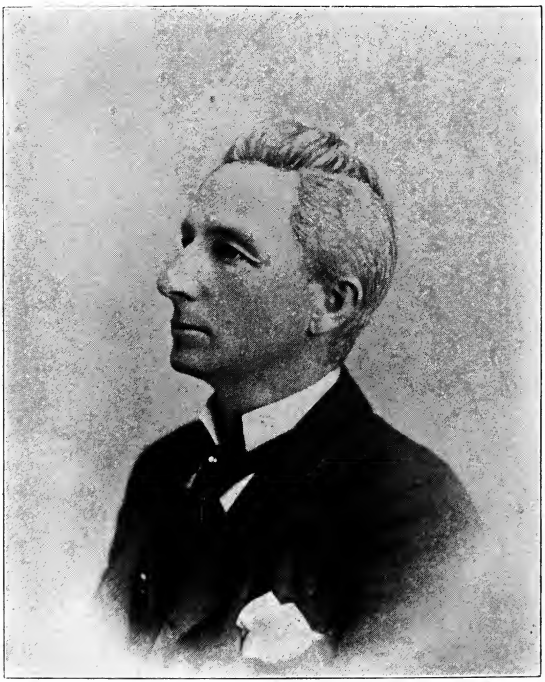
The Practical Printer


Frederick F. Thomas, Jr.



F. A. RINGLER CO., ENG.

THE

PRACTICAL PRINTER:

A BOOK OF INSTRUCTION FOR BEGINNERS;

A BOOK OF REFERENCE FOR THE MORE ADVANCED.

By HENRY G. BISHOP.

CONTAINING

INFORMATION ON ALL THE VARIOUS PARTS OF THE PRINTING BUSINESS.

WITH

DIAGRAMS OF IMPOSITION AND USEFUL TABLES.

THIRD EDITION. PRICE, $1.00.

HENRY G. BISHOP, PUBLISHER, ONEONTA, N. Y.

THROUGH ALL TYPEFOUNDERS.

NOTE TO THIRD EDITION.

The author of this work is gratified to find another edition made necessary but must apologize to those who have been kept waiting for the same owing to many unavoidable causes. An entirely new chapter on proof reading has been added in response to many requests. That this edition may meet with the same success as its predecessors is the earnest wish of the author.

PREFACE TO FIRST EDITION.

RATHER more than a year ago, it was suggested to the author that there was room for a work, which would treat fully of the various phases of the printing business from a practical point of view, written by someone who had passed through the necessary experience. After consulting with his friend, ANDREW C. CAMERON, the able and respected editor of *The Inland Printer*, the author undertook to write such a work, and now presents it to the printing fraternity with the hope that it may be found useful to the younger members of the craft, and not altogether without interest to those who are older.

For many years the author has contributed to the pages of the printing trade journals both in the United States and in England, and has published several works bearing upon subjects of practical interest to printers. He served a seven years' apprenticeship to the business in an establishment where each branch was taught by those who had a practical knowledge of what they taught. Since that time he has graduated and passed through all the various departments, and has, during

those many years, sought to learn all he could learn of the business in which his father and grandfather had spent their lives.

The one principal object that has been kept in view throughout this work is the presenting of practical instruction in the order in which it will be most useful and most likely to be retained in the memory.

The author makes no pretense to literary ability, but claims for his book the support of every printer in the land, on the ground of an earnest desire to impart to others the knowledge which he has acquired during a busy life as a "practical printer."

NOTE BY A. C. CAMERON.

THE necessity for such a book of reference as "THE PRACTICAL PRINTER," simple, concise, explanatory, instructive and reliable—a veritable *multum in parvo*—has long been recognized among the craft. The information embodied therein will be found invaluable to the intelligent, ambitious learner, a helpmate to the journeyman, and a material aid to the employer, referring, as it does, to various features and branches of the business of immediate interest to each. Its author, Mr. H. G. Bishop, is a gentleman long and favorably known to the readers of *The Inland Printer* as a contributor to its columns, and is eminently qualified, by virtue of his ability as a writer and varied experience as a practical printer of many years standing, to successfully accomplish the task he has undertaken. The information contained therein is worth many times the price charged for the work, and if its sale is commensurate with its merits its success is assured. I have much pleasure in recommending it to the printers of the United States.

A. C. CAMERON.

CHICAGO, April 1, 1889.

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PRACTICAL PRINTER.

INTRODUCTORY.

MANY "histories" and "treatises" have been written on the subject of printing, and great credit is due to some recent writers for the vast amount of information which they have supplied. It is well that we should know all that can be learned of the earliest growth and subsequent development of the art of printing, which has proved the greatest "tree of knowledge" that the world has ever produced. The printer who takes any pride in his business naturally desires to be as well posted in the history of the industry which gives him his bread as in the history of the country which gave him birth.

But while all this is true, and without wishing for a moment to depreciate the importance of such writings as have been referred to, there appears to be a growing need for a concise, yet exhaustive work, devoted to the practical side of the question, which will serve the purpose of an instructor for the learner, and a book of reference for the more advanced.

Therefore, the writer has undertaken to supply such a work, and though he feels somewhat doubtful of doing full justice to the subject, he nevertheless ventures forth, encouraged by the thought that he is engaged in a good cause, and that some measure of benefit to his fellow-craftsmen must be the result.

The great lack of the present day among printers is a knowledge of the rudiments of the business. A large number of men do certain things which they have seen others do without knowing the why or the wherefore, or understanding the necessity for doing such things in such ways, or the advisability of varying their methods to suit changed circumstances and contingencies. In fact, they learn to do their work much as a parrot learns to talk, and know no more of the fundamental principles of the business than it does of the construction of the English language. Such men may acquire a superficial knowledge of the printers' art, and may manage to pull through in a crowd, but they are not and never will be printers in the best sense of the word.

Now, what is needed is a theoretical as well as a practical training. A great deal is sometimes made of the fact that a man is a practical printer in opposition to the idea of his being a theoretical printer, as though a theoretical knowledge of the business were of no account. This is a great mistake. It is of the utmost importance that a man should have a practical knowledge of his business, but unless he knows the theory, as well as the practice, he has no *knowledge* of it at all.

It is impossible to lay too much stress upon this part of the subject, and, therefore, though some may think enough has been said, yet for the sake of those whom it is intended to benefit the truth must be reiterated until it has made an impression that will be lasting and beneficial in its results. It is impossible to learn to read without first learning our letters, and it is also impossible to become a printer without first learning the rudiments or elementary lessons. Without learning the A, B, C of the business no accurate and sure knowledge of it can be obtained. Before a

builder puts up a house he digs into the earth and lays a solid foundation. This digging and foundation laying has to be done before a knowledge of the printing business can be built up, and the deeper we dig the firmer will be the foundation, and the more lasting will be the superstructure.

It will be necessary to treat the two departments, composition and presswork, separately; and afterward several other subjects will be treated upon, such as machinery, power, ink, paper, cutting, managing, estimating, and many other matters which will be of advantage to the man who wants to become master of the business. A compositor needs to know something of the other branches in order to be better qualified for his own part of the work, and this is true of the pressman, and also of every man who is engaged in any one of the various departments. The compositor who knows something of presswork, will better understand how to put a form to press, and the pressman who knows something of composition, will know better how to treat his form when he gets it. There is no reason why this should lead to a man being a jack-of-all-trades, for some men take naturally to composition and would not be pressmen, and others take as naturally to presswork and would not be compositors.

One great difficulty which lies in the way of men trying to obtain this general knowledge of their business, is the fact that in most offices, particularly the larger ones, a man is engaged on only one part of the work, and some other men are engaged on the other parts, so that very little insight into more than one branch of the business can be obtained. It is the object of the writer to supply that deficiency, by going minutely into all the different parts of what goes to make up the general routine

of a printing establishment—to follow the different classes of work from the moment they are handed in in the shape of "copy," till the time they go out to the customers. How few workmen know anything about the cost of producing a job, or the price to be charged to the customer! They work from year's end to year's end without ever knowing what the public has to pay for the work they are engaged upon. And it is probable that the customer knows more about the cost of stock than the man who cuts it up, or the men who set the type and do the presswork. Moreover, it often happens that the manager or proprietor does not know how to give an estimate for a job, because he is not familiar with the cost of the different parts of the work. So he has to consult the foreman of the composing room as to cost of composition, the foreman of the pressroom for cost of presswork, the paper dealer for cost of stock, the ruler for cost of ruling, the binder for cost of binding, and so on through all the various occasions of expense. And then he calls himself a printer! Besides the ignominy connected with such a course, look at the loss of valuable time in thus arriving at the proper price to quote for a job that he may never get!

It may appear to some that this is taking too high ground, and they may be inclined to ask, "How many are there who know all these things?" To this question we answer, that there are hundreds of managers and proprietors who know them as fully as they know their alphabet. Those who do not know may think this is incredible, and to such we will quote Hamlet's remark to Horatio: "There are more things in heaven and earth than are dreamt of in your philosophy." But perhaps sufficient has been said on this point to impress the reader with an idea of its importance, and to lead him to resolve

that, very soon, he will make himself master of these things as far as he may have opportunity.

Those who desire to become printers, and those printers who desire to become better acquainted with the details of their business, are invited to accompany the writer through the subsequent pages, which will be devoted exclusively to the unfolding of the various phases of the business, nothing being considered too trivial to mention, so long as it can be used to promote the end in view, namely: imparting a sound theoretical and practical knowledge of printing. No attempt at fine language will be made, but what is said will be stated in plain, simple, every-day phraseology, so that everyone may understand and be benefited.

It will be necessary to go over ground that many readers may already be familiar with, but that will not hurt them, as it is often good to go over again things that have been learned and known for years, and they will have the satisfaction of knowing that others who have not traveled that way before will derive benefit, and, besides, they themselves will have their memories refreshed and may be glad to be reminded of some things which they had almost forgotten.

Carefully compiled tables, diagrams of imposition, and many illustrations will be given which will be of value in making points clearly understood, and be of lasting benefit for future reference. In fact, everything that can be obtained, which is calculated to help toward the main end, will be presented. As far as possible each different branch of the subject will be treated separately and in proper order, so that each lesson may be fully learned before another is taken up, and then that other shall be the one that is most intimately connected with its prede-

cessor. Thus the growth in knowledge of the various branches of the business will be natural and logical. We propose to clear the ground as we go along and have no turning back, but rather moving slowly and surely forward, gaining power of perception and understanding at each step, that when we do reach the goal we may be able to appreciate and hold fast to that which we have obtained.

COMPOSING DEPARTMENT.

READING AND SPELLING.

THE person who is about to learn the printing business will do well to start by learning how to read and spell correctly; and by this is not meant merely the ability to read and spell in the sense in which these terms are commonly used, for very few boys reach the age of fourteen or fifteen years without being able to do that; but what is meant is learning how to read and spell correctly everything that comes before him. Many boys, and men, too, who think they know all this, positively know nothing about it, or at least only know the most simple and superficial part of it. Give them a newspaper paragraph to read and they will get along pretty well, providing there are no hard words in it; but give them the copy from which the compositor set up the type for that paragraph, and it might puzzle them to read three words of it. Again, give them a whole column of printed newspaper matter to read aloud and it is more than probable that instead of going over it easily and smoothly they would pause and stumble like a horse going over a rough road. Many of the words would be wrongly pronounced, and some of them converted into words that have no place in any dictionary; and as to spelling every word in the column, the probability is that in that they would fare twice as badly. Let those who doubt this try it upon some of the young persons with

whom they are acquainted. We have tried it many times among different classes, and know the truth of what is here stated. Out of twenty-three applicants for position as copyholder (boys of from thirteen to sixteen years of age), there were only two who could read sufficiently well, and one of these broke down in spelling all the words in a paragraph of an ordinary newspaper leading article.

And any printer knows that this is only skimming the surface of the subject, for if, instead of taking newspaper columns, we should take the pages of a carefully-written book, especially if it were upon some scientific subject, the test would be much more severe. But a compositor who is engaged on bookwork has to read everything that comes along, on every conceivable subject, from an inquiry into the origin of species to a disquisition on astronomy.

Now it is far better that the learner should fully understand the difficulties of this part of the subject, and give up the idea of learning the business at all, than that he should start in with his eyes shut and only find out his mistake by painful experience, either in the loss of situations or the small amount of his earnings. But, at the same time, if he make up his mind to master the difficulties at the start, there is no occasion to give up, provided he has the capacity of mind required to grasp the necessary knowledge. Let him take the place of a learner standing at the very foot of the ladder, and strive to climb one step at a time, and the chances are that he will succeed.

The first step, then, is to learn to spell. This he can only do by steady practice and perseverance. The writer can remember when, as a boy, he used to carry a pocket dictionary and learn to spell every word in each page, taking about a page each day, and writing down all the peculiar and difficult words to impress them upon his

memory. This plan he would recommend to all who wish to learn.

The English language contains over one hundred thousand words, and though only a small proportion of these may be in every-day use, there are sufficient to make it no ordinary task to spell all that come along. There are many peculiarities about these words, with which it will be well for the learner to make himself acquainted. Besides there being a large number of difficult words, there are many which are pronounced alike but spelt differently, or spelt alike but pronounced differently, or spelt and pronounced alike but having different meanings; these, also, the would-be compositor must make himself familiar with. One or two examples may be given here. The words *rite, right, write, wright,* are all spelt differently and have different meanings, but are pronounced alike. The words *desert* (a wilderness) and *desert* (to forsake) are spelt alike but pronounced differently, the first pronunciation having two different meanings and the last five. Then the words *order* (method), *order* (a command) and *order* (a society) are spelt and pronounced alike but have widely different meanings. These are only a few examples, but there are hundreds of words in the English language that have the same peculiarities. Now, a compositor should not only know how to spell all these words, but also understand all their various shades of meaning.

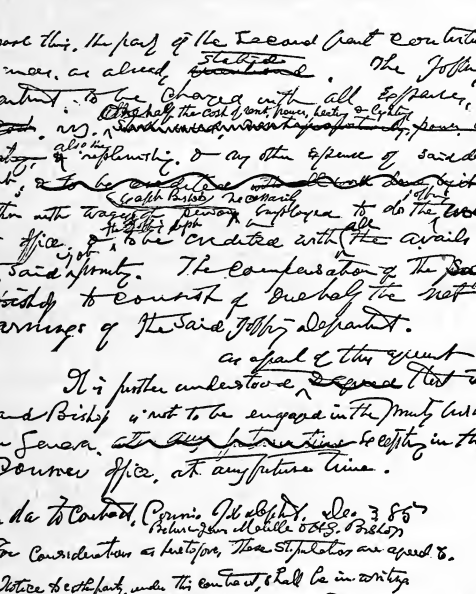
The next step will be learning to read, and those who have paid most attention to spelling will make the best readers. It is a good plan to read aloud, either alone or in company with someone who will be able and willing to correct any errors that may be made. A compositor should be able to *read,* he should also know *how* to read, and be able to read *everything.* Notwithstanding the many advantages in the

way of educational facilities which we have in this day—with our public and private schools and colleges—it is safe to say that not more than ten per cent of the people can get beyond the first of the foregoing requirements, the other ninety per cent being made up of those who cannot read at all, those who can read a little, and those who can *read* in the ordinary acceptation of the term. As for those who know *how* to read, that is, to give each word its proper pronunciation and correct color of meaning, they will be found among the ten per cent.

A compositor must be able to read manuscript of every kind, and no one knows so well as he does how many different kinds. No two men write just alike, and, as a rule, those who write for the press acquire a habit of writing so indistinctly that some of their copy looks more like the work of a mischievous fly who had got his legs and wings covered with ink and then crawled all over a sheet of paper to show that the fly tribe had some idea of the incongruous as well as the pen tribe.

What causes a good deal of trouble sometimes is the careless way in which an author will write words between the lines, or on the margin, without making any sign to show where they are to be inserted, and generally writing such words very small and indistinctly, the result being that an inexperienced compositor may waste valuable time in trying to put such words where they appear to belong. The following example will serve to show the uninitiated the kind of copy he may have to wrestle with for a living:

REDUCED FACSIMILE OF THE HANDWRITING OF AN EDITOR, WHICH SHOWS HIS GENERAL STYLE OF WRITING FOR THE PRESS.



And this is by no means the worst he can get, as many a compositor knows to his sorrow. And yet there are compositors who can read such scrawls, who know how to wind themselves into the intricacies of the worst writing; and the way they do it is by closely examining the author's style (for most authors have a style, however bad

it may be). A practiced eye will be able to detect certain points of regularity running through the most irregular looking mass. He will notice that although the *t* is not crossed the *i* is dotted; that though the *n* and *u* are both made alike, the *e* and *c* are distinctly different, that the *l* and *b* are looped at the top, whereas the *d* and *h* are not; that the *r* at the beginning of a word is different from that at the end of a word, and that the *s* is subject to the same rule; that though no periods are used, all the sentences begin with a capital letter. But even with this knowledge it may be difficult to decipher all the words so as to make the passage read like common sense, and often a word has to be put in or left out in order to help arrive at this conclusion.

Another common cause for trouble is the careless way in which names of persons or places are written. It may be possible to guess what an ordinary word is by that which goes before or comes after it; but names cannot be guessed in this way, and as there are often several ways of spelling the same name, it becomes almost impossible for the compositor to decipher it. But still, even here, the compositor with a practiced eye has an immense advantage over the uninitiated; a curve, or a loop, or a dot, or a thickening of a stem, or some other apparently insignificant feature in one or two of the letters may enable him to arrive at a correct solution of the difficulty.

Now all this points to the conclusion that the would-be compositor should make himself familiar with the reading of all sorts of handwriting; that he should go again and again over the same ground, until he knows every landmark, every point of similarity, every point of divergence. The difficulties may be great—they are great—but so long as they are not positively insurmountable he should press

forward till he conquers. The advantages which lie beyond are more than sufficient to reward him for all his toil. Take just one consideration. Suppose he should be employed as a compositor on piecework for ten years, it is safe to say that with this acquired practice and knowledge he could earn ten per cent more than he could without it, and this ten per cent invested in a savings bank at compound interest, would in the ten years amount to a considerable sum. Besides this direct gain there are many indirect advantages that accrue to the man who has become proficient in this as in any other branch of his business. And, again, there is great advantage as well as pleasure in this knowledge, on account of the ease with which work is done, instead of the constant worry and brainwork caused by puzzling over badly written copy. And still again, the man who has acquired this knowledge feels pardonable pride and pleasure in the possession of it.

The compositor will often find it necessary to correct bad spelling, and even ungrammatical sentences, in order to arrive at what the manuscript means and what he is to set up. If some authors were to have their copy followed *ad literatim* by the compositors, they might feel ashamed of themselves, and perhaps take a little more pains to prepare the next, for their own credit, if not for the sake of the compositor, who suffers so much from such carelessness. Thus it will be seen that besides being able to read and spell correctly, it is necessary to have a pretty correct knowledge of grammar, and besides this again it is necessary to be well informed upon matters generally. An author may only need to be posted on one particular subject, but a compositor needs to be posted on all subjects, in order to understand what is being written by all the

different authors whose copy he has to digest. It may be true that there are a great many compositors who have not this knowledge, but that does not alter the fact that such knowledge is necessary, and if necessary should be acquired at any and all cost by those who desire to become efficient workmen. Pope says that "a little learning is a dangerous thing," and it may just as truly be said that a partial knowledge of the compositor's art is an unprofitable thing. It is better to have a thorough knowledge of the simplest form of employment than to have an imperfect knowledge of anything else, however much better or more exalted it may appear. Someone has been credited with saying: "If I were a tinker, no tinker besides should mend a kettle like me;" and there can be no doubt that a good tinker has more to be proud of than a bad compositor.

PUNCTUATION AND CAPITALIZATION.

THERE are few subjects upon which there is more diversity of opinion than that of punctuation. Learned men—authors, editors, printers, schoolmasters—all agree to differ as to what should constitute the rule for accurately punctuating a printed work. Books that have been written on the subject, have sometimes been held up as being themselves examples of bad punctuation! Therefore, it is not pretended here to lay down any infallible rules, but simply to give a general idea of the subject, such as will be of service to those who purpose learning the printing business. If it were in our power to suggest such a system of punctuation as would meet the views of all the different factions, it would entitle us to the everlasting gratitude of compositors, for they, above all others, suffer from the present laxity and indefiniteness which prevails among writers for the press.

It often happens that an author does not attempt to punctuate his copy, and the compositor will do his best to make up for the author's negligence; then the proof-reader has different ideas to those of the compositor, and changes the punctuation accordingly, and the compositor has to make the changes in his own time. Then when the author gets the proof he thinks that certain other changes

are necessary, and makes the punctuation entirely different from that of either the compositor or reader.

We will now give a list of the various punctuation points, and explain their several uses; for some of them serve a variety of purposes; all of which the compositor should be thoroughly familiar with.

Comma (,). This marks the shortest pause in reading and writing, and is used to divide the several clauses of a lengthy sentence. Although it is but a small point, it causes the compositor more trouble than any other; therefore, in setting up copy which is not punctuated, he will find it more profitable to use commas sparingly than too profusely; at the same time he should use them where requisite, as the omission of a comma may entirely change the meaning of a sentence. Take the following as an example: "The troops landed, and killed a hundred negroes." Now, if the comma were left out after the word "landed," the sentence would have a different meaning, making it appear that the troops first landed the negroes and then killed them. Commas are also used, in conjunction with apostrophes, to denote extracts or quotations from other works, conversational matter, etc. This is done by inverting two commas at the commencement and placing two apostrophes at the end of such passages as are quoted. There should always be a thin space between the quotation marks and the word they precede or follow. Where a quotation occurs within another quotation, a single comma and apostrophe must be used; and if both quotations end together, a thin space is necessary to divide the single apostrophe from the double. Commas are also used in catalogues and other such works instead of the word "ditto," by placing two of them under a word which needs to be repeated.

Semicolon (;). This is used to mark a longer pause than the comma. It will be seen that two points (the period and comma) are used to make this sign, the meaning of which is that what has gone before is complete in itself, but that what follows is connected with it and is dependent upon it. A thin space should always be put before this point, and extra space after it. This remark applies also to the colon, exclamation and interrogation.

Colon (:). This is the next longest pause, and being made of two periods, means that what has gone before is complete in itself, as is also what follows, and yet that they are intimately connected. This point is also used in other ways, such as after the words thus: as follows: the following: Dear sir: etc.; also in reference to Scripture quotations, as, "John 22: 16; Matt. 14: 4;" and in many other ways.

Period (.). Besides being used to close a sentence, the period is also used in cases of abbreviations, such as Mr., Dr., Cr., Jno., etc.; but when used as an abbreviation mark it does not affect the punctuation. Such abbreviations as Tom, Ben and per cent do not need the abbreviating period, for they have themselves become words; the same is true of 1st, 2d, 3d, 4th, etc. The period is used to separate decimals from whole numbers, as, 5.055 and $104.05. It is also used after enumerating figures or letters, as, "I have two good reasons: 1. I cannot give my attention to the business; 2. I have no money to invest in it." Some authors make their sentences so long that twenty commas and several semicolons are used to one period. Others break their writing up into short sentences and use almost as many periods as commas. The compositor has to punctuate so as to make sense, and

he often finds it hard to do this with a piece of badly written copy.

Exclamation (!). The name of this point suggests its use. It is placed after every sudden or abrupt exclamation, such as, Oh! Ah! Alas! Hush! Bravo! Hurrah! or an expression of surprise, as, How wonderful! Marvelous! How beautiful! The exclamation point is sometimes repeated, to give greater effect, as, "Selling off below cost!! Great sacrifice!!!"

Interrogation (?). This point is always placed after a question. It is sometimes used in the middle of a sentence in connection with a doubtful word, or where the author is speaking ironically. "The report furnished by the company shows that Mr. Waters (Walters?) was among the killed." Or, "The abuse heaped upon me by Mr. Smith in his religious (?) journal is simply the result of personal spite."

Em dash (—). This has come to be used by many writers as a punctuation mark. It is used in parenthetical sentences, and in writing which has many disconnected sentences. It is also placed after a colon, thus:—, the following:—, etc. The dash is generally used after side-heads, and also before authorities at the end of a paragraph. It is sometimes added to the common points to lengthen the pause or supply the want of an intermediate point, to show emphasis, or to mark transition. It is also used where a sentence is abruptly broken, as "Sir, you are a—But, no matter, I will not commit myself."

Apostrophe ('). This is used as a quotation mark, in conjunction with the comma (as already stated), and has a variety of other uses besides. It is a sign of abbreviation, as in don't, won't, we're, o'er, thro', and in many

other similar cases. It also shows the possessive case, as, man's, woman's, etc.

Parenthesis ( ). The chief use of the parenthesis is to inclose a sentence which is inserted in another sentence for the sake of strengthening the argument or point to be demonstrated, but which could be left out without breaking the sense of the original sentence. For example: "The defendant alleges that before the death of her husband (not after his death, as stated by the plaintiff) Mrs. Jones signed the agreement," etc. Parentheses are also used in other ways, but in all cases the punctuation is not affected by them, and points should be placed just as they would be if no parenthetical matter were there. A good many compositors appear to be in doubt as to this, and will often put a comma before and after such parenthetical matter, which is decidedly wrong; for if they were to lift out the parentheses, and the words which are inclosed, they would be left with two commas instead of one. For example: "The proceedings, as stated by Blackstone, (Chapter III of Commentaries), were all written," etc. Now if the parenthetical matter were lifted out and the other words closed up you would have two commas left. The comma after "Blackstone" should not be there. Sometimes a few words may be put in parentheses at the end of a sentence, and the compositor is puzzled to know whether the period should be put inside or outside. It should be outside. But where a complete sentence is added, and parentheses are marked, then the period should be inside. A few examples may be of service here, as it is well that this point should be thoroughly understood.

"Aconite (Monkswood).—For all feverish and inflammatory affections (with thirst and dry skin), pleurisy, neuralgia and rheumatism (generally the result of cold). (See

also Belladonna.)" "Deposit required (except from members of the A. P. A.)." "Reformed Church, Bedford avenue (E. D.); Rev. C. Terhume."

Brackets [ ]. These are used in some works, though not often; but, as regards punctuation, the same remarks apply to them as to parentheses. They are used principally in dictionaries and other books of reference, and are often used in jobwork in a variety of ways, as, [22], [over], [see back].

Hyphen (-). This is also used principally in dictionaries, to show the divisions of words by syllables, but is used in several other ways besides, as when a word is divided at the end of a line and also in compound words. With reference to the latter it may be well to give a few examples. A phrase is generally made a compound word when it expresses a complex idea rather than two or more distinct ideas, as, "There is pretty ten-year-old, rosy-cheeked, golden-haired Mary." "The tree-and-cloud-shadowed river." "Twenty-one ten-dollar bills." "Time-tutored age and love-exalted youth" is very different in meaning from "Time tutored age and love exalted youth."

With regard to capitalization, which is closely connected with punctuation, there is great diversity of style among authors, some requiring that they be used freely and others disregarding them except for proper names and the beginning of sentences. But the following rules will be likely to cover the ground, so far as it affects the education of the compositor.

They must always be used in the following cases:—

1. At the commencement of a sentence, after a period and after exclamation and interrogation points, where such points close a sentence.

2. For all proper names, such as Chicago, Charles, British, French, United States, Europe, Atlantic, Pacific, Captain Jones, etc.

3. For names of publications, public buildings, clubs and institutions.

4. At the commencement of each line of poetry.

5. For the days of the week and for the names of the months.

6. For all pronouns and titles that have reference to the Deity, such as His, He, Himself, Thou, Thine, Messiah, Sun of Righteousness, Savior, Lord, Almighty, Supreme Being, Providence, etc.

7. At the beginning of quotations from other works, such as, "We are reminded of the words of Burns: 'Man's inhumanity to man makes countless thousands mourn.'" But there are exceptions to this rule, as in the following quotation: "Shakespeare says that 'conscience doth make cowards of us all.'"

