'S HANDBILL ADVERTISEMENT. *ANTE* 1480
The first "broadside" printed in England.

determine the celebration of more than one office on the same day. These collections of rules were known as "pyes." The pye of two commemorations governed the movable feast of Easter which ruled that of Whitsuntide; and that of three commemorations included the offices for Trinity as well as for Easter and Whitsun. Before passing on, too, it may be interesting to quote one of Caxton's colophons[1] taking as our example that attached to *Reynart the Foxe.*

"Prayeng alle them that shal see this lytyl treatis to correcte and amende Where they shal fynde faute For I haue not added ne mynusshed but haue folowed as nyghe as I can my copye whiche was in dutche and by me william Caxton translated in to this rude and symple englyssh in thabbey of westmestre, fynysshed the vj. daye of Juyn the yere of our lord MCCCC.Lxxxj. and the xxj. yere of the regne of Kynge Edward the iiijth."

Caxton, as we have seen, in the few years in which he acted as printer produced about a hundred different books, and in doing so started the great printing press on its gigantic work in England. How it has grown in four hundred years is obvious even to the least observant, but, even shortly after the master printer's death, in 1491, printing began to take a very important place in the life of England; presses were set up all over the country in important centres; and within the comparatively short period of one hundred and twenty years from Caxton's death—from 1491 to 1620—it is stated that close upon ten thousand different works were printed in England alone. It is probable, too, that many works were printed, copies of which have not come down to us. Nowadays, this mighty engine of the press so dominates our every day life, that it is difficult to realise what life would be without it, and as difficult to realise the gigantic output of works which is constantly going on. Some idea of this output may be gathered from the fact that not taking into account the daily or weekly papers, or the monthly and quarterly magazines, the London publishers

alone announce upwards of *two thousand* different books for issue during one season.

To return, however, to our first printer. Caxton, we have seen, died in 1491; all readers will echo quaint old Fuller's remark, that he "on many accounts deserved well of posterity." Posterity does honour to his memory in various ways; his life has been written by many authors, scanty though the materials are for such a work; a memorial tablet has been placed in the Church of St. Margaret's at Westminster, where he was buried; and lastly, in 1877, the printer and his work were celebrated by a grand Caxton Exhibition, which was held in London.

Charles Knight, in his little volume on the life and work of William Caxton, makes that printer's assistants hold a meeting in the printing house after they have buried their master. The subject of discussion is—Dare they attempt to carry on the work? Wynkyn de Worde is made to speak very emphatically and prophetically on the subject. Who is to patronise them, asks one of his companions, if they resolve to continue?

"The people, I tell you," exclaimed Wynkyn. "The babe in the cradle wants an Absey-book [an A B C book]; the maid at her distaff wants a ballad; the priest wants his Pie; the young lover wants a romance of chivalry to read to his mistress; the lawyer wants his Statutes; the scholar wants his Virgil and Cicero. They will all want more, the more they are supplied. How many in England have a book at all, think you? Let us make books cheaper

by printing more of them at once. The churchwardens of St. Margaret's asked six-and-eightpence yesterday for the volume that our master left the parish; for not a copy can I get if we should want to print again. Six-and-eightpence! That was exactly what he charged his customers for the volume. Print five hundred instead of two hundred, and we could sell it at three-and-fourpence."

In 1819 the Roxburghe Club resolved to place a monument to Caxton's memory in St. Margaret's Church, at Westminster. The memorial is in the form of a tinted marble tablet enclosing a panel of pure white, and the inscription runs as follows:

TO THE MEMORY
OF
WILLIAM CAXTON,
WHO FIRST INTRODUCED INTO GREAT BRITAIN
THE ART OF PRINTING,
AND WHO, A.D. 1477, OR EARLIER,
EXERCISED THAT ART
IN THE ABBEY OF WESTMINSTER,
THIS TABLET,
IN REMEMBRANCE OF ONE
TO WHOM
THE LITERATURE OF THIS COUNTRY
IS SO LARGELY INDEBTED,
WAS RAISED
ANNO DOMINI MDCCCXX.,
BY THE ROXBURGHE CLUB.
EARL SPENCER, K.G., PRESIDENT.

Above the panel there is a pediment, upon which is engraved the device of Caxton.

CHAPTER V.

WYNKYN DE WORDE, AND OTHER EARLY ENGLISH PRINTERS.

"He wonders much,
And smiles as often, as the leaves he turns
That tell how Caxton worked his infant press,
And how his successor with better skill,
Wynkyn de Worde ycleped, this art pursued;
And Pynson; and the early tribe that first
Through British land to British eyes conveyed
The printed letter and the instructive page;
By which in learning, liberty, and arts,
We shine conspicuous."—T. F. DIBDIN.

PRINTING, it has been pointed out, was invented and introduced into this country at a period of unusual literary sterility; there was an awakened interest in what had already been written by bygone poets and philosophers, but no great capacity for adding to the store. Caxton, however, translated and printed some notable works, but his immediate successor, "Wynkyn de Worde of vertuous entent," although he made considerable improvements in his art, did not combine the work of author with that of master printer. In the preceding chapter, we saw that it is believed that Wynkyn de Worde came over with Caxton in the seventies of the fifteenth century. He is supposed to have been a native of the duchy

of Lorraine, though some writers maintain that he came from Worth in Belgium, and was thus Wynkyn de *Worth*. We shall find, however, in his case, as

WYNKYN DE WORDE.

we found in that of his master, that biographical particulars are of the scantiest, but we do know that in 1491 he succeeded to the business on the death of Caxton, and continued to the close of the fifteenth century to exercise the craft of printer at

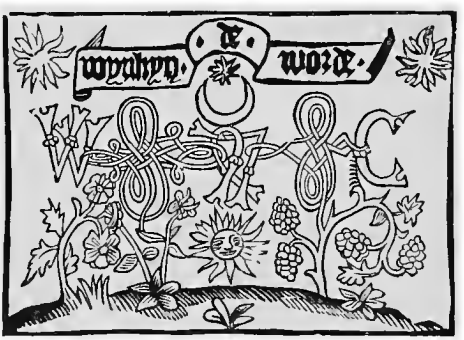
the sign of the "Red Pale," in the Almonry of Westminster Abbey.

It has been noticed, as a curious fact, that Wynkyn de Worde did not put his name on any of the books which he printed until 1493, when he issued editions of the *Golden Legend* and of the *Liber Festivalis*; in fact, that he did not put his name on any books which were printed from the types which had been employed by his master. By the date named, he had provided himself with a sufficient supply of new types and other materials to start upon his long and successful career as the principal printer of his day. Charles Knight, in the passage from his *The Old Printer and the Modern Press*, with which we concluded the previous chapter, shows us Wynkyn de Worde as an enthusiastic believer in the art to which he had devoted himself. That he was an enthusiastic printer is, we think, sufficiently shown by the improvements which he made "in the art and craft," and by the fact that from the time of his master's death, until his own, forty-three years later, he published upwards of four hundred works. This represents no mean powers of work, when we realize how different was the printing press then employed from the complicated steam presses which are used to-day;* when we remember that each sheet of a book had to be printed by presses worked by hand, and that often new types had to be cut. Quotations from Arabic and Hebrew even did not daunt the printer, for where they were to be employed he had special wooden types cut, and used these. They

* See Chapter ix. for particulars.

were wanted so infrequently that it was quite unnecessary to have matrices made and the types cast in the usual way.

Wynkyn de Worde was not a literary man like his predecessor, neither had he the taste of William Caxton in his selection of works for publication; but it is worth remembering to his credit that he never forgot the master under whom he had learned the printer's art, and to whose business he had



WYNKYN DE WORDE'S MARK, WITH CAXTON'S INITIALS.

succeeded. We find, therefore, in the various colophons* used by him always some reference to Caxton. Either Caxton's name or initials share a place in the device with the name or initials of his disciple, or else the book is directly referred to as printed "at Caxton's house." Some of the colophons used by Wynkyn de Worde were couched in verse,

* A device or description giving the printer's name, place of printing, and date, formerly commonly printed at the end of books. The colophon has now become very much simplified, and is generally referred to as the imprint of a book. (See the last page of this volume for a present-day example.)

written either by the printer himself or by one of the assistants in his employ. An example of this versifying may well find a place here, as serving to show not only the introduction of Caxton's name, but also a reference to the first English paper manufacturer, who had set up a mill at Hertford, probably about 1507. The verses quoted from, are attached to *Bartholomeus de proprietatibus rerum.*

"And also of your charity call to remembrance
The soul of William Caxton, first printer of this book
In Latin tongue at Cologne, himself to advance,
That every well-disposed man may thereon look:
And John Tate the younger, joy might he brook,
Who hath late in England made this paper thin
That now in our English this book is printed in."

It would not profit us much in learning of the triumphs of the printing press to devote attention to each of the four hundred and odd volumes which this active printer put forth. We have seen that the first works which he issued consisted of new editions of two books which had been originally published by the father of English printing. But brief mention need be made of any of his books, many of which were grammars, law books, and volumes of a theological nature. One of the most important of the numerous works which he printed is undoubtedly the *Voyages and Travels* of Sir John Maundeville, which he had ready in 1499. The year before that, Wynkyn de Worde printed *The Festyuall, or Sermons on sondays and holidais, taken out of the Golden legend.* Of this last named book it has been said that the stories it contains "are so extravagant, that one would imagine they were invented to try

how far human credulity could be extended." These two works were among the last which Wynkyn de Worde issued from "Caxton's house" at the sign of the Red Pale, for about 1500—at the latest in 1502—he removed and was "dwellynge in flete strete at the sygne of the sonne agaynst the condyth" (the sign of the Sun in Fleet-street).

In 1509 we find Wynkyn de Worde describing

COLOPHON.

(From *De Heteroclytics Nomenebus.*)

himself as printer to the King's mother, the Lady Margaret. In that year, it may be mentioned, he printed the *Seven Penitential Psalms*, as expounded by Bishop Fisher. Each year thenceforward is marked by the issue of various books, the titles of which, however, must not delay us longer. To the student of the history of printing, the works of Wynkyn de Worde are chiefly interesting as marking considerable improvement in the art of type-cutting and casting. He was the first printer to use Greek

types in England, and was not baffled even when quotations in Hebrew or Arabic were required. He was also the first printer to employ music types, in 1495.

As we found in glancing at the facts of Caxton's life, so far as they are known, so we find with Wynkyn de Worde, that it is impossible definitely to say whether he was ever married or not. There is nowhere any mention of his being married, though a suggestion that he may have been comes, as it came in Caxton's case, from certain old account books of the parish of St. Margaret's, Westminster, wherein we find the following suggestive entries:

"Item for the Knell of Elizabeth de Worde . . vi *d.*
Item for iii torches, with the grete bel for her . viii *d.*

And again in 1500 we find

"Item, for the Knelle of Julian de Worde, with the grete bell . . . . . vi *d.*

Seeing that the distinguished printer with whom we are here dealing was a foreigner naturalised in England, it seems permissible to hazard the suggestion that the funerals referred to were those of his wife and his son. One writer, indeed, hazards the double suggestion that Caxton was married, and that he had a daughter who married Wynkyn de Worde, and was the Elizabeth here mentioned.

Wynkyn de Worde made his will on June 5, 1534, and died in the same year. In his will he expresses a desire that he shall be buried in the parochial church of St. Bride's, in Fleet Street, before the high altar of St. Katherine, and concludes this document

with a number of bequests, mostly in the form of books, to his various friends and servants. "Item, for tithes forgotten vi *s.* viii *d.* Item to the Fraternity of our lady, of which I am a brother, x *s.* to pray for my soul. Item, to my maid, iii *l.* in books. To Agnes Tidder, widow, xl *s.* in books. Item to Robert Darby, iii *l.* in printed books. To John Barbanson, lx *s.* in printed books, & ten marks. To Hector, my servant five marks sterling in books. And to Simon my servant, xx *s.* in printed books. To Wislin xx *s.* in printed books. And to Nowel, the bookbinder in Shoe-lane, xx *s.* in books. And to every of my apprentices, iii *l.* in printed books. And to John Butler, late my servant, vi *l.* in printed books. And to my servant, James Ganer, in books xx. marks. And forgive John Bedel, stationer, all money he owes me, &c., for executing this, my will, with James Ganer, and that they, with the consent of the wardens of the parish of St. Bride's, purchase at least xx *s.* a year in or near the city, to pray for my soul, and say mass. To Henry Pepwell, stationer, iv *l.* in printed books. And to John Gonge, forgive what he owes me, and iv *l.* To Robert Copland, ten marks. To Alard, bookbinder, my servant, vi *l.* xiii *s.* iiii *d.*"

The Robert Copland referred to in this will, was one of Wynkyn de Worde's assistants, who subsequently became a printer on his own account. By the time that he was in business, however, the new art was rapidly spreading, and we cannot refer much to him, except to point out that he was a writer as well as a printer, and that he penned prologues and epilogues in verse, to some of the

books printed by him. He was possibly responsible for the rhymed colophon quoted a page or two earlier, and for such similar efforts as the following. The first of these verses was attached to a life of *Robert the Devil*, and the other to a volume entitled, *The Complaint of Them that be too soon Married.*

"Thus endeth the lyfe of robert the deuyll
That was the seruant of our lorde.
And of his condycyons that was full euyll
Enprynted in London by Wynken the Worde."

