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PLATE PRINTING AND DIE STAMPING

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Plate Printing and Die Stamping

HOW TO OPERATE A DEPARTMENT FOR COPPERPLATE AND STEEL-DIE ENGRAVING AND PRINTING





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Introduction

WHILE the type-printing industry continues to grow and expand remarkably in every section of the country, the engraving and plate-printing business is also increasing wonderfully. On every side there is a much greater demand for various specialties of both social and commercial engraving. The public in general has come to appreciate the excellent qualities of engraved printing, whereas a few decades ago only the so-called "exclusive set" were large buyers of engraving, with few exceptions. Business concerns and professional people are now heavy consumers of engraved stationery, for they have recognized the fact that there is selling value in fine engraved printing.

STEEL-PLATE ENGRAVING AND PRINTING

Steel-plate engraving is done for the finest grades of business and social work, such as bank notes, bonds, certificates, diplomas, charters, illustrated designs for calendar backs, letterheads, noteheads, billheads, cards, announcements, and so forth. The steel engraving is sharp, and after the plates have been hardened they may be used for very long runs before showing wear. A steel-engraved plate for a letter heading, for instance, will give one hundred thousand impressions and more, provided the presswork is done right.

Practically all of the lettering on a steel plate is engraved by hand. The shading of characters, cloud effects, tints, etc., are done mechanically on what is called a ruling machine.

Elaborate and intricate borders for bank notes, bonds, certificates, etc., are also made mechanically. That is, the designs are first made intaglio and are afterwards transferred in relief form to small steel cylinders called "rolls." These rolls are then hardened and are placed on a special machine where they stamp continuous border designs, etc., in portions of the steel plates to be printed from. Duplicate plates can be made with the aid of the rolls. Obviously, these steel rolls are very expensive, and are made only by the larger engraving concerns for special use. The smaller engraver can send to one of the larger firms and have borders, tint blocks, etc., made from certain stock rolls. It should be mentioned that the machines used in the making of the rolls are very costly, and that they are used only infrequently. The purpose of the rolls is one of accuracy rather than economy in engraving. It would be impossible to engrave by hand a continuous intricate border, for example, which

How the plate is printed

would be absolutely uniform on all sides. But the rolls make it possible to produce such borders perfectly uniform as they "punch in" the pattern continuously. Of course the rolls will carry and will apply individual designs, such as an eagle, a portrait, etc.; but such designs are made by other processes.

The major portion of all fine plate printing is done by hand on presses built especially for the purpose. The press is usually a crude affair, and its appearance is anything but graceful; yet this machine can turn out beautifully engraved printing, slowly but well. Bank notes, large diplomas and certificates, and government paper money are printed on machines of this character.

The operator inks the plate with a small hand roller which forces the color down into the incisions on the plate. Experience tells just how much ink should be applied to each engraving.

After the plate has been carefully inked the operator takes a wad of cheesecloth and with it wipes off all superfluous color from the surface of the plate, allowing the ink to remain in the crevices.

The operator then lays the palm of his hand in a box of whiting and polishes the plate with the hand containing the whiting. Some of the powder falls into the incisions, but this does no harm in the printing.

How die stamping is produced

Plates of smaller sizes are ordinarily glued to the "plank" or platen of the press, and points are marked on the plate for positioning the stock. Plates of larger size are frequently set upon the platen loose. The stock is laid carefully upon the inked plate; the operator pulls the lever or turns the flywheel, and the sheet and engraved plate pass underneath the "D" roller, around which has been placed the "rigging" (or backing). This concludes the printing operation.

STEEL-DIE STAMPING AND EMBOSSING

Monograms, seals, headings and designs for menus, business cards, stationery forms, etc., come under the title of steel-die stamping and embossing. The engraving is sunk extra deep in small steel blocks of about half an inch in thickness. The work is done either in colors, gold, or other bronzes. By this process greeting cards, menu cards, illustrations and special designs are frequently illuminated in several different colors and bronze. When the form is to be done in a number of colors, a separate die must be cut for each color, of course, and the work must register perfectly.

This class of work is executed on a stamping press instead of on a roller press. A die-stamping press is altogether different from a plate-printing press. The stamping press is operated by means of a lever which

Printing from the die

acts on vertical screws, giving a hammer-like impression, while the plate-printing press has a **D**-shaped roller which gives a rotary impression. The majority of stamping machines used throughout the country are operated by hand levers, although there are numerous power die presses in successful operation.

A brush is used instead of a roller for steel-die embossing, as the crevices to be inked in an embossing die are deeper than in a steel plate. Thus the die is "painted" over with the color or bronze selected.

The die is held firmly in a removable holder called a "chuck." After each inking the operator takes the chuck holding the die in his hand and wipes the face of the die across a pad of paper. This action removes all superfluous ink or bronze.