8. At the commencement of each line or paragraph in displayed jobwork.

Besides the cases enumerated, there are many others in which capitals should be used; some of them imperative and others optional.

Many authors like to have capitals put to the words which express the subject upon which they are writing. For instance, when the subject is Free Trade, those words would be capitalized; so, if it were Protection, or Astronomy, or Mathematics, or Ancient History, such words would have capital letters.

Then capitals are needed for the pronoun I, the interjection O, and the exclamation Ah!

In catalogue and circular work, capitals should be used pretty freely, for not only do they help to bring out the

salient points, but they improve the appearance of such work, and enliven an otherwise flat page of matter.

It will be seen from the foregoing that punctuation and capitalization are intimately connected, and compositors will do well to study both together. There is much more in them than appears at first sight, and we have only just opened up some of the leading points as guides for further study. It remains for the reader to follow along the lines laid down until he reaches a fuller comprehension of this important subject. However, like everything else that is worth learning, it calls for patience and perseverance before it yields all the benefits and rewards which it contains.

We shall now pass on to the more practical and technical part of our subject, giving a description of the various implements and appliances to be found in the composing room, with their names and particular uses, showing the different kinds and sizes of type and their relation to each other, explaining the meanings and uses of commercial and other signs, references and accents, and also give instructions in learning the boxes, distribution, composition, correcting, making up, imposition and tabular work.

But let no beginner think that he can afford to pass lightly over what has gone before and plunge at once into what is to follow. This is too often done by those who are anxious to commence setting up type before they know anything of the previous education which is necessary to make a competent compositor. Such persons go to swell the ranks of that unsatisfactory and unprofitable class called "amateurs!"

There is perhaps a sense in which all beginners are amateurs, but the class referred to will be nothing but

amateurs to the end of their days, because they have never taken the trouble to learn the rudiments of the business, but have commenced at once to practice what they do not understand. There is the same difference between them and printers as there is between quacks and doctors — the latter have passed through a proper training and obtained their diplomas, while the former have substituted presumption for knowledge and trickery for legitimate title.

NAMES OF TYPES AND THEIR RELATIVE SIZES.

IN order to give full information and instruction under this head, it will be necessary to consider two separate systems, for there are two in existence at the present time, viz: the old system of names and sizes of types and the new American point system. The probability is that within a few years the latter will be the only universally acknowledged system, but until then we must accept matters as they stand, and consider both.

Types which are ordinarily used for book and newspaper work are called Roman, and these are certainly the plainest and most readable of all the types in use. Old Style is also Roman, but is made to imitate, in some measure, the style of type used in olden times, and the choice between modern and old style Roman is simply a matter of taste, both being about equally readable and suitable for the same class of work. Italic has the same face, but instead of being upright, is made to slant to the right, and was originally intended as an imitation of handwriting. Italic is cast to match both the modern and old style Roman faces, so that it can be used in conjunction with them, part of a paragraph being set in Roman and the other part, or certain words of it, being set in Italic.

When thus used, it is generally for the purpose of giving emphasis to such parts or special words.

Besides the ordinary Roman and Italic faces, there are a great number of others (so many that it would be useless to attempt to name them), which embrace nearly every conceivable design or character, from the plain Gothic to the most artistic and delicately formed ornamental faces. These are used principally for what is called Job Work; and further on we will give rules for the compositor's guidance in the selection of faces to suit the class of job he may have in hand, for this variety of faces is often a great stumbling-block to the compositor, and leads him to set up the most incongruous and inartistic combinations of types.

But whatsoever the faces of types may be, and however great their variety, they are all cast on bodies of certain regular sizes, that is so far as their depth is concerned, so that every type cast on what is called pica body would be the same size in depth, no matter what its face might be.

The usual sizes, under the old system, are as follows:

Brilliant,	Pica,
Minikin,	English,
Diamond	Columbian,
Pearl,	Great Primer,
Agate (or Ruby),	Paragon,
Nonpareil	Double Small Pica,
Minion,	Double Pica,
Brevier,	Double English,
Bourgeois,	Double Great Primer,
Long Primer,	Double Paragon,
Small Pica,	Canon (or 4-line pica).

In order to give an idea of the relationship that these sizes bear one to another, we present some lines set up from the same copy in different sizes of type.

Printing is the art of producing impressions, from characters or figures, on paper or other mate

Printing is the art of producing impressions, from characters or figures, on paper or

Printing is the art of producing impressions, from characters or figures, on p

Printing is the art of producing impressions, from characters or figur

Printing is the art of producing impressions, from characters or

Printing is the art of producing impressions, from characters o

Printing is the art of producing impressions, from charac

Printing is the art of producing impressions, from p

Printing is the art of producing impressions, fr

Printing is the art of producing impressio

Printing is the art of producing i

The following comparison will further illustrate this point, though, unfortunately, under the old system, it cannot be depended upon as an infallible guide, on

account of the variations in the standards of the different foundries:

One line of	Minion	equals two lines of	Brilliant.
" "	Brevier	" "	Minikin.
" "	Bourgeois	" "	Diamond.
" "	Long Primer	" "	Pearl.
" "	Small Pica	" "	Agate (or Ruby).
" "	Pica	" "	Nonpareil.
" "	English	" "	Minion.
" "	Columbian	" "	Brevier.
" "	Great Primer	" "	Bourgeois.
" "	Paragon	" "	Long Primer.

Now, if these proportions could be depended upon, and if a printer could order such sizes from any of the many typefounders, with the assurance that he would get the exact sizes with an accuracy of proportion, nothing more could be desired. But every printer knows that this is not possible under the old system. Not only do the above proportions vary, but if he should order any one size from two different foundries, he would get two sizes instead of one. He would find that pica measures six to the inch in some cases and not in others; that should he be compelled to mix the types of one foundry with those of another, he would have to justify with paper or cardboard.

But with the point system all this is changed. Not only do all the different foundries supply the same sizes, but the proportions are correct, and not only do two lines of some sizes equal one line of some other, but every size bears a certain relation to every other size, so that the power of making combinations with different sizes is almost unlimited.

The following scale, issued by MacKellar, Smiths & Jordan, of Philadelphia, shows the names and sizes of the types under the point system:

THE NEW POINT SCALE.

3-point body	Excelsior.
3½ " "	Brilliant.
4 " "	Semi-Brevier.
4½ " "	Diamond.
5 " "	Pearl.
5½ " "	Agate.
6 " "	Nonpareil.
7 " "	Minion.
8 " "	Brevier.
9 " "	Bourgeois.
10 " "	Long Primer.
11 " "	Small Pica.
12 " "	Pica.
14 " "	2-line Minion. / English.
16 " "	2-line Brevier.
18 " "	Great Primer. / 3-line Nonpareil.
20 " "	2-line Long Primer. / Paragon.
22 " "	2-line Small Pica.
24 " "	2-line Pica.
28 " "	2-line English.
30 " "	5-line Nonpareil.
32 " "	3-line Small Pica. / 4-line Brevier.
36 " "	2-line Great Primer. / 3-line Pica.
40 " "	Double Paragon.
42 " "	7-line Nonpareil.
44 " "	4-line Small Pica. / Canon.
48 " "	4-line Pica.
54 " "	5 line Small Pica. / 9-line Nonpareil.
60 " "	5-line Pica.
72 " "	6-line Pica.

It will be noticed that the old names are preserved and a few new ones added, and that each being made to a certain number of points (each point being one-twelfth of a pica), it is easy to justify the different sizes together without the aid of paper or cardboard.

TABLE showing what number of ems of other sizes will correspond with pica, from 10 to 40 ems in depth.

Pica.	Small Pica.	Long Primer.	Bourgeois.	Brevier.	Minion.	Nonpareil.	Agate.	Pearl.	Diamond.	Pica.
10	11	12	13⅓	15	17	20	22	24	26½	10
11	12	13⅓	14⅔	16½	19	22	24	26½	29½	11
12	13	14⅔	16	18	20½	24	26	29	32	12
13	14¼	15⅔	17⅓	19½	22¼	26	28½	31	34½	13
14	15¼	16⅔	18⅔	21	24	28	30½	33½	37½	14
15	16¼	18	20	22½	25¾	30	32½	36	40	15
16	17½	19⅓	21⅓	24	27½	32	35	38½	42½	16
17	18½	20⅔	22⅔	25½	29	34	37	41	45½	17
18	19½	21⅔	24	27	31	36	39½	43	48	18
19	20½	22¾	25⅓	28½	32½	38	41½	45½	50½	19
20	21¾	24	26⅔	30	34¼	40	43½	48	53½	20
21	23	25⅓	28	31½	36	42	46	50½	56	21
22	24	26⅔	29⅓	33	38	44	48	53	59	22
23	25	27⅔	30⅔	34½	39½	46	50	55½	61½	23
24	26	28¾	32	36	41	48	52	58	64	24
25	27¼	30	33⅓	37½	42¾	50	54½	60	66½	25
26	28½	31⅓	34⅔	39	44½	52	57	62	69	26
27	29½	32¾	36	40½	46¼	54	59	64½	72	27
28	30½	33⅔	37⅓	42	48	56	61	67	75	28
29	31½	34¾	38⅔	43½	49¾	58	63	69½	77½	29
30	32½	36	40	45	51½	60	65	72	80	30
31	33¾	37⅓	41⅓	46½	53¼	62	67½	74½	82½	31
32	35	38⅔	42⅔	48	55	64	70	77	85	32
33	36	39¾	44	49½	56½	66	72	79½	88	33
34	37	40¾	45⅓	51	58	68	74	82	91	34
35	38	42	46⅔	52½	60	70	76½	84	93½	35
36	39	43¼	48	54	62	72	79	86	96	36
37	40	44¾	49⅓	55½	63½	74	81	88½	98½	37
38	41	45¾	50⅔	57	65	76	83	91	101	38
39	42¼	46¾	52	58½	66¾	78	85	93½	104	39
40	43½	48	53⅓	60	68½	80	87	96	107	40

TABLE showing the number of lines of different sizes of type containing a thousand ems, from 10 to 40 ems pica in width.

Pica ems in width.	Number of Lines Containing a Thousand Ems.									
	Pica.	Small pica.	Long Primer.	Bourgeois.	Brevier.	Minion.	Nonpareil.	Agate.	Pearl.	Diamond.
10	100	91	83	75	67	59	50	46	42	38
11	91	83	76	68	61	53	46	42	38	34
12	83	77	70	63	56	49	42	38	35	32
13	77	70	65	58	51	45	39	35	33	29
14	71	66	60	54	48	42	36	33	30	27
15	67	62	56	50	44	39	33	31	28	25
16	63	57	52	47	42	36	31	29	26	24
17	59	54	49	44	39	34	29	27	25	22
18	56	51	46	42	37	32	28	25	23	21
19	53	49	44	40	35	31	26	24	22	20
20	50	46	42	38	33	29	25	23	21	19
21	48	44	40	36	32	28	24	22	20	18
22	45	42	38	34	30	26	23	21	19	17
23	44	40	36	32	29	25	22	20	18	16
24	42	39	35	31	28	24	21	19	17	16
25	40	37	33	30	27	23	20	18	17	15
26	39	35	32	29	26	23	19	18	16	15
27	37	34	31	28	25	22	18	17	16	14
28	36	33	30	27	24	21	18	16	15	14
29	35	32	29	26	23	20	17	16	15	13
30	34	31	28	25	22	20	17	15	14	13
31	32	30	27	24	21	19	16	15	14	12
32	31	29	26	23	21	18	16	14	13	12
33	30	28	25	23	20	18	15	14	13	12
34	30	27	25	22	20	17	15	13	13	11
35	29	26	24	21	19	17	15	13	12	11
36	28	26	23	21	19	16	14	13	12	11
37	27	25	23	20	18	16	14	12	12	10
38	26	24	22	20	18	16	13	12	11	10
39	26	24	22	19	17	15	13	12	11	10
40	25	23	21	19	17	15	12	11	10	9

It was not considered necessary to give fractions in this table, the figures being near enough for all practical purposes.

TABLE showing the equivalents in depth of 100 lines, from Pica to Diamond.

100 LINES OF	Pica.	Small Pica.	Lg. Primer.	Bourgeois.	Brevier.	Minion.	Nonpareil.	Agate.	Pearl.	Diamond.
Pica .....equal	100	109	120	133	150	171	200	218	240	266
Small Pica "	92	100	110	122	137	157	184	200	220	244
Lg. Primer "	83	91	100	111	125	143	166	182	200	222
Bourgeois . "	75	82	90	100	112	129	150	164	180	200
Brevier ... "	67	73	80	89	100	114	134	146	160	174
Minion ... "	58	64	70	78	87	100	116	128	140	156
Nonpareil . "	50	55	60	67	75	86	100	110	120	134
Agate..... "	46	50	55	61	69	79	92	100	110	122
Pearl ..... "	42	45	50	56	63	71	84	90	100	112
Diamond .. "	38	41	45	50	56	64	76	82	90	100

TABLE showing the number of ems contained in one square inch, from Pica to Diamond.

Pica	36 ems.	Minion	105 ems.
Small Pica	42 "	Nonpareil.....	144 "
Long Primer	52 "	Agate	168 "
Bourgeois	64 "	Pearl.....	208 "
Brevier	81 "	Diamond	256 "

PECULIAR SIGNS USED IN PRINTING.

THE number and variety of signs used in printing are much greater than the casual observer would imagine. Besides those used in ordinary work there are many which are only needed in special cases. But a compositor needs to know them all—not only their names but also their uses. And yet how few have ever cared to study them or even make themselves acquainted with their names. A great many men are puzzled when they come across a medical, astronomical or algebraical sign in their copy, and neither know its name, its significance, nor where to look for it. Now, why is this? The answer in most cases is, perhaps, indolence—a disposition to put off to some other time the trouble of learning anything that can possibly be done without for the present.

But it is not our intention to leave out this important part of our subject, and we believe that it is for the best interest of those for whom we are writing that we should insist upon a close and careful examination of every sign which they may possibly have to use either in the present or in the future. It is far better to learn these things too soon than wait until the time comes for putting them into practice.

Most of the larger dictionaries contain lists of these signs, and there is no difficulty in becoming acquainted

with them. We shall only furnish the more important ones, and those which are most likely to be required in the average run of work.

COMMERCIAL SIGNS.

A 1, The designation of a first-class vessel, the letter denoting the character of the hull for build and seaworthiness, and the figure that she is well found in rigging, gear, etc.

£ (Latin *libra.*) A pound sterling.

℔ (Latin *libra.*) A pound weight.

$ Dollars.

/ Shillings; as, 4/6 = 4s. 6d.

@ At *or* to; as, Wood at $4 per cord; Oats 47 @ 48 c. per bushel.

℔ Per; as, Rice 4c. ℔ lb.

% Per cent; as, Commission at 2½ % = 3.38.

a/c Account; as, S. Brown in a/c with L. A. Roberts.

☞ Index.

} Brace.

ACCENTS.

´	Acute Accent	á	é	í	ó	ú
`	Grave Accent	à	è	ì	ò	ù
^	Circumflex Accent	â	ê	î	ô	û
¯	The Long, *or* Macron	ā	ē	ī	ō	ū
˘	The Short, *or* Breve	ă	ĕ	ĭ	ŏ	ŭ
..	Diæresis	ä	ë	ï	ö	ü

German and Scandinavian:

Å Ä Ö å ä ö ü

French and Spanish:

Á Ç É Í Ñ Ó

á à â ç è ê ë é î ï í ñ ó ô ù û ü ú

REFERENCES.

*	Asterisk.	§	Section.
†	Dagger, *or* Obelisk.	‖	Parallels.
‡	Double Dagger.	¶	Paragraph.

ALGEBRAICAL.

$+$ *plus*, or *more*, denotes that the quantity before which it is placed is to be added; as, $a+b$; $3+4$.

$-$ *minus*, or *less*, denotes that the quantity before which it is placed is to be subtracted; as, $a-b$; $3-2$.

$\times$ *into*, denotes, when placed between two quantities, that they are to be multiplied together; as, $a \times b$; 3×6.

$\div$, *or :* *divided by*, denotes, when placed between two quantities, that the one on the left is to be divided by the one on the right; as, $a \div b$; $8 \div 4$; $a : b$.

$\pm$ *plus*, or *minus*; as, $a \pm b$; $\sqrt{a^2} = \pm a$.

$\sim$ denotes the difference between two quantities, without implying which is to be subtracted from the other; as, $a \sim b$.

$-:$ denotes the difference or excess.

$\propto$ denotes that one quantity varies as another; as, $a \propto \frac{1}{b}$, a varies as $\frac{1}{b}$

$\sqrt{\ }$ *radical sign*, denotes, when no number is written over the sign, that the square root is to be taken; as, $\sqrt{a}$; $\sqrt{9}$.

f, F, ϕ, *functional symbols.* A functional symbol denotes that two or more quantities vary together; as, $y = f(x)$, denoting that y is a function of x, or that there is a general relation or dependency of value between y and x.

$=$ *sign of equality*, denotes that the two quantities between which it is placed are equal; as, $a+b=x-y$; $8+4=5+7$.

$>$ *sign of inequality*, denotes that the quantity placed at the opening is greater than the one at the vertex, and is read *greater than*; as, $a > b$, i. e. a greater than b.

$<$ *sign of inequality*, denotes that the quantity at the vertex is less than the one at the opening, and is read *less than*; as, $b < a$, i. e. b less than a.

$\sqsubset$ *greater than*; as, $a \sqsubset b$, i. e. a greater than b.

$\sqsupset$ *less than*; as, $a \sqsupset b$, i. e. a less than b.

$\div\!\!\div$ geometrical proportion; as, $\div\!\!\div a : b : c : d$.

$\int$ denotes that an integration is to be performed; as, $\int dx$.

d, δ, D, Δ, L, are symbols variously used to denote differences, differentials, derivatives, or variations.

$\angle$ denotes an angle; as, $\angle$ A, or $\angle$ B A C; which is read, the angle A, or the angle B A C.

△ denotes a triangle; as, △ B C D; which is read, the triangle B C D.
⌊ denotes a right angle; as, ⌊B, or ⌊A B C.
□ denotes a square; as, □A B C D.
▭ denotes a rectangle; as, ▭A B C D.
○ denotes a circle, or 360°.
≒ *equivalent to*, denotes equivalency; as, $\overline{AB} \fallingdotseq BD \times BC$; i. e. a square equivalent to a rectangle.
‖ denotes parallelism.
⊥ denotes a perpendicular.

ASTRONOMICAL.

☉, *or* ☺	The Sun.	◕	Moon in its last quarter.
☿	Mercury.	♂	Mars.
♀	Venus.	♃	Jupiter.
⊖, ⊕, *or* ♁	The Earth.	♄	Saturn.
●	New Moon.	♅, *or* ⛢	Uranus.
◐	Moon in its first quarter.	♆	Neptune.
○, *or* ☽	Full Moon.	✳	A fixed Star.

MEDICAL.

℞ recipe, or "take."

☞This symbol was originally the sign ♃ of Jupiter, and was placed at the top of a formula to propitiate the king of the gods, that the compound might act favorably.

℈ a scruple; ℈ss, half a scruple; ℈i, one scruple; ℈iss, one scruple and a half; ℈ij, two scruples, etc.

ʒ a drachm; ʒss, half a drachm; ʒi, one drachm; ʒiss, one drachm and a half; ʒij, two drachms, etc.

℥ an ounce; ℥ss, half an ounce; ℥i, one ounce; ℥iss, one ounce and a half; ℥ij, two ounces, etc.

lb a pound.
♏ a minim, or drop.
f ʒ a fluid drachm.
f ℥ a fluid ounce.
O, *or* 0 (*Octarius*), a pint.
āā (*ἀνὰ*), of each.

SUPERIORS AND INFERIORS.

$Sd^{acegikmoquy}{}_{ajg}$ $Ig_{xvtrpnlshfdb}{}^{wz}d$

$md^{1234567890}g_{9}$ $mg_{1234567890}$

FRACTIONS.

¼ ½ ¾ ⅓ ⅔ ⅛ ⅜ ⅝ ⅞ 1/16

ROMAN NUMERALS.

I.	One.	XXI.	Twenty-one.
II.	Two.	XXX.	Thirty.
III.	Three.	XL.	Forty.
IV.	Four.	L.	Fifty.
V.	Five.	LX.	Sixty.
VI.	Six.	LXX.	Seventy.
VII.	Seven.	LXXX.	Eighty.
VIII.	Eight.	XC.	Ninety.
IX.	Nine.	C.	One hundred.
X.	Ten.	CC.	Two hundred.
XI.	Eleven.	CCC.	Three hundred.
XII.	Twelve.	CCCC.	Four hundred.
XIII.	Thirteen.	D.	Five hundred.
XIV.	Fourteen.	DC.	Six hundred.
XV.	Fifteen.	DCC.	Seven hundred.
XVI.	Sixteen.	DCCC.	Eight hundred.
XVII.	Seventeen.	DCCCC.	Nine hundred.
XVIII.	Eighteen.	M.	One thousand.
XIX.	Nineteen.	MM.	Two thousand.
XX.	Twenty.		

TYPOGRAPHICAL.

dele, expunge.

turn an inverted letter.

less space between words or letters.

print the diphthong *ae* or *oe* as a single character; thus, *æ*, *œ*.

more space.

directs attention to bad or foul type.

directs attention to a space or quadrat that stands up.

.... placed under words that have been erased, and which it is subsequently decided shall remain, the word *stet* (let it stand) being written in the margin.

[begin a new paragraph; also, bring a word to the commencement of a line.

¶ begin a new paragraph.

≡ drawn under words or letters which are to be printed in capitals.

≡ drawn under words or letters which are to be printed in small capitals.

— Italics, if drawn under a word printed in roman letters; roman letters, if drawn under a word printed in italics.

tr. transpose.

l. c. lower case;—used when a letter or word that should be printed in common letters has been put in capitals or small capitals.

wf. wrong font;—used when a character is not of the proper size or kind of type.

s. c., or *s. caps.* print in small capitals.

Qy., or *?* Query;—used in any case of doubt.

Besides making himself familiar with all these signs and characters the compositor should know where they are to be found when wanted. Perhaps this would be a difficult task in some establishments where such signs are generally thrown into the spare boxes of the cap case, there being no proper place allotted to them. But this very difficulty arises from a lack of the knowledge we are seeking to impart, and only further illustrates the need for such instruction.

Every composing room should contain certain cases which are set apart for these peculiar signs, and each box of such cases should be labeled with the particular sign it contains, so that every person who has occasion to set out of it or distribute into it should have no excuse for mixing.

Very few employers have any idea of the amount of time that is lost in looking for peculiar sorts when they happen to be wanted, or else they would provide proper receptacles and insist on careful distribution of such sorts when done with. But not only is there great loss on

account of the time spent in finding them, it should also be borne in mind that they cost more to replace than the ordinary letters in a font in the event of their being lost.

Let each man and boy who reads this determine to make himself master of the names and uses of these peculiar signs, and he will, in the future, have many occasions for congratulating himself that he did so. A little spare time spent in this way will be an investment that will be sure to bear good interest.

TERMS USED IN THE COMPOSING ROOM.

BEFORE entering upon the actual work of composition it will be necessary to explain the terms and phrases employed in connection with the work, and the names of the implements which compositors use. It is true that if we followed the course pursued by others who have preceded us, we should put these terms in the appendix, and it is just possible they might look better there than here. But it certainly appears more logical to explain the terms about to be used now than to use them and then explain their meanings at the end of the book. The following list contains only such as are most likely to be needed:

Ascending letters.—Letters that ascend into the upper shoulders; as b, d, l, etc.

Author's proof.—The proof sent to an author after the compositor's errors have been corrected.

Author's corrections.—The changes made by the author in such proof.

Back furniture.—The piece of furniture placed between the pages which form the back fold, as 1 and 16 or 8 and 9 in a sheet of octavo.

Bastard title.—A short title preceding the general title of a work.

Bastard type.—Type with a face larger or smaller than its regular body: as nonpareil on minion body, or minion on nonpareil body.

Batter.—Types injured in a form or otherwise.

Beard of a letter.—The outer angles supporting the face of a type and extending to the shoulder.

Bevels.—Slugs cast type high with a beveled edge, used around pages to be stereotyped, to form the flange on the side of the plates.

Binding.—This term is used when a type, lead, reglet, piece of furniture, or anything else, through being too large, or being misplaced, binds against some other part in locking up.

Blocks.—The bases on which electrotype plates are placed for printing.

Blocked up.—When the font of type is all set, and none is available for present use.

Bodkin.—An awl-like tool used for correcting errors in type.

Body.—The shank of a letter.

Body-type.—This term is used to denote the class of type which is used on book and newspaper work, as distinct from job type.

Bottled.—Type wider at the bottom than at the top.

Boxes.—The compartments of a case in which the types are placed.

Brass rule.—Strips of brass of different kinds and thicknesses, used in table work and in various other ways.

Break-line.—The last line of a paragraph.

Broken matter.—Pages of type disrupted and somewhat intermingled.

Cabinet.—A receptacle for cases, chases, leads, etc.

Case.—The receptacle for type, divided into numerous compartments, from which the compositor sets up his matter.

Casting off.—Estimating how many pages a certain quantity of copy will make in type.

Catch-line.—This is a short line, consisting of one or more unimportant words, placed between two display lines in job composition.

Ceriphs.—The lines or cross-strokes at the ends of the stem of a letter.

Chase.—A rectangular iron frame in which pages of type are imposed for printing on the press.

Clean proof.—A proof containing few faults.

Clearing away.—Properly disposing of materials after a work has been completed.

Close matter.—Solid matter with few break-lines and no leads.

Composing.—Setting type.

Composing rule.—A steel or brass rule with a beak at one end, used in typesetting.

Composing stick.—An instrument in which types are arranged in words and lines.

Correct.—A compositor is said to correct when he amends the faults marked in a proof.

Corrections.—The alterations or errors marked in a proof.

Cut-in letter.—A type of large size adjusted at the beginning of the first paragraph of a chapter as an initial letter.

Cut-in note.—A note justified into the side of a page.

Dele, ⅁.—A proofreader's mark, signifying to take out.

Descending letters.—Letters that go down into the lower shoulder of the body; as g, j, p, q, y.

Display.—This is a term used in job composition, and means the selecting and laying out of type lines so as to produce the best results or display.

Distributing.—Returning types to their various boxes after having been printed from.

Double.—Words set up twice over.

Drive out.—To space widely.

Em.—The square of the body of a type.

En.—Half the dimensions of the preceding.

Even page.—The 2d, 4th, 6th, or any even-numbered page of a book.

Fat.—Poetry, leaded or other matter which is easily or quickly set up.

Folio.—The figure or numeral placed at the head or foot of a page to denote its sequence.

Foot-note.—A remark which instead of being embodied in the text is placed at the foot of a page, with a reference mark to connect it with the passage to which it refers.

Foot-sticks.—Sloping pieces of furniture placed at the bottom of pages, between which and the chase the quoins are driven to fasten the pages.

Form.—The pages or job when imposed in a chase.

Foul proof.—A proof with many faults marked in it.

Furniture.—Pieces of wood or metal used for dividing pages in imposition, filling up blank spaces and in locking up job forms.

Galley.—A wooden or brass flat oblong tray, with side and head ledges, for holding type when composed.

Gauge.—A strip of reglet with a notch in it, to denote the length of the pages in making up.

Get in.—To set words closely.

Gutter sticks,—The piece of furniture placed between the pages in the outside fold, as 14 and 16 or 13 and 15 in a sheet of octavo.

Half-title.—The title of a book inserted in the upper portion of the first page of matter.

Hanging.—When a page is locked up at the side before being locked up at the foot, causing a crooked appearance, it is called hanging.

Hammering proof.—Taking a proof from the type by means of the proof planer and a mallet.

Hanging indention.—Where successive lines are set in an em or more beyond the first line.

Head-sticks.—Furniture put between the heads of pages in imposition.