"Fynysshed and done the yere of our lorde
A thousand cccc and xxxv. at London.
Enprynted also by Wynken de Worde
In Fletestrete at the sygne of the son."

In taking this brief survey of the invention and rise of printing, Robert Copland and his contemporaries need not detain us long. Of Richard Pynson even a brief notice must suffice, and to him we will come after quoting the following tribute to the memory of Wynkyn de Worde from an eighteenth-century authority on matters typographical.

"His skill in the art of printing is much to be admired: for although he was the immediate successor of Caxton, yet he improved the art to a very great degree of perfection; cutting a new set of punches, which he sunk into matrices, and cast the several sorts of printing letters, which he made use of himself, and some of them have been n use to this day, being cast so true, and standing so well in line, as not to be excelled by any; and

of these he had also a larger variety of sorts and sizes than his predecessor."

John Lettou and William Machlinia were a couple of foreign printers, who, it is supposed, were encouraged by William Caxton to set up presses in England, that they might further promote the new art. They worked both separately and in partnership, chiefly in the production of law books.

RICHARD PYNSON.

Robert Copland (already referred to), his son William Copland, Julian Notary, and William Faques were other printers, who "flourished" in London at the close of the fifteenth or in the early part of the sixteenth century.

Of Richard Pynson, that little information which has come down to us may well be noted, for he, like Wynkyn de Worde, was a servant of William

Caxton, and owed his knowledge of the art to the training of the father of English printing. Like so many of our early printers, Pynson was a foreigner, presumably from Normandy, but that he was naturalized an Englishman, papers still in existence

DIues. Contra. On gode
friday ouir al in holy chir
che/ men crepe to the crosse and
worshyp the crosse. Pauper. þ
is sothe/ But nat as thou menyst
The crosse that we crepe to and
worshyp so highly that tyme/ is
criste him self þ died on the crosse
that day for oure synne and our
sake As sayth Beda libro iii. de
gemma anime/ For the shap of
a mãis a crosse. And as he heng
vpō the rode he was a very cros

SPECIMEN OF TYPE USED IN *DIUES AND PAUPER.*
Printed by Richard Pynson, 1493.

testify. It is probable that Pynson did not set up in business on his own account until after the death of his "worshipful master." When he did, he established himself near Temple Bar, for, in a colophon to a book which he published in 1493, he described himself as "at the Temple Bar of London," while

in the following year he was more circumstantial, and says he was "dwelling without the Temple Bar of London," and later he speaks of his house as "the sign of the George."

In 1504 Pynson was able to sign himself "King's Printer." He issued a large number of works, but is chiefly worthy of our remembrance as being the first English printer to employ Roman type (such as that in which this book is printed), which he did in the year 1518. He is supposed to have died about

FAC-SIMILE WOODCUT FROM THE *BIBLIOMANIA*
Printed by Richard Pynson, 1503.

ten years later. Before then, printing had firmly established itself in the country, and quite a number of presses were at work; indeed, the "King's Printer" himself seems even to have suffered at the hands of a pirating rival, for in a law book (an edition of *Lyttleton's Tenures*) which he published in 1527, he inveighed somewhat emphatically, in a Latin letter

to the reader, against a certain rival, Robert Redman. The letter is as follows :—

"Richard Pynson, the Royal printer, salutation to the Reader. Behold, I now give to thee, candid Reader, a Lyttleton corrected (not deceitfully), of the errors which occurred in him; I have been careful that not my printing only should be amended, but also that with a more elegant type it should go forth to the day: that which hath escaped from the hands of Robert Redman, but more truly Rudeman, because he is the rudest out of a thousand men, is not easily understood."

CHAPTER VI.

SOME FAMOUS EARLY PRINTERS—THE PROGRESS OF THE ART.

"There are also those who think that the multiplication of books is injurious; I should like to hear why. For those who love art and honour, it is now an agreeable, golden, and blissful time, in which they can plant and sow the field of their understanding with innumerable wondrous seeds, or enlighten it with many heavenly rays. But for those who love neither the art nor their souls, I say, if they choose, they may learn in a short time, with half the labour, as much as one could do formerly in many years."

Cologne Chronicle (1499).

THE writer of the above quoted passage from the *Cologne Chronicle* deserves credit for early recognition of the true value of the great discovery, which was not then, as regards the actual practice of the art, half a century old. He saw that, so far as the ascertaining of knowledge was concerned, the invention of typography was equal to a well nigh indefinite lengthening of man's life. At the time that he wrote, thinking men may well have been astonished at the rapid progress made throughout the more important centres of European life by the new invention. Each decade saw the establishment of further presses. Gutenberg's idea had "caught on," if such a modernism may be permitted, in a very remarkable manner. It had spread up to and firmly established itself in England, as we saw in the

preceding chapter; it had gone south to Venice and Italy; and west and east too the triumphant engine of civilization had made progress. By this time the energies of the "master printers" were devoted to the perfecting of the types used, to the getting of clearer and smaller letters. In England, we have seen that Caxton's two apprentices, Wynkyn de Worde and Richard Pynson, had pushed gallantly along on the road of progress. In this chapter we will glance at the establishments of one or two of the more famous Continental printers.

Up to 1462 "the grand typographical triumvirate" had kept their secret fairly well, despite the fact of the lawsuit between Gutenberg and Faust, and the consequent division into two printing establishments. One or two other presses had, it is true, been established by certain of Gutenberg's disciples; notably one outside Mentz, by Albert Pfister, who is remarkable as having published the first book in German type, and for the issue, in 1460, of a fine Bible of 881 pages. The sacking of Mentz, in 1462, was the occasion of the scattering of the workmen, and they no doubt then felt themselves free to make known that which hitherto they are supposed to have been bound by solemn oaths not to reveal. So effectual was the enforced distribution of the men who had been initiated into the mysteries of typography, that within a short space of eighteen years afterwards, there were no fewer than ninety-four printing offices at work in the different cities of Europe. It is not often in the world's history that so widespread a benefit has resulted from the sacking of a city.

The men who set up these various printing presses were all, if we may judge by those of whom any particulars have come down to us, remarkable for their enterprise and learning. They were scholars, not mere mechanics; they showed wisdom in the selecting of manuscripts for printing, and in the employing of men of profound erudition and cultivated talents to compare the various manuscripts, and revise them for the press. Venice and Italy we shall find were particularly active towards the close of the fifteenth and early part of the sixteenth century. The first book printed in Greek type was issued from a Milan press in 1476, while by the presses of Florence and Venice alone, during the decade from 1471 to 1480, upwards of twelve hundred works were printed, two hundred of them being editions of the ancient classics. It may be mentioned here as a fact well worthy of record that, by the close of the fifteenth century, nearly all the works of the ancient authors that were known, had been printed.

In France, it is curious to learn, women were among the first who excelled in the newly acquired art. One woman, indeed, Charlotte Guillard, who began business in 1490, is reported to have kept several presses at work for half a century. Later, too, it was no uncommon thing for the widow of a printer to continue the business; indeed, when we reach the sixteenth century, we find that in England alone, between 1530 and 1580, there were no fewer than six presses controlled by women.

Joannes Frobenius founded a printing establish-

ment at Basle in 1491. The works which issued from his press are chiefly remarkable for the fact that they are well printed, and are unusually free from error. This last quality was probably attained owing to the fact that the "corrector" to the Basle press was no less illustrious a person than the great scholar Erasmus. Froben, during the years from 1491 to 1527, (the year of his death), issued no fewer than three hundred works, including those of Erasmus. Another celebrated Basle printer was Henry Peter, or Petrus, who published a fine edition of *Plato* in 1556.

Venice occupies a proud place in the earlier annals of printing. Two men are rival claimants for the position of "first printers" of the Queen of the Adriatic. These are John de Spira and Nicholas Jenson, who set up printing offices about 1470. Of these two, Jenson was undoubtedly the better printer, and some fine specimens of his work have come down to us; but he deserves a place in our record mainly as being the printer who either invented, or at the least perfected, the "Roman type," which, as we saw on an earlier page, was introduced into England by Pynson, and is, with modifications, the kind of type most commonly in use at the present day.

We come now to consider the life and work of the most important of the Venetian printers. One, copies of whose books are among those most eagerly coveted by modern collectors of old and rare volumes, is Aldo Manuzio, an accomplished student, who "to a universal knowledge added

an unconquerable industry and diligence." The Christian name of the great printer is supposed to have been an abbreviation of Theobaldus. He was born in or about 1446, and was already a middle-aged man when he set up a printing office. He was intimate with an Italian prince, Alberto Pio, who was fired with a taste for literature. This prince and his uncle conceived a very lordly idea, which was nothing less than the setting up of a magnificent printing press in one of their castles in Carpi. They intended to give absolute possession of such castle to Aldus for the purpose of prosecuting his printing work, and to invest him with further honour and power by making him a territorial governor. However, as Burns has told us—

> "The best laid schemes o' mice an' men,
> Gang aft a-gley,
> And lea'e us naught but grief and pain
> For promised joy,"

and the noble scheme of these two princes was frustrated by political and family disturbances.

Aldus had already acquired some knowledge of the new art of printing, and had impressed his patrons with its great value. The castle in Carpi, however, remained for a time a "castle in Spain," and he betook himself to Venice, the city which was henceforward always to be associated with his labours. He began well in 1488, by purchasing the establishment which had been set up eighteen years earlier by Jenson, and for over a quarter of a century pursued his work with untiring energy. In 1496 he wrote to a friend saying, that during the years

that had elapsed since he set up his printing press, he had "never enjoyed one hour of sound sleep." He was the first printer who introduced the custom of printing a few copies of a book on a finer or stronger paper than that of the ordinary edition. The first book so printed was *Epistolæ Græcæ,* and it was issued in 1499.

In the following year, Aldus married the daughter

Aldo Manuzio.

of Andrea Torresano of Asola, and about the same time he is supposed to have issued a first leaf, in folio size, of a proposed edition of the Bible, to be printed in Hebrew, Greek, and Latin. The work was unfortunately never done, but the fact that it was contemplated is, in itself, worthy of note, as showing the great printer to us as the first person who conceived the notion of a polyglot Bible.

The year 1501 is especially interesting in the life of Aldus, and in the history of printing, because

there then issued from the Venice press a work—an edition of Virgil—which was doubly remarkable. In the first place it was smaller in size than any printed book had hitherto been—that is to say, it was an "octavo" size, while books had hitherto been printed in "folio"; and, secondly, it was printed in an entirely new kind of type, which we now know as *Italic*, but which was then known as *Corsivi*, or, from the name of the printer, *Aldine*. That the new size was readily appreciated may be imagined when we realise how much more convenient it was to handle than the old one, and when we further come to consider that it is the size in which, down to the present day, the vast majority of books are issued. The italic type, too, met with ready appreciation, and a steady demand was made for works from the Aldine press. Such, indeed, was this demand that some unprincipled rivals at Lyons went so far as to copy the distinctive device (a dolphin and anchor) which Aldus printed on his books. Before passing on, it is worth noting that the handwriting of the poet Petrarch is said to have formed the model on which the new *italics* were cut. This type was cut for Aldus by a celebrated goldsmith and artist, Francesco Raibolina, or Il Francia. The goldsmith himself subsequently set up a printing press, but he was not permitted to employ the italic type in his books, for Aldus got a patent granted by the government of Venice and three successive Popes, allowing him the exclusive right of using it.

The Aldine press was, as may be imagined, kept very busy, but in 1510 and 1511 came (probably

owing to the bad state of public affairs) two years when nothing was issued. The following year, however, the press was active again, and in an advertisement to the reader of a book published in 1512 Aldus says he has hardly time even to inspect, much less to correct, the sheets which are executed in his office, that his days and his nights are devoted to the preparation of fit materials, and that he can scarcely take food or strengthen his stomach owing to the multiplicity and pressure of business. "Meanwhile," adds he, "with both hands occupied, and surrounded by pressmen who are clamorous for work, there is scarcely time even to blow one's nose. O terribly severe occupation!" In the same year in which Aldus thus apostrophised his "terribly severe occupation" his son and successor, Paul, was born.

Erasmus, who, as we have seen, was corrector of the press to Froben of Basle, was also for a time one of the correctors of the press for the great Venetian printer, and the manner of their meeting is adapted as follows, by Mr. T. F. Dibdin, from the biography of the illustrious scholar. "Having brought his *Adagia* to a conclusion, Erasmus wrote to Aldus to ask him whether he would print it; which the latter readily agreed to undertake. The former, therefore, arrived at Venice: and, on knocking at the door of the Aldine printing office, was compelled to wait a long time before he could obtain a sight of the master of it; owing either to the actual occupation of Aldus with his pressmen, or to his supposing the visitor to be one of those ordinary ones who call out of mere

curiosity. When, however, the printer understood that it was Erasmus who waited below, he ran to him, apologised for his apparently ungracious reception, embraced him in the kindest manner, and took him to the house of his father-in-law, where they caroused, I ween, over the choicest flagon of wine; and surrounded by vellum *Virgils*, *Horaces*, *Petrarchs*, and *Dantes*, made their illustrious guest sensible of the high opinion in which he was held by them."