The chuck and die are slipped into position on the stamping press. Underneath the inked die is a counter (or "male") die made of cardboard. The sheet to be printed is laid in proper position over the counterdie; the operator pulls the lever, and this forces the inked "female" die down over the stock and counterdie, printing and embossing the design with one stroke.

COPPERPLATE ENGRAVING AND PRINTING

Copper being softer to engrave upon than steel, and thus easier to work on, copper plates are used for

Copper for limited quantities

short runs of work, such as calling cards, wedding announcements, invitations, etc. There is no process by which copper plates can be hardened, and the fine lines of the engraving quickly wear away. Nevertheless, copper plates will produce excellent work up to their limited number of impressions, which would be about two thousand. Steel plates can be used for runs longer than two thousand; but obviously visiting cards, wedding invitations and other social work are usually printed in small quantities, and copper plates serve well enough for the purpose. It costs a great deal more to cut a steel plate than it does to engrave a copper plate.

Copperplate printing is produced in practically the same way as is steel-plate printing, on plate presses operated by hand power. For every impression the plate must be inked, wiped and polished by hand.

Equipment

TO MAKE a proper start in the business, the engraving and plate-printing department should be placed in charge of an expert engraver who has a knowledge of presswork as well as engraving. The mechanical equipment of a small engraving plant should include:

> One hand stamping press; One plate printing press; One set of engravers' tools; Stock of inks and bronzes; Whiting, wiping pads, white tissue, etc.

With such an equipment in charge of an expert engraver it should be possible to handle all of the ordinary small commercial and social work which would come to the average engraving house.

Power presses could be added to the department if the business warranted it. It would not be desirable to install a power press in the beginning, as such a machine is expensive to purchase and would necessitate a great deal of work, especially long runs, to keep it in continuous operation.

There are several automatic die and plate presses on the market which have proved very successful. These

Use of engraving machines

machines automatically ink and wipe the plates and dies, the feeding being done by hand. They will produce on an average of from six thousand to eight thousand impressions during an ordinary working day. In the larger plants these machines are used for the production of illuminated greeting cards, stationery, business cards, letterheads, and other work of this class having long runs, and other work which it is not practical to do on hand presses.

Several engraving machines are now on the market, and are used in sections where engravers are scarce. It should be understood that the engraving machine does not do the entire engraving on a plate, but that it outlines patterns for the engraver to finish by hand.

While it is recommended that an expert engraver be employed to manage the affairs of a new shop, it would be possible for an enterprising layman to manage a new plant with capable help, without first employing an expert engraver. In such an instance the plan would be to have all plates engraved by some outside concern. An expert engraver is an artist, and therefore is a high-salaried man, and it would require plenty of good work to keep him profitably employed. There are a number of reliable engraving concerns in each of the larger cities, and any of these is capable of making steel and copper plates on special order for the printer or stationer. Later on, as the amount of business would allow for it, a professional engraver could be engaged, for there are many advantages in having a complete engraving plant absolutely independent of outside assistance.

So far as the presswork of an engraving department is concerned, a bright apprentice could soon handle this part of the business. This does not mean that the presswork is easy to learn, for it has its intricacies and difficulties like all other industrial arts. Nevertheless, the intelligent beginner could readily handle the presswork, while it would be impossible for him to do engraving without first having served as an apprentice under the instruction of experts. Manufacturers of the stamping and plate presses will give instruction in the operation of their machines to purchasers, and this instruction would be of valuable help to the beginner.

As all steel plates and dies should be hardened to preserve their fine lines, a complete engraving plant would embrace a hardening furnace, several of which are on the market. This work, however, could be done by a trade-engraving concern.

Copper plates, steel plates and steel dies, in a full range of sizes, and of standard heights, finished and ready to be engraved upon, can be bought from the regular engravers' supply houses. A complete set of engravers' tools is not expensive, and they may be bought singly or in full sets from the supply dealers, although the journeyman usually has his own set of tools.

Plate-printing and embossing inks, varnishes, driers, etc., are entirely different from the inks, etc., used in type printing. There are a number of reliable manufacturers who supply these materials ready for use.

Die-wiping papers are being made especially for the purpose by leading paper manufacturers. The wiping papers are carried in stock by the dealers in the correct range of sizes.

White tissue paper, used to "slipsheet" all engraved work to be delivered to the buyer, can be bought at any good paper or supply house.

Other accessories, such as wax, glue, felt, blankets, sheeting for die stamping, make-ready knives, inking rollers, sticking soap, tinsel, chemicals, etc., can be bought at any well-stocked supply house.

All things considered, it does not involve a large sum of money to start an engraving and plate-printing department. A few hundred dollars invested in the right styles of machines and accessories will equip a small plant to produce a general line of work.