Hell-box.—The receptacle for broken or battered letters; the old metal box; the shoe.

High spaces and quads.—These are used in matter specially intended for electrotyping and not to be printed from.

Imposing.—Arranging and locking up a form of type in a chase.

Imposing stone.—The stone on which compositors impose and correct forms.

Imprint.—The name of the printer or publisher appended to jobs or title pages.

Indentation.—The space placed at the commencement of a paragraph.

Inferior letters.—Small letters cast near the bottom of the line.

Inner form.—The form containing the second and third pages of a sheet when imposed in two chases.

Justifying.—Spacing out lines to a certain measure.

Keep in.—To crowd in by thin spacing.

Kerned letter.—Type of which a part of the face hangs over the body.

Laying cases.—Filling cases with a font of new type.

Laying down pages.—Placing pages of type on the stone in proper order for imposition.

Leaded matter.—Matter that has leads between the lines.

Leaders.—Dots or hyphens placed at intervals of one or more ems in length to guide the eye across the line to the folio in tables of contents, etc.

Leads.—Thin strips of metal cast to various thicknesses, quadrat high, used for spacing between lines, etc.

Lean.—Close and solid matter.

Lean type.—Thin type.

Locking up.—Tightening up a form by means of quoins.

Long-cross.—The bar that divides a chase the longest way.

Lower case.—The case containing the small letters of the alphabet, figures, points, etc.

Make-up.—To arrange the lines of matter into pages.

Make-up rule.—A steel rule with a projection on the top used in making up.

Making margin.—Arranging the space between the pages of a form so that the margin will be properly proportioned.

Mallet.—A wooden hammer.

Matter.—Composed type.

Measure.—The width of a page or job.

Nicks.—Hollows cast in the front of the lower part of the shank of a type, to show the compositor how to place it in his stick.

Off its feet.—When type leans in any direction, causing an imperfect impression of its face, it is said to be off its feet.

Open matter.—Matter widely leaded or containing numerous break-lines.

Out.—An omission marked in the proof by the reader.

Outer form.—The form containing the first and last pages of a sheet when imposed in two chases.

Over-running.—Carrying words backward or forward in correcting.

Page-cord.—Twine used for tying up pages.

Pi.—Types of different kinds mixed together.

Picking.—Taking letters out of one job to use in another.

Planer.—A smooth block of wood used for leveling the surface of pages of type when imposed.

Planing down.—To bring down types evenly on their feet by laying a planer on the page and striking it with a mallet.

Proof planer.—A planer covered with cloth, used for taking a proof by beating with a mallet instead of putting on press.

Quadrat.—A low square blank type, used to fill up break-lines and other spaces.

Quirewise.—When the whole of the pages of a work are imposed so as to make but one section when folded.

Quoins.—Small wedges for locking up a form. There are now many devices made of iron which are used for this purpose.

Quotation furniture.—Quotations cast to various sizes in length and width, used for blanking and as furniture.

Quotations.—Words or sentences quoted from other works and inclosed by inverted commas and apostrophes. Large hollow quadrats.

Rack.—A receptacle for type cases when not in use. Also, form racks in which to stand forms.

References.—Letters or characters used to direct the reader's attention to notes at the foot of a page.

Reglet.—Thin furniture, of an equal thickness all its length. It is made to match the depth of quadrat.

Revise.—A proof taken from the type after corrections have been made.

Roller.—A wooden cylinder covered with composition, which, set in an iron frame, revolves upon a rod, and is used for inking type.

Running head.—The title of the book or subject placed at the tops of the pages.

Run-on.—This term means that there is to be no paragraph.

Runs on sorts.—Requiring an inordinate proportion of particular letters.

Saw-block.—A box similar to a carpenter's miter block, to guide in cutting furniture, etc.

Setting.—Composing.

Shank.—The metal body upon which the face of a letter stands.

Sheetwise.—When the pages of a sheet are imposed in two forms, which are backed in printing.

Shooting-stick.—An instrument used for locking up a form.

Short-cross.—The short bar which, crossing the long bar, divides the chase into quarters.

Shoulder.—The surface of the shank of a type not covered by the letter.

Side-sorts.—Types in the side and upper boxes of a case, consisting of letters not frequently used.

Side-sticks.—Sloping furniture on the outside of the pages next to the chase, where the quoins are inserted.

Signature.—A letter or a figure used at the bottom of the first page of a sheet, to direct the binder in placing the sheets in a volume.

Slice-galley.—A galley with an upper movable bottom, called a slice, used for pages and jobs too large to be lifted by the fingers.

Slug.—A thick lead generally cast to nonpareil or pica thickness.

Sorting pi.—Separating different kinds of types that may have got mixed together.

Sorts.—The letters in the several case-boxes are separately called sorts.

Space rules.—Fine lines, cast type high, and of even ems in length, for table and algebraical works.

Spaces.—Low blank types used to separate words.

Squabble.—A page or form is squabbled when the letters are twisted out of a square position.

Stand.—The frame on which the cases are placed for composition.

Stem.—The vertical strokes of a type.

Stet.—Written opposite to a word in a proof to signify that the word erroneously struck out shall remain.

Stone hand.—A compositor who is chiefly employed on imposition and other work which is done on the stone.

Sub.—A compositor occasionally employed on a newspaper to fill the place of an absentee.

Superior letters.—Letters of a small face cast near the top of the line.

Table work.—Matter consisting chiefly of rules and figures and set in columns.

Take or taking.—A given portion of copy.

Text.—The type which is used in the body of a book is called the text type.

Turn for a letter.—When a sort runs short, a letter of the same thickness is substituted, placed bottom upward.

Tweezers.—Used for picking out letters in correcting.

Tying-up.—Winding page-cord round a page of matter before imposing.

Upper case.—The case containing capital and small capital letters, fractions, etc.

White line.—A line of quadrats.

White page.—A blank page.

Wrong font.—A type which belongs to some other font than that in which it is found.

Many of the terms usually inserted in such lists as the foregoing have been omitted, as they have now become obsolete, and others of more modern origin have been inserted in their place.

Besides these, however, there are many other terms and phrases which, although not strictly technical, have a

special significance in connection with the work of the compositor. Those who have grown old in the business know how necessary it is to be well posted in all these matters, and know that among the young members of the craft there is woful ignorance and indifference as to them.

"Making up" and "imposition" are often used as though they were interchangeable terms, whereas the first refers to making up the lines of the book or job into a page or pages, while the latter refers only to the putting of such page or pages into chase in proper order for printing.

The young compositor will find it advantageous to study all these terms thoroughly, not only because there is a good deal of information to be obtained thereby, but also because when he finds himself among a body of compositors he will be expected to know and to use the correct phraseology in referring to the various matters which they indicate.

Unfortunately there is a growing tendency among young men to shirk the thorough mastery of all these details. They are in such a hurry to be proficient that they neglect the very first essentials of proficiency. They think they ought to learn in six months what it took their fathers five or seven years to learn! Not so fast, young men! It is true you may have more advantages than your fathers, and that you may be a little smarter, but all the smartness and all the advantages will never make you compositors unless you pass through the same routine that your fathers did. You may get through quicker, *but go through you must*, or you will never be able to fill their places.

COMPOSITION.

WE now enter upon the field of actual operation, where all that has been learned up to the present will be brought into requisition. But only those who have carefully and earnestly studied the preceding pages will be fit to enter this field with any profit to themselves or any likelihood of becoming useful members of the craft. Therefore, it may be better for some that they should turn and retrace their steps over the ground already covered, and come back to our present standpoint with increased knowledge and better qualifications to proceed.

Composition (or typesetting), while it is not a mere mechanical operation, requires great dexterity and a nicety of application, such as few other occupations call for. The rapidity with which a good compositor can transfer the types from the boxes, wherein they lie in a disordered mass, to the composing stick, and build them up one by one into all kinds of words and sentences, astonishes a looker on who is not in the secret.

The first thing to be learned in connection with composition is the lay of the cases. This is called

LEARNING THE BOXES,

and is far more important than might appear at first sight. The compositor should not only know where every letter, figure, point, space, etc., may be found, but should go

over the boxes so frequently and persistently that he cannot possibly make a mistake. Especially is this important in connection with such types as are not frequently used; for here, as elsewhere, there is a great temptation to shirk the thorough mastery of the necessary details and only learn so much as appears requisite for present emergencies. As before stated, there are very few compositors who have thoroughly learned all the boxes in the upper case, and consequently it cannot be wondered at that many of those boxes are little else than receptacles for pi.

Having learned the boxes thoroughly, the compositor will proceed to fill his case with type by means of

DISTRIBUTION.

This part of the work is of more consequence than many compositors appear to think. It is safe to say that more than one half the marks made on proofs are the result of careless distribution. A little extra time spent on this part of the work will be saved many times over in composing and correcting. It is better to be a little slower in putting the type into case than to lose time by picking up the wrong letters, and having to change them either in the stick or after the proof has been read.

POSITION OF THE BODY.

This is a matter which should receive careful attention, not only because it materially affects the amount of work which can be done, but also because it affects the health. Many men have brought on serious diseases of the chest and lungs through assuming a stooping posture, whereby these organs have been contracted and cramped. The body should be kept erect and the height of the cases should be so adjusted as to conform to this position. Sitting should be avoided, as it is almost sure to lead to a

stooping habit. The left hand, which holds the stick, should follow and wait upon the right hand, which picks up the types. The eyes should travel a little ahead of the hands, so as to see which way the type lies in the boxes, that it may be taken hold of at once in the right manner and carried to the stick with the nick in the right position. There should be no hurry, but every movement should be sure, deliberate and steady. Many compositors have contracted the bad habit of making several false movements, which are simply the result of hurry. Instead of picking up a letter every time their hand goes to the box, they will make two or three picks instead of one, and then, instead of taking the type direct to the stick, they will stop to turn, tap it on the center of their case, click it against their stick, or use some other false motion equally absurd. The amount of time lost in this way is very great, and those who wish to become fast compositors must avoid making a single movement which is not necessary. The man who makes the greatest number of these unnecessary movements sets the least number of types. A hasty habit also leads to other evils, such as dropping types which have to be picked up again, dirty proofs which have to be corrected, breaking lines in spacing, bad justification, and many others equally injurious. Boys should be taught "first to be accurate, then to be quick." There is more danger of their going too fast than going too slow. Speed will almost invariably follow a slow, careful beginning, but will never be acquired where careless haste is allowed to become a habit.

JUSTIFICATION

is another part of the process which can be performed in such a manner as to materially affect the amount of work done. The time spent in justification by different

compositors varies considerably. Some acquire the habit of looking ahead and apportioning a certain quantity of their copy to fill the line. This is not so difficult as it might at first appear. After a little practice it will be found easy to see before half the line is set up what number of words will be required for the balance. A good compositor will thus often avoid having to change more than two or three spaces to justify his line, whereas a careless one will have twice the number to change, and spend twice the time over it. But not only does justification affect the number of ems that can be set up, it also affects the value of the matter after it is set up. Badly justified matter may cost more in the shape of time lost in handling it, or through letters drawing out after it is on the press, or working off its feet, than it cost to set up originally. Every line should be made exactly the same length. It is a bad practice to justify lines so tightly that the last space inserted has to be pushed down with another type. The lines should be just tight enough to hold themselves in the stick firmly, supposing the stick should be turned upside down. It will often happen that in the setting of a line the types may lean a little to one side, and unless properly adjusted will appear off their feet when printed. A careful compositor will never allow such a thing to happen, as he will, by the aid of his left thumb, take care that every letter is made to stand perfectly upright before he tightens his line.

EVEN SPACING.

Besides the spacing out which is called for in justifying the lines, there is another and perhaps more important phase of this subject, and that is spacing evenly between the several words which go to make up a line. There are certain rules which it would be well for compositors to

observe at all times, no matter what kind of composition they may be engaged upon. We will just enumerate a few of these:

First. All matter which is leaded should be more widely spaced than solid matter, and this increase in the width of spacing should be regulated by the amount of space put between the lines—whether one lead, two leads, three leads or more. Nothing looks more unsightly than solid matter with square pigeon holes between the words, unless it be double or treble leaded matter with only thick or thin spaces.

Second. The spacing should be uniform, not only between the different words contained in a line, but between the whole of the words contained in a whole page, or the whole job. A very common error is to put thick spaces through the last line of a paragraph, no matter what the spacing of the previous line may be. This error is not only one of the commonest, but is one of the most easily remedied. Let the compositor only bear this point in mind, and he will naturally space the last line with either thick spaces, en spaces, or whatever is called for. Then, in order to give the spacing a uniform appearance, it may be necessary to vary the spacing according to the shape of the letter with which a word begins or ends.

Third. The indentation of a paragraph should also be regulated by the amount of space to be put between the lines. Where a one em indentation would be all right for solid matter, it would not look well for widely spaced lines; in that case it would be better to indent two or even three ems, according to the width of the column or page. Even in the case of solid matter, the indentation of the paragraph should depend on the length of the line.

Irregular spacing arises from carelessness as often as from a desire to pick up more types. Of course where a man is engaged on piecework there is a strong temptation to rush the types together, and on newspaper work it does not much matter, though even then a good compositor will pay some regard to his spacing, and not lose much time on it either. But on book or magazine work the spacing should be carefully done, and no man who prides himself on his ability will neglect this important point. Let a man once make up his mind to space evenly, and he will soon acquire the habit of doing it all the time, and will, by looking a little ahead, learn to do it without loss of time.

DIVISIONS.

In connection with spacing must be mentioned the dividing of words at the ends of lines. Though it may not be easy to avoid the division of words altogether, and while it may be true that a bad division is better than bad spacing, yet it is nevertheless true that a great many very ugly and unnecessary divisions are made for the want of a little forethought and care. Some of them are wholly inexcusable, and are sufficient of themselves to condemn a man as an incompetent workman. The writer can remember when, as a young man, engaged on bookwork, he had great trouble in correcting such mistakes. The proof-reader would think nothing of making a "ladder" nearly the whole length of a page, in order to correct one bad division and to avoid irregular spacing, until the end of a paragraph was reached. Then the division of a word was seldom allowed at all if it could possibly be avoided, but if allowed, could only be so in certain forms. In the case of one very particular and expensive work there was not a single division through the whole of its three hundred pages.

How was it done? Well, it was not so very difficult a matter. The measure was wide, and we had to go back sometimes and drive out or get in a word, but always observing the necessity for uniformity of spacing. About that time there had been a composing machine placed upon the market, and a committee of about a dozen were deputed to meet the inventor and take into consideration the practicability of such a machine. After careful and painstaking examination we came to the unanimous conclusion that the time occupied in taking up the long lines which were set by the machine and putting them through the composing stick, properly spacing and justifying them, took so much time as to almost neutralize any advantage there might otherwise be gained. The inventor tried to persuade us that the time required for such spacing and justifying in the ordinary method of composing was considerable, and in fact did not differ much from that required in the case of matter set up by his machine. But one of our number took up a stick in the ordinary way and set up for about half an hour, and by looking ahead and arranging his words to suit his lines the justifying took so little time that it could scarcely be taken account of, he only having two or three spaces to change in any one line; and when a proof was taken it was found to be free from errors, with only one division and the spacing uniform.

CLEAN PROOFS.

A clean proof is one of the most unmistakable signs of a good compositor, for no matter what else a man may excel in, unless he has clean proofs his worth as a compositor is greatly decreased. Generally speaking, a dirty proof (like many other defects) is simply the result of carelessness. Let a man aim at producing a clean proof and he will be careful in his distribution, will read his

copy so as to catch the sense of what he is setting up, and will read over his lines before justifying. A dirty proof is not only a disgrace to a man, but is a positive loss to him and to his employer, for not only is his time wasted in corrections, but the proofreader's time is wasted in marking and revising. And yet how often do we hear a compositor trying to excuse himself when a mistake has been allowed to pass, by blaming the proofreader, instead of taking the whole blame upon himself, where it rightly belongs!

In this connection it will be well to consider another very important part of the compositor's work, namely,

CORRECTING.

A great deal of time may be saved by going the right way to work in correcting a proof. If the matter be still on the galley, the quoins should be slightly loosened (not taken out) so that the lines can be lifted up easily. Where there are wrong letters to be changed, it is a good plan to gather up all the letters required and hold them between the thumb and first finger of the left hand, and then to lift the whole line in which the correction has to be made sufficiently high so that with the right hand the wrong letters may be taken out and the proper ones inserted. In order to do this the compositor should place himself with his right side next the stand on which his galley rests, and lean over so that he can read the matter from the head, just as he does when the lines are in the stick. He should then begin to correct from the top of the galley, and work down to the bottom. Where the thickness of the letter which has to be put in varies from that which has to be taken out, some of the spaces must be changed so as to allow for the difference. Where there are "outs" or

"insertions," it is better to leave them till the wrong letters are all changed, and then lift out so many lines as are likely to be affected by the insertion or omission. If several lines have to be over-run they should be placed on another and smaller galley, and be turned round so that the first line will take the place of the last. By this means the beginning of the first line is brought outside, so that it is easy to take up and pass the words through the stick. In no case should the lines be spread out along the galley, or, as is often done, laid along the lower side of the boxes in the case.

Should the matter have to be corrected in the form, the same general course should be pursued, except that it may be necessary to use a bodkin, though this should be avoided where possible, as the type is liable to get damaged thereby; but tweezers should never be used, as they are almost sure to injure the type. Sometimes when correcting in the form a page may be "squabbled" on account of the quoins being too loose and the matter receiving too much pressure in a certain part. Where this occurs, it is a good plan to walk away for a few minutes, until any nervousness which it may have occasioned has passed off, and then to come back and observe carefully where the "squabble" has its start. It may then happen that by putting one or two letters into their right places the whole can be brought into proper shape, whereas if it were undertaken hurriedly the trouble might only be made worse.

The following reduced fac simile of a "dirty proof" will be useful to many, as it contains all the marks which are usually made by proofreaders, and by comparing it with the piece of corrected matter which follows, the meaning of these marks will be easily learned:

HAMLET'S ADVICE TO THE PLAYERS.

Speak the speech, I pray you, as I pronounced it to you, trippingly on the tongue, but, if you mouth it, as many of our players do, I had as lief the Town crier spoke my lines. Nor, do not saw the air too *much* with your hand, thus: but use all gently; for, in the very torrent, tempest, and, as I may say, whirlwind of your passion, you must acquire a temperance that may give it smoothness. O, it offends me to the soul to hear a periwig-pated robustious fellow tear a passion to tatters, to very rags, — to ~~rend~~ the ears of the groundlings, who, for most part, are capable of nothing but inexplicable ~~dumb~~ show and noise. I would have such a fellow whipped for o'erdoing Termagant; it out-Herods Herod. Pray you avoid it. Be not too tame, neither, but let your own discretion be your tutor; suit the action to the word, the word to the action, with this special observance, that you o'erstep not the modesty of Nature; for any thing so overdone is from the purpose of playing, whose end, both at the first and now, was and is, to hold, as 'twere, the mirror up to nature: to show Virtue her own feature, Scorn her own ~~picture~~, and the very age and body of the time, his form and ~~pressure~~.

SHAKESPEARE.

HAMLET'S ADVICE TO THE PLAYERS.

SPEAK the speech, I pray you, as I pronounced it to you, trippingly on the tongue; but, if you mouth it, as many of our players do, I had as lief the town crier spoke my lines. Nor, do not saw the air too much with your hand, thus: but use all gently; for, in the very torrent, tempest, and, as I may say, *whirlwind* of your passion, you must acquire a temperance that may give it smoothness. O! it offends me to the soul to hear a periwig-pated robustious fellow tear a passion to tatters,—to very rags,—to split the ears of the groundlings, who, for most part, are capable of nothing but inevitable dumb show and noise. I would have such a fellow whipped for o'erdoing Termagant; it out-Herods Herod. Pray you avoid it.

Be not too tame, neither, but let your own discretion be your tutor; suit the action to the word, the word to the action, with this special observance, that you o'erstep not the modesty of Nature; for any thing so overdone is from the purpose of playing, whose end, both at the first and now, was and is, to hold, as 'twere, the mirror up to Nature: to show Virtue her own feature, Scorn her own image, and the very age and body of the time, his form and pressure.

Shakespeare.

JOBWORK.

There is no part of our business which is so difficult to explain, or to teach by written instructions, as that of job composition. So much depends upon personal aptitude, good taste, and the faculty of grouping the types so as to produce a harmonious effect. There are, however, many points on which it will be well to touch.

The selection of suitable faces of types is of first importance. There are some types which seem to be just made for certain classes of work that would be entirely out of place if used on others. In selecting types the compositor must be guided by the nature of the business or profession of the customer.

For lawyers, doctors, schools and institutions, small plain faces are most suitable.

For companies, corporations and state work, larger plain faces will be more appropriate.

For wholesale mercantile houses, good, substantial, well-formed faces, with just enough ornamentation to give them style, should be used; or some lines of script may be introduced to advantage.

Retail tradesmen mostly prefer showy, ornamental faces, with curves, panels, and perhaps cuts which illustrate some portion of their business.

Church and other religious work calls for old English texts and other ecclesiastical faces, of which there are many series.

But in every case it must be borne in mind that legibility is of more consequence than the most artistic arrangement or fanciful design. Where both can be obtained, of course, it is all right, but too often the former is sacrificed for the latter. There are plenty of good readable faces that have style and finish, and these should

be chosen rather than those which have only their flourishes to recommend them. An inferior workman will often try to cover up his deficiency by using the most fanciful types, but, alas! he only makes more manifest the poverty of his ideas.

The next point to consider is the proper arrangement of the types so as to produce harmony and effectiveness.

In order to arrive at a proper result, the sizes of the types and the lengths of the lines must be taken into account. In the setting up of a business card, billhead, circular, etc., the customer's name, business and address are the three most important points to bring out. These can each be made equally prominent without using exactly the same size of type. A small line may be made just as legible as a large one by being a little heavier in face, or being placed in contrast with the still smaller types that are near it. Then the length of the line has much to do with its prominence. But where all the types are about the same size, and all the lines about the same length, the result is that there is too much of a sameness, and nothing stands out distinctly.

Further on will be shown some specimens of job composition, which it is hoped will be of service in conveying correct ideas on this subject, and those who desire to learn or to improve their knowledge will do well to study all the different styles there shown.

Spacing has a great deal to do with the production of a good piece of job composition. There should always be plenty of space between the words, and sometimes between the letters, where it is necessary to increase the length of the line. Then the spacing between the lines is even more important. Very few men appear to know how to do this spacing out. The correct rule is to put more space between

long lines than short ones, and where catch lines occur (that is, such words as "of," "the," "and," "by," when standing alone) the space put each side of them should only be one-half of what would be put between the longer and more important lines.

Where dashes are placed between certain of the lines, it is better to vary the space each side of them than to make such space uniform. For instance, where a dash is put each side of a line, it is better to let them be closer to the top and bottom of that line than they are to the next lines on either side, which gives the line the appearance of being inclosed between two dashes.

A brass rule run close up under a line, or within a lead of it, will give that line prominence and add to the effectiveness of the display.

Large initials may be used with advantage, but should never be put at the beginning and end of a line, except it be in the case of large poster work.

Where a large amount of matter has to be put into a small space, it is best to set up all the small or body type first, and then to devote the balance of the space to such lines as may have to be displayed, always bearing in mind that the greater the contrast between the body of the job and such display, the more striking and satisfactory will the whole appear.

In show printing, where large bills have to be set up, it is better to lay out the most important lines first, and then work to them. This remark will apply to any other large work where there is plenty of space allowed.

TABLE WORK.

This is another part of the compositor's work which calls for special and careful training. There are comparatively few men who may be called good table hands.

Some have never set a piece of table matter in their lives, and would never dream of attempting such work; and so they remain ignorant of one of the nicest of all the compositors' accomplishments.

Of course there are tables and tables; some of them, perhaps, not deserving the name. But to know how to take a piece of manuscript copy, which has been drawn up without regard to what space it has to fill, and to cast it off so as to make it a certain size, and to arrange all the columns and heads in proper proportions, is an accomplishment which any compositor may well be proud of.

Those who have carefully studied the sizes and proportions of types will have a great advantage over those who have not, as a great deal depends upon accuracy of measurement. A piece of table work which looks well on the galley may, when put on the stone and locked up, refuse to go further. If all the calculations as to justification have not been accurately made, it will not lift, and may take the man as long to remedy the evil as it would have taken another man to set it up properly in the first instance.

When commencing a piece of table work it is well to move slowly. It should be carefully cast-off to find what sized type it will be necessary to use; and each column should have its proper width in ems marked. Where there can be any doubt as to whether some words or figures will come in to any given space, it is better to set them up and make sure. Guessing will not do. The man who spends a proper amount of time in making these preparations will have his work finished before the man who neglects the precaution; although at first it may appear that the latter is half finished before the former starts.

Where there are several columns which contain only figures, it is better to set them in long lines than to set one column at a time. The number of ems of each column should be added together, and the stick made up to that number of ems. For instance, suppose there are ten columns, and that their widths in brevier (or whatever type the table is being set in) are 3½, 4, 4, 4, 2½, 3, 5, 2, 4, 3 ems respectively, the stick should be made up to 35 ems of that sized type. A line of quadrats should then be set right across, divided according to the various widths of the columns. It will then be easy to set the figures in one line and yet keep them in proper position in their respective columns. After this, the rules can easily be inserted by opening up a space between the columns with a knife or piece of brass rule.

Space should always be allowed between the type and the rules. In the columns there should be at least an en space on either side, with an em at top and bottom. In the heads the same rule should be observed, though there may be more reason for departing from it in the case of a large number of words having to be crowded into a small space, as often happens.

The type used for heads should be about two sizes smaller than that of the body, where it can be so arranged.

If the rules have to be cut, great care is needed in getting just the proper length, for if they are too short they will not look well, and if too long the table will not lift. The face of the rule should be dressed, so as to avoid a curl on the end.

MAKING UP.

By this term is meant making up into pages matter that has been composed for book or pamphlet work. As a rule pages are made one-half longer than their width. If a

page be twenty ems wide it ought to be thirty ems long, without the folio. Of course this proportion cannot always be strictly adhered to, but will serve as a good basis for calculation.

Before the make-up is begun a gauge should be cut to mark the length of page. A piece of reglet with a notch cut into it will serve the purpose very well. Then the matter should be roughly measured off to see whether there are likely to be any bad divisions.

There are certain laws with regard to this part of the work which must on no account be violated. The last line of a paragraph must not be turned on to the top of a page, nor must one line of a paragraph be allowed to stand at the foot of a page, if it be possible to avoid it. By keeping a look-out ahead these difficulties can be usually avoided, but it may sometimes be necessary to "get in" or "drive out" a line.

The first page of a chapter or section should be sunk about one-fourth the depth of an ordinary page; that is, if the length of the pages be thirty picas, such first pages should be begun about seven picas from the top.

Where a chapter ends below the middle of a page it is better to begin the next chapter on a new page rather than to crowd the heading and have just a few lines at the foot of a page.

Where there are running heads to the pages they should be set either in even small capitals or in italics, and the space under them should be equal to one line of the type.

Where there are cross-headings occurring in the body of the pages, such headings should be a little more prominent than the rest of the page, and should have about twice as much space before them as after them, so that

if there were a nonpareil after there should be at least a pica before them.

Great care should be taken to secure uniformity in the length of the pages, otherwise there will be trouble when the pages come to be imposed. The lines should be pressed close together with the fingers, and examined to find whether they may not be off their feet, for unless they stand perfectly upright there will be a variation in length of page.

In tying up the pages care must be taken that the cord is placed about the center of the type and that the end is so placed as to be easily drawn out for untying.

IMPOSITION.

THE subject of imposition next claims our attention, and will be found worthy of careful study. Unfortunately, it is but little understood, and, like table-work, it is often avoided as something not necessary and requiring too much study to learn.

However, every compositor should know how to impose a form of type or lay down a sheet of plates, and those who do not are considered incompetent workmen. A careful study of the following diagrams will overcome the difficulty, and a little practice will soon make perfect.