Great indeed was the service which Aldus did to the art of typography. And no less notable was the service which he performed to literature. If he heard of a manuscript which had not yet been printed, he was unceasing in his efforts and regardless of trouble or expense in getting possession of it; and thus it is that we owe many first editions of Greek and Latin classics to him. From the brief extracts from his own writing given above, showing his untiring activity, it is not surprising that he did not live to a very great age; indeed, it seems wonderful that he should have maintained such activity up to the age of sixty-nine. He died in 1515.

Over the door of his printing office Aldus placed an inscription, to the following effect—

"WHOEVER YOU ARE ALDUS EARNESTLY ENTREATS YOU TO DESPATCH YOUR BUSINESS AS SOON AS POSSIBLE, AND THEN DEPART; UNLESS YOU COME HITHER LIKE ANOTHER HERCULES, TO LEND HIM SOME FRIENDLY ASSISTANCE; FOR HERE WILL BE WORK SUFFICIENT TO EMPLOY YOU, AND AS MANY AS ENTER THIS PLACE."

Reference has been made above to the Aldine device, which, with the motto *Festina lente* or *Sudavit et alsit*, is found on all books issued by Aldus, after 1502, or by his son and grandson, who continued the business to the close of the sixteenth century. This device was adopted, we are told, for the following reasons—"the dolphin, because of the speed with which the fish is said almost to leap through the waves; while the anchor, on the contrary, represents stability and repose. By these emblems, Aldus meant to imply that, in order to labour to any purpose, the scheme of work must be carefully and maturely weighed, and then executed with rapidity." This symbolic explanation *may* be correct, as also may be the legend that Aldus printed some of his favourite classics from silver types, but it would appear much more likely that the printer selected it as a good decorative device or "trade mark" from among the illustrations to a work, *The Reveries of Polyphilus*, published by him in 1499. Certain it is that the device was not used as such until 1502, when it appeared on the octavo edition of Dante.

After the death of Aldus in 1515, his father-in-law, as guardian for the infant Paul, continued the business until 1529, when the young man was able to conduct it himself.

Paul became as enthusiastic a student of Latin literature as his father had been of Greek, and he, and his son after him, maintained the Venetian printing office as one of the most important in Europe.

This brief notice of the life and work of the

famous Aldus may fittingly be closed by quoting the following impromptu verses on "The Aldine Anchor," by Sir Egerton Brydges, a notable book-lover.

"Would you still be safely landed,
On the Aldine *anchor* ride,
Never yet was vessel stranded
With the *dolphin* by its side.

"Fleet is Wechel's flying courser,
A bold and bridleless steed is he;
But when winds are piping hoarser,
The dolphin rides the stormy sea.

"Stephens was a noble printer,
Of knowledge firm he fixed his *tree;*
But time in him made many a splinter,
As, old Elzevir, in thee.

"Whose name the bold Digamma hallows,
Knows how well his page it decks;
But black it looks as any gallows
Fitted for poor authors' necks.

"Nor time nor envy ne'er shall canker,
The sign that is *my* lasting pride,
Joy, then to the Aldine *anchor*,
And the *dolphin* at its side.

"To the dolphin, as we're drinking,
Life, and health, and joy we send;
A poet once he saved from sinking,
And still he lives the poet's friend."

In Paris, at the beginning of the sixteenth century, the famous press of the Stephens was first set up. The first of the family was Henry Stephen, and no fewer than eight of his descendants continued the press on into the seventeenth century. This press

became celebrated for the beauty of its types and the accuracy of the works which issued from it. The Stephens were, in fact, scholars as well as printers, and Henry, who died in 1520, was the first printer who publicly exhibited proofs of his works, so that any errors might be pointed out. This practice, as we shall see later, was also followed by Plantin at Antwerp. The second member of the Stephens family was Robert, and the press continued so to flourish under his management, that he found it necessary to usually have ten or a dozen correctors of different nationalities in his house. It is said that nothing but Latin was spoken in his family. For upwards of a century and a quarter the Stephens' press flourished, and during that period a very large number of classical and grammatical works were issued from it, and no fewer than forty-five editions of the Bible in different languages.

From the beginning of the sixteenth century it becomes noticeable that books began to be printed for real use, whereas hitherto they had been prepared, mainly, as luxuries for those who were possessed of considerable means, or who were devoted students prepared to give up everything for a few volumes. The spread of printing with its consequent improvements in the type, and in the form and size of books, brought about of necessity a cheapening of the works printed. By the middle of the sixteenth century the art had spread into every country in Europe, except Russia, Ireland being the latest to set up a press, and even there the first work, *The Book of Common Prayer*, was ready in 1551.

A family of printers, no less celebrated than the Venetian one which we have just considered, is that of the Elzevirs of Holland. Aldus, his son and grandson, were issuing notable editions of classics and other works from 1488 until 1597. The work of the two families just overlaps, for it was in 1592 that Louis Elzevir, of Leyden, issued his first book; thenceforward he, five of his sons, and several of his grandsons, continued publishing until 1681. Latin, French, and Italian classics were issued, beautifully printed in yet smaller volumes than the octavos instituted by Aldus, in 12mo, 16mo, and 24mo. Their books were remarkable, not only for their size and the beauty and clearness of the type from which they were printed, but also from the fact of their being issued at an extremely low price. The duodecimo editions of French and Italian classics, for instance, were sold for but a florin a volume of five hundred pages! In 1674 Daniel Elzevir published a catalogue of books which had been printed by his family, and the catalogue itself occupied seven volumes. The eldest of the Elzevirs was the first printer who distinguished between the letters u and v. Despite the very many works which issued from their presses, and the fact that many of the editions must have been large ones, "Elzevirs" are much prized by book collectors, and often bring very considerable prices; a copy of an unimportant cookery book, *Pastissies*, for example, was sold about twenty years ago for a sum of £130.

It is impossible within the limits of this book to enlarge upon the various steps by which the art of

printing was improved and spread abroad, until it effected such results as we are to-day aware of. We have seen that on the opportunity occurring it "spread like wildfire" over Europe. That student after student was enlisted in its cause, city after city became possessed of a printing press, and all the storehouses of learning were ransacked for new and remarkable manuscripts of the ancient writers. Well was it that the invention came as it did at a time of literary inactivity, not to say sterility. Had there been many notable authors like Erasmus, during that latter half of the fifteenth century and earlier part of the sixteenth century, it is quite probable that their works might have been perpetuated to the neglect of the ancients. The awakened interest in learning had a curious double effect, both of which were made possible by Gutenberg's happy invention. The fine works of the old Greek and Latin writers were stamped in an enduring form, and scattered broadcast over Europe, and so quickened the movement into something like new life, when fresh, enduring literature might be produced. Shakespeare was writing his plays a hundred years after Caxton's death!

In treating of the "progress of the art of printing," the following items are not without interest. A couple of hundred years after Gutenberg had been labouring over the perfection of his new invention, it occurred to some printers of Leipsic that such an anniversary should not be allowed to go uncelebrated. The matter was discussed and the celebration duly took place, after the following appeal had been distributed by the printers to their colleagues:

"That the praise of God may resound the farther, and that dear posterity in all places may be cheered to holy imagination, they [the printers of Leipsic] have thought it good and advisable to discover this their intention to their fellow craftsmen, whether they might perhaps be pleased to celebrate the jubilee with them; and accordingly, in April of this current year, they issued friendly and brotherly epistles to the same in several noble cities of the empire, ports, and commercial towns; but particularly the far and widely celebrated city of Strasburg, which is renowned as a mother and native city of the inventors and beginners of this worshipful art, as also to the noble Universities of Wittenburg and Jena, sufficiently unfolding to them their Christian intent, and exhorting them to equal thankfulness to God under all changeableness of circumstances, almost all of whom have cheerfully accepted and willingly agreed to like joy in the Lord and celebration of such feast."

Similar celebrations took place at Leipzic in 1740 and 1840, and the following figures are interesting as illustrating the advance which had been made:—

1640,	Leipzic	employed	5	master printers	and	11	journeymen.
1740	„	„	18	„	„	137	„
1840	„	„	20	„	„	620	„

In the last-named year there were also 200 apprentices.

In addition, it must be mentioned that a single establishment, in 1840, printed as many books as all the printers of the town in 1740.

CHAPTER VII.

SOME FAMOUS PRESSES — PLANTIN — BASKERVILLE — KELMSCOTT.

"I am well aware that many illustrious men have flourished as printers; I have known the Alduses from Italy—the Frobens from Germany—and the Stephens from France; but these are all eclipsed in the single name of Plantin! If they were the *stars* of their own hemispheres, you, Plantin, are the *Sun*, not of Antwerp or of Belgium only, but of the world."—SCRIBANIUS.

WE come now to look at the work done by a few of the more remarkable of the world's printing presses. Of these it is impossible within the limits of this small volume to survey more than just those, which, for some peculiar reason, stand out prominently from among the rest. And of these the first one, with which we deal, shall be the famous Plantin Press of Antwerp.

The name of Christopher Plantin deserves to stand first, not only because he was unquestionably one of the front-rank printers of the sixteenth century, but, because in his press we have a wonderful link with printing's early days. He was born near Tours, in France, in 1514, the year before the death of the first Aldus, and yet, to-day, all visitors to Antwerp may see the entire stock of materials, which he employed, just as they were when he used them!

Biographical materials are scanty in Plantin's case, as in those of other illustrious printers who live for us in the book-monuments which they have left to testify to their skill, ingenuity, and perseverance. Christopher Plantin was born near Tours, in 1514; he received instruction in typography from Robert Mace, the king's printer at Caen. About the year 1550—just a century after Gutenberg found himself with his great invention on the threshold of success—this young Frenchman set himself up in business in Antwerp. He was evidently without means, for while he gained his livelihood by binding and selling books, his wife added to the family income by the sale of linen. Five years later he was assisted by the loan of capital to start a complete printing office. The earliest work to be issued from his press was a short essay from the Italian, upon the education of girls, which he quaintly describes as "the first bloom from the garden of his printing house." In 1557 his new business had so increased that he was compelled to move to new premises, and in that year he set his office up again at the sign of the Golden Unicorn. The carefulness and beauty of his workmanship was such that his business still went on rapidly increasing, and in 1579 he was able to purchase the fine building, now known as the Musée de Plantin, in which his types and presses remain to the present day.

Years before Plantin removed to the establishment which is now most intimately associated with his name, and which was described by one of his contemporaries as among the noblest buildings

CHRISTOPHER PLANTIN.

in Antwerp, he had started upon the greatest typographical undertaking of his time. This was nothing less than a great Polyglot Bible, to be completed in several folio volumes. The work, which has often been spoken of as "the eighth miracle of the world," was begun in 1561, and completed in eleven years. Antwerp was at this time under the rule of the Spanish crown, and Philip the Second of Spain appointed Plantin his "Royal Printer," and, what was more important still, advanced the money required for the gigantic enterprise.

As other famous printers had done, Plantin secured the services of many of the most celebrated scholars of the day; the eloquent testimony of one of these to the value of the great printer's services to literature is quoted at the head of this chapter. So careful was Plantin, that not only did he employ some of the most competent men as readers and correctors, but, to make as sure as possible that no errors should be passed over, he hung up for public inspection, as Robert Stephen had done in Paris, the proof sheets of any work he had in hand, that so any *errata* might be discovered.

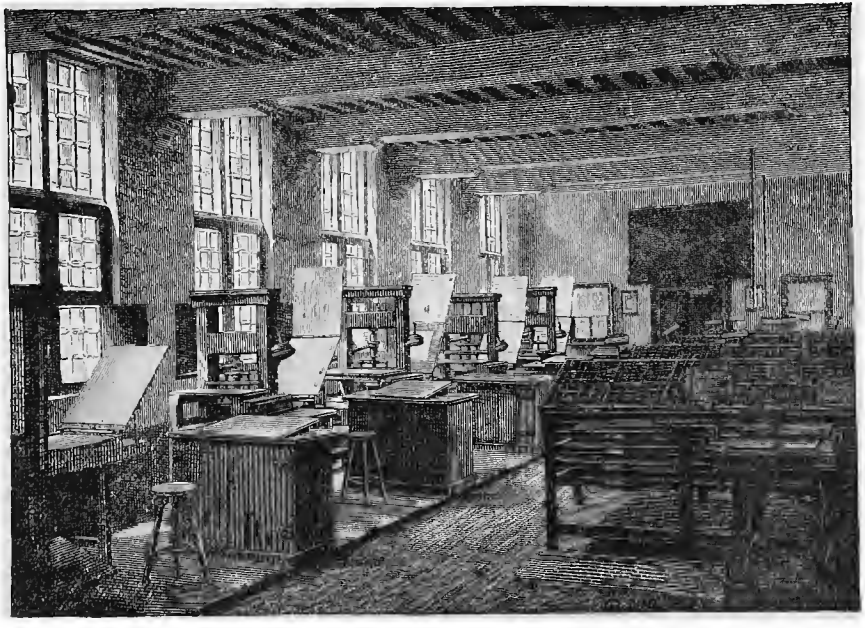
The fame of Plantin's press spread rapidly throughout Europe, and it is not surprising to learn that the King of France was anxious that he should leave Antwerp, and remove his magnificent printing establishment to Paris. Christopher Plantin, very naturally, did not attempt any such transplantation. He did, however, as we shall have occasion to mention further on, start branch establishments not only in Paris, but also in Leyden. In his more prosperous days Plantin

is said to have expended one hundred golden crowns a day in wages for pressmen and correctors, while even in his decline there are said to have been no fewer than seventeen presses at work in his printing-house.