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Engraving

For the information of those who may not be familiar with the art of engraving steel and copper plates, the following brief explanation is offered:

First, the original design to be engraved is minutely sketched in black or colors, as the case may be. For regular lettering there are "stock" patterns, or painted cards, containing complete alphabets, although many expert engravers can cut hand-lettering rapidly, without the aid of patterns, directly upon the plates.

Second, a sheet of gelatin is laid over the design, or lettering, to be engraved, and with a steel point the engraver traces the subject, "scratching," so to speak, a duplicate of the design upon the gelatin.

Third, the gelatin sheet is powdered with vermilion, which adheres to the portions scratched by the tool.

Fourth, the face of the blank steel or copper plate is waxed, and the gelatin sheet is laid upon the surface of the plate in reversed position, which of course transfers the designing "backwards." The back of the gelatin is then rubbed with a flat tool which transfers the vermilion pattern to the waxed plate, thus forming a ground, or pattern, for the engraving.

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Fifth, portions of the plate which are not to be etched are touched up with a substance which is acidproof.

Sixth, acid is now applied to the plate, which "bites" out the heavier marks formed by the vermilion ground. The depth of the "biting" depends upon the length of time the acid is allowed to work.

Seventh, all of the fine engraving is then completed by handwork with a graver. If larger letters, etc., are to be shaded, or if tints are to be added, this is done on a ruling machine, an instrument containing a diamond point which traces delicate lines of various tones. This is the machine used to produce those beautiful "cloud" and "shadow" effects so noticeable on large engraved calendar backs, business letterheads, certificates and the like. When the lines traced by the ruling machine are close together, there is a dark-gray tone; when the lines are farther apart, the gray is lighter. Crossing the lines gives a fine dot effect, and so forth. The ruling machine does not engrave, and etching is necessary to finish the work.

Eighth, if the plate or die is of steel, it should be casehardened. This is done by placing the steel in a cyanide bath. It requires about fifteen minutes to caseharden the die or plate, and this action will preserve all the fine lines of the engraving. There are several hardening furnaces upon the market built expressly for the purpose.

There is no process by which copper plates as a whole can be hardened, but they can be steel-faced or nickel-plated.

THE GEOMETRICAL LATHE

These machines can be found in only the larger engraving plants. They are used principally for cutting special designs upon plates, which designs are afterwards transferred in relief form to small steel cylinders termed "rolls." For example, the rolls are utilized for pressing original and continuous borders for bank notes, bonds, certificates, etc., into regular steel plates.

The design to be engraved in the plate is cut in sharp relief upon the surface of the roll. With the aid of another machine the roll presses its characters into the soft steel plate, which is subsequently hardened. In the cases of continuous borders, and designs that are to be duplicated on a steel plate in several places, the advantages of the rolls are apparent. The work of the lathe is original and absolutely accurate, and in a great measure it prevents the counterfeiting of paper money. The pantograph instrument is also used in connection with making designs for steel plates.

Engravers owning geometrical lathes will attend to

The master engraving plate

orders from the smaller engraving establishments for certain kinds of lathe and roll work. The smaller engraver can send to the owners of lathes and rolls and have borders, etc., added to partly engraved plates.

A geometrical lathe is a very valuable machine, and only an expert is capable of operating it efficiently. The lathe is used only on rare occasions. In even the larger plants the lathe is at intervals idle for more than a year. The original work accomplished by the geometrical lathe for bank notes and certificates, for example, could not be duplicated by handwork.

It should be mentioned that rolls containing designs in relief of ornaments, figures, tint backgrounds, etc., are also made for special purposes.

ENGRAVING MACHINES

There are several so-called engraving machines that are very efficient for outlining lettering and other ordinary work on steel and copper plates.

For lettering, the engraving machine works from a master plate which contains a complete alphabet of the lettering selected. The various characters of the alphabet have been stamped intaglio in the master plate. This plate is used as a pattern, instead of making a gelatin pattern. The characters on the master plate are large, and the engraving machine can be so

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adjusted that the letters may be reduced to any smaller size desired when transferred to the steel or



An engraving machine

copper plate. An individual master plate is essential for each style of lettering.

Uses of the engraving machine

After the engraving machine has outlined with a diamond point the pattern on the steel or copper plate, the plate is engraved by hand, or is treated and given the acid "bite" the same as though a vermilion ground had been applied. All of the fine engraving must still be done by hand; nevertheless, the engraving machine will save considerable time in any plant where there is a great deal of lettering to do. It should be understood that the machine will outline large lettering as well as small. Expanded or condensed lettering can also be done. From one of the master plates lettering can be done in a full range of sizes. The engraving machine will also do work similar to that of a ruling machine.