The first thing to learn is how to lay down the pages or plates so that they will back properly in printing, and the next is to put the proper space between the pages so as to secure the correct margin when printed and trimmed.

By referring to the diagrams it will be noticed that the first page of every imposition is placed at the nearest left-hand corner, with the foot of the page outward. There are some exceptions to this rule, where it is desired to commence from the center in order to bring some lighter pages of matter in the middle of the form, and the more solid pages on the outside. But in every case the first page must be placed with the foot facing in this direction, and

always to the left of the page alongside. it. It will be noticed also that the odd and even pages always occupy the same relative position, that is, the odd page to the left and the even page to the right when looked at from the foot of the page. If this be borne in mind it will save many mistakes that might otherwise arise.

Another point having the same general application is that the folios of the two pages which stand alongside of each other, when added together, will make just one more than the number of pages in the sheet. As in a sheet of quarto, 1 and 8 make 9, so do 2 and 7, 3 and 6, 4 and 5, and in every other sheet of whatever number of pages the same rule applies.

Sheet work is imposed in two forms, one is called the outer form (containing the first page and all pages which print on the outside of the sheet) and the other is called the inner form (containing the second page and all the other pages which print on the inside of the sheet).

Half-sheet work is imposed in one form which backs itself and is then cut through the middle, each half being a perfect sheet. As, for instance, half a sheet of sixteens when backed and cut through makes two sheets of octavo.

A great many printers appear to be in error regarding the proper names of some of the sheets of imposition, some calling a sheet containing twelve pages "a sheet of twelves," or a form containing sixteen pages "a sheet of sixteens," and so on. For the sake of such, a complete list is here given:

A sheet of folio contains four pages.

A sheet of quarto contains eight pages.

A sheet of octavo contains sixteen pages.

A sheet of twelves contains twenty-four pages.

A sheet of sixteens contains thirty-two pages.

A sheet of eighteens contains thirty-six pages.
A sheet of twenties contains forty pages.
A sheet of twenty-fours contains forty-eight pages.
A sheet of thirty-twos contains sixty-four pages.
A sheet of thirty-sixes contains seventy-two pages.
A sheet of forties contains eighty pages.
A sheet of forty-eights contains ninety-six pages.
A sheet of sixty-fours contains one hundred and twenty-eight pages.
A half sheet of quarto contains four pages.
A half sheet of octavo contains eight pages.
A half sheet of twelves contains twelve pages.
A half sheet of sixteens contains sixteen pages.
A half sheet of eighteens contains eighteen pages.
A half sheet of twenties contains twenty pages.
A half sheet of twenty-fours contains twenty-four pages.
A half sheet of thirty-twos contains thirty-two pages.
A half sheet of thirty-sixes contains thirty-six pages.
A half sheet of forties contains forty pages.
A half sheet of forty-eights contains forty-eight pages.
A half sheet of sixty-fours contains sixty-four pages.

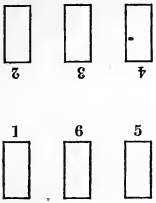
In the following diagrams it has not been thought necessary to illustrate a larger form than a half sheet of sixty-fours, for the reason that a larger form is seldom needed, and that, should it in any case be necessary, the man who has got so far will be able to meet the case. It will be noticed that a half sheet of sixty-fours is nothing more than the two forms of a sheet of thirty-twos put together, the inner form being turned round so as to put the second page on the far left-hand corner. The same remark applies to all other half sheets.

Special attention is called to the "French" sheet of twelves. As a rule both printers and binders have a dislike

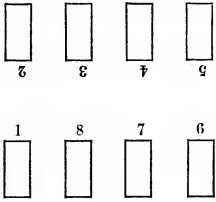
for twelves in any shape, but they will find that by this scheme the chief cause for objection is removed. The advantages in folding will be readily seen by reading the following remarks, which are taken from a previous number of THE INLAND PRINTER :

" Place the sheet before you so that page 3 will be at the upper right-hand corner. Then fold the top of the sheet toward you to match page 2. Now slide the sheet from the right-hand top toward you until page 5 comes at the upper right-hand corner, and fold the top of the sheet toward you again, this time matching page 4 at the lower right-hand corner. Now slide the sheet toward you again, the same as before, until page 16 is at the upper right-hand corner, then one more slide and fold, and you have the twenty-four complete. Notice that in all this folding you haven't turned the sheet over once in the whole operation."

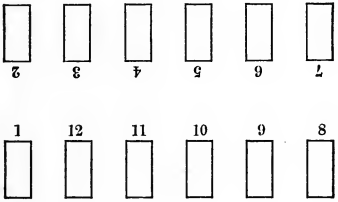
Six-page Folder.



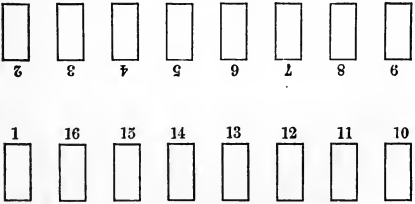
Eight-page Folder.



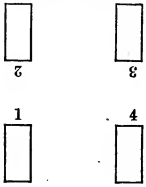
Twelve-page Folder.



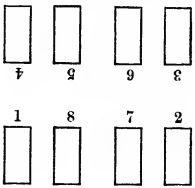
Sixteen-page Folder.



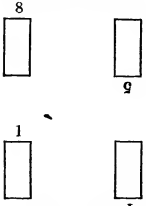
Sheet of Folio.



Sheet of Quarto.

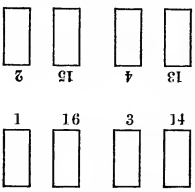


Sheet of Quarto Legal Cap way.

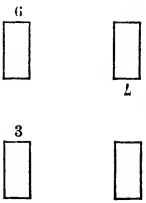


Outer form.

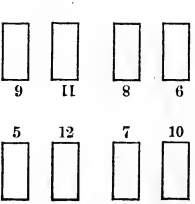
Four Sheets of Folio imposed Quirewise.



1st form. 2d form.



Inner form.

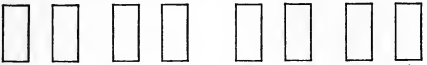


3d form. 4th form.

Sheet of Quarto Broad way.

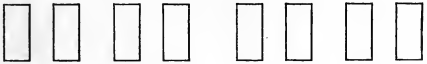
Outer form. Inner form.

Sheet of Octavo.



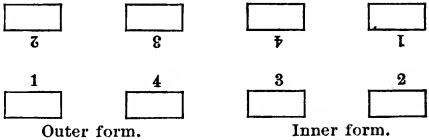
Outer form. Inner form.

Sheet of Twelves.



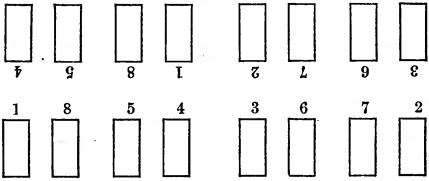
Outer form. Inner form.

Two Half-sheets of Broad Quarto worked together.



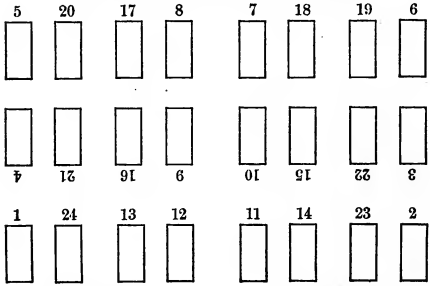
Outer form. Inner form.

Two Half-sheets of Octavo worked together.



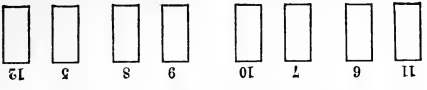
Outer form. Inner form.

Sheet of Twelves without Cutting.



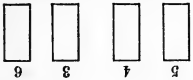
Outer form. Inner form.

Sheet of Octavo imposed from the centre

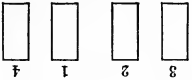


Outer form. Inner form.

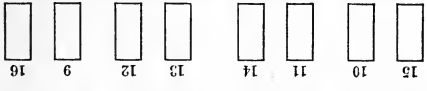
Half-sheet of Octavo imposed from centre.



Two quarters of a sheet of Octavo imposed from centre.

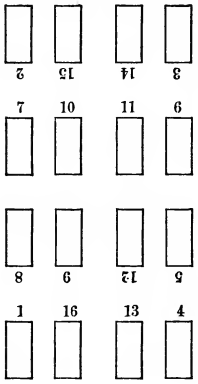


Sheet of Twelves imposed from the centre.

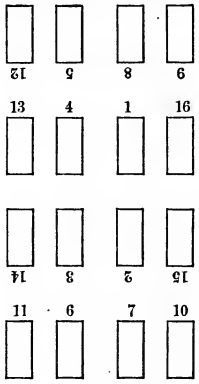


Outer form. Inner form.

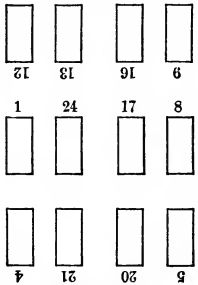
Half-sheet of Sixteens



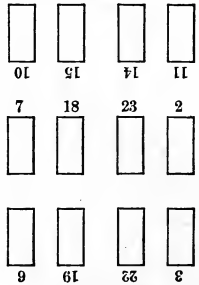
Half-sheet of Sixteens imposed from the centre.



The "French" Sheet of Twelves.

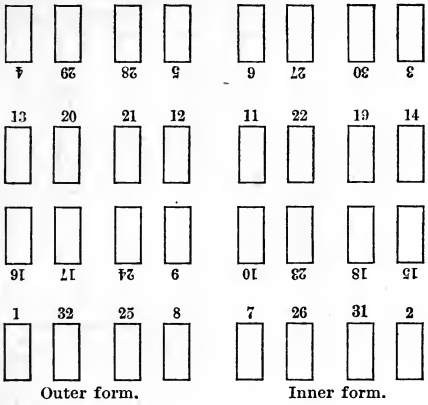


Outer form.



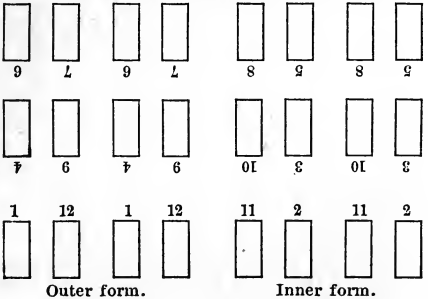
Inner form.

A Sheet of Sixteens.



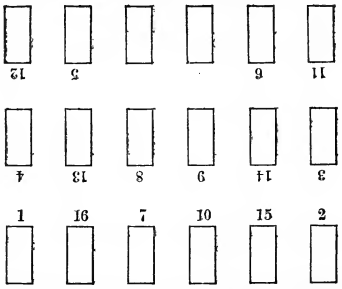
Outer form. Inner form.

Two Half-sheets of Twelves worked together.



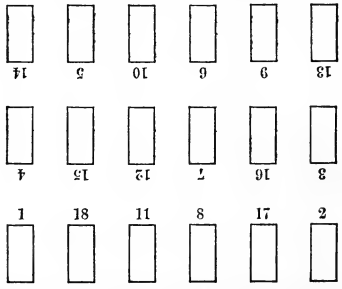
Outer form. Inner form.

A Half-sheet of Eighteens.
Containing 16 pages and 2 blanks.



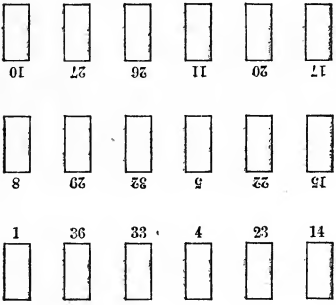
When the first side is printed the centre pages must be transposed,—viz. pages 7 and 10 in the place of 9 and 8, and pages 9 and 8 in the place of 7 and 10. Then back up.

A Half-Sheet of Eighteens.

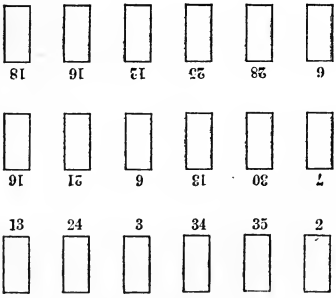


When the first side is printed transpose the form, —viz. pages 11 and 8 in the place of 7 and 12, and pages 7 and 12 in the place of 11 and 8. Then back up.

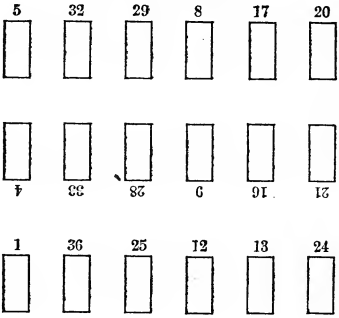
Outer Form of a Sheet of Eighteens, with one Signature.



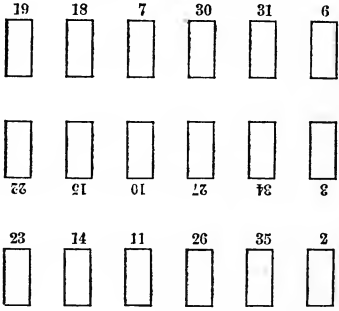
Inner form of a Sheet of Eighteens, with one Signature.



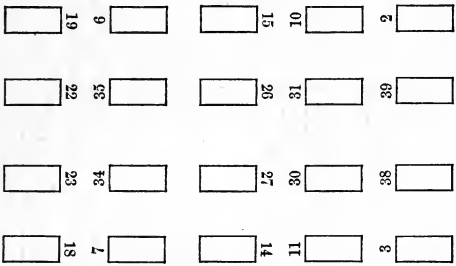
Outer form of a Sheet of Eighteens, to be folded together.



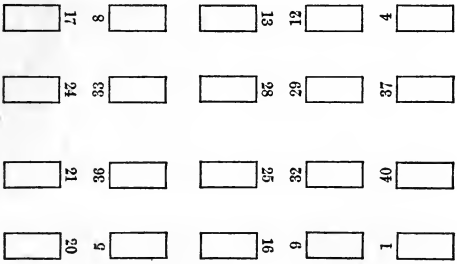
Inner form of a Sheet of Eighteens, to be folded together.



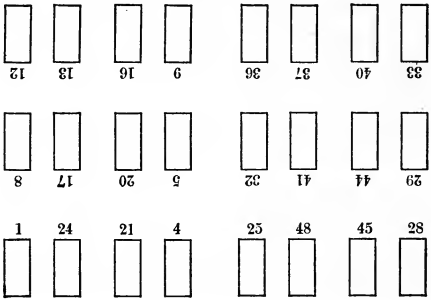
Inner Form of a Sheet of Twenties.



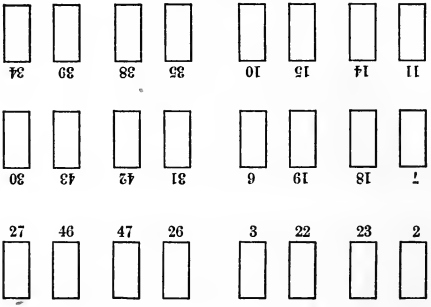
Outer Form of a Sheet of Twenties



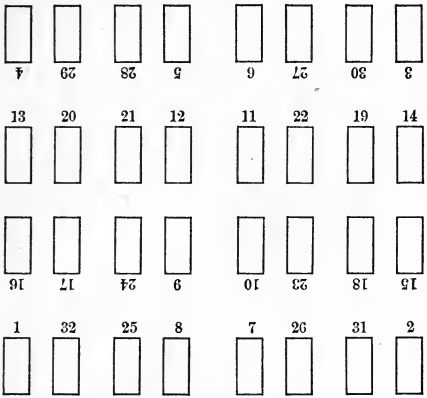
Outer Form of a Sheet of Twenty-fours, with two Signatures.



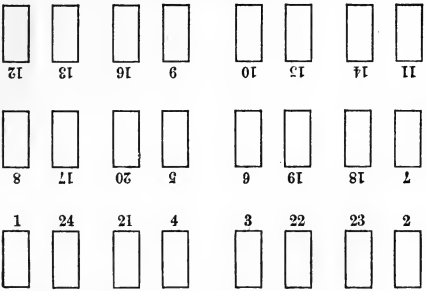
Inner Form of a Sheet of Twenty-fours, with two Signatures.



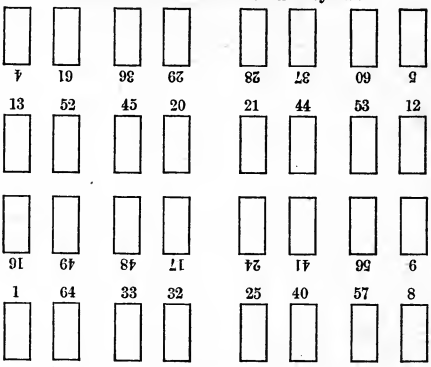
Half-sheet of Thirty-twos.



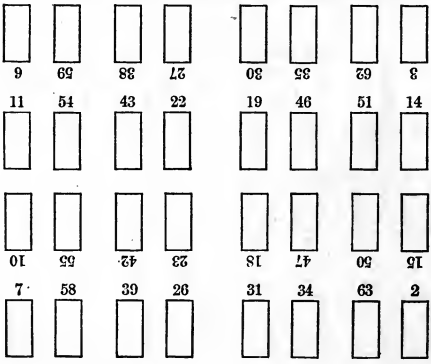
Half-Sheet of Twenty-fours.



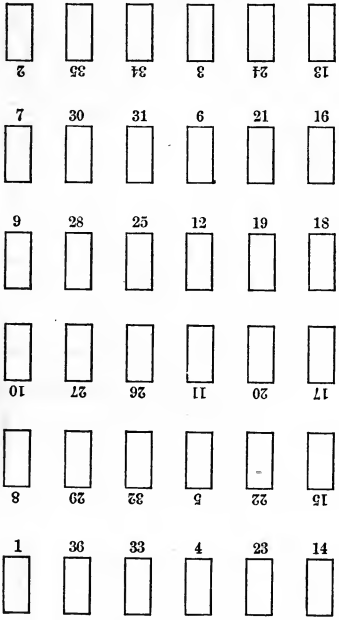
Outer Form of a Sheet of Thirty-twos.



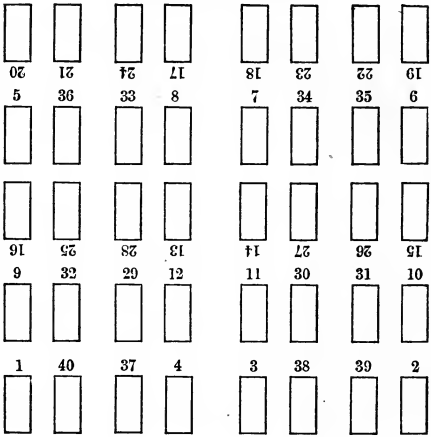
Inner Form of a Sheet of Thirty-twos.



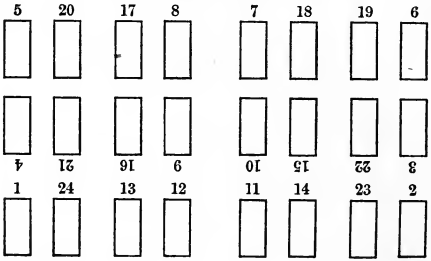
A Half-sheet of Thirty-sixes.



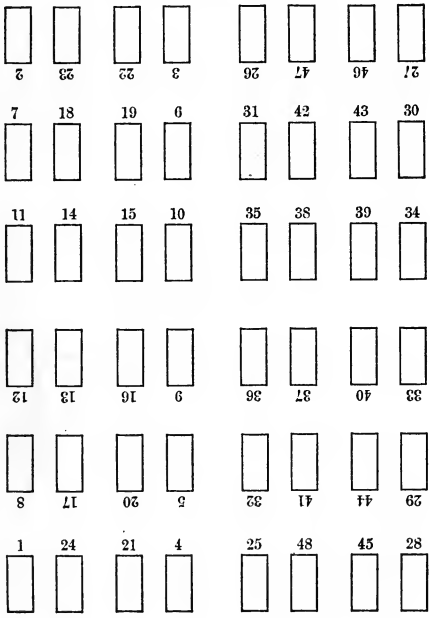
A Half-sheet of Forties.



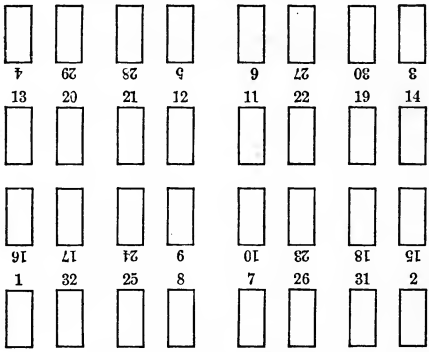
A Quarter-Sheet of Forty-eights, without cutting.



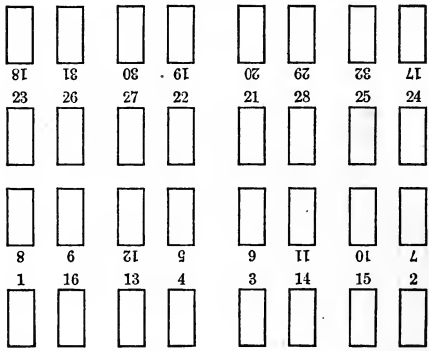
A Half-Sheet of Forty-eights,
with two Signatures.



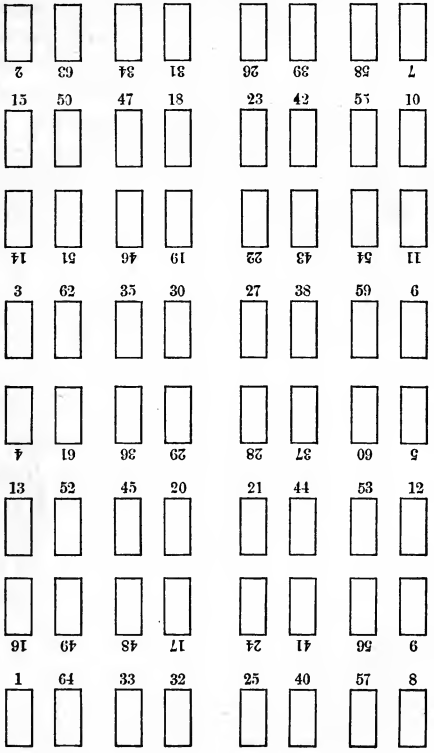
A Common Quarter-sheet of Sixty-fours.



A Quarter-sheet of Sixty-fours, with two Signatures.



A Half-sheet of Sixty-fours.



MAKING THE MARGIN.

Having learned how to lay down the pages, it will now become necessary to learn how to make the proper margin. This is done in the following manner: Fold a sheet of the paper which is to be used into as many parts as there are pages in the form. Then place the sheet thus folded on the first or left-hand page of the form, one edge even with the left-hand side of the type, place the adjoining page so that its left side may be even with the right-hand edge of the folded paper, which will leave a sufficient space between the two pages to admit the furniture, which should then be selected of a proper width to suit the form in hand, as follows: In octavos, about a great primer less in width than the space between the pages, as determined by the above rule; in twelves, about a pica less; in sixteens, about a long primer; and proportionally less as the number of pages are increased. Having thus secured the proper width for the gutter-sticks, cut them somewhat longer than the page, and holding one of them between the two pages, above the page cord, close the pages up to it; then open the folded sheet so as to cover the two pages, and, bringing the fold in the paper exactly in the middle of the gutter-stick, secure it there with the point of a penknife or bodkin; the right-hand edge of the paper thus opened must be brought to the center of the cross-bar, which determines the furniture required between it and the pages. Having thus arranged the margins for the back and fore edge of the book, proceed in like manner to regulate the head and foot margins, by bringing the near edge of the folded paper even with the bottom of the first page, and so placing the adjoining off page that its head may be barely covered by the off edge of the folded paper,

which will give the required head margin. All other sections of the form must be regulated by the foregoing measurements, when the margins for the whole sheet will be found correct.

The greater the number of pages in a sheet, the smaller in proportion should the margin be; the folded paper, therefore, should lie proportionally less over the edge of the adjoining page, both for gutter and back, in a form of small pages than in one of larger dimensions. A folio may require the page to be half an inch nearer the back than the fore edge; while a twelves may not require more than a pica em.

In imposing jobs where two or more of the same size, requiring equal margins, are to be worked together, fold the paper to the size appropriate for each, and so arrange the type that the distance from the left side of one page to the left side of the adjoining one shall be exactly equal to the width of the folded paper, as before described.

LOCKING UP.

The locking up the form is the next thing to be considered, and this part of the work requires as much skill and care as either of the others mentioned. The quoins should first be gradually and equally tightened all round with the fingers, then the form should be planed down, and the sides of the pages should be examined, to find out whether any letters have slipped at the ends of the lines, or whether the furniture binds in any part, causing hanging or crookedness. After this the quoins may be tightened until the form will lift. The inside quoins should be tightened first, that is, those that are nearest the thick end of the sidestick and footstick. The secret of locking up a form so that it will be square and lift properly is in

proceeding to lock up gradually and evenly all round. All the hammering and tightening in the world will not take the place of this. If the planing down has been carefully done before locking up, it will only be necessary to go over the form lightly with the planer to find whether any of the pages "spring." Beating the form with planer and mallet after locking up may spoil much type, but will serve no other purpose.

PRESS DEPARTMENT.

IN order to thoroughly understand all the details of this department, the learner will need to commence at the very threshold and take the place of "devil." Many would, no doubt, prefer to skip this part and begin by learning how to put a form on the press and make it ready; but this would lead to a superficial knowledge and must not be allowed. Many a pressman looks back to his experience as "devil" with thankfulness, not because he relished the experience which he then passed through—consisting, as it did, of much that was unpleasant and disagreeable, including the washing of forms and rollers, which caused chapped hands to smart with lye, and which could not be washed clean even for Sunday; sweeping floors and filling waste-paper bags; being daubed with ink, which sometimes gave him the appearance of having a sudden growth of moustache or beard, with many other peculiar vicissitudes "too numerous to mention"—but because all that experience formed the basis of his future success as a workman.

Education in a pressroom is a slow process, and cannot be acquired in a few months. The eyes, the ears, the hands and the mind all need to be slowly educated to understand the various objects, sounds and operations that

surround them. All the faculties need to be brought into harmony with their environment. The eye that is trained will see a hundred things connected with the machinery, presses, forms, paper and ink which another would not notice at all. The trained ear will detect sounds that are unusual, and will be able to trace them to their source, whether they come from a loose pulley, a bearing that needs oil, or from some internal part of a press, where another would be utterly ignorant. The trained hand will handle things as only such a hand can, because it has become accustomed to its work by experience, and is able to detect anything wrong in the condition of the rollers or vibrations of some parts of the machinery or presses.

Now all this proves the necessity of a slow and constant education, which can only be obtained in the pressroom. No amount of reading will supply its place; no theoretical knowledge, however accurate, will serve the same purpose, there must be actual contact—touching, seeing, and hearing—or no real knowledge of this part of the business can be learned.

And the proper time to get this knowledge is when young, while the faculties are developing and the mind is receptive, and the hands pliable and the heart hopeful. The best pressmen today and at all times are those who began young. Such men will do the right thing in the right way and at the right time, almost unconsciously, simply because the doing of such things has become a part of their regular habits of life. Their eyes and their ears are in full sympathy with their surroundings, and can readily detect any irregularities that may intrude themselves into their domain. Such men would find it difficult to explain the why and the wherefore of everything they do, and more so to impart their knowledge to others,

except by ocular demonstration, and then it would have to be a slow process and would require that the learner be on the spot all the time.

But it must be clearly understood that without this teaching by practical and experienced men, no accurate knowledge of the business can be obtained. Merely being in a pressroom will not of itself be of much use, however important and helpful it may be, as has been shown. There must be instruction as well as environment, and even with both these and with everything else favorable, it is not everyone who can become a good pressman.