"From this very office," says one writer, "such a succession of beautiful, curious, useful and magnificent works issued as filled Europe with astonishment, and raised the name of Plantin to the topmost pitch of glory."

The device of Plantin consisted of a pair of compasses extended, with the motto, "*Labore et Constantia.*" The great printer died in 1589, having, in rather more than thirty years, raised one of the most remarkable establishments in the whole history of printing, having, indeed, done as much as any other single individual for the improvement and advancement of the latest and most useful of the arts. He is said by one eulogist to have "excelled in every kind of type." Contradictory accounts tell us, one that Plantin died "poor and broken-hearted" (it is difficult to realise *why*), and another that he died "the richest, as well as the most famous, printer in Europe."

That he was at the time of his death the most famous printer in Europe is certain, and that he was something more than "passing rich" may be imagined from the fact that he was able to leave his three daughters and their husbands the entire plant of his three printing offices. One son-in-law, Moretus, whom he had earlier taken into partnership, succeeded him in the possession of the



PLANTIN'S PRESS ROOM IN THE MUSEUM AT ANTWERP.

Antwerp printing establishment. Through seven generations of printers the property descended to Edward John Moretus, the last of his race, who, some years ago, sold the building, with its unique wealth of typographical materials and curiosities, to the Antwerp city authorities for the sum of £48,000. The place was purchased as a public museum, and in it the citizens of Antwerp and visitors to the interesting old city may see, just as Christopher Plantin used them, the types, presses, and all other printing materials which long excited the world's wonder, and which remain to-day a splendid monument to the memory of a truly great man.

"Illustrious man, and venerable abode!—where the puncheons and matrices yet remain, which once astonished Europe with the result of their operations. I am speaking soberly, when I own that, of all the printers whose works have ever adorned the literary republic, none, I think, stand upon so broad and lofty a pedestal, as Christopher Plantin. Jenson and Robert Stephen had equal elegance, and Aldus and Froben equal zeal and learning; but take his smaller and his larger works together, his pocket Latin Bible and his Polyglot Bible, and you will hardly find anything to approach, certainly nothing to excel them."

We come now to consider the life and work of a famous English printer, one who "united in a singularly happy manner the elegance of Plantin with the clearness of Elzevir." This man is John

Baskerville, of Birmingham, thus apostrophised by M'Creery in his poem, *The Press*—

> "O Baskerville! the anxious wish was thine,
> Utility with beauty to combine;
> To bid th' o'erweening thirst of gain subside;
> Improvement all thy care and all thy pride:
> When Birmingham for riots and for crimes
> Shall meet the long reproach of future times,
> Then shall she find amongst our honoured race,
> One name to save her from entire disgrace."

John Baskerville was born in 1706 at Wolverley, in Worcestershire. He began the business of life in the not very promising position of footman to a clergyman; he cannot, however, have remained in such a situation long, for in 1726 he kept a writing school at Birmingham, and also, when opportunity offered, engraved inscriptions on tombstones. A slate tablet, which is now in the possession of a collector, is beautifully engraved as follows: "Grave Stones cut in any of the hands, by John Baskerville, writing master." Fourteen years later, Baskerville set up in business in the same town as a japanner, and evidently found the trade a profitable one, for about 1750 he was able to set about an undertaking which he had long desired to embark in. This was nothing less than printing. It was perhaps natural that the whilom schoolmaster, whose business was the improvement of his pupils' writing, should also wish to improve the letters for their *reading*. English typography had fallen into a bad way, although it is true, one man, Caslon, originally a gunsmith's apprentice, had already set about improving it. When, however, Baskerville turned his attention to

the printing press, he did not neglect the business which had given him his capital. He spent some years in experiments, trying to cut such letters as should please his own fastidious taste; before one such letter was finally produced, he had spent as much as six hundred pounds, and some thousands went before he began to reap any profits from his enterprise. Success, however, finally rewarded his efforts, for he brought the art of typefounding and printing to a perfection hitherto unknown; and in 1756, the first-fruits of his taste and industry were issued in the form of a grand quarto edition of *Virgil*, a work which Macaulay described as, "the first of those magnificent editions, which went forth to astonish all the librarians of Europe."

Baskerville did not live for quite twenty years after the publication of his fine *Virgil*, but in that time he issued from his press upwards of fifty works of the most varied kinds, including the Bible, a Greek New Testament, works of such modern writers as Milton, Addison, and Congreve, and such of the ancient classics as Juvenal, Horace, and Catullus. All of these were of course printed from those beautiful clear types, the perfect production of which had cost him so much labour, and so great an expenditure of money. When he died, on January 8th, 1775, he left a sum of £12,000, but this was probably what remained of the fortune made in the japanning, for the speculation in printing yielded him, it is to be imagined, more of honour than of profit.

In the following letter dated November 2nd, 1762, and addressed by Baskerville, from Easy Hill,

Birmingham, "to the Hon'ble Horace Walpole, Esq., Member of Parliament, in Arlington street, London," the enthusiastic printer gives some interesting details of his struggles and disappointments:—

"Sir,—As the Patron and Encourager of arts, and particularly that of Printing, I have taken the liberty of sending you a Specimen of mine, begun ten years ago, at the age of forty seven, and prosecuted ever since with the utmost Care and Attention, on the strongest Presumption, that if I could fairly excel in this divine Art, it would make my Affairs easy, or at least give me Bread. But alas! in both I was mistaken. The Booksellers do not choose to encourage Me, though I have offered them as low terms as I could possibly live by; nor dare I attempt an Old Copy till a Law Suit relating to that affair is determined.

"The university of Cambridge have given me a Grant to print their 8vo. and 12mo. *Common Prayer Books,* but under such Shackles as greatly hurt me. I pay them for the former twenty, and for the latter twelve pounds ten shillings the thousand; and to the Stationers Company thirty two pound for their permission to print one edition of the *Psalms in Metre* to the small *Prayer Book;* add to this the great expense of Double and treble carriage, and the inconvenience of a printing house an hundred Miles off. All this Summer I have had nothing to print at Home. My folio *Bible* is pretty far advanced at Cambridge, which will cost me near £2,000, all hired at five per cent. If this does not sell, I shall be obliged to sacrifice a small Patrimony, which brings

me in £74 a year, to this business of Printing, which I am heartily tired of and repent I ever attempted. It is surely a particular hardship, that I should not get Bread in my own country (and it is too late to go abroad) after having acquired the Reputation of excelling in the most useful Art known to mankind; while everyone who excells as a Player, Fiddler, Dancer, etc., not only lives in Affluence, but has it in their power to save a Fortune.

"I have sent a few Specimens (same as the enclosed) to the Courts of Russia and Denmark, and shall endeavour to do the same to most of the Courts in Europe; in hope of finding in some of them a purchaser of the whole scheme, on the Condition of never attempting another Type. I was saying this to a particular Friend, who reproached me with not giving my own Country the Preference, as it would (he was pleased to say) be a national Reproach to lose it: I told him nothing but the greatest Necessity would put me upon it; and even then I should resign it with the utmost reluctance. He observed the Parliament had given a handsome Premium for a great Medicine; and he doubted not if my Affair were properly brought before the House of Commons, but some Regard would be Paid to it. I replied I durst not presume to Petition the House, unless encouraged by some of the Members, who might do me the honour to promote it; of which I saw not the least hopes or probability. Thus, Sir, I have taken the Liberty of laying before you my Affairs without the least Aggravation; and humbly hope your patronage: to whom can I apply

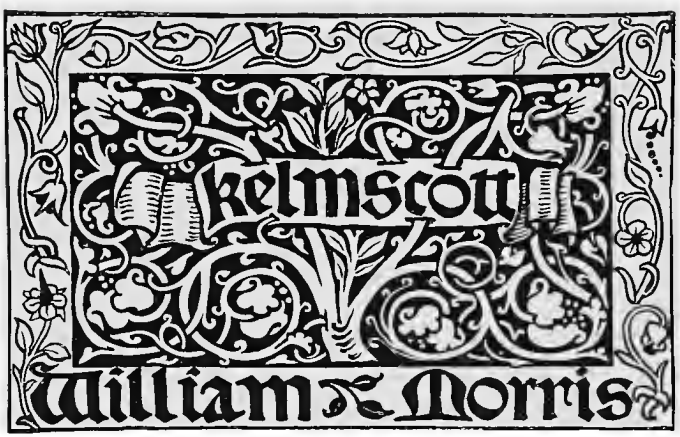
for Protection, but the great who alone have it in their power to serve me? I rely on your candour as a Lover of the Arts and to excuse this Presumption in your most obedient and most humble servant

"JOHN BASKERVILLE.

"P.S.—The folding of the Specimens will be taken out by laying them for a short time between damped Papers. N.B.—The Ink, Presses, Chases, Moulds for Casting, and all the apparatus for Printing were made in my own shops."

The printer does not appear to have got such patronage as he desired, and he tried subsequently to dispose of his entire stock of types, but without success; he did not, however, print much during the last few years of his life, considering, and apparently not without some justice, that he had not met altogether with such encouragement as he merited. Baskerville was described by one friend as "tasteful in all things," while another said that "he was much of a humourist." After his death the printer's widow, who survived him for a few years, discontinued the printing, although she carried on the type-founding branch of the business. Several unsuccessful attempts to dispose of them having been made, the Baskerville types were finally sold about 1779 to a literary society in Paris, for a sum of £3,700, and were employed in the printing of a fine edition of the works of Voltaire. What finally became of the types is not now known; but it has been conjectured that they may have been melted down for bullets during the troublous days of the great French Revolution.

It is of course impossible within the limits of one short chapter to give any really extended notice of the world's celebrated presses, for a large volume might easily be devoted to the subject. Here we have to content ourselves with but brief glances at some of the more notable, and must conclude with all too short an account of the modest establishment



THE KELMSCOTT PRESS DEVICE.

which has been set up on the banks of the Thames by Mr. William Morris. Seeing how, within the last few years, all who are interested in the book-world have had their attention drawn to the very beautiful productions of the Kelmscott Press, it is curious to learn how very recently it was that Mr. Morris entered upon his new career as "master printer." One of the very first poets of his time, he had already distinguished himself in several of

the arts and crafts, when he bethought himself of having his books more beautifully printed than they had hitherto been.

The Kelmscott press, which, despite its youth, is yet assured of a definite place in the history of this century, may be said to be more or less an outcome of the Arts and Crafts Exhibitions inaugurated in 1888. In the section of the exhibition of that year which was devoted to modern book-producing, Mr. Morris took a keen interest, and in the two or three years immediately following, he carefully superintended the printing of his own works at the Chiswick press. It then occurred to him that he might have a private hand-press of his own, and he at once, with characteristic energy and thoroughness, set about designing his own types for it. All the work of the old typographers was carefully examined and compared, and from a study of these types, old and new, from the points of view of readableness and beauty, the result was a very clear and artistic letter, which, taking its name from the first book printed with it, is called the "Golden type." This first work was Caxton's *Golden Legend.* In speaking to an interviewer* about his designing of this type, Mr. Morris remarked, "It's curious enough, when you come to think of it, what happened with printing. It was born full grown and perfect, but began to deteriorate almost at once. For one thing, of course, it was invented just at the end of the mediæval period, when everything was already pretty far gone. And its history, as a whole, has

* *English Illustrated Magazine*, April, 1895.

practically coincided with the growth of the commercial system, the requirements of which have been so fatal, so far as beauty is concerned, to anything which has come within its scope." This it was which caused the new master printer to go right back to the beautiful types of Jenson, and, among others, to "the generous and logical designs of the fifteenth-century Venetian printers," for his models. Mr. Morris, it has been said, himself designed the types, and as fast as each letter was completed it was placed in the hands of the punch-cutter, the matrices

This is the Golden type.

This is the Troy type.

This is the Chaucer type.