Let not anyone imagine for a moment that the art of printing can be acquired easily and in a short time ; let him not think that a few months will suffice to learn how to put a form on the press and make it ready, or he may become one of those useless beings which we call " amateurs," and all his life be a failure as far as he is concerned and a nuisance so far as others are concerned.

It is pitiful to hear young men talk of having learned the printing business in a year, and to see them starting up small offices with small capital, small presses and small prospects of reaching anything better than the failure which they deserve. Let not the reader be led away by any false theories on this subject. There is but one way to become a pressman, and that is by following in the footsteps of those who have been all their lifetime in the business, and by coming practically and constantly in contact with all the various details of the pressroom.

The great lack among the majority of pressmen is technical knowledge and experience. So long as they have to operate upon a form which consists only of plain type, all goes well, but when plates have to be made ready or engravings " brought up," matters do not proceed so

satisfactorily, and waste of time or imperfect work exposes the deficiency. Again, it is difficult to find a man who is equally able to manage all the different makes of presses. The principles of making ready, however, are very nearly the same in all, and we are convinced that a little study of the construction of each press would enable a man to prepare a form with equal success on any press. In some cases, however, considerable allowance should be made, for a man has but little chance of becoming familiar with a press he has had no opportunity of working, and it too often happens that his experience has been obtained in a small office where, perhaps, only one or two presses were employed.

It is necessary to mention at the outset that the qualifications necessary to fit a man to manage presses are, quickness (as distinguished from fussy haste), a thorough knowledge of the construction and peculiarities of his press, a strong nerve and, above all, unremitting care. Should a roller be left out of its place, or a plate insecurely fastened, the consequence might be disastrous.

In producing newspapers, quality is necessarily made subservient to speed, and if our favorite paper possesses the merit of containing the latest details of the previous day's news, we are not overcritical about its typographical appearance. The case, however, is very different with bookwork—so different, indeed, as almost to constitute it a separate trade. The newspaper may be destroyed in a few hours; the book, or bound-up serial, remains, perhaps, for a century, a credit or a disgrace to the establishment from which it proceeded.

One of the difficulties the pressman has to contend with is his feeders. We attribute the difficulty of managing the feeders greatly to the lax discipline exercised by

the pressman. During the time he is patching a sheet, when he supposes the feeders are rather in the way than otherwise, they are allowed to do just as they think proper, and consequently are ripe for any mischief which may present itself. In a pressroom, above all places, there is always work to be done. Feeders can always be profitably employed in cleaning and wiping up the presses, besides which the accumulation of paper, which is so noticeable in the majority of pressrooms, might be profitably prevented by insisting that it be continually collected and placed in baskets, which ought to be provided for the purpose.

As a rule, the way pressmen treat their feeders is very reprehensible, and we often wonder that the latter are not more refractory than they really are. If the pressman would only take the trouble to teach them their duties — how to clean rollers properly, wash up without waste of lye and benzine; how to brush the forms over without battering them — he would speedily find that they would take greater interest and pleasure in their work, besides being of more general assistance.

It is a well-known fact, that a great quantity of work is spoiled by the dirty fingers of the feeders. Proper provision should be made for washing, that no excuse could be offered, and the pressman should, in all cases, insist that the feeders wash their hands well before commencing, and on every occasion when the rollers have been handled. It is a lamentable thing to see really good books having one or two well-thumbed sheets bound up in them. We are perfectly aware that this may sometimes be caused in the folding or binding departments, but the feeder invariably gets the credit of it.

Rags and paper that have been saturated with oil or benzine should never be allowed to accumulate, as they

are dangerous in case of fire. Iron pails should be provided, in which they can be placed when done with, or they may be carried directly to the engine room to be burnt. Many fires have been caused by allowing such matter to collect in corners, as it quickly generates heat, and combustion takes place at a comparatively low temperature.

We will commence our instructions on this subject by giving a list of the technical terms used in a pressroom:

Bearers.—Lengths of type-high wood or iron, placed along each side of the bed of a cylinder press, on which the cylinder travels when passing over the form. Also pieces of wood or metal placed on the insides of job chases, for the purpose of carrying the rollers evenly over small forms.

Bed.—The flat part of the press, on which the form is laid.

Blanket.—A woolen or rubber cloth used on cylinder presses for some classes of work, to avoid much making ready.

Blocks.—The bases on which electrotype plates are fastened for printing.

Broadside.—A form of one large page.

Chase.—A rectangular iron frame in which pages of type are imposed.

Cylinder.—That part of a cylinder press on which the sheet is carried over the form.

Devil.—The youngest boy, who generally does the dirty work and goes on errands.

Feed-guide.—An implement attached to a press to aid in correct feeding.

Feeding.—Supplying the press with sheets.

Fly.—The apparatus which takes off the sheets from the press.

Form.—The type imposed in a chase ready for printing.

Fountain.—Reservoir for ink, attached to the press.

Friar.—A light patch in a printed sheet caused by defective rolling.

Gauge.—A strip of reglet with a notch in it to show the position the form must occupy on the press to get proper gripper margin.

Gauge-pin.—An instrument to aid in feeding job presses correctly.

Good color.—Sheets printed neither too black nor too light.

Grippers.—The appliances which take the sheet from the feed-board and carry it around the cylinder. Also, on job presses, long pieces of iron which grip the sheet against the platen and pull it off the form.

Guides.—A side-guide is a piece of iron or other metal affixed to the feed-board to which the sheets are fed so as to strike in proper position on the form. Front-guides are made adjustable and lie along the front of the feed-board, to which the sheets are fed.

Inset.—A sheet or section which is so printed as to set in some other sheet or section.

Mackle.—When part of the impression appears double.

Making ready.—Preparing a form on the press for printing.

Monk.—A black spot in a printed sheet, owing to the ink not being properly distributed.

Out of register.—When the pages do not back each other.

Overlay.—One or more thicknesses of paper so cut and placed on the tympan, platen, or cylinder as to improve the impression.

Perfecting.—Printing the second form of a sheet.

Pick.—A particle of ink or paper imbedded in the hollow of a letter, filling up its faces and occasioning a spot.

Platen.—The part of a job press which, acted upon by a lever, gives the impression to the sheet.

Points.—Pieces of steel or other metal placed in the form to make holes in the sheet by which the second side can be pointed so as to give accurate register. Also for folding to points on a folding machine.

Quire.—Twenty-four sheets of paper.

Ratchet.—An instrument for turning the screws of electrotype blocks.

Ream.—Twenty quires of paper.

Register.—To cause the pages in a sheet to print precisely back to back.

Register sheet.—The sheet used to make the register.

Revise.—The last proof of a form before working it off.

Roller.—A wooden cylinder or iron rod covered with composition, for inking the type.

Set-off.—When sheets that are newly worked off soil those that come in contact with them, they are said to set off.

Sheetwise.—When the pages of a sheet are imposed in two forms which are backed in printing.

Signature.—A letter or a figure placed at the bottom of the first page of a sheet to direct the binder in gathering the sheets in a volume.

Slur.—A blurred impression in a printed sheet.

Token.—Two hundred and fifty sheets.

Tympan.—A frame covered with parchment or muslin and attached to the bed of a hand press, to lay the sheet on before printing.

Underlay.—A piece of paper or card placed under types or cuts to even up the impression.

White page.—A blank page.

Work and turn.—When a sheet is printed half sheetwise, the paper must be turned and worked on the second side.

Besides the foregoing technical terms, it will be well for the pressman to make himself acquainted with those previously given for the composing department.

MAKING READY ON CYLINDER PRESSES.

TO properly make ready a form on the press, so as to get an even impression and regularity of color, is the first and most important part of a pressman's duties; and how to proceed properly with this part of his work, to produce the best results in the least possible time, is what everyone should earnestly strive to learn. There are many men, however, who have very crude ideas on the subject, and are wofully deficient in the very rudiments of such knowledge.

It often happens that a man will spend hours cutting out, underlaying, patching up, and overlaying a job, without first seeing whether the bed of his press is clean, or whether his form is in proper condition. Sometimes the form may spring, causing one part of the form to be higher than the other parts, and, without stopping to find the cause of this and remedying it at the start, he will proceed to adjust it in his making-ready sheets. It may be that after he has succeeded, in his way, and is just ready to start, the form has to be unlocked for some reason or other, and when it is locked up again it is done more carefully, the part sprung is planed down, and then the pressman discovers that all his leveling up has to be done over again. Whereas, had he taken the ordinary precaution to see that his form was properly locked up and planed down at the start, all that time would have been saved. It is safe to say that about one-half the work done by such men, under

the name of "making ready," is not only unnecessary, but almost renders it impossible to get a decent job at all.

To see the force of these remarks it is only necessary to watch the proceedings of two men at work, the one a competent workman and the other not. You will notice that at first it looks as though the incompetent man is getting along faster than his fellow. He gets his form on first, begins his cutting out first, and has managed to get his first "patched-up" sheet on the cylinder before the other man has taken an impression of his form. But look at them in an hour's time! The first man is still laboring in vain to get a result that will even satisfy himself, while the other man has just got his sheet marked "O. K." by the foreman, and is ready to go ahead. The reason for the latter's success is that he did not start till he was ready. He stopped to get his cylinder and bed cleaned off, to see that his form was properly planed down and locked up, to get a few bad letters changed, and in other ways to try and prevent having to do anything twice over. But when he did begin it was all plain sailing, for he knew what he had to do and how to do it.

There are many men who can make ready a form of type in fairly good shape, who are at a loss when they get a form of plates; and there are more who can do both and yet know nothing of fine cut-work. If they have to make an overlay for a cut at any time it is pitiful to see how they go about it, doing the things they ought not to do, and leaving undone the things they ought to do. Perhaps it may be unreasonable to expect every pressman to be able to make ready cut-work, but this is no excuse for any man's not being able to do it; and if all tried their best there would be twice as many good pressmen as there are.

But now to begin. We will take a half sheet book form, on a cylinder press. The first thing necessary is to see that the right kind of ink for the job to be printed with is in the fountain, and that the rollers are in suitable "condition," and that the fountain is set so as to give out a proper quantity of ink. Then let the press run for a little while before putting on the form, which will give an opportunity for observing whether all is as it should be.

Next, clean off the bed of the press, making sure that there is nothing there that will interfere with getting a level impression. Then see that the back of the form is free from dirt or other substance and place it on the press. Then loosen the quoins, plane down the form, and lock up again, being careful not to lock it up too tightly, or it may spring. Then gauge the position of the form so as to place the feed edge the proper distance from the gripper edge of the cylinder. (This may vary according to the margin required on the sheet.)

Now give attention to the cylinder, and see that it is clear from any irregularities, that the packing is clean and suitable for the kind of form that is being put on; that the thickness of the packing is such as will give a light impression to start off with; and, also, that such packing is securely fastened so that it will not shift.

Next, set the guides and take one or two impressions of the form on its own paper, and back up by feeding the same sheets in again with the printed side turned end for end and face down, so that page 2 will print on the back of page 1. This is for the purpose of making register, and should always be done before patching up the sheet, as it often happens that pages have to be shifted and other changes made.

After accurate register has been obtained in this way,

then proceed with the making ready, which will vary according to the nature of the form and the quality of work required. If there are cuts, they will in all probability need to be underlaid. If they should be low all over, it will be necessary to underlay all over, and to put such thickness of paper or cardboard as appears to be necessary to level them up to the height of the surrounding type matter; but if only low in some parts, then only such parts need to be underlaid. Care must be taken that the underlays do not extend under any part of the type matter.

Now, take another impression. If the underlaying has been successful you can begin to patch up a sheet, as follows: Notice first any parts that are too heavy and cut them out of your sheet with a sharp knife. (This sheet ought rather to be too thin than too thick, as in cutting out such parts from a thick sheet you may make too great a difference where only a slight difference is needed; whereas, if the difference should not be sufficient, you can cut it out again from the next sheet.) Next, notice the parts that are low and which need to be brought up by overlaying. This is remedied by laying one or more pieces of thin paper on such low parts and sticking them with paste, being careful that the paste is thin and free from lumps.

The accompanying reduced fac similes are intended to show—first, the need for making ready; second, the patched-up sheet; third, the result obtained.

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Policies will be issued for these amounts only. Females not insured in this class. No medical examination required.

Any person entitled to insurance in this class can obtain same with us 30 *per cent cheaper* than in any other Company The following are the rates:

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Broker in Stocks, Gold or Merchandise.
Cattle dealer or Broker, office duty only.
Civil Engineer, consulting and office duty only.
Clergyman.
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Consulting Engineer, office duty only.
Copyist.
Cotton Factor or Broker.
Cotton Sampler or Classer.
Custom-house Officer or Clerk, office duty only
Draughtsman.
Editor.
Express agent, office duty only.
Grocer, no counter duty
Hotel Keeper, city, office duty only.
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Land Agent, not traveling.
Lawyer.
Lumber Mill Proprietor office duty only.
Merchant, no counter duty.
Merchant, office duty only.
Milliner.
Minister, clergyman.
Musician, not traveling.
Music Teacher.
Pawn-broker.
Paymaster, not traveling.
Postmaster.
Post-office clerk.
President of corporation.
Publisher, office duty only.
Real Estate Broker.
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Sexton, not Grave Digger.
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DOVER, N. H., Feb. 17th, 1883

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Yours respectfully,

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I wish to thank you for the prompt payment of my claims in full, for injuries received at the Elgnmie Fire. I can cheerfully recommend your Company, for the prompt and efficient way of doing business.

Yours truly,

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POUGHKEEPSIE, N. Y., Feb. 20th, 1888.

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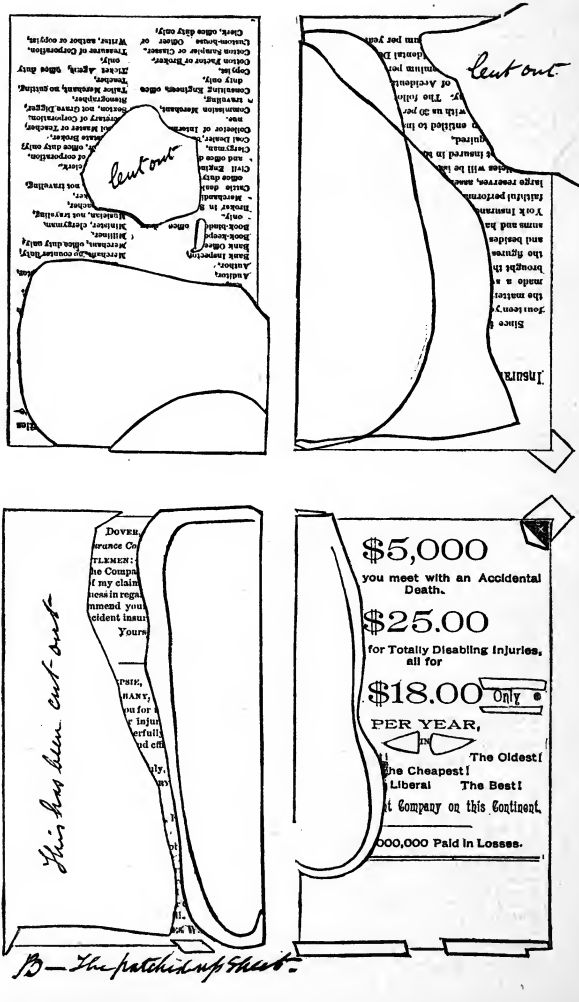
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$5,000 in event of Accidental Death, and $25 weekly indemnity. Premium per year, $18.00.

$2,500 in event of Accidental Death, and $12.50 weekly indemnity Premium per year $9 00.

The following persons and those whose duties are of the "office only" come in the "extra Preferred class:"

Accountant,
Actuary,
Architect, Office duty only, no supervising,
Army or Navy Officer, not in service,
Artist, not traveling,
Assessor,
Attorney at Law,
Auctioneer, Office Duty only,
Auditor,
Author,
Bank Inspector,
Bank Officer,
Book-keeper,
Book-binder, office duty only,
Broker in Stocks, Gold or Merchandise,
Cattle dealer or Broker, office duty only,
Civil Engineer, consulting and office duty only
Clergyman
Coal Dealer office duty only,
Collector of Internal Revenue,
Commission Merchant, not traveling,
Consulting Engineer, office duty only,
Copyist,
Cotton Factor or Broker,
Cotton Sampler or Classer,
Custom-house Officer or Clerk, office duty only,
Draughtsman,
Editor,
Express agent, office duty only,
Grocer, no counter duty,
Hotel Keeper, city, office duty only,
Insurance officer or clerk, not inspecting,
Land Agent, not traveling,
Lawyer,
Lumber Mill Proprietor, office duty only,
Merchant, no counter duty,
Merchant, office duty only,
Milliner,
Minister, clergyman,
Musician, not traveling,
Music Teacher,
Pawn-broker,
Paymaster, not traveling,
Postmaster,
Post-office clerk,
President of corporation,
Publisher, office duty only,
Real Estate Broker,
School Master or Teacher,
Secretary of Corporation,
Sexton not Grave Digger,
Stenographer,
Tailor Merchant, no cutting,
Teacher,
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Treasurer of Corporation,
Writer, author or copyist,

DOVER, N. H., Feb. 17th, 1888.

The Accident Insurance Co. of North America.

GENTLEMEN:—I hereby acknowledge the receipt of the Company's check for $60.71, in full settlement of my claim. Please accept thanks for your promptness in regards to same, and I would cheerfully recommend your Company to all who intend taking accident insurance.

Yours respectfully,

JOHN W. FOSS.

POUGHKEEPSIE, N. Y., Nov. 20th, 1887.

H. S. BULL & Co., ALBANY, N. Y.

I wish to thank you for the prompt payment of my claims in full, for injuries received at the Eighmie Fire. I can cheerfully recommend your Company, for the prompt and efficient way of doing business.

Yours truly,

HENRY P. WILLIAMS.

POUGHKEEPSIE, N. Y., Feb. 20th, 1888.

H. S. BULL & CO., MANAGERS.

I hereby acknowledge receipt for full amount of my claim against the "Accident Insurance Company of North America," for injuries received by me from falling. I can especially recommend this Company for being very liberal and prompt in payment. I have been Insured in other Companies but this is the most prompt of them all.

JAMES W. MOORE.

$5,000

In case you meet with an Accidental Death.

$25.00

Per week for Totally Disabling Injuries, all for

Only **$18.00** Only

PER YEAR,

—IN—

The Largest! The Oldest!
The Cheapest!
The Most Liberal The Best!

Purely Accident Company on this Continent.

Over $1,000,000 Paid in Losses.

C.— The result.

Now take an impression on the cylinder (or rather on the packing). Then paste the sheet, which you have cut out and patched up, on the cylinder so that it will be exactly over the impression just taken. A top sheet may now be put over the whole and securely fastened. (This top sheet should be smooth and strong enough to be pulled tightly to avoid bagging.) Then take another impression and proceed with patching up as before, until the proper results are obtained. On no account must this patching up be done on the top sheet, but either on the sheet that has already been worked on or a new sheet may be made and placed ever it by raising the top sheet for that purpose.

The foregoing remarks are intended to apply to a type form. A form of plates should be treated in the same way, except that more can be done in the way of leveling up by underlays instead of overlays.

For fine cut-work it will be necessary to spend more time in cutting out and overlaying them so as to bring up the solid parts and lighten the parts which are intended to be light. Good cut printers are always scarce, and the reason is that for such work a man needs to be an artist, for there is almost as much art in printing an engraving properly as in making the engraving. It does not always follow, therefore, that the man who spends most time in making his overlays will arrive at the best results.

It is a great advantage in this part of the work to try and grasp the idea of the artist who made the cut, and then to try to help toward the same end. It is also well to remember that with a good cut, a clean press, a level impression, good ink and good rollers, satisfactory results should be obtained with little or no patching up. Now, then, if all is not right, ask yourself the question, "What

is wrong?" and the time spent in finding the answer to the question will be more than saved afterward in putting things right.

These remarks apply equally to every kind of form and all classes of work, but are particularly applicable to fine cut or book work, where much time may be spent in trying to produce a good job.

The following extract from an English work on this subject is worthy of attention:

The pressure to be given in order to print an engraving properly must not be uniformly equal, or the effect apparent on the engraver's proof will not be attained, for instead of the impression containing light, medium and darker shades, it will be uniformly dull and lifeless — the light tints will be too hard and black, and the solids will neither be firm nor contain enough color, nor will the medium tints possess any of the mildness and softness which ought to pervade part of the engraving.

It ought to be perfectly understood that the cutting of an overlay must not be performed in a merely mechanical manner. It is a common practice, after having hastily looked at an impression of an engraving, to immediately commence cutting out the lights and heightening the solids, regardless of the greater artistic effect to be produced. In many cases the paper is cut abruptly, without any study of the required gradation of light and shade; and the workman is satisfied, after having finished, by feeling the overlay, and finding the blacks heightened and the lights depressed. This is, however, not the proper method.

Before commencing operations, the proof supplied by the engraver should be properly studied, with the aim of producing as nearly as possible the same effect. It will be patent to all that engravings worked on a press rarely, if ever, equal the proof supplied with the cut. In the latter, superior ink is used; the india proof-paper is beautifully soft, with a splendid surface; and the use of the burnisher enables the engraver to obtain altogether a superior effect. In addition to this, where extreme lightness and delicacy of tint are required, the ink is partially wiped from the block, so that, putting aside the fact of the thoroughly experienced eye for artistic effect, the means employed in the production of an engraver's proof are altogether of a different and more effective character than those at the disposal of a pressman.

In making an overlay, the ground-work must be first prepared on the proof that has been pulled on plate-paper. Supposing the subject to be a landscape, the sky should be peeled, i. e., a thin layer of the paper scraped evenly off. It is not advisable to cut the lighter shades away altogether, as it may cause them to look "rotten." Just sufficient impression should be given to allow the fine lines to appear plainly, but not indistinctly. Considerable judgment must therefore be used in preparing the extreme lights. After having finished the foundation, the blacks or solids must be added. These will always be found in the foreground. In fastening the pieces onto the first proof, the paste must be of the thinnest consistency, and very sparingly laid on, as it soon dries, becomes hard, and gives impression where not intended, thus marring the effect.

From proof number three must be cut all the lighter shades, retaining the darker and medium ones, and these must be pasted on. The fourth and last pull should possess the extreme, medium and lighter shades — only the lightest part being cut away — and fastened on as before. The greatest care is necessary that the pieces be fixed on exactly in their places; if not, the overlay is worse than useless. The extreme edges of the overlay should be scraped or cut gradually away, to prevent them from appearing hard and abrupt.

In figure subjects, the fleshy parts — the face, arms, etc. — should be soft and delicate; in fact, nothing condemns an illustration more than the dark, muddy face and hard outline. We would certainly prefer them "rotten," or indistinct, of the two; but the medium should always be aimed at, and attained. Of course, the surface and substance of the paper have a great deal to do with the satisfactory appearance of engravings. When calendered paper is used less labor and ink are required, and the effect is infinitely superior.

Here we may mention the frequent appearance in illustrations of small white spots, about the size of a pin's head. These, in the majority of instances, are small batters, caused by pieces of grit being pulled on to the cut, or by the shrinking of the metal beneath the copper shell. Under any circumstances these will occur, and should be attended to immediately they are perceived. The plate should be lifted, and by means of a pair of calipers the exact place can be marked underneath. Place the face of the electro downwards upon a piece of thick paper, to prevent its being scratched, and by means of a small punch force up the

place marked. This should be done with care, or the work on the surface of the plate will suffer.

Where a sheet is printed in two forms it is usual to print the inner form (containing the second page) first. The reason for this is that it often happens that a first page will contain larger type and if printed first would be more likely to set off on the top sheet. And in the case of illustrated journals the cuts are usually put on the first and other pages that come in the outer form, and in that case it is better to print the cuts last.

MAKING READY ON JOB PRESSES.

WHAT has been said in the preceding pages will apply in a great measure to making ready on job presses. At the same time, there is a great difference between the two kinds of work ; hence, it is often found that a man who may be very good on cylinder presses is quite at a loss when he comes to handle a job press, and *vice versa*.

It is important, first of all, to see that the impression screws are set so as to give a uniform impression, and that the form is in the center of the chase. Should the form be a light one, consisting of delicate type, or only a few lines of matter, it will be well to have type-high "bearers" on the inside of the chase. These will serve to bear some of the impression, and help to keep it uniform, besides carrying the rollers evenly over the type and preventing their wiping on the edges.

For the larger part of jobwork it is better to have the "packing" hard, and the impression screws set so as to bring the platen as near as possible to the bed of the press. For most forms it will be found well to have one sheet of cardboard (about equal to six-ply), four sheets of book paper (about forty pound), and a top sheet of writing paper ; though these will need to be varied in quantity to suit the different forms, some requiring a sheet or two more or less of the book paper. The top sheet ought not

to be put on until the patching up and cutting out has been done.

Supposing the press to be leveled up and the form in proper condition for putting on, then proceed as follows: Take a light impression on a piece of book paper; notice the general appearance of such impression. There will probably be some parts that are heavy and some that are light, some single letters that appear too high and some that are too low. Now proceed to remedy these evils by first trying to remove their cause. It may be found that the form needs to be unlocked and planed down, or that a particle of dirt is sticking under some letter, or that some other letter is really worn out and too low to bring up, and needs to be changed. Then take another proof in the same way, and also take an impression on the packing, which should consist of the sheet of board and the several sheets of book paper, as mentioned above, the top sheet of book paper being the making-ready sheet. Then lift out the form and underlay such letters (or cuts, if there should be any) as are low, and on the making-ready sheet patch up with thin paper such parts as may appear hollow and need to be brought up, and cut out any parts that are too high, or scratch the part with a knife, if cutting out would make too much difference. This being done with proper results, next put on the top sheet, take an impression thereon, and proceed to set the guides.

Although there are many devices called guides, the best results are obtained by the use of quadrats. Take a sheet of the paper to be printed on and measure across the impression on the top sheet to ascertain the proper position for the guides; mark with a pencil, and then stick the quadrats on with some good paste or mucilage. The advantage of this kind of guide is that you do not need to

make holes in the packing. By the use of pins, or other such appliances, the packing sheets and board are soon rendered worse than useless, as the different sized forms bring the type right over where pin-holes have been made for some previous job. To prevent the sheet slipping over the quadrats, it is well to paste a strip of card alongside of them, with one end left loose, and under this the sheet can be fed without any inconvenience; or a small piece of card may be pasted on top of the quadrat, overhanging slightly on the side to which the sheet is fed.

Let it be understood that the less embossing a job has the better will be the result. Some work is so indented that the back looks as though it had been embossed for the blind to read with their fingers. A hard, sharp impression is what should be sought for, and this can only be obtained by having very little underneath the top sheet.

In patching up imperfect letters, care must be taken to put the patch just where it is needed, and not allow it to touch any other part. For instance, if the dot of a letter "i" does not show up, and you put on a piece that not only covers the dot, but some other letter, you may bring up the dot, but you will make whatever else you cover too heavy. It is easy to cut a very thin strip of paper so that you can put on the smallest particle without touching any other part. All that is required is care, and generally all that makes the difference between a really good job and a very bad one is the want of a little care.

Those who are determined to produce good work will soon learn how to accomplish it, and will find themselves well repaid for the extra pains they may have taken in the meantime.

It may be well to refer to the importance of cleanliness in connection with good work. It too often happens that

an otherwise creditable piece of work is spoiled in the handling. Finger marks are inexcusable, and denote a slovenly workman or feeder at once. And not only are these caused by dirt, but on some kinds of paper a mere dampness of the fingers will cause an ugly mark that cannot possibly be wiped off. Then, again, it often happens that either through using bad ink, or by using too much, the sheets will set off on the back of each other when laid on the board. If the job is such as to call for a large amount of ink, thin sheets should be laid between the printed sheets as they come from the press, so as to prevent the back of one sheet coming in contact with the face of another.

The use of a good quality of ink is the greatest economy in the long run, for not only does it result in a better appearance, but it saves considerable spoilage, and goes further than a cheaper grade. Especially is this true with colored inks, for unless a really good result is obtained, the job had better have been printed in black. When colored work is bad, it is bad indeed, and attracts more attention to its inferiority than would a job in black.

Before leaving this part of our subject, we would mention the advisability of carefully preserving overlays of jobs that have taken a large amount of time to prepare. It often happens that a job may be duplicated, and then a great saving may be effected in this way. Of course, this applies to work done on either cylinder or job presses.

THE PROPER TREATMENT OF ROLLERS.

THE importance of this subject cannot be overrated, as good printing depends, to a very great extent, upon the condition of the rollers. Constant care and judgment are required in their treatment, as the materials of which they are made render them particularly sensitive to warmth and cold. The form may be perfectly made ready, the paper be of the best quality and surface, and superior ink used, yet the result will be unsatisfactory if the rollers are not in fit condition. Indeed, rollers well chosen will often compensate for deficiencies in hurried making ready, and will hide many glaring defects which would become painfully apparent were the rollers out of condition.

If the temperature be too warm they will fret and burst; if too cold they will become hard, akin to leather. The composition should be neither too hard nor too soft; but a certain amount of elasticity is desirable, so that it can adapt itself to the form in every part.

When rollers are very soft and pulpy and inclined to leave the stocks at either end, consequent upon the temperature being high, they should be lifted out of the press, and stood in a cool place until the composition becomes firmer. They must be constantly watched, for if they burst while working, it necessitates the table and form being thoroughly cleaned, as the detached composition adheres firmly to both.

By having a duplicate set of rollers at hand much time and labor may be saved, especially in the summer, in warm, confined pressrooms. Under these conditions it will sometimes be found necessary to change the rollers every hour—say every two reams. Long stoppages may be often avoided by adopting this plan, and the work will look very much better.

The less violent friction the surface of a roller is subjected to, the longer it will keep in condition, so an allowance should always be made for the speed at which a press runs. In a warm temperature the rollers on a press, running from 750 to 900 copies per hour, will last much longer than on a press printing from 1,200 to 1,500. In the latter case the rollers should be slightly firmer than in the former.

When rollers become hard, as they will in cold weather, they should be wiped down several times with a rag dipped in hot water, which will slightly soften and render them "tacky." Care must be taken that no drops of water be left on the surface, as damp penetrates the composition, causing swellings, which burst, leaving punctures. Washing them with strong lye, and allowing them to be exposed to the atmosphere when not in use, soon renders them useless. It must also be remembered that it is a very injurious practice to wash rollers too much. When they become hard and leathery through long usage, they should be at once discarded, as it is almost impossible to restore them to a proper working condition.

Ink will also affect the rollers. If there is much "dryers" in its composition, it will dry or "cake" upon the surface of the rollers in a short time, unfitting them for decent work. The only way to really remedy this is to have several auxiliary rollers ready, and change when they

become flat, wiping down the ones just lifted, that they may be ready when again required.

The greater the diameter of the inking-roller the better, as it carries a larger inked surface to the form. The smaller the roller, the sooner the ink is exhausted.

The working condition of a roller can be easily ascertained by the feel. If, when pressing the finger into the composition, it leaves an indentation, the roller is either too new or the temperature in which it has been kept has been too warm. No attempt should be made to work a roller in this condition, as the surface will be injured, or the composition leave the stock. When rollers are first cast they are invariably unfit for use, being too new, and should be stood in a moderately cool place for at least a week. If a roller be too green, it will not take up the ink evenly, added to which, it is liable to change the nature of the latter, which loses its brilliancy. An "inker" in prime condition should feel, when the finger is drawn along it, "tacky," i. e., somewhat rough and adhesive. In this state it will take the ink well from the table, and also deposit it almost uniformly over the form. As we have said before, if the roller be old and tough, with a bright, leathery surface, it should not be used. If it takes the ink from the table, it will do so unequally, and deposit nearly the whole of it on its first revolution, leaving the end of the form farthest from the table without ink.

The length of time a roller should last cannot be accurately fixed, as there are so many agencies at work—speed of the press, the class of work it has to perform, the kind and quality of the ink, and above all, as we have before said, the temperature. But careful attention will in all cases materially add to its durability.

Monks, or thick ridges of ink running across the form,

are owing to the imperfect distribution of ink by the distributers, or are sometimes caused by the fountain knife or roller being out of order and allowing the ink to escape at intervals in larger quantities than is required. If they are owing to either of the last-mentioned causes, the defect can only be remedied by the knife being ground or the roller turned. Rollers in bad condition will sometimes produce monks.

Friars — named, we suppose, in contradistinction to the former — appear across the page or pages as lighter patches than the greater part of the form. This may be the effect of some foreign substance having got onto the roller bearers, causing the inkers to jump, or, as in the case of monks, by the bad condition of the rollers; under any circumstance, the cause may soon be discovered, and remedied with little trouble or ingenuity.

Rollers should not be allowed to stand about on the floor, but be kept in a cupboard built especially for them, and should not be stood on end but be laid lengthwise. This cupboard should be placed in that part of the room which is least liable to be affected by changes of temperature. A roller properly cared for will last much longer than it would otherwise, and will do good work for a long time. But it often happens that a new roller is spoiled after a few days' use, and ought to be discarded, for when once out of condition there is no economy in continuing to use it, as the time spent in doctoring it up will soon cost more than a new one. Pressmen should be very careful and painstaking in regard to their rollers, not only for the sake of their employers, but also for their own comfort, convenience and credit.

CARE OF INKS.

INKS should also have much more care bestowed upon them than they usually get, and should be kept in cupboards where dust cannot reach them. Lids ought always to be kept on the cans that are not in constant use and a strip of paper should be pasted around the part where they open, just as it is when first received from the ink manufacturer. It is impossible to estimate the immense amount of loss occasioned by leaving ink cans and barrels lying about the pressroom with no covering over them—allowing dust and other matters to fall into them *ad libitum*. Not only is the ink affected thereby, but the particles of dust are carried onto the face of the form, and the type or cuts are injured thereby. Many a valuable cut has become covered with "pin-hole" spots from this cause, and many a font of delicate-faced type has been destroyed in the same way.

Where ink has been standing unused for a length of time, it is a good plan, before using, to turn it all out onto a slab and well mix with an ink-knife.

Pressmen should always make sure that a former can of ink has really been all used up before opening a fresh one, as the neglect of this precaution results in having several cans of the same ink in use at the same time. A good plan is to see that the empty can is thrown away or otherwise disposed of before opening a new one.

OIL AND RAGS.

THESE two articles play a prominent part in every printing establishment and cannot be passed over without a slight recognition.

The proper oiling up of presses and shafting is an important part of a pressman's duties. The neglect to supply the usual drop of oil to any one of the many small holes found in a press may cause some part to "fire," and result in great loss and delay. A careful pressman will regard this as one of his first concerns when starting up in the morning, and during the day will have his ears on the alert for any unusual noise that may arise from a dry bearing. Oil should be used plentifully but judiciously. Simply pouring a stream of oil on any part may do more harm than good, besides wasting the oil. Too much may be as bad as too little. The great aim should be to put the right amount of oil in the right place and at such intervals as experience shows to be necessary. Where parts become gummed up or holes are clogged it is a good plan to apply a little kerosene oil which has the effect of loosening the obstruction.

Oil cans should be kept in good condition, and when they become injured from any cause they should either be repaired or replaced by new ones. A faulty oil can is a nuisance, as well as being the cause of much loss of oil.

Benzine should be used with great caution, as it is highly inflammable and has more to answer for in the way of fires than anything else that is used. There are many devices for storing this in small quantities, and the printer who does not avail himself of such lays himself open to just censure.

Rags should be supplied to the pressroom in sufficient quantities to provide for washing up properly and speedily, but, at the same time, should be well looked after, especially when they have become saturated with oil and benzine. If a printer wishes to have a fire he need only allow a pile of such dirty rags to lie in some corner until spontaneous combustion takes place, for which he will not have long to wait. Therefore, those who wish to prevent fires, and avoid the risk of having to answer for causing the death of some unfortunate persons, will take the precaution to have all dirty rags taken care of while in use and destroyed when done with.

STOCK AND SHIPPING DEPARTMENT.

IN an establishment of moderate size, it is well to have the stock handled by one man (with assistance, if necessary), both before and after printing. All stock that comes in should be passed into his care, and all that goes out should go through his hands. He should also have the giving out of all stock whether to be printed, ruled or bound. By this means an easy check is kept upon the quantity received and used. It too often happens that there is great looseness with regard to stock, and it is often easy for a pressman who spoils a quantity of paper to help himself to more without its being charged up against the job. Then in the matter of delivering to customers there is great advantage in having the work, when finished, passed through the hands of the man who gave out the stock, as he will more readily detect anything that may be wrong as regards quantity or otherwise. To see that a customer gets full count is an important matter, and when it is understood that the work is being counted or measured, the chances are that the pressmen will not spoil so much.

The man who has charge of this work should know something of the printing business; should be strong and active, and also be quick at figures. These are qualifications that are not hard to find, and need not necessarily

involve the paying of a large salary, but it is the poorest kind of economy to put a cheap man in so responsible a position, and a mistake to think it is only laborer's work, which can be done by anyone.

The fitting up of a stockroom is another important point to be considered. The tables and shelves should be so arranged that each kind and weight of stock can stand by itself, instead of being piled one on the other. Nothing should stand on the floor, but platforms should be provided which would raise the paper at least twelve inches, and so prevent the damage occasioned by knocking the sweeping-broom against the edges of the paper. It is better to build the shelves so that the stock can be carried the full height of the room rather than have it spread around and occupying all the floor space.

Another point of importance is the carrying of such stock as will use up to most advantage. There are certain leading sizes and weights which should always be on hand, and never be allowed to run so low as to fall short in a day or two. The same remark applies also to certain standard qualities. But the idea of trying to keep on hand every size and weight, and every kind and quality, is unwise. Rather have less kinds and greater quantities, than more kinds and smaller quantities. In regard to flat papers for general jobbing work, two leading qualities will often suffice — one a good, substantial number one rag, and the other a cheaper grade, costing about one-third less. For instance, if the better kind cost 12 cents then the other should cost about 8 cents. Any intermediate quality is likely to lead to mistakes and loss. If an intermediate quality is carried it will often happen that when the cheaper kind is not on hand the intermediate quality will be used at a loss, and when the job is done again the customer will

expect to get the same quality. Or if the better kind runs out then there is a temptation to substitute the intermediate quality, with the chance of having the whole job thrown back, or a deduction made on the bill which will cut off all the profit. And with other kinds of paper or cardboard the same rule holds good, though, of course, circumstances may alter the case in some instances.

In the matter of cutting stock for printing, it is well to have it done by a man who knows something of the printing business, as he will often cut it so as to suit the job and help the pressman in his part of the work. As, for instance, where there is little margin on a job it is well to cut it double the size, and then work and turn the sheet round, which gives an opportunity for using the grippers; and in various other ways the cutter can help the printer. While speaking of cutting it may be well to mention another point which may be of value to some who have not had much experience. It often happens that in cutting up a job which has been printed several on a sheet, there will be a set-off caused by the clamp pressing upon the printed matter. This can often be avoided by laying a strip of thick cardboard along the front of the clamp and between the printed parts so as to bear off the pressure from such printed parts. Where a small number of a job has to be done in a hurry, and cut before the ink has had time to dry, it is a good plan to take a little magnesia or plaster of paris and dust over the sheet, and then rub off with a piece of cotton batting.

Where cardboard has to be cut on an ordinary cutting machine, it should be so done as to have an inside cut edge all round, as it will be noticed that the edge which comes from the outside of the knife is always rough and broken. This can be easily accomplished by cutting the card a

trifle larger and then turning it round and cutting a shaving off, which will give a nice, clean, even edge.

The following tables will be found useful in this department, and the man who has charge should make himself familiar with each one, which will result in his work being done not only more accurately, but also much more easily.

Tables I to IV show the amount of paper to give out for jobs of any quantity from 50 to 100,000 copies, and will save much time in figuring.

TABLES for giving out Paper, calculated in Reams, Quires and Sheets. 20 Quires (480 Sheets) to the Ream. No Overs.

TABLE I.

No. Required	Full Sheet.			Half Sheet.			3 To Sheet.			4 To Sheet.		
	R.	Q.	S.	R.	Q.	S.	R.	Q.	S.	R.	Q.	S.
50	0	2	2	0	1	1	0	0	17	0	0	13
100	0	4	4	0	2	2	0	1	10	0	1	1
200	0	8	8	0	4	4	0	2	19	0	2	2
250	0	10	10	0	5	5	0	3	12	0	2	15
300	0	12	12	0	6	6	0	4	4	0	3	3
400	0	16	16	0	8	8	0	5	14	0	4	4
500	1	0	20	0	10	10	0	6	23	0	5	5
600	1	5	0	0	12	12	0	8	8	0	6	6
700	1	9	4	0	14	14	0	9	18	0	7	7
750	1	11	6	0	15	15	0	10	11	0	7	20
800	1	13	8	0	16	16	0	11	3	0	8	8
900	1	17	12	0	18	18	0	12	12	0	9	9
1,000	2	1	16	1	0	20	0	13	22	0	10	10
1,250	2	12	2	1	6	1	0	17	10	0	13	1
1,500	3	2	12	1	11	6	1	0	21	0	15	15
1,750	3	12	22	1	16	11	1	4	9	0	18	6
2,000	4	3	8	2	1	16	1	7	19	1	0	20
2,500	5	4	4	2	12	2	1	14	18	1	6	1
3,000	6	5	0	3	2	12	2	1	16	1	11	6
4,000	8	6	16	4	3	8	2	15	14	2	1	16
5,000	10	8	8	5	4	4	3	9	11	2	12	2
10,000	20	16	16	10	8	8	6	18	22	5	4	4
20,000	41	13	8	20	16	16	13	7	20	10	8	8
30,000	62	10	0	31	5	0	20	16	18	15	12	12
40,000	83	6	16	41	13	8	27	15	16	20	16	16
50,000	104	3	8	52	1	16	34	14	14	26	0	20
100,000	208	6	16	104	3	8	69	9	4	52	1	16

TABLES for giving out Paper, calculated in Reams, Quires and Sheets. 20 Quires (480 Sheets) to the Ream. No Overs.

TABLE II.

No. Required	6 To Sheet.			8 To Sheet.			9 To Sheet.			12 To Sheet.		
	R.	Q.	S.	R.	Q.	S.	R.	Q.	S.	R.	Q.	S.
50	0	0	9	0	0	7	0	0	6	0	0	5
100	0	0	17	0	0	13	0	0	12	0	0	9
200	0	1	10	0	1	1	0	0	23	0	0	17
250	0	1	18	0	1	8	0	1	4	0	0	21
300	0	2	2	0	1	14	0	1	10	0	1	1
400	0	2	19	0	2	2	0	1	21	0	1	10
500	0	3	12	0	2	15	0	2	8	0	1	18
600	0	4	4	0	3	3	0	2	19	0	2	2
700	0	4	21	0	3	16	0	3	6	0	2	11
750	0	5	6	0	3	22	0	3	12	0	2	15
800	0	5	14	0	4	4	0	3	17	0	2	19
900	0	6	6	0	4	17	0	4	4	0	3	3
1,000	0	6	23	0	5	5	0	4	16	0	3	12
1,250	0	8	17	0	6	13	0	5	20	0	4	9
1,500	0	10	11	0	7	20	0	7	0	0	5	6
1,750	0	12	5	0	9	3	0	8	6	0	6	3
2,000	0	13	22	0	10	10	0	9	7	0	6	23
2,500	0	17	10	0	13	1	0	11	15	0	8	17
3,000	1	0	20	0	15	15	0	13	22	0	10	10
4,000	1	7	19	1	0	20	0	18	13	0	13	22
5,000	1	14	18	1	6	1	1	3	2	0	17	9
10,000	3	9	12	2	12	2	2	6	4	1	14	18
20,000	6	19	0	5	4	4	4	12	15	3	9	12
30,000	10	8	12	7	16	6	6	19	0	5	4	6
40,000	13	18	0	10	8	8	9	5	8	6	19	0
50,000	17	7	12	13	0	10	11	11	15	8	13	18
100,000	34	15	0	26	0	20	23	3	6	17	7	12

TABLES for giving out Paper, calculated in Reams, Quires and Sheets. 20 Quires (480 Sheets) to the Ream. No Overs.

TABLE III.

No. Required	15 To Sheet.			16 To Sheet.			18 To Sheet.			20 To Sheet.		
	R.	Q.	S.	R.	Q.	S.	R.	Q.	S.	R.	Q.	S.
50	0	0	4	0	0	4	0	0	3	0	0	3
100	0	0	7	0	0	7	0	0	6	0	0	5
200	0	0	14	0	0	13	0	0	12	0	0	10
250	0	0	17	0	0	16	0	0	14	0	0	13
300	0	0	20	0	0	19	0	0	17	0	0	15
400	0	1	3	0	1	1	0	0	23	0	0	20
500	0	1	10	0	1	8	0	1	4	0	1	1
600	0	1	16	0	1	14	0	1	10	0	1	6
700	0	1	23	0	1	20	0	1	15	0	1	11
750	0	2	3	0	1	23	0	1	18	0	1	14
800	0	2	6	0	2	2	0	1	21	0	1	16
900	0	2	12	0	2	9	0	2	2	0	1	21
1,000	0	2	19	0	2	15	0	2	8	0	2	2
1,250	0	3	12	0	3	7	0	2	22	0	2	15
1,500	0	4	5	0	3	23	0	3	12	0	3	3
1,750	0	4	22	0	4	15	0	4	2	0	3	16
2,000	0	5	14	0	5	5	0	4	16	0	4	4
2,500	0	7	0	0	6	13	0	5	20	0	5	5
3,000	0	8	8	0	7	20	0	6	23	0	6	6
4,000	0	11	3	0	10	10	0	9	7	0	8	8
5,000	0	13	22	0	13	1	0	11	14	0	10	10
10,000	1	7	19	1	6	1	1	3	4	1	0	20
20,000	2	15	14	2	12	2	2	6	8	2	1	16
30,000	4	3	9	3	18	3	3	9	12	3	2	12
40,000	5	11	4	5	4	4	4	12	16	4	3	8
50,000	6	18	22	6	10	5	5	15	20	5	4	4
100,000	13	17	20	13	0	10	11	11	16	10	8	8

TABLES for giving out Paper, calculated in Reams, Quires and Sheets. 20 Quires (480 Sheets) to the Ream. No Overs.

TABLE IV.

No. Required	24 To Sheet.			32 To Sheet.			36 To Sheet.			48 To Sheet.		
	R.	Q.	S.	R.	Q.	S.	R.	Q.	S.	R.	Q.	S.
50	0	0	3	0	0	2	0	0	2	0	0	1½
100	0	0	5	0	0	4	0	0	3	0	0	2½
200	0	0	9	0	0	7	0	0	6	0	0	4½
250	0	0	11	0	0	8	0	0	7	0	0	5½
300	0	0	13	0	0	10	0	0	9	0	0	7
400	0	0	17	0	0	13	0	0	12	0	0	9
500	0	0	21	0	0	16	0	0	14	0	0	11
600	0	1	1	0	0	19	0	0	17	0	0	13
700	0	1	6	0	0	22	0	0	20	0	0	15
750	0	1	8	0	1	0	0	0	21	0	0	16
800	0	1	10	0	1	1	0	0	23	0	0	17
900	0	1	14	0	1	5	0	1	1	0	0	19
1,000	0	1	18	0	1	8	0	1	4	0	0	21
1,250	0	2	5	0	1	16	0	1	11	0	1	3
1,500	0	2	15	0	2	0	0	1	18	0	1	8
1,750	0	3	2	0	2	8	0	2	1	0	1	13
2,000	0	3	12	0	2	15	0	2	8	0	1	18
2,500	0	4	9	0	3	7	0	2	22	0	2	5
3,000	0	5	5	0	3	22	0	3	12	0	2	15
4,000	0	6	23	0	5	5	0	4	16	0	3	12
5,000	0	8	17	0	6	13	0	5	19	0	4	9
10,000	0	17	9	0	13	1	0	11	14	0	8	17
20,000	1	14	18	1	6	2	1	3	4	0	17	10
30,000	2	12	2	1	19	3	1	14	18	1	6	3
40,000	3	9	11	2	12	4	2	6	8	1	14	20
50,000	4	6	20	3	5	5	2	17	22	2	3	13
100,000	8	13	16	6	10	10	5	15	20	4	7	2

TABLE showing the Quantity of Paper required to print 1,000 copies of a book in any form from octavo to 32mo.

No. of Forms.	8vo.	12mo.	16mo.	24mo.	32mo.	Paper for 1,000 Copies.	
	Pages.	Pages.	Pages.	Pages.	Pages.	Rms.	Qrs.
1	8	12	16	24	32	1	2
2	16	24	32	48	64	2	4
3	24	36	48	72	96	3	6
4	32	48	64	96	128	4	8
5	40	60	80	120	160	5	10
6	48	72	96	144	192	6	12
7	56	84	112	168	224	7	14
8	64	96	128	192	256	8	16
9	72	108	144	216	288	9	18
10	80	120	160	240	320	11	..
11	88	132	176	264	352	12	2
12	96	144	192	288	384	13	4
13	104	156	208	312	416	14	6
14	112	168	224	336	448	15	8
15	120	180	240	360	480	16	10
16	128	192	256	384	512	17	12
17	136	204	272	408	....	18	14
18	144	216	288	432	....	19	16
19	152	228	304	456	....	20	18
20	160	240	320	480	....	22	..
21	168	252	336	504	....	23	2
22	176	264	352	....	....	24	4
23	184	276	368	....	....	25	6
24	192	288	384	....	....	26	8
25	200	300	400	....	....	27	10
26	208	312	416	....	....	28	12
27	216	324	432	....	....	29	14
28	224	336	448	....	....	30	16
29	232	348	464	....	....	31	18
30	240	360	480	....	....	33	..

EXAMPLE.—How many reams will be required for a 12mo. book containing 312 pages? Find the number of pages (312) in the 12mo. column: in the outer column on the left of the table the number of forms (26) is seen: and in the outer column on the right, the quantity of paper required is given (28 reams 12 quires).

TABLE showing the Number of Sheets contained in any Number of Quires.

Quires.	Sheets.	Quires.	Sheets.	Quires.	Sheets.
1	24	21	504	41	984
2	48	22	528	42	1008
3	72	23	552	43	1032
4	96	24	576	44	1056
5	120	25	600	45	1080
6	144	26	624	46	1104
7	168	27	648	47	1128
8	192	28	672	48	1152
9	216	29	696	49	1176
10	240	30	720	50	1200
11	264	31	744	51	1224
12	288	32	768	52	1248
13	312	33	792	53	1272
14	336	34	816	54	1296
15	360	35	840	55	1320
16	384	36	864	56	1344
17	408	37	888	57	1368
18	432	38	912	58	1392
19	456	39	936	59	1416
20	480	40	960	60	1440

NAMES AND SIZES OF DIFFERENT PAPERS.

Flat Letter	10x16	Medium—Printing	19x24
Law Blank or Small Cap,	13x16	Royal—Writing	19x24
Flat Cap	14x17	Royal—Printing	20x25
Crown	15x19	Double Cap	17x28
Demy	16x21	Super Royal—Writing	20x28
Folio Post	17x22	Cardboard	22x28
Check Folio	17x24	Imperial—Writing	22x30
Medium—Writing	18x23	Imperial—Printing	22x32

TABLE OF COMPARATIVE WEIGHTS OF PAPER.

24x38	25	28	30	35	40	44	48	50	56	60	70	80
14x17	7	7	8	9	10	12	13	14	15	16	18	20
17x22	10	11	12	14	16	18	20	21	23	25	28	33
18x23	11	13	14	16	18	20	22	23	25	27	32	36
19x24	13	14	15	18	20	22	24	25	28	30	35	40
20x25	14	15	17	19	22	24	26	28	31	33	39	44
22x28	17	19	19	24	27	30	32	34	38	40	47	54
22x32	19	21	23	27	31	34	37	39	45	47	54	62
23x41	26	29	31	36	41	46	50	52	58	62	73	83
24x36	24	26	29	33	38	42	45	48	53	57	66	76
26x38	27	30	33	38	43	48	52	54	63	65	76	87
26x40	29	32	35	40	46	50	55	57	64	68	80	91
27x40	30	33	36	42	47	52	57	59	66	71	83	95
28x42	32	36	39	45	52	57	62	65	72	77	90	103
28x44	34	37	41	47	54	60	65	68	76	81	95	108
29x41	33	36	40	46	52	57	63	65	73	78	91	104
29x43	34	38	42	48	55	60	66	69	78	82	96	109
30x42	35	38	42	48	55	61	66	69	78	83	97	111
33x46	42	46	51	58	67	73	80	83	93	100	117	133

BUSINESS MANAGEMENT.

HAVING treated of the various processes of the printer's art, it is now necessary to consider the methods of conducting business. And at the outset it is important to emphasize the fact that there is no business more dangerous as regards the liability for failure than that of printing. Perhaps not more than one-fourth of those started ever reach a paying basis, and less than that number ever make anything like a success. Indeed, the number of successful printing businesses cannot be more than ten per cent of those which are begun. These are stern facts, and safely within the bounds of truth. Therefore, those who contemplate making a start for themselves need to be careful lest they go with the great majority.

But, at the same time, there is money in the business, if properly handled. The chief danger lies in the fact that there are so many incompetent men trying to conduct printing businesses, who take work at ridiculously low prices (many of them not knowing that they are doing so) that a new beginner is compelled to compete with them, and is in danger of losing sight of the important fact that he cannot do a job at a certain price because someone else does it for that amount. He is in danger of forgetting to figure on the cost of production, and of

losing sight of the fact that someone else doing work at a loss will be no consolation when he fails. There is only one safe way of doing business, and that is seeing that a fair profit can be made on all work done. The head of one of the largest printing businesses in America lately said that the amount of net profit made on their total output for a year was only ten per cent; and it is safe to say that more than half the printers in the country do not get such good prices as does that firm. *Net* profit is a thing that very few men ever get to understand. They figure roughly or approximately, and flatter themselves that they are making profit when they may be getting poorer every year. They sometimes forget the amount that the capital they have invested in the business would bring them in if invested at compound interest. They also lose sight of the fact that their plant depreciates in value to the extent of at least ten per cent per annum, to say nothing of the materials — furniture, reglet, leads, brass rule, etc.—which are being used up all the time, making the depreciation more like twenty per cent per annum! They sometimes also lose sight of the fact that their own time and labor has a market value outside of their own business.

Take a sample case: A man has $25,000 invested in a printing business, the plant having cost $20,000 and the working capital being the other $5,000. Now, that amount invested at six per cent would net him $1,500. Then add to this the ten per cent depreciation on the $20,000, making $3,500. Next, take his services at, say, $2,000, and you have a total of $5,500 a year. Now, suppose his business pays him that amount every year, what are his net profits? Just the $2,000 which we have allowed for his services! For the interest on the money he could get anywhere, and

the $2,000 allowed for depreciation has to be spent in buying new plant to replace that which is being worn out all the time. But suppose he should draw out the $5,500 a year, and spend it, what would he be worth when his plant was worn out? Why, absolutely nothing. Whereas he would have no difficulty in investing his $25,000 at seven per cent interest, which would net him almost as much without his services, and he would still be worth $25,000 all the time. And this argument holds equally good where a smaller or larger amount than that mentioned is invested.

It may be that in some instances a better result than the above might be shown, but it is just as likely that even a worse result would represent the majority of cases. There are hundreds of employing printers who have all their capital invested in their business, and who give more hours of their own time than anyone in their employ, whose net profits do not amount to more than the salary of some of their employés.