SPECIMENS OF MR. MORRIS'S TYPES.

were formed, and the types cast. The first book to be put in hand was the *Golden Legend* of William Caxton, but the first one to be actually ready was Mr. William Morris's own romance, *The Story of the Glittering Plain.* The new books were at once hailed with delight, and since the first issue from the press in April, 1891, all book-lovers have looked for the successive volumes with unusual and increasing interest.

Kelmscott House, Mr. Morris's home on the Mall between Hammersmith and Chiswick, received its name after the beautiful place near the source of the Thames, which has long been his country residence, and which is associated with memories of Dante

Gabriel Rossetti and others celebrated in the twin worlds of art and letters. In a cottage close to Kelmscott House, Mr. Morris set up his first press, and there began work, with a staff of assistants consisting of one man and one boy. Now, however, the visitor to the press finds that the work has so increased that the cottage has had to be given up, and a part of an old riverside mansion utilized for the purpose. Here, the visitor may see the compositors at work in an upper room, and in the front room on the ground floor an iron hand-press and a couple of pressmen, one engaged in inking the type by means of a hand-roller, and the other in fixing the sheets in position, turning the press, and taking the sheets off. This place is, however, not big enough, and another house yet nearer the river, and a few yards nearer Kelmscott House, is also used. On the occasion of my visit, two of the presses were being employed in printing off the sheets of a magnificent new folio edition of Chaucer's Works. It was interesting in the extreme to see this book—undoubtedly one of the greatest "triumphs of the printing press" of our time—in the making. The magnificent volume will be illustrated by close upon eighty pictures by Sir E. Burne-Jones, and large ornamental borders specially designed by Mr. Morris. As only limited editions are prepared at the Kelmscott Press, the illustrations are printed directly from the wood-blocks, instead of from electrotypes.* Beautiful as are these works, they are so costly as to be quite out of the reach of ordinary book-loving mortals; indeed, they are mostly sub-

* See p. 145.

scribed for long before they are ready. *Chaucer*, for instance, which I saw printing, and which is, so far, Mr. Morris's greatest undertaking, costs twenty pounds for the ordinary edition, while that printed on vellum, of which there are to be only thirteen copies, costs no less than one hundred and twenty guineas. At the third press, I saw the Kelmscott edition of Herrick's *Poems* in course of printing.

In describing the Kelmscott Press, to be able to say much one would need to be gifted with the ability of the journalist—as described by "Cynicus"—

> "To make something out of nothing
> And much more out of less."

To resolve "I will a plain unvarnished tale deliver," in describing the source of so much that is truly beautiful in the way of book-making, is to know that there is but little to describe, for so simple are the appointments in the two houses given up to printing, that, as the interviewer referred to above has put it, "one of the old printers might fall into place and resume the practice of his craft, were he allowed to re-incarnate himself and come here." The rooms in which the presses are now situated differ in truth but in small measure from the old-time printing offices. The resources employed by Mr. Morris might almost entirely have been employed by any of the old masters of the craft of whom we have learned in preceding chapters. The two important differences which took my eye, in looking round, were the iron presses in place of the old wooden ones, and the use of a hand-roller for

inking the type in place of the dabber which used to be employed. Otherwise, all is as it might almost have been four centuries ago. Just the plain presses, a man to work each, and a man to wield the ink-roller, while a lad stood by to place a sheet of plain paper on each printed sheet as it was taken from the press, so that there might be no "set off," as it is called—no impression of ink from one sheet on to another. The damp sheets—for at the Kelmscott wetted paper is used for printing on—are afterwards hung up along the ceilings of another room, so that they may thoroughly dry before being sent to the binders.

Simplicity is indeed the most striking characteristic of this home of beautiful work, and with a glance at the cases filled with blocks of the page borders designed by Mr. Morris, for the *Chaucer* and other works, and at the delicate wood-blocks of Sir E. Burne-Jones' illustrations, I came away deeply impressed by the fact that some of the finest products of the modern printing press come from a remarkably plain and unpretentious place, and full of admiration for the great poet, not the least of whose honourable titles is that which he has in a few years gained for himself, of one of the greatest of our "master printers."

CHAPTER VIII.

EARLY PRINTERS' CUSTOMS—THE "CHAPEL"—PRINTERS' "DEVILS."

"Let us turn then—[our eyes] on the benefits of the well employed Press; and we shall see it a mint of solid worth, the good it hath done (and yet may do) being inestimable; it is Truth's Armory, the Bank of Knowledge, and Nursery of Religion, never suffering a want of the sincere Milk of the Word, nor Piety's Practice to be out of print (and that not only in one book) weekly issuing forth helps to doing as well as Knowing our Duty."—WHITLOCK (1654).

SINCE the very earliest date at which printing was practised, a large number of new improvements and inventions have been made, which have greatly transformed the art, as might be seen by comparing one of the early products of the printing press with one of the present time. In some respects, it is true, the earlier volume would show superiority of workmanship, but then, in those days, printing was of course a much slower and more expensive process. We will glance in this chapter at some of those minor differences between fifteenth-century and nineteenth-century printing, which cannot be overlooked in dealing with this matter, but which, nevertheless, scarcely called for treatment, except in the most incidental fashion, in preceding chapters.

Originally, as we have seen, printing types were designed in imitation of the handwriting which was employed by the scribes, and this it is which accounts for the letters and words being so close together as to require very careful attention from those unaccustomed to them. Improvements in type-cutting were soon made, and the individual letters became much simpler and clearer towards the close of the fourteenth century, when Jenson began to use his exceedingly clear Roman type, which, slightly changed, is that most frequently met with in various sizes in books and newspapers. At the very end of the century, too, as we have already seen, Aldus began to use the graceful *italic* type, which was said to have been cut in imitation of the handwriting of the poet Petrarch. Here, too, it may be added that the cutting of letters, from which the matrix was to be made in which the types were to be cast, was chiefly entrusted to goldsmiths and coin designers, and only to the chief masters of those crafts.

Early books were printed straight on, without title pages, or divisions into paragraphs, as we have them now. Title pages, indeed, were scarcely known until 1480, and did not become at all common until the beginning of the following century. The pages, too, were not numbered at first, and "signatures" were unknown until about 1470, when they were used in an edition of Terence, printed in Milan. In some books printed at Paris a few years later, signatures are found at the tops of the pages. These, it may be as well here to explain for the benefit of the

uninitiated, are single letters or numbers put at the bottom of what is to be the first page of each sheet of a work printed; for example, in an octavo work (such as this), that is to say, a book each sheet of which folds into eight leaves — on every sixteenth page will be found letters or figures in succession, A on page 1, B on page 17, C on page 33, and so on. This is of very great service to the binder, when he has to fold and arrange the sheets of a work before he begins the actual binding.

Seeing that it was the custom for the scribes to gorgeously illuminate in gold and bright colours any manuscript which they copied, it is not surprising to find that in early printed books the first letter of each important division was omitted, so that it might be inserted by hand, and be "illuminated" by a special artist. This was, of course, not difficult in the days when an edition of a book consisted of but a comparatively few copies, when, indeed, the art itself was considered more as a useful way of accelerating the production of "manuscripts" than as an invention of world-wide and time-long significance.

All the earliest printed books had places thus left bare of type for the illuminator to work upon, and many examples of such works may be seen by any visitor to our great public libraries. Printing and hand-work were indeed allied still further than this in early books, for, at first, quotations from such languages as Hebrew or Greek, where a different kind of lettering was necessary, were written in by hand after the work was printed.

The illuminated initial was superseded early in the sixteenth century by engraved initial letters, designed by such artists as Hans Holbein. With certain modifications, these have come down to us, so that wherever we see a fancy initial, or even a first letter a little larger than those which follow, as at the beginning of each chapter of this little book, we may know that it is a survival of the illuminated letters which were used by the scribes when printing was unknown. What these letters were originally like may be seen by anyone who walks through the galleries of the British Museum. Many of the ornamentations ran from the initial letter right down the side or along the top of a page.

Books were, in fact, printed at first in simple imitation of handwriting; there was no variety in the sizes of the types, there were no "running titles," as at the tops of the pages of this volume, there were no numbers to the pages, and no "signatures," as we have seen; and there was no division of the work into paragraphs for half a century after the invention had been made.

In the matter of punctuation and spelling, too, there is much that is interesting in the earliest products of the press. In regard to punctuation, the interest lies, it is true, in its almost total lack, while as for the spelling, there was, as may easily be imagined when we come to think of it, scarcely likely to be any real system. Each scribe spelled, more or less, in the way which seemed simplest to him, and used such contractions of words as he considered convenient. The printers at first could, of

course, only follow the writers of the manuscripts which they were copying; but as soon as books began to be multiplied, it was found necessary to arrange a common spelling which all should employ, and so spelling itself, as systematized, we may regard as one of the products of the printing press. We have only to consider how very perplexing it would be if each writer were permitted to spell the words he used just as he chose: as it is, to a reader of very old manuscripts and books, there often occur times when he finds it most puzzling to come across the same word spelled in two or three different ways in one book. Indeed, the writers and printers did not trouble even to be consistent in the spelling of their own names, and to give but one example, we find Wynkyn de Worde putting his name on the books which he printed in quite a variety of ways.

While on the subject of spelling, a few words may be said on the allied one of the contractions employed by early printers. Spelling, we have seen, was without method; and without method, too, was the use of contractions; each scribe and printer used those which seemed easy to him, and although there were of course many in more or less general use, there were others peculiar to each particular printing-office. In course of time these grew so numerous that a book is said to have been written about them, so that correctors for the press could discover what word a given contraction represented without spending a long time in puzzling over it. The extent to which these contractions were employed may be

guessed from the following examples taken from early Latin works:—

sic	=	sicut	g̃	=	ergo
c̃	=	est	ñ	=	non
s̃m	=	secundum	Dõ	=	Deo
q̃d	=	quid			

In the matter of punctuation, too, simplicity was the rule, for the only mark employed for some years was the point, or full stop (.). The comma (,) was a later invention, and its place was first taken by a thin oblique dash after that part of a sentence where a light pause was to come. After one sentence is closed with a full stop, we now always begin the new sentence with a capital letter, but this was not done earlier. The first semicolon (;) was employed in Hakluyt's *Voyages*, printed in 1599.

The colon (:) is to be found in Bale's *Act of English Votaries*, a work published in the middle of the sixteenth century; within the following fifty years, however, its use became fairly general. The first note of admiration or exclamation (!) is to be found in the *Catechism* of Edward VI., and there curiously enough it occurs only once, in the following sentence—"Master, oh the unthankfulness of men!"

"Errata," or lists of errors of the press discovered too late for correction, began to be issued in 1478, occurring for the first time in an edition of *Juvenal*, published at Venice in that year. Nowadays, important works often have such "errata" published with them. On this subject the following epigram

is amusing. At the close of a stupid book the author had put the word "finis"=the end. A wit who picked the volume up wrote "finis" in the list of errata, and justified his doing so in the following couplet:

> "Finis! an error, or a lie, my friend!
> In writing *foolish* books—there is no End!"

The printer's name, and the place and date of publication of a book, were often omitted in the earlier issues of books; and often, when printed, they were in the midst of a long rigmarole, which is, however, frequently useful as showing the origin of the work in question. Dates when given are found sometimes in words, sometimes in figures, and sometimes in the two styles combined, as follows, "cccc and lxxiiii." It may be mentioned, too, that in early works the date was always printed at the end, not, as is the rule nowadays, at the beginning. A curious example of the dating of books by Olympiads occurs on one of the earliest works issued from the printing press at Oxford (1485). But it is not only worthy of note as being dated by Olympiads, instead of in the usual manner, but also as containing a Latin poem, showing the rivalry between the English printers and their Continental *confrères*. The following is a translation of the poem in this book, which was "auspiciously imprinted in the pious University of Oxford, in the two hundred and ninety-seventh Olympiad from the birth of Christ."*

* A strange error, by the way, occurs in this reckoning, as an Olympiad was but four years, while it is here reckoned as being five.

"Theodoric Rood, a German born,
O' the city of Cologne,
That he this curious book did print,
To all men maketh known;
And his good partner, Thomas Hunte,
An Englishman he was:
Now aid them Heav'n! that so they may
Venetian skill surpass.

"A man of France, nam'd Jenson, taught
The Venetians this fair art,
Which Britain, by her industry,
Did to herself impart.
Engraved books to send to us,
Which in deep lore excel,
Cease, O Venetians! yield to us—
We to all others sell.

"The language, Romans, which by you
So long before was known
Is now at length by us attain'd,
And used with our own.
The Britons severed from the world,
Though Virgil truly sung,
They now can well his works peruse
In his own Latin tongue."