These facts are here stated for the purpose of pressing home upon the mind of the beginner the importance of adopting right methods in the conduct of his business, and to make him cautious and watchful against the many liabilities to failure and loss which are before him; for the more deeply he is impressed by the foregoing remarks the less likely will he be to indulge in cutting prices for the sake of getting work, or to allow any other bad practices to ruin his business.

It does not follow that because a man is a good printer he will necessarily make a successful business man when he starts for himself, as many have found to their sorrow. At the same time it does follow that he will not be so likely to give his work away for less than it is worth, as

will a man who has never had to earn his living as a compositor or pressman — and that is a strong point in his favor.

BUYING PLANT AND MATERIALS.

After a printer has been carrying on business for a number of years, he looks back and sees some of the mistakes which he has made during that time, and mentally remarks that if he were to have his time over again he would do many things differently.

As he walks around his establishment and takes an inventory of his plant and appliances for carrying on his business, he is apt to make a comparison between the amount of money it has cost him and its intrinsic value at the present time — the result often being far from encouraging. He sees some things nearly worn out and others quite so, and unless he has been allowing a proper amount each year for depreciation, his thoughts are likely to be very gloomy. He thinks of many things for which he has paid high prices that have not yielded him the profits he expected. Some of them he could have done almost as well without. He sees materials which have not been bought in proper proportions, the result being that one-half of such materials were never brought into profitable use. And so he mutters to himself as he returns to his office, "If I had the buying of this plant over again, I would buy differently."

Is this merely an imaginary picture? Or is it what may be found in actual fact? Nine printers out of every ten will be ready to admit that it is more fact than fiction.

Now, that being the case, will it not be of advantage to those who are only now beginning to buy if they can get some few pointers on the subject? Undoubtedly it

will; and with a view to this end the writer ventures to make the following suggestions:

In the first place let it be distinctly remembered whenever purchases are being made that "the best is the cheapest." Well, of course, that saying is as old as the hills; but that is in its favor, so don't forget it. Low-priced articles are, as a rule, dear enough in the end. It is better to buy less in quantity and have more quality. This is especially the case with presses and machinery. It is best to buy presses of standard makes that have a reputation among printers generally; though there may be now and then some really good article that has yet to make its name, and in such cases it is well to look closely into its merits; but great caution is needed in buying a new invention.

Having decided to put in a certain make of press, it is better to buy several of that kind than to have a variety. And this for various reasons, not the least important of which is that all your pressmen get used to them and can easily change off from one to another. The manufacture of printing presses has reached such a point that there really is not much choice between the several standard and accepted makes; of course, special kinds of work will sometimes call for special presses, but this does not weaken the point in the least.

The same remarks apply to machinery of every description in each department.

And type is no exception to this rule, either; for unless it come from a good foundry, where the appliances are of the most approved kind and the metal is of the best, it would be real economy to throw it away, rather than suffer the loss it will occasion if once put into use.

In buying for the job composing room great care

should be exercised. Here, everything should be not only of the best, but in proper proportions. It too often happens that the contents of a job composing room gives the idea that the buying has been done by half a dozen different individuals, each acting independently of the other; for instead of there being harmony and proportion in the different kinds and quantities of types there is just the reverse.

Now, with regard to harmony of design and character it is a great mistake to attempt to carry all the various faces that are made by all the typefounders. What should be aimed at is the bringing together of such of the best designs as will make a harmonious whole. At the same time, contrast must not be lost sight of; for contrast and harmony are both essential to make the beautiful in design or color.

Then, with regard to proportion, there is just as much care needed. It is better to buy all the sizes that are made of a certain face than to pick out two or three sizes at long intervals. If you have the whole of a series, it will be of more use to you than twice the amount picked out from several series; though, of course, where a man has limited capital and yet has to have some measure of variety, he may find it difficult to purchase the whole series of each kind of type.

But this brings us to the most important part of our subject, and that is the difference between buying many kinds and buying much of a kind.

IT IS BETTER TO HAVE FEWER KINDS AND PLENTY OF THEM THAN TO HAVE MORE KINDS AND LITTLE OF THEM.

One hundred fonts of job type, weighing four hundred pounds in the aggregate, will be twice as useful as two hundred fonts weighing the same amount.

It is safe to say, where there are so many kinds, not more than one-third of them are brought into actual daily use. The rest lie in their shrouds of dust waiting for the day when they will return to the melting pot.

Of course, all that has been said about type applies equally to wood letters. Indeed, so far as the question of small fonts is concerned, there is a special need for care in regard to wood letter, as the fonts contain fewer letters of each kind. What is the use of a three A font in an office where much poster work is done? It is worse than useless; and yet, how many such fonts there are.

Type and printing materials have two values: one is the price they will sell for, and the other is the amount they can be made to earn. But whether this latter value is commensurate with their cost depends more upon how they were bought than upon how much was paid for them.

There is another point of importance to be mentioned, and that is the advisability of buying a sufficiency of quads and spaces, leads and reglets, furniture and quoins. These materials cost less than anything else, and yet they play a very large part in the operations of every-day business.

COST OF PRINTING INK.

A very important item of expense in running a printing business is that of ink, and yet it is often left out of calculation when prices are being given for work. Of course, it may be that in the majority of jobs the ink forms but a proportionately small part of the entire cost, but that is no reason why it should be left out of our calculations entirely, for there are times when it forms a large proportion, and if we get into the habit of neglecting it all the

time, the chances are that we shall forget it when it should be thought of.

Granting that the quantity used on a single thousand of a small job is but very little, how about figuring on ten thousand of the same job? Is it not the rule to say, "Well, the composition is the same, the paper will be ten times as much, the presswork so much per thousand runs after the first thousand," and to omit the ink entirely? Then, on printing a single thousand a trifle better price is generally charged, which may cover the cost of the ink; but when a larger quantity is figured on the price has to be made proportionately lower, and unless the ink be made an item in figuring the cost, it will certainly be an item in the lost profit.

Then, again, the habit of leaving it out of our calculations entirely results in ignorance of what quantity to allow for when it has to be considered. How few seem able to calculate the quantity of ink required to run a certain number of any job! Say, for instance, on poster work. A case came under the notice of the writer where the cost of the ink used on two thousand three-sheet block bills, printed in red and black, came to one-third the amount charged for the job; whereas the person who did the figuring had just allowed a "dollar or two" extra for the red ink.

It is difficult to lay down any definite rule as to the quantity required on different jobs, as they vary so much, but what is urged is the importance of taking the matter into consideration. After a little practice any man with ordinary ability to figure will be able to calculate closely enough to prevent making a loss on that score.

It is well to bear in mind, too, that certain colors go further than others. The writer has a small memorandum

book in which are jotted down points of importance in regard to ink and other matters that affect the cost of production, and on the ink page is a line which reads—"Beware of red!"

There is no economy in using poor ink because it appears cheap. A better grade will often be cheaper in the end, as it will go further and work better, saving not only on the bulk of ink used, but also saving in the time of pressmen and presses.

COST OF STOCK.

In figuring the cost of stock, too much care cannot be taken, as when a mistake occurs here it is likely to be a serious one. There is a great tendency on the part of printers to "guess" at the cost of stock used on small jobs. Now this is not safe in practice, for the habit of guessing in small matters will lead to guessing in large matters and a wrong guess may cause the loss of many dollars. The few minutes extra time required to arrive at accurate figures will not be time thrown away. The only safe way of conducting business is knowing without doubt just what you are doing and how much profit you are making on each transaction. To some it might appear that this would be a difficult matter. But it really is not so when once the mind is made up to accomplish it.

Certainly, in the matter of the cost of stock it is easy enough, provided you take the trouble to figure at all.

The following eight tables will be found of great service in figuring on the cost of stock used in small quantities, as they show at a glance the cost per pound, ream and quire, of paper of any weight from eight to seventy pounds, and at any price from 6 to 20 cents a pound, rising by quarters of a cent.

TABLE I.

Weight, 8 to 16 lbs. Price, 6c. to 12¾c. per lb.

Weight -	8 lb.		10 lb.		12 lb.		14 lb.		16 lb.	
Price per lb.	Ream	Qr.	Ream	Qr.	Ream	Qr.	Ream	Qr.	Ream	Qr.
6c	$0.48	.03	$0.60	.03	$0.72	.04	$0 84	.05	$0.96	.05
6¼	0.50	.03	0.63	.04	0.75	.04	0.88	.05	1.00	.05
6½	0.52	.03	0.65	.04	0.78	.04	0.91	.05	1.04	.06
6¾	0.54	.03	0.68	.04	0.81	.05	0.95	.05	1.08	06
7	0.56	.03	0.70	.04	0.84	.05	0.98	.05	1.12	.06
7¼	0.58	.03	0.73	.04	0.87	.05	1.02	.06	1.16	.06
7½	0.60	.03	0.75	.04	0.90	.05	1.05	.06	1.20	.06
7¾	0.62	.04	0.78	.04	0.93	.05	1.09	.06	1.24	.07
8	0.64	.04	0.80	.04	0.96	.05	1.12	.06	1.28	.07
8¼	0.66	.04	0.83	.05	0.99	.05	1.16	.06	1.32	.07
8½	0.68	.04	0.85	.05	1.02	.06	1.19	.06	1.36	.07
8¾	0.70	04	0.88	.05	1.05	.06	1.23	.07	1.40	.07
9	0.72	.04	0.90	.05	1.08	.06	1.26	.07	1.44	.08
9¼	0.74	04	0.93	.05	1.11	.06	1.30	.07	1.48	.08
9½	0.76	.04	0.95	.05	1.14	.06	1.33	.07	1.52	.08
9¾	0.78	.04	0.98	.05	1.17	.06	1.37	.07	1.56	.08
10	0.80	.04	1.00	.05	1.20	.06	1.40	.07	1.60	.08
10¼	0.82	.05	1.03	.06	1.23	.07	1.44	.08	1.64	.09
10½	0.84	.05	1.05	.06	1.26	.07	1.47	.08	1.68	.09
10¾	0.86	.05	1.08	.06	1.29	.07	1.51	.08	1.72	.09
11	0.88	.05	1.10	.06	1.32	.07	1.54	.08	1.76	.09
11¼	0.90	.05	1.13	.06	1.35	.07	1.58	.08	1.80	.09
11½	0.92	.05	1.15	.06	1.38	.07	1.61	.09	1.84	.10
11¾	0.94	.05	1.18	.06	1.41	.08	1.65	.09	1.88	.10
12	0.96	.05	1.20	.06	1.44	.08	1.68	.09	1.92	.10
12¼	0.98	.05	1.23	.07	1.47	.08	1.72	.09	1.96	.10
12½	1.00	.05	1.25	.07	1.50	.08	1.75	.09	2.00	.10
12¾	1.02	.06	1.28	07	1.53	.08	1.79	.09	2.04	.11

TABLE II.

Weight, 8 to 16 lbs. Price, 13c. to 20c.

Weight -	8 lb.		10 lb.		12 lb.		14 lb.		16 lb.	
Price per lb.	Ream	Qr.	Ream	Qr.	Ream	Qr.	Ream	Qr.	Ream	Qr.
13c	$1.04	.06	1.30	.07	1.56	.08	1.82	.10	2.08	.11
13¼	1.06	.06	1.33	.07	1.59	.08	1.86	.10	2.12	.11
13½	1.08	.06	1.35	.07	1.62	.09	1.89	.10	2.16	.11
13¾	1.10	.06	1.38	.07	1.65	09	1.93	.10	2.20	.11
14	1 12	.06	1.40	.07	1.68	.09	1.96	.10	2.24	.12
14¼	1.14	.06	1.43	.08	1.71	.09	2.00	.10	2.28	.12
14½	1.16	.06	1.45	.08	1.74	.09	2.03	.11	2.32	.12
14¾	1.18	.06	1.48	.08	1.77	.09	2.07	.11	2.36	.12
15	1.20	.06	1.50	08	1.80	09	2.10	.11	2.40	.12
15¼	1.22	.07	1.53	.08	1.83	.10	2.14	.11	2.44	.13
15½	1.24	.07	1.55	.08	1.86	.10	2.17	.11	2.48	.13
15¾	1.26	.07	1.58	.08	1.89	.10	2.21	.12	2.52	.13
16	1.28	.07	1.60	.08	1.92	.10	2.24	.12	2.56	.13
16¼	1.30	.07	1.63	.09	1.95	.10	2.28	.12	2.60	13
16½	1.32	.07	1.65	.09	1.98	.10	2.31	.12	2.64	.14
16¾	1.34	.07	1.68	.09	2.01	.11	2.35	.12	2.68	.14
17	1.36	.07	1.70	.09	2.04	.11	2.38	.12	2.72	.14
17¼	1.38	.07	1.73	09	2.07	.11	2.42	.13	2.76	.14
17½	1.40	.07	1.75	.09	2.10	.11	2.45	.13	2.80	.14
17¾	1.42	.08	1.78	.09	2.13	.11	2.49	.13	2.84	.15
18	1.44	.08	1.80	.09	2.16	.11	2.52	.13	2.88	.15
18¼	1.46	.08	1.83	.10	2.19	.11	2.56	.13	2.92	.15
18½	1.48	.08	1.85	.10	2.22	.12	2.59	.13	2.96	.15
18¾	1.50	.08	1.88	.10	2.25	.12	2.63	.14	3.00	.15
19	1.52	.08	1 90	.10	2.28	.12	2.66	.14	3.04	.16
19¼	1.54	.08	1.93	.10	2.31	.12	2.70	.14	3.08	.16
19½	1.56	.08	1.95	.10	2.34	.12	2.73	.14	3.12	.16
20	1.60	.08	2.00	.10	2.40	.12	2.80	.14	3.20	.16

TABLE III.

Weight, 18 to 26 lbs. Price, 6c. to 12¾c. per lb.

Weight -	18 lb.		20 lb.		22 lb.		24 lb.		26 lb.	
Price per lb.	Ream	Qr.	Ream	Qr.	Ream	Qr.	Ream	Qr.	Ream	Qr.
6c	$1.08	.06	$1.20	.06	$1.32	.07	$1.44	.08	$1.56	.08
6¼	1.13	.06	1.25	.07	1.38	.07	1.50	.08	1.63	.09
6½	1.17	.06	1.30	.07	1.43	.08	1.56	.08	1.69	.09
6¾	1.22	.07	1.35	.07	1.49	.08	1.62	.09	1.76	.09
7	1.26	.07	1.40	.07	1.54	.08	1.68	.09	1.82	.10
7¼	1.31	.07	1.45	.08	1.60	.08	1.74	.09	1.89	.10
7½	1.35	.07	1.50	.08	1.65	.09	1.80	.09	1.95	.10
7¾	1.40	.07	1.55	.08	1.71	.09	1.86	.10	2.02	.11
8	1.44	.08	1.60	.08	1.76	.09	1.92	.10	2.08	.11
8¼	1.49	.08	1.65	.09	1.82	.10	1.98	.10	2.15	.11
8½	1.53	.08	1.70	.09	1.87	.10	2.04	.11	2.21	.12
8¾	1.58	.08	1.75	.09	1.93	.10	2.10	.11	2.28	.12
9	1.62	.09	1.80	.09	1.98	.10	2.16	.11	2.34	.12
9¼	1.67	.09	1.85	.10	2.04	.11	2.22	.12	2.41	.13
9½	1.71	.09	1.90	.10	2.09	.11	2.28	.12	2.47	.13
9¾	1.76	.09	1.95	.10	2.15	.11	2.34	.12	2.54	.13
10	1.80	.09	2.00	.10	2.20	.11	2.40	.12	2.60	.13
10¼	1.85	.10	2.05	.11	2.26	.12	2.46	.13	2.67	.14
10½	1.89	.10	2.10	.11	2.31	.12	2.52	.13	2.73	.14
10¾	1.94	.10	2.15	.11	2.37	.12	2.58	.13	2.80	.14
11	1.98	.10	2.20	.11	2.42	.13	2.64	.14	2.86	.15
11¼	2.03	.11	2.25	.12	2.48	.13	2.70	.14	2.93	.15
11½	2.07	.11	2.30	.12	2.53	.13	2.76	.14	2.99	.15
11¾	2.12	.11	2.35	.12	2.59	.13	2.82	.15	3.06	.16
12	2.16	.11	2.40	.12	2.64	.14	2.88	.15	3.12	.16
12¼	2.21	.12	2.45	.13	2.70	.14	2.94	.15	3.19	.16
12½	2.25	.12	2.50	.13	2.75	.14	3.00	.15	3.25	.17
12¾	2.30	.12	2.55	.13	2.81	.15	3.06	.16	3.32	.17

TABLE IV.

Weight, 18 to 26 lbs. Price, 13c. to 20c. per lb.

Weight -	18 lb.		20 lb.		22 lb.		24 lb.		26 lb.	
Price per lb.	Ream	Qr.	Ream	Qr.	Ream	Qr.	Ream	Qr.	Ream	Qr.
13c	$2.34	.12	$2.60	.13	$2.86	.15	$3.12	.16	$3.38	.17
13¼	2.39	.12	2.65	.14	2.92	.15	3.18	.16	3.45	.18
13½	2.43	.13	2.70	.14	2.97	.15	3.24	.17	3.51	.18
13¾	2.48	.13	2.75	.14	3.03	.16	3.30	.17	3.58	.18
14	2.52	.13	2.80	.14	3.08	16	3.36	.17	3 64	.19
14¼	2.57	.13	2.85	.15	3.14	.16	3.42	.18	3.71	.19
14½	2.61	.14	2.90	.15	3.19	.16	3.48	.18	3 77	19
14¾	2.66	.14	2.95	15	3.25	.17	3.54	.18	3.84	.20
15	2.70	.14	3.00	.15	3.30	.17	3.60	.18	3.90	.20
15¼	2.75	.14	3.05	.16	3.36	.17	3.66	.19	3.97	.20
15½	2.79	.14	3.10	.16	3.41	.18	3.72	.19	4.03	.21
15¾	2.84	.15	3.15	.16	3.47	.18	3.78	.19	4.10	.21
16	2.88	.15	3.20	.16	3.52	.18	3.84	.20	4.16	.21
16¼	2.93	.15	3.25	.17	3.58	.18	3.90	20	4.23	.22
16½	2.97	.15	3.30	.17	3.63	.19	3.96	.20	4.29	.22
16¾	3.02	.16	3.35	.17	3.69	.19	4.02	.21	4.36	.22
17	3.06	.16	3.40	.17	3.74	.19	4.08	.21	4.42	.23
17¼	3.11	.16	3.45	.18	3.80	.19	4.14	.21	4.49	.23
17½	3.15	.16	3.50	.18	3.85	.20	4.20	.21	4.55	.23
17¾	3.20	.16	3.55	.18	3.91	.20	4.26	.22	4.62	.24
18	3.24	.17	3.60	.18	3.96	.20	4.32	.22	4.68	.24
18¼	3.29	.17	3.65	.19	4.02	.21	4.38	.22	4.75	.24
18½	3.33	.17	3.70	.19	4.07	.21	4.44	.23	4.81	.25
18¾	3.38	.17	3.75	.19	4.12	.21	4.50	.23	4.88	.25
19	3.42	.18	3.80	.19	4.18	.21	4.56	.23	4.94	.25
19¼	3.47	.18	3.85	.20	4.24	.22	4.62	.24	5.01	.26
19½	3.51	.18	3.90	.20	4.29	.22	4.68	.24	5.07	.26
20	3.60	.18	4.00	.20	4.40	.22	4.80	.24	5.20	.26

TABLE V.

Weight, 28 to 36 lbs. Price, 6c. to 12¾c. per lb.

Weight -	28 lb.		30 lb.		32 lb.		35 lb.		36 lb.	
Price per lb.	Ream	Qr.	Ream	Qr.	Ream	Qr.	Ream	Qr.	Ream	Qr.
6c	$1.68	.09	$1.80	.09	$1.92	.10	$2.10	.11	$2.16	.11
6¼	1.75	.09	1.88	.10	2.00	.10	2.19	.11	2.25	.12
6½	1.82	.10	1.95	.10	2.08	.11	2.28	.12	2.34	.12
6¾	1.89	.10	2.03	.11	2.16	.11	2.37	.12	2.43	.13
7	2.96	.10	2.10	.11	2.24	.12	2.45	.13	2.52	.13
7¼	2.03	.11	2.18	.11	2.32	.12	2.54	.13	2.61	.14
7½	2.10	.11	2.25	.12	2.40	.12	2.63	.14	2.70	.14
7¾	2.17	.11	2.33	.12	2.48	.13	2.72	.14	2.79	.14
8	2.24	.12	2.40	.12	2.56	.13	2.80	.14	2.88	.15
8¼	2.31	.12	2.48	.13	2.64	.14	2.89	.15	2.97	.15
8½	2.38	.12	2.55	.13	2.72	.14	2.98	.15	3.06	.16
8¾	2.45	.13	2.63	.14	2.80	.14	3.07	.16	3.15	.16
9	2.52	.13	2.70	.14	2.88	.15	3.15	.16	3.24	.17
9¼	2.59	.13	2.78	.14	2.96	.15	3.24	.17	3.33	.17
9½	2.66	.14	2.85	.15	3.04	.16	3.33	.17	3.42	.18
9¾	2.73	.14	2.93	.15	3.12	.16	3.42	.18	3.51	.18
10	2.80	.14	3.00	.15	3.20	.16	3.50	.18	3.60	.18
10¼	2.87	.15	3.08	.16	3.28	.17	3.59	.18	3.69	.19
10½	2.94	.15	3.15	.16	3.36	.17	3.68	.19	3.78	.19
10¾	3.01	.15	3.23	.17	3.44	.18	3.77	.19	3.87	.20
11	3.08	.16	3.30	.17	3.52	.18	3.85	.20	3.96	.20
11¼	3.15	.16	3.38	.17	3.60	.18	3.94	.20	4.05	.21
11½	3.22	.17	3.45	.18	3.68	.19	4.03	.21	4.14	.21
11¾	3.29	.17	3.53	.18	3.76	.19	4.12	.21	4.23	.22
12	3.36	.17	3.60	.18	3.84	.20	4.20	.21	4.32	.22
12¼	3.43	.18	3.68	.19	3.92	.20	4.29	.22	4.41	.23
12½	3.50	.18	3.75	.19	4.00	.20	4.38	.22	4.50	.23
12¾	3.57	.18	3.83	.20	4.08	.21	4.47	.23	4.59	.23

TABLE VI.

Weight, 28 to 36 lbs. Price, 13c. to 20c. per lb.

Weight -	28 lb.		30 lb.		32 lb.		35 lb.		36 lb.	
Price per lb.	Ream	Qr.	Ream	Qr.	Ream	Qr.	Ream	Qr.	Ream	Qr.
13c	$3.64	.19	$3.90	.20	$4.16	.21	$4.55	.23	$4.68	.24
13¼	3.71	.19	3.98	.20	4.24	.22	4.64	.24	4.77	.24
13½	3.78	.19	4.05	.21	4.32	.22	4.73	.24	4.86	.25
13¾	3.85	.20	4.13	.21	4 40	.22	4.82	.25	4.95	.25
14	3.92	.20	4.20	.21	4.48	.23	4.90	.25	5.04	.26
14¼	3.99	.20	4.28	.22	4.56	.23	4.99	.25	5.13	.26
14½	4.06	.21	4.35	.22	4.64	.24	5.08	.26	5.22	.27
14¾	4.13	.21	4.43	.23	4.72	.24	5.17	.26	5.31	.27
15	4.20	.21	4 50	.23	4.80	.24	5.25	.27	5.40	.27
15¼	4.27	.22	4.58	.23	4.88	.25	5.34	.27	5.49	.28
15½	4.34	.22	4.65	.24	4.96	.25	5.43	.28	5.58	.28
15¾	4.41	.23	4.73	.24	5.04	.26	5.52	.28	5.67	.29
16	4.48	.23	4.80	.24	5 12	.26	5.60	.28	5.76	.29
16¼	4.55	.23	4.88	.25	5.20	.26	5.69	.29	5.85	.30
16½	4.62	.24	4.95	.25	5.28	.27	5.78	.29	5.94	.30
16¾	4.69	.24	5.03	.26	5.36	.27	5.87	.30	6.03	.31
17	4.76	.24	5.10	.26	5.44	28	5.95	.30	6.12	.31
17¼	4.83	.25	5.18	.26	5.52	.28	6.04	.31	6.21	.32
17½	4.90	.25	5.25	.27	5.60	.28	6.13	.31	6.30	.32
17¾	4.97	.25	5.33	.27	5.68	.29	6.22	.32	6.39	.32
18	5.04	.26	5.40	.27	5.76	.29	6.30	.32	6.48	.33
18¼	5.11	.26	5.48	.28	5.84	.30	6.39	.32	6.57	.33
18½	5.18	.26	5.55	.28	5.92	.30	6.48	.33	6.66	.34
18¾	5.25	.27	5.63	.29	6.00	.30	6.57	.33	6.75	.34
19	5.32	.27	5.70	.29	6.08	.31	6.65	.34	6.84	.35
19¼	5.39	.27	5.78	.29	6.16	.31	6.74	.34	6.93	.35
19½	5.46	.28	5.85	.30	6.24	.32	6.83	.35	7.02	.36
20	5.60	.28	6.00	.30	6.40	.32	7.00	.35	7.20	.36

TABLE VII.

Weight, 40 to 70 lbs. Price, 6c. to 12¾c. per lb.

Weight -	40 lb.		45 lb.		50 lb.		60 lb.		70 lb.	
Price per lb.	Ream	Qr.	Ream	Qr.	Ream	Qr.	Ream	Qr.	Ream	Qr.
6c	$2.40	.12	$2.70	.14	$3.00	.15	$3.60	.18	$4.20	.21
6¼	2.50	.13	2.82	.15	3.13	.16	3.75	.19	4.38	.22
6½	2.60	.13	2.93	.15	3.25	.17	3 90	.20	4.55	.23
6¾	2.70	.14	3.04	.16	3.38	.17	4.05	.21	4.73	.24
7	2.80	.14	3.15	.16	3.50	.18	4.20	.21	4.90	.25
7¼	2.90	15	3.26	.17	3.63	.19	4.35	.22	5.08	.26
7½	3.00	.15	3.38	.17	3.75	.19	4.50	.23	5.25	.27
7¾	3 10	.16	3.49	.18	3.88	.20	4.65	.24	5.43	.28
8	3.20	.16	3.60	.18	4.00	.20	4.80	.24	5.60	.28
8¼	3.30	.17	3.72	.19	4.13	.21	4.95	.25	5.78	.29
8½	3.40	.17	3.83	.20	4.25	.22	5.10	.26	5.95	.30
8¾	3.50	.18	3.94	.20	4.38	.22	5.25	.27	6.13	.31
9	3.60	.18	4.05	.21	4.50	.23	5.40	.27	6.30	.32
9¼	3.70	.19	4.17	.21	4.63	.24	5.55	.28	6.48	.33
9½	3.80	.19	4.28	.22	4.75	.24	5.70	.29	6.65	.34
9¾	3.90	.20	4.39	.22	4.88	.25	5.85	.30	6 83	.35
10	4.00	.20	4.50	.23	5.00	.25	6.00	.30	7.00	.35
10¼	4.10	.21	4.62	.24	5.13	.26	6.15	.31	7.18	.36
10½	4.20	.21	4.73	.24	5.25	.27	6.30	.32	7.35	.37
10¾	4.30	.22	4.84	.25	5.37	.27	6.45	.33	7.53	.38
11	4.40	22	4.95	25	5.50	28	6.60	.33	7.70	.39
11¼	4.50	.23	5.07	.26	5.63	.29	6.75	.34	7.88	.40
11½	4.60	.23	5.18	.26	5.75	.29	6.90	.35	8.05	.41
11¾	4 70	.24	5.29	.27	5.88	.30	7.05	.36	8.23	.42
12	4.80	.24	5.40	.27	6.00	.30	7.20	.36	8.40	42
12¼	4.90	.25	5.51	.28	6.13	.31	7.35	.37	8.58	.43
12½	5.00	.25	5.63	.29	6.25	.32	7.50	.38	8.75	.44
12¾	5.10	.26	5.74	.29	7.38	.32	7.65	.39	8.93	.45

TABLE VIII.

Weight, 40 to 70 lbs. Price, 13c. to 20c. per lb.

Weight -	40 lb.		45 lb.		50 lb.		60 lb.		70 lb.	
Price per lb.	Ream	Qr.	Ream	Qr.	Ream	Qr.	Ream	Qr.	Ream	Qr.
13c	$5.20	.26	$5.85	.30	$6.50	.33	$7.80	.39	$9.10	.46
13¼	5.30	.27	5.97	.30	6.62	.34	7.95	.40	9.28	.47
13½	5.40	.27	6.08	.31	6.75	.34	8.10	.41	9.45	.48
13¾	5.50	.28	6.19	.31	6.88	.35	8.25	.42	9.63	.49
14	5.60	.28	6.30	.32	7.00	.35	8.40	.42	9.80	.49
14¼	5.70	.29	6.42	.33	7.13	.36	8.55	.43	9.98	.50
14½	5.80	29	6.53	.33	7.25	.37	8.70	.44	10.15	.51
14¾	5.90	.30	6.64	.34	7.38	.37	8.85	.45	10.33	.52
15	6.00	.30	6.75	.34	7.50	.38	9.00	.45	10.50	.53
15¼	6.10	.31	6.87	.35	7.63	.39	9.15	.46	10.68	.54
15½	6.20	.31	6.98	.35	7.75	.39	9.30	.47	10.85	.55
15¾	6.30	.32	7.09	.36	7.88	.40	9.45	.48	11.03	.56
16	6.40	.32	7.20	.36	8.00	.40	9.60	.48	11.20	.56
16¼	6.50	.33	7.32	.37	8.13	.41	9.75	.49	11.38	.57
16½	6.60	.33	7.43	.38	8.25	.42	9.90	.50	11.55	.58
16¾	6.70	.34	7.54	.38	8.38	.42	10.05	51	11.73	.59
17	6.80	.34	7.65	.39	8.50	.43	10.20	.51	11.90	.60
17¼	6 90	.35	7.77	.39	8.63	.44	10.35	.52	12.08	.61
17½	7.00	.35	7.88	.40	8.75	.44	10.50	.53	12.25	.62
17¾	7.10	.36	7.99	.40	8.88	.45	10.65	.54	12.43	.63
18	7.20	.36	8.10	.41	9.00	.45	10.80	.54	12.60	.63
18¼	7.30	.37	8.22	.42	9.13	.46	10.95	.55	12.78	.64
18½	7.40	.37	8.33	.42	9.25	.47	11.10	.56	12.95	.65
18¾	7.50	.38	8.44	.43	9.38	.47	11.25	.57	13.13	.66
19	7.60	.38	8.55	.43	9.50	.48	11.40	.57	13.30	.67
19¼	7.70	.39	8.67	.44	9.63	.49	11.55	.58	13.48	.68
19½	7.80	.39	8.78	.44	9.75	.49	11.70	.50	13.65	.69
20	8.00	.40	9.00	.45	10.00	.50	12.00	.60	14.00	.70

ORDER BOOK AND JOB TICKETS.

In order to keep track of the cost of work throughout its several processes there have been various systems adopted, with more or less success, and it is difficult to say which of those systems is entitled to be considered best. But the following has borne the test of many years' practice, and is recommended as being reliable and practicable :

Have a book in which jobs can be entered and numbered consecutively, as they are received. Let this book be ruled in columns, so as to provide for entering all the particulars of name, address, quantity, description, etc., on the left-hand page, and on the right-hand page ruled so as to provide for the entry of the various items of cost, such as composition, presswork, stock, cutting, padding, ruling, numbering, perforating, folding, sewing, binding, etc., with a column for total cost, and one for the price charged to customer.

Then have a small blank, called a "job ticket," printed so as to provide spaces for all of the above particulars, on which the person putting the job in hand will enter all particulars and instructions to correspond with the entry in the order book, and those who are engaged on the job must enter the time occupied. Let each person also have a "daily time slip," on which to enter against the job number the same time which they enter on the job ticket, the total of these entries being the time they have worked during the day. There will be times when a man is engaged on general distribution or other work in other departments, which cannot well be charged to any job number, in which case he will enter the time on his daily slip, and not on the job ticket, such work being taken into

account, as will be explained shortly. No job should be allowed to be put in hand without a job ticket being made out, and such ticket must accompany the job from start to finish.

The following reduced fac similes will illustrate the system.

To arrive at the cost of the time thus charged on the job ticket, it is necessary to take other things into account besides the wages paid. A good plan is to fix a certain rate per hour. Take the composing room, for example. Find the total amount paid in the room (including foreman, proofreader, etc.); then by dividing that amount by the aggregate number of hours worked, you have the cost per hour. But that would not represent the full cost of composition. Experience shows that at least one-half more must be added in order to cover distribution and other necessary expenses, so that if the cost shown was 20 cents you will have to reckon 30 cents. The press-room can be figured in the same way, for although there is no distribution to be allowed for, there is power to think of, and there are times when presses are standing idle and other such like matters to be provided for. And so for bindery and other rooms.

After a job is finished, the time on the ticket is to be figured at the rates per hour which have been decided upon. Should the composition rate be 35 cents, and the time charged be 2½ hours, then the cost of composition would be called 90 cents. The time on the other parts of the work being figured in the same way.

After the various items of cost have been figured out on the job ticket they will be entered in the order book against their proper numbers, as shown on the fac simile sheet. Of course, the difference between the "total

THIS TICKET MUST ACCOMPANY JOB THROUGHOUT.

Job No. 2441 July 24 1888

Name C. Thomas's Sons

Quantity 2000 in 8 books

Description Freight Contracts

1/2 bound sheep, cloth sides

Stock 1050 sht 18+23=30 Gro 2

Cost of Stock 7.50 Color of Ink red

Proof Wanted no Job Wanted 10 days

Bound in 8 books. Pads.

Ruled Yes Numbered Yes Perforated

BE CAREFUL TO CHARGE ALL TIME OCCUPIED. **TIME.** BETTER CHARGE RATHER MORE THAN LESS.

Work.	NAME.	HOURS.					
Comp.	Van Bramer	1¾	1			1.00	
"	Southwell	1/2					
"							
"							
Press.	V. B.	2½				1.75	
"	Shonty	3					
"							
"							
Cutting.	Ed	1/2				.20	
Padd'g.							
Ruling.	Megarr	4				1.35	
Numb'g or Perf'g.	Nellie	3				.60	
Folding and Sewing.	Susie & Dora	13	2½			1.60	
Bind'g.	Herzogtr	6½	7	2		4.60	
Bind'g Mater'ls.	$2 wo						

Remarks:

Charge 32.50

Take Proof of Job on Back of Ticket before Lifting.

cost," and the "billed at" columns, will only show the gross profit. Then will come rent, gas, office expenses, etc., before the *net* profit is arrived at.

Name W. Southwell 7/24 1888

DAILY TIME SLIP.

JOB NO.	HOURS.
2241	1/2
2236	4 1/4
2249	2
2216	1 1/2
2221	1 3/4
	10

Time entered on this Slip must correspond with time on Job Ticket.

Those who have used this system have found that it took them a very little time to get used to it, and they would not give it upon any account.

But do not attempt to carry on business without a system of some kind that will furnish you with the particulars enumerated here; for without such information you will be groping in the dark and find when it is too late that your business is a failure.

PROOF READING.

NO part of the work of printing is of more importance nor requires more care than that of proof reading. The type may have the newest and handsomest face, the paper may be the best that can be made, the presswork may be unsurpassable and the binding the most elegant, and yet if the proof reading has been carelessly done the whole of the work may be disfigured and spoiled. Not only will there be inaccuracies as regards spelling, punctuation or grammar, but also a lack of uniformity in style throughout.

There are some points upon which there may be diversities of opinions, but whatever style is adopted at the commencement of any work should be followed closely to the end. Capitalization, spelling, punctuation and spacing are each open to some difference of opinion, but there should be no two opinions followed in any one piece of work.

Very few authors are aware to what an extent they are indebted to proof readers for uniformity of style, and those who are most indebted are the least likely to appreciate it. Copy is very often prepared in the most careless manner, and compositors and proof readers have to spend much valuable time in putting it into proper shape, although perhaps the author may never know that anything has been done to it. But only let a proof reader allow a trifling error to pass and that

same author will come down upon him like a mighty avalanche!

Proof reading is by no means as easy a matter as some persons would seem to suppose. To be qualified for this work a man must have a very large amount of general knowledge, must be a good scholar, must have a powerful memory, must be acquainted with the practical part of the printing business, and must have an eye quick to detect errors. Besides this he should be somewhat familiar with several languages besides his own and have an acquaintance with the geography of the whole world.

Very often he is called upon to read scientific and classical works, in which he will meet with a variety of abstruse subjects, with all of which he is expected to be more or less acquainted. Medical, mathematical, philosophical and botanical works often form part of that which he has to read and revise and prepare for the public eye. And generally speaking the authors who deal with these more difficult subjects have the worst kind of handwriting and bestow least pains upon trying to make what they write intelligible to the poor compositor. The consequence is that the proof reader has to be consulted again and again and must make "sense" somehow.

Therefore it will be easily seen that a proof reader's duties are by no means light, and the man who ably fills such a position has an amount of hard work and mental worry which no one else in the business has to endure. And yet there must be proof readers and someone must be found who is able and willing to cope with these difficulties.

Unfortunately, it happens that some of those who are engaged in this work take so little pains to do that work properly or to qualify themselves for reading in the higher branches of literature that discredit is thus brought upon the body generally, and the work done is not appreciated as it should be. Those who desire to become good proof readers must be prepared to undergo a large amount of mental preparation and to give themselves up to hard work.

A few suggestions may be given here which will be likely to benefit those who are desirous of entering on this kind of work:

1. Before starting to read a proof find out whether you are to "follow copy" in regard to doubtful spelling or compound words and whether the author has given general instructions on other points.

2. Ascertain whether you are to adopt any particular style as regards capitals or punctuation.

3. Take a general survey of the copy in order to find out whether there is uniformity in the author's style; whether he spells words differently in some places from what he does in others; whether he capitalizes all through alike, and whether he underlines properly and uniformly for capitals, small capitals or italics.

4. If you find that no uniformity of style has been adopted, and that you are to use your own judgment, then write down carefully such leading rules as will help you in securing uniformity throughout.

5. When the proofs are laid before you, treat them to the same examination. Notice whether the paragraphs are all indented alike, whether the spacing is

uniform, and whether such instructions as may have been given have been followed.

6. It is a good plan to let the copyholder read in an even tone, one word at a time, without trying to give expression to the sense of what is being read, and then to let your eyes keep just a little ahead of his reading, as by this means you will be more likely to detect errors than by following his lead.

7. If the copyholder be a fast and accurate reader it will be well simply to compare with copy and look for "outs," "doubles" and other typographical errors at this first reading, and then go over the ground a second time by yourself for punctuation, spacing and the other finer points.

8. When revising a proof which has been corrected it will be advisable not only to see that all the changes have been made, but to see that no alterations have been made other than those marked. Where the corrections are very numerous it is a good plan to have the whole re-read by the copyholder.

9. When the matter has been made up into pages, it will be necessary to look carefully after such points as the following:

That no lines have become transposed in making up;

That no lines have been left out;

That the bottom line of each page reads on to the top line of the next page;

That no page commences with the last line of a paragraph; and

That the running heads and folios are in proper sequence.

An experienced proof reader will have an immense advantage over a novice, from the fact that when he reads a proof he knows what he is looking for and what he may expect to find. Especially is this so when he has some experience as a compositor. For, on the principle of the old adage, "Set a rogue to catch a rogue," he knows the kind of errors which are most likely to be made and where to look for them.

Wrong letters, turned letters, wrong font letters, doubles, outs, bad spacing, bad spelling, transposition of letters at the ends of lines—these and many other such irregularities he is constantly looking out for, and, like a detective, he acquires the power of quickly recognizing his objects.

Failure to detect an error and then to have that error found by someone else is, to a conscientious proof reader, not only annoying but humiliating. I can well remember some painful experiences of this sort myself, and the mortification and chagrin are more easily written about than they were endured. But every proof reader has to pass through this ordeal at some time or other, and it is comforting to remember that others have had the same experience and afterwards made a success. In spite of the greatest precaution and most careful examination, mistakes will find their way into the best of works.

We are told that Aldus, in order to eliminate all errors from his edition of Plato, offered a gold coin for every mistake that could be discovered. Also, that publishers in his day used to publicly expose the proof sheets of their works and offer rewards to those who would point out errors. "And yet such unlucky

mistakes often crept into their works that they declared that either the devil presided over typography or there was diabolic malice on the part of the compositors."

The subject of proof reading covers a very wide range. Books, magazines, newspapers and job work each furnish a large field for the exercise of the natural talents, and yet each call for distinctive treatment. As a rule, more time is given to the reading of proofs for book work than for any other kind. Generally there is no hurry, while accuracy is of greater account than speed. Therefore the reader can devote all his thought and attention to that one point of supreme importance—accuracy. Not a word should be spelt wrongly; not a punctuation mark should be misplaced; not a capital should be misused or omitted; not a space should be out of uniformity; not a wrong font or turned or broken letter should appear; but everything should be—accurate.

Magazine work comes next in this order, and while it naturally calls for accuracy it often calls for expedition. Therefore the reader has these two special features to bear in mind. To be accurate as well as to be quick is a qualification which requires a good deal of nerve, in addition to knowledge and practice. But if there should be so much hurry as that something must be slighted, do not let it be the uniformity, for as the articles will be written by different individuals, there will be more danger of failure in this respect than in any other.

For newspaper work there must be speed. Some other points may have to give way to this and even

accuracy may be sacrificed on the altar of necessity, but at all cost latest news must be received and the forms must be on time. A press which runs tens of thousands an hour cannot be kept waiting because the compositor has misspelt the word "diabetes" or made Shakespeare the "Bard of Avos."

Job work calls for both accuracy and speed, and is, perhaps, the hardest kind of work to read. Here, more than anywhere else, the proof reader will find the advantage of having a knowledge of the compositor's work. To know something of the different names and sizes of types, to be familiar with the faces of special kinds used in display work, and to have some amount of taste for judging the artistic merits of such work will be found immensely helpful. But job work embraces such a great variety of matter and changes so often that a proof reader needs to be able to turn from one job to another and be just as much at home on one as on the other. Figure work requires accuracy in its fullest sense, and yet often has to be done with as much speed as is ever called for on newspaper work.

In every kind of work the copy should always be read by the copyholder and on no account should the proof reader read the proof aloud while the copyholder simply holds the copy and compares with what is being read. It would almost seem superfluous to mention such a matter as this, but among job printers there is a good deal of this kind of proof reading, and many mistakes and much spoiled paper result.

Large posters and show bills can be read in the type before being locked up, as the type is large and

the locking of such forms is quite an item. In this large work the rules of punctuation need not be so rigidly enforced. Where a large line of wood letter just fits the measure a point may be dispensed with, or where it falls short and an exclamation point would be in keeping, then two or even three of these may be used to fill out the line.

Divisions of words in job work ought not to be allowed. Not only do divisions look bad in displayed lines, but also in the solid matter of circulars. "Wide spacing and no divisions in job work" used to be a part of the printed instructions in one of the largest and best printing establishments. And it is a very good rule to follow.

Proof readers will do well to be very careful about making changes in displayed work other than actual errors. If it should appear to them that a line would look better if set in some other type, or that some different arrangement of the lines should be made, it will be better to make the suggestion before marking the change on the proof. The compositor may have some reason for doing as he has done of which the reader might be totally ignorant.

It is important in reading displayed work to see that all of the short lines, brass rules and dashes are in the centre; also to see that all reprint jobs are spaced out according to copy, particularly in blanks and other jobs where spaces are left for writing.

Another important point is to see that the form is locked up straight; that it does not hang down on one or both corners; that no pieced leads have become crossed in the centre; that the form is not

crooked on account of a piece of the furniture being too long, thus causing it to bind, and that from no other cause the form is thrown out of square or is in an unfit condition to be put on the press.

Where jobs are printed in two or more colors it is important to see that the spacing between the lines is perfectly accurate, as it will be too late to find this out when the first form is finished and the second is being printed into the spaces left. It is best to have a proof of the whole page taken on dry paper before it is dissected for colors, and then to measure each form by such proof.

Picking and turning for sorts in job work is a constant source of trouble to the reader, as after he has carefully read and corrected all of the errors in a proof some delay may arise before the job is printed, and in the meantime letters are taken out and perhaps not put back carefully. Therefore when the job is actually on the press it is advisable to read every displayed line again with this fact in view.

And yet, even then, the last danger is not passed. A letter may draw out and break while the press is running, and the person who puts in another letter may put in a wrong one. But this should not be allowed. There ought to be a rule that whenever letters draw out or matter is pied the reader should be told of it so that he may revise the changes made.

In the case of a very long run from one form plates are mostly used, but where such work is done from movable types the reader should take a sheet every now and then and carefully examine it to see whether any letters have been pulled out or broken off.

It has become customary in some establishments to let a proof reader read over copy before it is given to the compositors. He marks the punctuation, makes the spelling and capitalization uniform, and in other ways seeks to lessen the number of changes that would have to be made in the proof. This is a good plan, and while at first sight it might appear that the compositor was the only one benefited, yet in reality the reader's time in doing this first work is more than paid for by the reduction in the amount of his work afterward.

It is the rule in most large houses where they print books of reference, public documents and other works which require the very greatest care, to have the proofs pass through the hands of two or more different readers. Sometimes each reader will read by copy and go over the same proof, making their additional marks alongside of those already there. And then the proof may be revised by still another reader.

Press proof reading on book and magazine work should be done by a special reader. Here it is not so much a question of followng copy or punctuation or capitalization as a general scrutiny of the whole to find whether anything may have happened to the matter since it was made up and imposed; also to see that each sheet follows on from the end of the previous one and to give a final glance over the whole, in view of the fact that this is the last examination the work will get before it is too late to make changes. The man who fills this post will find that he holds a responsible and important position.

A proof reader should be very careful not to make

unnecessary marks. He should never make a change which he can avoid. Some readers are apt to think that they please their employers and display their ability by making a proof look as dirty as possible. What they are expected to do is to mark all ERRORS, and if they do more than this they waste their employer's time and provoke the bad feeling of the compositors.

Sometimes a reader may get out of patience with a compositor because he has made more mistakes than he thinks ought to be made, and will for that very reason try and make the proof look as black as possible, thus provoking the compositor to wrath. But if he were to go to the case and try his hand on setting up the same work he might modify his idea.

On the other hand, compositors often accuse readers of spiteful motives and actions where they do not exist, and while they sometimes think they would like to change places with the readers, they would find, if they really did so, that a reader's position is anything but a bed of roses.

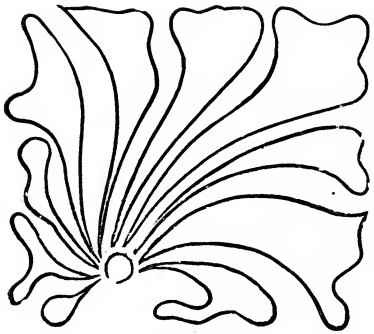
The fact is that, instead of either of them having cause to find fault with the other, the trouble of both principally comes from their common enemy, the author. If every writer for the press would write in a plain, readable style the compositor would make fewer mistakes, the reader would have less to do, and all parties concerned would be better off. But, alas, the prospect of any such blissful state of things appears to be afar off. This has always been the trouble with the writing of most authors, and is likely to be in the future, although the introduction of type-

writing machines has modified the evil to some small extent.

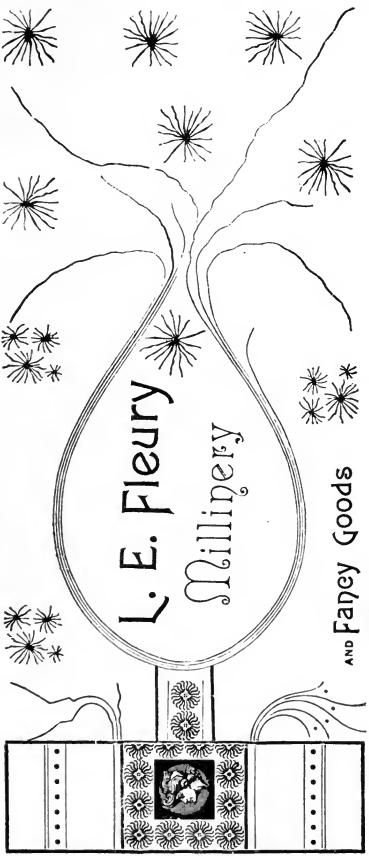
In closing, and in connection with the foregoing, it may be well to quote the following lines from Johnson's "Typographia," published in 1824 :

Ye Author's list! we must a tale unfold,
Which, doubtless, some of you have oft been told;
You little dream how much poor Typo's vex'd,
When with bad copy his mind's sore perplex'd;
Nor is this all, he still has cause to dread
The Reader's gall, when first his proof is read:
Corrected now, to you 'tis straight convey'd,
And in a trice the greatest havoc's made;
Methinks we see you every page survey,
As with blunt pen the world's map you portray!
The numerous marks, on its margin's plain,
Appear like soldiers in the battle slain!
The proof's returned — the Chapel's members all
Rush to the stone, obedient to his call,
To view this carnage, though no blood appears,
Yet e'en the sight awakes their manly fears!
Aloud they roar — enough to strike him dead,
"A mob, a mob, th' riot act must be read!"
His grief to soothe — they sympathizing bawl,
"Patience and a sharp bodkin cures all."
His form, with heavy heart he then lays up,
And letters seeks, which fill his bitter cup;
How often, when correcting at the stone,
He's prayed for you, while breaking his breast bone.
Reflect, when next you wield your potent quills,
And spare the printer all these dreaded ills:
Revise, transcribe and make your copy right,
Thus save his labor and his precious sight!
For this, your pardon we must humbly crave,
And of this subject beg to take our leave.

SPECIMENS OF COMPOSITION



BRASS RULE WORK.


L. E. Fleury
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AND Fancy Goods

JULIUS HEINEMANN
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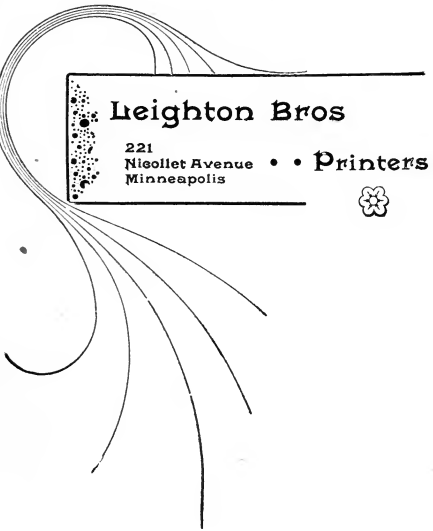
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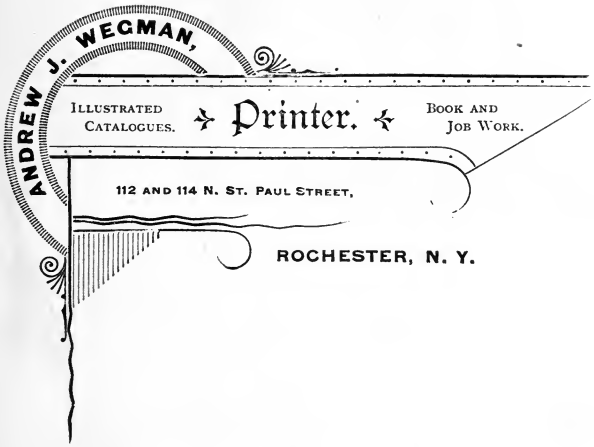
221
Nicollet Avenue
Minneapolis
Printers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112 AND 114 N. ST. PAUL STREET,
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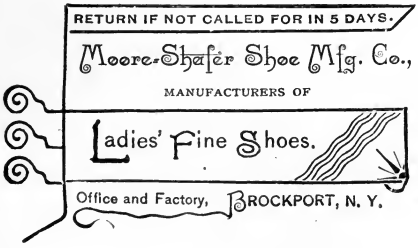
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MANUFACTURERS OF
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THE ✲ BEVERLY ✲ TIMES.
E. M. BATES,
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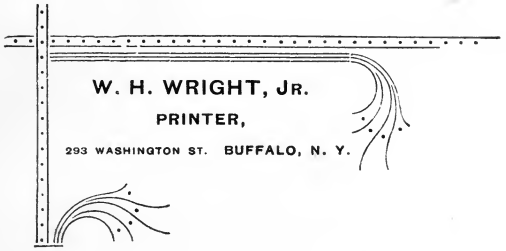
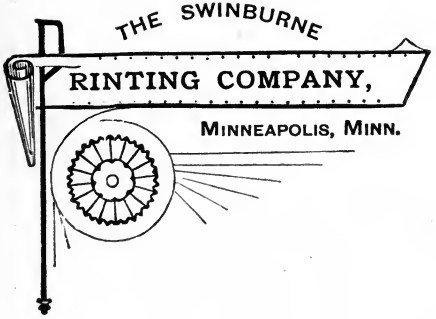
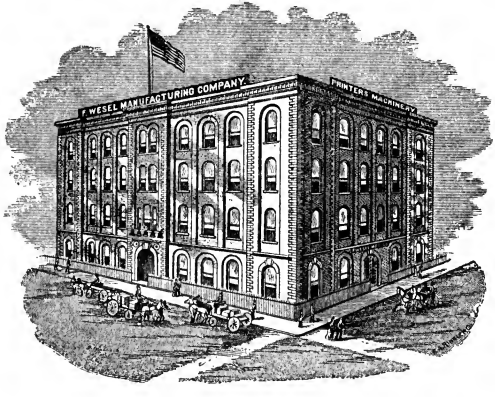
BEVERLY, ✲ MASS.


W. H. WRIGHT, JR.
PRINTER,
293 WASHINGTON ST. BUFFALO, N. Y.


THE SWINBURNE
RINTING COMPANY,
MINNEAPOLIS, MINN.

Factory of F. Wesel Manufacturing Co.



Henry and Cranberry Streets, Brooklyn, N. Y.

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Printers are successful can be attributed to the fact that they are constantly on the alert for anything "new" in the way of time-saving material, and as the

F. WESEL MANUFACTURING CO.

Is ever to the fore in the bringing out of new and labor-saving appliances for the execution of fine and rapid printing, and as you, kind readers, are doubtless of a progressive turn—not objecting to be on a level with those who

ARE ON TOP OF THE LADDER

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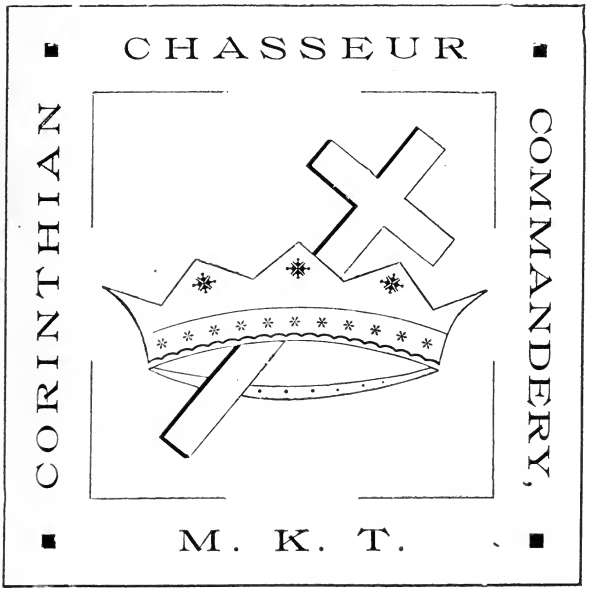
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