A few words must be said of a curious printer's custom, the origin of which is not definitely known, but which has been shrewdly guessed at, namely, that of calling a printer's office a "chapel," and a duly elected workman of the establishment, the "father of the chapel." Certain it is that to this day these terms are used in all our printing houses, and that fines for the benefit of the chapel,—or the body of compositors and printers—are imposed for certain offences. The term, it has been suggested, originates in the fact of Caxton's press having been set up within the

precincts of Westminster Abbey. The suggestion is, at any rate, a plausible one, and may well be assumed to be correct, in lieu of a better. Another, but less likely origin, is suggested by Moxon, in an old book on the mechanical arts. Writing a couple of centuries ago, Moxon says, "Every printing house is, by the custom of time out of mind, called a Chapel, and all the workmen that belong to it are members of the Chapel; and the oldest foreman is father of the Chapel.* I suppose the style was originally conferred upon it by the courtesy of some great Churchman or men (doubtless when Chapels were in more veneration than of late years they have been here in England), who, for the books of divinity that proceeded from a printing house, gave it the reverend title of Chapel." The supposition that the custom arose from Caxton's printing office being in Westminster Abbey seems more likely to be true. This theory was, I believe, first propounded by M'Creery in his poem on *The Press*.

> "Each printer hence, howe'er unblest his walls,
> E'en to this day his house a Chapel calls."

From the chapel it is an easy step to the chapel's errand boy, and time out of mind (as Moxon has said of the custom of calling the printing house a Chapel) it has been the custom to speak of the small errand boys of the printing office as "printer's devils." Whence the term arose it is now difficult to determine, but the following passage from the *Grub Street Journal* of October 26, 1732, is, if not

* The "father of the chapel" s now always elected by his fellows.

strictly accurate, at least entertaining: "As I was going the other day into Lincoln's Inn, under a great gateway, I met several lads loaded with great bundles of newspapers, which they brought from the stamp office.* They were all exceeding black and dirty, from whence I inferred they were 'printers devils' carrying from thence the returns of unsold newspapers after the stamps had been cut off. They stopt under the gateway, and there laid down their loads, when one of them made the following harangue: 'Devils, gentlemen, and brethren—Though I think we have no occasion to be ashamed on account of the vulgar opinion concerning the origin of our name, yet we ought to acknowledge ourselves obliged to the learned herald, who, upon the death of any person of title, constantly gives an exact account of his ancient family in my *London Evening Post*. He says, there was one Monsieur Devile, or Deville, who came over with the Conqueror, in company with De Laune, De Vice, De Val, D'Ashwood, D'Urfie, D'Umphry, etc. One of the sons of this monsieur De Ville was taken in by the famous William Caxton, in 1471, as an errand boy, was afterwards his apprentice, and in time an eminent printer, from whom our order took its name; but suppose they took it from infernal devils, it was not because they were messengers frequently sent out in darkness, and appeared very black, but upon a reputed account, viz., John Fust, or Faustus, of Mentz, in Germany, was the inventor of printing,

* Newspapers, until 1855, had to pay a certain duty per copy, and had to be duly stamped at the stamp office before they could be sold.

for which he was called a conjuror, and his art the black art. As he kept a constant succession of boys to run on errands, who were always very black, these they called devils, some of whom being raised to be his apprentices, he was said to have raised many a devil. As to the inferior order among us called flies, employed in taking newspapers off the press, they are of later extraction, being no older than newspapers themselves. Mr. Bailey thinks their original name was lies, taken from the papers they so took off, and the alteration occasioned thus: to hasten these boys the pressman called, flie lie, which naturally fell into one single word, flie. This conjecture is confirmed by a little corruption of the true title of the *Lying Post*; since, therefore, we are both comprehended under the title devils, let us discharge our office with diligence; so may we attain, as many of our predecessors have done, to the dignity of printers, and to have an opportunity of using others as much like poor devils as we have been used by them, or as they and authors have been used by booksellers. These are an upstart profession who have engrossed the business of bookselling, which originally belonged solely to our masters. But let them remember that, if we worship Belial and Beelzebub, the God of flies, all the world agrees that their god is Mammon."

The printer is a little hard upon the "upstart" booksellers, but his harangue is nevertheless amusing, although the truth of his history may be more than doubted.

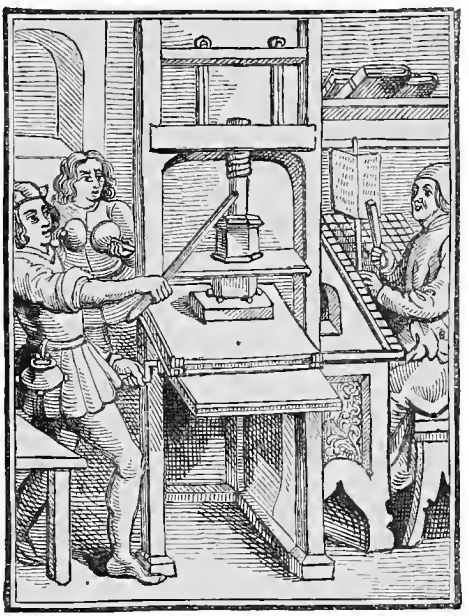
CHAPTER IX.

PRINTING PRESSES—ELECTROTYPE—STEREOTYPE—COLOUR PRINTING.

"And out of the witchcraft of their skill
A creature he called to wait on his will—
Half iron, half vapour, a dread to behold—
Which evermore panted, and evermore roll'd,
And utter'd his words a million fold:
Forth sprang they in air, down raining like dew,
And men fed upon them and mighty grew."—ANON.

WE come now to consider a very important matter, which however can necessarily only be briefly dealt with. A whole volume might be devoted to the subject of the actual printing press, and its present day equivalent, the printing machine. The old-fashioned press was worked in a somewhat similar fashion to that practised in every office, in the taking copies of written letters by means of a "copying press." The copying press, as most of my readers will be aware, works by the pressure of the damped page of a letter-book against the letter which has been written, the pressure being brought about by means of a screw with cross-handles, which on being turned around lowers a heavy plate of iron upon the book and letter underneath. Well, the old world printing press worked in a very similar manner. It was, of course, much

larger, and had an additional arrangement for holding the sheet of paper in exact position over the forme of type. The likeness and difference may be seen from the accompanying illustration of an old-fashioned wooden handpress. At the present day,



AN OLD PRINTING PRESS.

where printing presses are worked by manual labour, the presses are of iron; some of them—as those at the Kelmscott press—very similar in principle to the old wooden ones, and others entirely different. From the time that typography was invented, the printers long contented themselves with the simple old con-

trivance, with but few improvements up to the present century. Once, however, inventors had set to work upon the idea of getting a machine which should do the work, improvements followed one another with extraordinary rapidity, until there is a far greater difference between the mechanism employed in printing at the two ends of the nineteenth century than there is in the earliest kinds of types used and those of to-day. The art of printing was revolutionised by the introduction of machinery worked by steam. A close description of such machinery would be so full of technicalities as to be quite out of place in a small work like this, which is not only intended for popular reading, but which aims at describing the method of printing, not so much from a mechanical as from a historical point of view.

A Dutch mathematical instrument maker, one William Janssen Blaew, was the first to set about improving the old wooden press, and as improved by him it continued in general use throughout the whole of Europe up to the early part of the present century. The earliest change in the press was made by an ingenious nobleman, the third Earl of Stanhope, brother of the great Pitt, Earl of Chatham, and father of the eccentric Lady Hester Stanhope. This, which was a lever press, was known by the name of its inventor, and was chiefly remarkable in that it more evenly distributed the pressing power, and so enabled the pressman to do his work with greater nicety. Some other inventors further improved this press; and it, in its turn, was superseded by the

Columbian press, introduced into England by its patentee, Mr. George Clymer, of Philadelphia. With all their improvements the utmost work that could be got out of these machines was about one hundred and twenty-five sheets per hour.

An important step forward was made when first the idea occurred of getting the pressure from a revolving cylinder, instead of from a flat weight. This notion has been aptly spoken of as "the mechanical key-note to fast printing," and it first occurred, towards the close of the last century, to one W. Nicholson, who took out a patent for a cylinder printing machine. Little seems to have come of this patent, and about the same time a German inventor, König by name, was carrying out a series of experiments with the object of producing a quick printing machine. In 1804, he came to London to seek for encouragement in his arduous undertaking, but for some time had to content himself with making small improvements in existing presses. Meanwhile, however, he was devoting himself to the perfecting of his pet idea—the invention of a cylinder machine worked by steam power. At length he finished a working model, and submitted it to Mr. Walter, of the *Times*, and a couple of machines were ordered. Before, however, the *Times* was printed by machinery for the first time (in 1814), a successful experiment was carried out in the printing, in April 1811, of part of the *Annual Register* for 1810. Of one sheet of this book, that marked with the signature "H," about three thousand copies were printed in the new method. The machines ordered by the proprietor of

the *Times* were pushed forward as rapidly as possible, and in the issue of that journal for November 29th, 1814, there was a communication to the readers informing them there was presented to the public of that day "the practical result of the greatest improvement connected with printing since the discovery of the art itself." The communication then went on to describe the machinery employed, but that has since been so entirely superseded that a close account of it is not necessary here. The notice to readers concluded, "the whole of these complicated acts is performed with such velocity that no less than eleven hundred sheets are impressed in an hour." We are not told whether the eleven hundred sheets were completely printed, or whether it merely means that eleven hundred sheets passed through the machine, for as the König only impressed one side of the paper at a time, the difference would be considerable. The advance on the old flat-printing presses was, in any case, very great. The König machine was, however, a very complicated affair, and thirteen years later it was superseded by one invented by Messrs. Applegarth and Cowper, which printed nearly *thirty* times as rapidly.

The next improvement was made in the shape of the famous "Hoe" machine, which was introduced into England in 1857, and which, with later improvements, is extensively used at the present day. This machine was the invention of an Englishman, Robert Hoe, who was born in Leicestershire, in 1784, and who emigrated to America. He was assisted by his son Richard. In the earlier presses the type

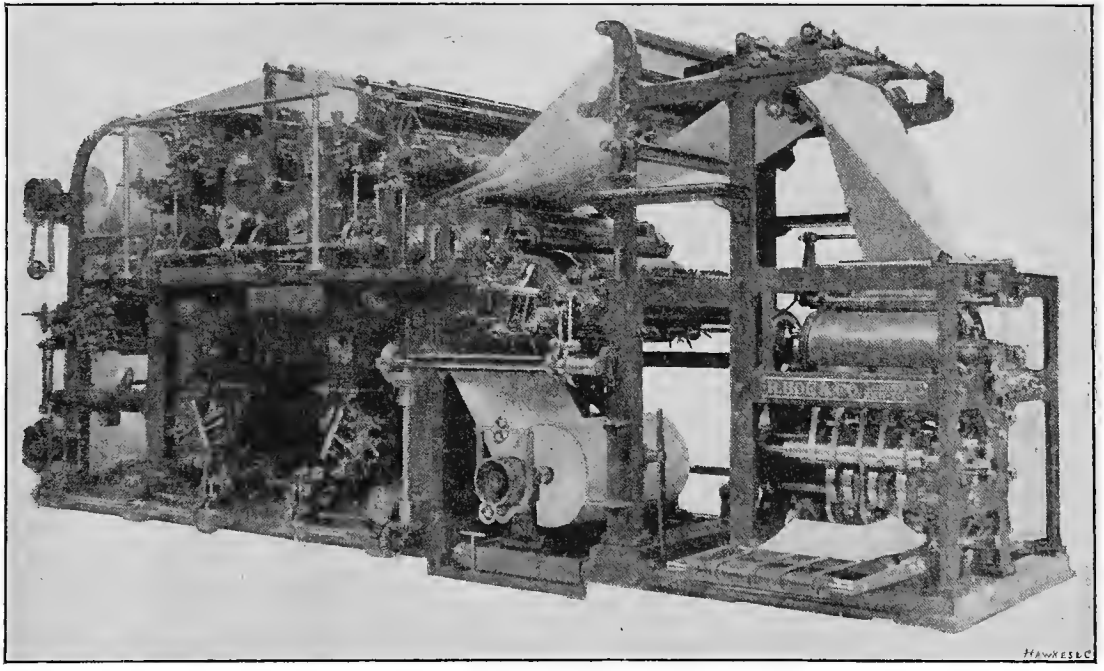
was inked by a roller, which travelled backwards and forwards, and was then laid under a cylinder which carried the paper. Richard Hoe improved upon this by placing the type on a fixed cylinder, and making the impressing cylinders travel around it. Later still he fixed the type on a revolving cylinder, in contact with which revolved four impressing cylinders. This "rotary" press became known as "Hoe's lightning press." Not content with this, the younger Hoe, later still, made a machine which printed from a five-mile-long sheet or web of paper, and on both sides of the paper at once.

Another modern press is the "Walter," named after the proprietor of the *Times*, to whom it owed its existence, and which was completed in 1869. This magnificent machine was the "outcome of an elaborate and costly series of practical experiments, such as could only have been carried on in a printing establishment of the magnitude of that pertaining to the *Times*." Yet another modern press extensively used is the Marinoni, named after its inventor. These three mentioned last—the Hoe, the Walter, and the Marinoni—are those mostly employed in all large printing establishments.

The accompanying illustration, which has been chosen as being a modern type of machine, will give readers some idea of the mighty giants which work throughout the night at extraordinary speed, printing our daily papers. It is one of the "Hoe" machines with latest improvements. To describe its formation and action would take up a great deal of our space, and would probably only then be under-

stood by readers acquainted with the mystifying technicalities of machinery terms. This machine is known as the "Hoe Double Supplement Web-Printing and Folding Machine," and is employed in the offices of a number of the chief London daily papers, including those of the *Daily Telegraph*, *Standard*, and *Daily Chronicle*. Why it is called a Supplement Machine is because it will print, simultaneously, the ordinary eight pages, and a two or four page supplement, so that when, as often happens, a daily paper is issued in an enlarged size, it is yet produced from the printing press at the same rate as usual. The following is the manner in which the machine works. At one end there is a roll of paper double the width of the sheet which is to be printed, and from this roll eight pages are unwound, while at the other end of the machine, at right angles to the first roll, is another, only of the exact width of the sheet to be printed. This second roll supplies the supplementary sheets of two or four pages which may be required. This machine will print, fold, and count as many as twenty-four thousand papers per hour, provided that there are not more than twelve pages. Should the paper be larger (16, 20, or 24 pages) the machine will turn out twelve thousand copies per hour.

The "Hoe Three-Roll Machine" is the most recently designed, and is employed in several of the larger newspaper offices, both in the metropolis and throughout the United Kingdom. The following are the names of a few representative newspapers which are printed from it: the *Times*, the *Scotsman*,



"HOE" PRINTING MACHINE.

Glasgow Herald, Manchester Guardian, Yorkshire Post, Leeds Mercury, and *Birmingham Post.* It is quite impossible to convey any adequate idea of the working of one of these modern triumphs of ingenuity and inventive skill by a mere verbal description, but the following account of how this fine machine works may prove useful to those readers who take sufficient interest in the matter to seek an opportunity of visiting the printing offices of one of our big newspapers, that they may see for themselves the sureness, the ease, and the incredible swiftness with which these complicated pieces of mechanism do their work. This three-roll machine is capable of printing and folding to half-page size, four and six-page papers at the rate of 48,000 copies per hour; eight, ten, or twelve-page papers at the rate of 24,000 copies per hour; and sixteen, twenty, or twenty-four-page papers at the rate of 12,000 copies per hour, all cut at the head, and counted in bundles of any number required. This machine owes its name to the fact that it is arranged for three independent reels of paper, each of the same width as the sheet to be printed, and each roll has its own complete printing mechanism, so that practically there are three machines in one, capable of working separately, or in combination. When a four-page paper is required, one reel only is used with its printing mechanism; for an eight-page paper, two reels are used, the printed product of one being made to meet the printed product from the other—four pages upon four pages making up the eight-page paper required. These printed, but uncut, webs of paper pass down

a triangular plate called a "former," which folds them into page size; they are then pulled over this triangular plate by a pair of rollers passing them on to a folding cylinder; needle points, carried by this cylinder, dart out and seize the leading edge, conveying it around itself until the centre of the sheet is in a line with a pair of small rollers, when a rotary blade of unique design, carried by this cylinder, moves quickly out, and tucks the centre of the sheet between these rollers, thus folding it. At the same instant the needles are withdrawn, and the sheet is cut off to the correct length. From these folding rollers the sheet falls into a rotary fly, which deposits it on to travelling bands, and from these bands the now completed sheets are removed to the despatch room. For a twelve-page paper, three rolls of paper are used, each with its own printing mechanism; thus the three webs of paper full width produce a twelve-page paper. These are folded and delivered in the same manner as the eight-page paper. For a ten-page paper, three reels are used, but one of them is only half the width of the other two. In this case the two page sheets are inset between the two four pages, and the whole pasted together down the back. The eight and twelve-page papers are also pasted in like manner, so that the pages can be turned over like any ordinary book.

Letterpress printing machines are roughly divisible into three kinds—(1) "simple cylinder," by which the sheet of paper is printed on one side of the paper only; (2) "perfecting," by which the printing is done on both sides of the paper at one operation;

and (3) "platen" which prints one side of the sheet only, and by means of flat pressure. There are besides, various kinds of rotary machines with small mechanical differences. It is, it may be added, difficult to comprehend the working of a printing machine from a mere verbal description, and readers wishful to realise the wonderful mechanism which takes in the end of a miles-long roll of paper, and issues complete and properly folded copies of a newspaper, at the rate of very many thousands an hour, should take an opportunity of visiting one of the large newspaper printing offices and seeing the "machinery in motion."

Two very important matters, which must be briefly dealt with in this chapter, are those of stereotypes and electrotypes. Electrotypes, or "electros" as they are generally called, are copies of wood cuts or of formes of type produced by means of the electric deposition of copper upon a mould taken from the original. A wax mould is taken of the surface to be reproduced, and this is covered with plumbago to give it a conducting surface to which the copper will adhere. The positive pole of an electric battery is then placed in contact with the mould, and the negative pole with a copper plate. Both are then immersed in sulphate of copper in solution. A thin film of copper is deposited by electric action on the face of the mould; when this film has become as thick as a stout sheet of paper, the mould is removed from the bath, and the shell of copper is detached from it and is then "backed"

by some type metal. When cold, the plate is reduced to an even thickness by planing its back, and then, for printing, the metal plate is fastened on a block of wood. Roughly speaking, to translate the process into typographical terms, the original wood block takes the place of the punch, the waxen or other mould that of the matrix, while the completed "electro" is like the type. A large number of book illustrations are printed from electros. By their use the original wood block receives the minimum of damage, as a large number of electros may be taken from it. Indeed, by following the same method, new electros may be made from the others.

Stereotyping comes from a Greek work signifying solid, and the English word type. It is the process by which a single plate is taken from the forme of movable types; and that which made rotary printing a possibility. The original kind of stereotyping by means of plaster, was invented by an Edinburgh goldsmith, named William Ged, early last century. So successful was Ged's process, that he was commissioned by the University of Oxford, in 1731, to manufacture stereo-plates for Bibles and Prayer-books.

In this process, after the type is "locked up" in the forme, the face of the whole sheet of it is thinly and evenly oiled with a brush, and surrounded by a frame; plaster of Paris, mixed with water, is then poured over it, and makes a mould of the entire forme. When this has hardened, it is dried in an oven to remove all the moisture, and it is then used as a mould into which type-metal is run,

and so a *fac-simile* of the original forme of type is secured. About a century later this system was superseded by the invention, by another Scotsman, named Wilson, of the *papier maché* process. This system, with but slight modifications, is that now generally employed in newspaper offices. After the type has been set up by the compositors, and been locked up in its forme, the forme is sent to the foundry and "stereoed" in something after the following fashion: the *papier maché* mould is prepared by spreading paste over a sheet of fairly thick unsized paper, and covering it with sheets of tissue paper, each of which is carefully flattened, and the whole then saturated. The face of the type is oiled, and the surface of a paper, powdered with French chalk, laid upon it. The back of the paper, which is then uppermost, is covered with a damp cloth, and is smartly and regularly beaten all over with a beating brush, so that the soft paper and paste is driven into all the interstices of the type, and a mould thus formed. The cloth is then removed, and another sheet of damp paper laid on the whole and beaten over again, so as to make it join well with the back of the newly formed matrix. The back of this *papier maché* matrix is then levelled, covered with a double thickness of blanket, placed in a screw-press, and subjected to strong pressure over heat. The matrix is thus rapidly dried, is removed from the press, and has its edges trimmed, and is then placed in a ready heated casting-mould. Just sufficient distance is left between the surface of the matrix and the cover of the casting-mould to make

the thickness of the stereo-plate. The molten type metal is poured in, and as soon as it is set the plate of metal is removed, and the matrix is put by for future use, or destroyed. The plate, which is, of course, a *fac-simile* of the original forme of type, is then trimmed, and is ready for putting on the press for printing from. When the stereotype has to be put upon a cylinder for rotary printing, the only difference is that the *papier maché* matrix is placed in a specially shaped casting-mould, in which it forms a segment of a circle of just such a size as to fit the impression cylinder of the printing machine. This reads like a very lengthy process, but twelve minutes after a forme has left the compositors' room the stereo-plate is ready for fixing upon the machine.

The alloy used in the preparation of stereos is composed of the same materials as those used for ordinary type metal, that is to say, lead, tin, and cadmium. The best and hardest alloy for the purpose is said to be made of these metals, in the proportion of 20 parts of lead, to 12 parts of tin, and 9 of cadmium.

Yet another matter which can here be but briefly touched upon is that of colour-printing, a subject which cannot fail to be of interest to many readers, owing to the widespread popularity of the coloured plates which are so important a feature—especially at the Christmas season—of many of our weekly papers and magazines. There are two kinds of colour-printing, the essential differences of which

are sufficiently indicated by their names—chromo-lithography, and chromo-typography. The latter method is, comparatively speaking, but little employed nowadays, except where a very large number of impressions are required. Some quarter of a century ago this method was more freely used. Chromo-lithography, or colour-printing from stone blocks, is the method most generally employed, both for the production of what we know as coloured plates, and also of coloured show cards and advertisements.

Chromo-typography is the system which is allied to ordinary typography, only instead of one printing such as is sufficient for obtaining an impression in black and white (like this page), sometimes the plate has to be printed as many as ten or a dozen times—for each separate tone requires a separate printing. First, a block is prepared, giving the outlines of the painting which is to be reproduced. Then blocks have to be employed for each of the various colours to be used, and the plate is thus printed bit by bit, and even after three or four or even more printings, it gives very little indication of what the completed picture will be like. But gradually after each impression of a new tone or colour, it begins to take shape, and at length, after a number of printings, the "plate" is completed, and is a fairly close reproduction of the original painting. This colour-printing requires very careful workmanship in the preparation of the blocks, in the ensuring that the "register" shall be kept perfect—that is to say, that each colour shall be impressed at exactly the required place, and not,

as we sometimes see in carelessly done work of this kind, one colour right over the edge of the object to which it is supposed to belong.

In the second and more generally employed method of colour printing, that of chromo-lithography, each colour has to be impressed from a different stone block, and, of course, the thing printed must receive one, two, three, or more impressions, according to the number of tones employed in the composition. The stone which is used for this kind of printing is of a peculiar nature, and is chiefly found in the Solenhofen quarries in Bavaria, although some is found in France, and some in different parts of the North American continent. This process of lithographic printing was, it may be added, invented about a century ago, between the years 1796 and 1800, and the inventor was a certain native of Prague, named Alois Senefelder.

The following is a brief description of the art of chromo-lithography as at present practised. A drawing of the design to be reproduced is first made in outline, then a number of stones are taken, one for each colour, and the design is transferred to the polished surface of each. Then the artist marks in litho-ink (a preparation composed of wax, lamp-black, and other ingredients) the part of the design on the stone which is to take a particular colour, and the stone is put upon the press, and passes under both damping and colour rollers; that portion which is inked retains the colour while it repels the water, while the rest of the picture becomes quite wet, and thus repels the colour. The stone, being damped

and inked at each movement, thus passes to and fro under the impressing roller, which carries the paper to be printed. This operation has, of course, to be repeated for each picture as many times as there are different stones (or different colours) to be employed. For example, where a plate is to be printed in eight or ten colours, first the yellow impression is taken, and when all the plates have been passed over the yellow stone it is removed, the machine is cleaned, the next coloured ink to be employed is prepared, the second stone is fixed in, and all the plates are passed through the machine a second time, and receive a second impression of colour, and so on; the colours are added in regular order with a view to getting the best effect from the whole combination.

CHAPTER X.

COMPOSING MACHINES—"TYPOGRAPHY WITHOUT TYPE."

"The admirable invention of printing enables the artist to make a thousand copies from the original manuscript in far less time, and with less expense, than it would cost to make half a dozen such copies with the pen. From the period of this glorious discovery knowledge of every kind might be said to be brought out of the cloisters and universities, where it was known only to a few scholars, into the broad light of day, where its treasures are accessible to all men." SIR WALTER SCOTT.

THE early printers would be greatly astonished, could they have been made aware of the extraordinary development of their "newly invented art and craft of typography," which was to take place within the next three or four centuries or so. Not the most sanguine among them could, even in his wildest imaginings, have thought of a day when printing should be done by machinery, worked by steam, when type-setting should be done by machinery, or—latest and most wonderful development of all—when one machine, more rapid than all others, should make its own types, while the compositor merely sat and touched a number of keys. Wonderful, indeed, are the modern developments of some apparently simple inventions. Far-reaching as have been the results of Gutenberg's

work, some of its results are really more wonderful in comparison with it, than it is in comparison with the block-book from which it arose. Given the block-book, the notion of printing from movable types might be nothing more than a "happy thought," but given typography, it must have required long and patient experimenting, and a succession of "happy thoughts," before a "Linotype" machine could have been perfected. It is indeed no exaggeration to say, as one writer has done, that this new machine is to the printing business of to-day what Gutenberg's invention was to the scribes' writing of the fifteenth century.

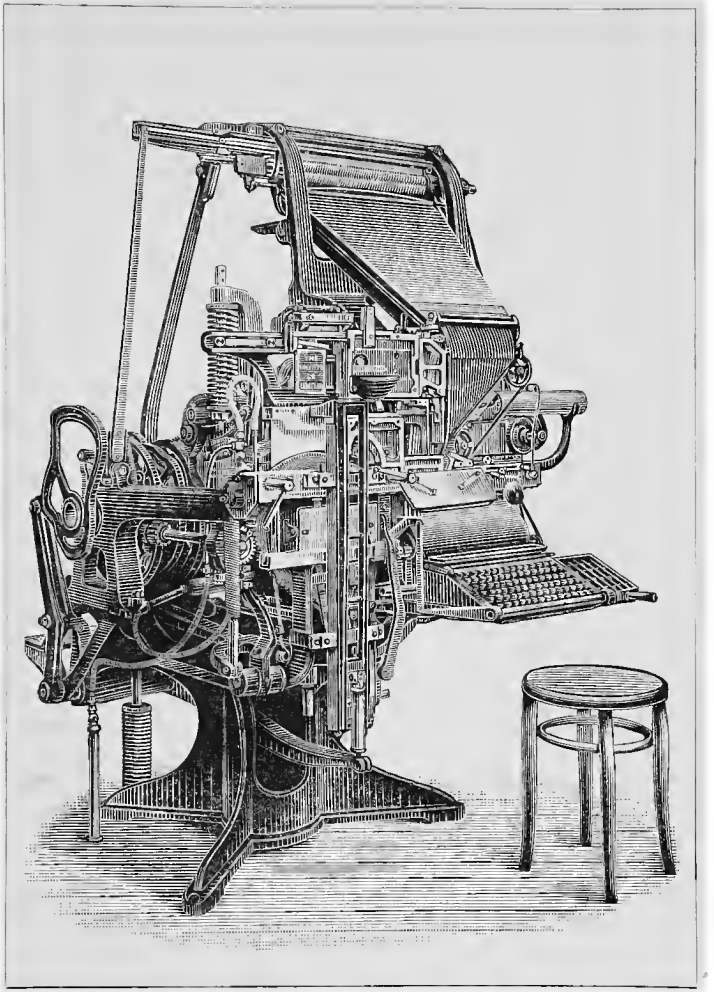
During the present century many attempts have been made to perfect a system of type-setting, or composing, by machinery. Several such machines have been made with varying success. At the present time, the most generally-used one appears to be the "Linotype," and of this we shall have something to say further on, but meanwhile, we may glance at earlier attempts in the same direction. One of the simplest composing machines is known as the "Fraser," and with this no fewer than ten thousand pages of the latest edition of the *Encyclopædia Britannica* were set up. This machine will set up types at a speed amounting to twelve thousand an hour, that is to say, roughly speaking, that an expert user of it could in one hour compose ten pages of this volume. This machine sets its types in one continuous line, which has to be divided and "justified" by the operator, or by someone assisting him.

One kind of type-composing machine, the invention

of Mr. Charles Kastenbein, was introduced into the *Times* office in 1872, and, with later improvements, is still in use for composing almost the whole of the paper with the exception of the advertisements. Unlike the "Fraser," the "Kastenbein" machine (which can be worked up to a speed of 13,000 types an hour) requires two operators, one as compositor and the other to "justify" the lines as they are set, that is to space them out to their proper width.

The two composing machines referred to are not the only efforts that have been made towards the setting of type more quickly than it is possible for a compositor working "at case"; they are, however, two of the most successful, and may be taken as representative ones. The next step forward is that referred to in the opening paragraph of this chapter, the step forward which meant, very literally, the practice of typography without the use of types.

We owe the invention of printing to Germany, and the inventor of the latest "triumph" in connection with it is an American citizen of German extraction. His name is Ottmar Mergenthaler, and he was by trade a clockmaker, when, in 1880, he first turned his attention to the principle involved in type-composing machines. He carried on a long series of experiments, but must soon have found himself well on the track of his great idea, for by 1884 he had completed his first "Linotype" machine. The new invention was soon taken up in America, and a large number of improvements made in various parts of the mechanism. In 1891 it was introduced into England, but even since then a number of highly important improve-



THE LINOTYPE COMPOSING MACHINE.

ments have been invented, so that Mergenthaler's original machine is now very much altered. Some idea of the amount of work which has been expended over the "Linotype" may be gathered from the fact that close upon fifteen hundred patents have been granted in connection with it. The result is a machine which "comprises mechanism for, first, composing the matrices; second, casting from them when they complete a line of reading matter; third, distributing the matrices of which that line has been composed back again into their proper magazines, in order that they may again and again be used to form succeeding lines. These three operations are carried on concurrently, that is to say, while the matrices for one line are being composed, the matrices of the previous line are being cast from, and at the same time the matrices for the line before that again are being distributed. The result is that lines of, as it were, stereotyped matter are produced from six to ten times more rapidly than the most expert compositor could put together in his composing stick the types which would be necessary to form an equal quantity of reading matter."

Mr. John Southward, whose summary has just been quoted, read before the members of the British Association at Ipswich on September 17th, 1895, an extremely interesting paper on "The Production of Letterpress Printing Surfaces without the use of Types." Mr. Southward, who is a well-known authority on printing matters, explained in some detail the manner in which a "Linotype" machine works, but as his paper was delivered before an

audience consisting of mechanical experts, it would not be altogether understood of the ordinary reader without a considerable number of diagrams. Here I must content myself with giving as simple a description as possible of a very complicated and delicately-balanced piece of machinery. The "Linotype" machine, to start with, is not, as may be gathered from what has already been said, "a type-setting machine in the ordinary sense of the word. On the contrary, it is a machine which, being operated by finger-keys, like a type-writer, creates, or produces, type matter ready for use on the press or stereotyping table."

To stand before one of these machines while a skilled operator is working it, is to make one marvel at the ingenuity of man. Seated before one of the machines, such as that shown in the illustration, the operator has his "copy" fixed up in front of him, and as he reads it he "plays" his fingers rapidly over the key-board, which is similar to that of an ordinary type-writer. As his finger lightly touches one of the keys, the matrix of the letter corresponding to it slips from its place in the magazine down on to a small revolving band, which carries it on to its place on the "stick"; as soon as a line is completed it immediately "moves on," and another one begins to form in its place.

Let us, however, follow the course of the first line of matrices. Having been completed in the stick, the machinery moves it on and stops opposite a small opening in the moulding-wheel, which is in front of the melting pot full of type metal, and under which a

Bunsen-burner gives sufficient heat to melt the metal. As soon as our line of matrices reaches this opening, the pump in connection with the melting pot pumps up some of this metal, and forces it up so that it fills this opening in the wheel, and has its front moulded in the line of matrices. The wheel then gives a half-turn, and the moulded line, or "linotype," is forced between two sharp blades, which trim the sides of the line so that it shall lie quite close against that which precedes, and that which follows it. Having passed through these blades, the line falls into its proper place in the stick just in front of the compositor, who can read it there just as though he had set it type for type by hand. While this last-named process, the trimming of the "linotype," has been going on, what has become of the line of matrices in which it was formed? As the wheel took its half-turn, the line was lifted straight up and moved a little toward the right of the operator, when an iron arm reached over from the back of the machine and picked up the entire line, with the exception of the "spaces" between the words, which travel a bit further to the right into their particular little magazine, from which they drop again at the will of the operator into their places in fresh lines. The arm which reaches over from the back grips its small load and carries it up to the top of the machine, and then occurs one of the most wonderful of all the operations in this very wonderful invention. The matrices are moved along a bar by a screw-like motion, and as each letter arrives over its particular division in the magazine out of which it started, it drops from the bar, and

is there once more ready in its turn to follow its companions in due order on that marvellous circular journey. It is really impossible to give in words any adequate notion of the working of this extraordinary piece of mechanism, by which, in a given time, one man can "compose" as much matter as half a dozen compositors working in the ordinary manner.

And now, having hurriedly surveyed the history of the printing press during four centuries and a half, we take leave of the extremely interesting subject at a moment when the wonders of the machine we have just been considering make us marvel what the next "triumph" will be. We have seen how the press, thanks to Gutenberg's happy invention, has peacefully worked one of the greatest of all revolutions in the whole history of mankind. It has placed education—the key to the great treasure-houses of literature, science, and art—within reach of everybody; it has enabled the humblest artizan of to-day to acquire such a library as was beyond the reach of Erasmus and other great scholars of the middle ages; it has, more than any other single invention or institution, had a civilizing effect on the whole world; has tended to break down the barriers of national narrow-mindedness and race-hatred; and to help forward that time when the war-drums will throb no longer, and the battle flag be furled—

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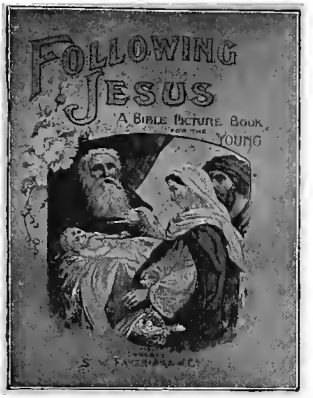

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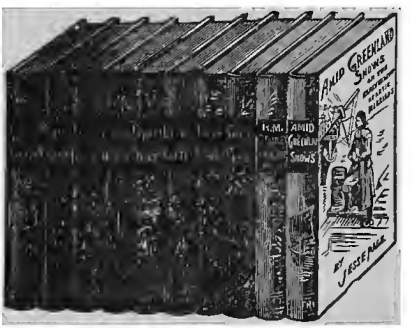

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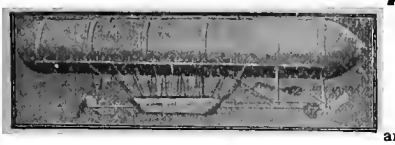

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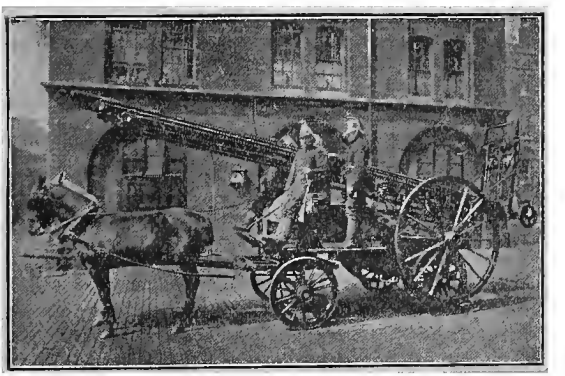

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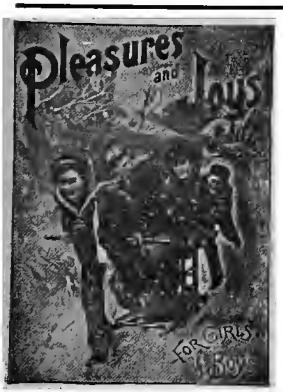

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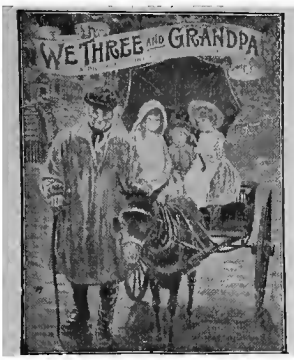

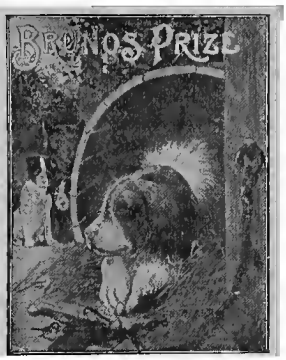

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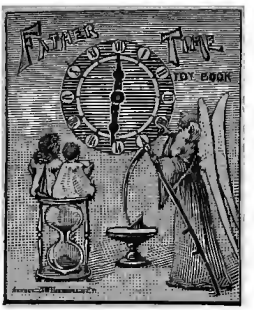

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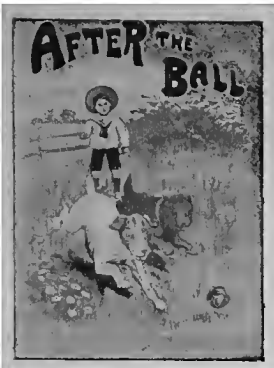

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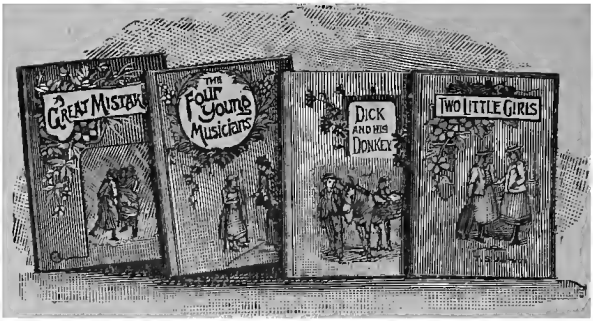

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