STEEL-DIE ENGRAVING

Regular engraving on steel dies is done in the same manner as engraving on steel and copper plates. The engraving is deeper, however, as both printing and embossing are produced from steel dies.

The designs are made on gelatin sheets, and are transferred to the face of the dies the same as for steel and copper plates. Certain work can be outlined on the dies by the engraving machine.

Figure dies—those containing embossed reproductions of faces and forms—are engraved with the aid of a special machine. The model for the face or figure

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is first sculptured and approved. A reduction of the design is then sunk in the die. Some art engravers specialize in figure die work, and heads of noted personages, such as Washington and Lincoln, are carried in stock. Other art engravers make a specialty of heraldic designing, and are experts on the correct forms of crests, coats of arms, monograms, etc. Still other engravers specialize on bookplates, steel process color plates, etc.; and it is the custom for the ordinary engravers having orders for heraldic designs and other special engraving to give the work to such experts.

Steel dies for illuminated designs on menus, cards, program covers, greeting cards, monograms and general commercial lines are all engraved by hand from original sketches. These sketches are painted in rich colors by skilled artists, and gelatin patterns are then made. A separate die is cut for each color, and of course the register of each die must be exact.

Stock dies of one-letter and two-letter monograms are obtainable and may be found useful in doing a general run of social stationery where the customers do not wish to buy original dies.

CORRECTIONS ON COPPER PLATES

On numerous occasions it is necessary to make corrections in the engraved matter on used copper plates.

Correcting a plate

Perhaps a date line is to be changed for that of some other; a street address is to be replaced by another on account of the customer's moving, and so forth.

In such instances the wording to be corrected is scraped from the surface of the plate, and the plate is then pounded up from the back. After all of the engraving in the spot has been eliminated through the scraping and hammering up, the place is leveled and polished. Afterwards the new engraving is applied. Sometimes a worn copper plate can be re-engraved.

It is also possible to make alterations in the inscriptions on steel plates and steel dies. The latter, however, must be drilled out on the back, and in such cases special machine work is essential.

SCREEN FOR NEUTRALIZING LIGHT

The engraver works in front of and facing a window, usually under a north light. Over his head, and running to the sill of the window, on an angle of about forty-five degrees, is a screen covered with white linen, or artists' cloth. This screen serves to neutralize the light, so that sunlight is not too bright nor cloudy atmosphere too dark.

Printing

ALTHOUGH the hand steel- and copper-plate printing presses in general use are of ancient design, and are anything but beautiful in appearance, it is a fact that these hand machines, under the direction of efficient operators, are producing the finest engraved printing. For many years hand presses were in service in the Bureau of Engraving and Printing at Washington, and the quality of Uncle Sam's engraving and printing is well known.

For some time to come hand plate and die presses will be in general commercial use throughout the world, therefore it would seem well to devote some space to a few practical hints concerning the operation of the hand machines. It should be understood that the hints offered are for the apprentice, or beginner.

COPPERPLATE PRESSWORK

As an aid in printing properly, the edges of the face of every plate should be slightly beveled or rounded. While the majority of plates that come to the press operator have their edges rounded, some plates not having this treatment are received. The operator will

Nickel-facing the plate

save time by having at least the sharp edges of such plates smoothed down with a fine file or emery cloth.

When there is to be an extra-long run on a copper



Steelplate or copperplate printing press

plate, it is a good plan to have it steel-faced or nickelplated; this facing will lessen the wear on the plate, yet it will not fill up the fine hair lines of the engraving in the least. Experts claim that as many as five thousand perfect impressions can be obtained from a faced

Preparing for printing

copper plate, and that a plate not faced will not ordinarily last for more than two thousand impressions.

MAKE-READY

Most important of all is to have the "D" roller adjusted so that the impression will be uniformly even. If the "D" roller is lower at one end than at the other, sheets are likely to move slightly from their position on the plate during the printing operation. Blurring in the printing is often caused by the "D" roller not being adjusted accurately.

Have the "rigging" (or tympan) around the "D" roller tight and smooth. Wrinkles and "bellies" in the rigging have a great deal to do with slurring in printing, and they lessen the effects of good make-ready.

Considerable make-ready is not essential for shortrun orders such as visiting cards, at-home cards, wedding invitations, business cards, etc. The "spotting up" is done in this way: Two impressions are pulled on manila or kid-finished note paper. From one sheet all of the printed lines are cut out with a make-ready knife, and the cut-out pieces are then pasted in true position over the printed characters on the second sheet. This second sheet is then pasted in back of the copper plate, in such a position that the underlays will be directly under each of the engraved lines. This make-ready will cause the intaglio places in the plate to print more distinctly and easily than otherwise.

After the underlays have been applied to the back of the plate, a third impression is taken on a sheet of stock of a weight and texture somewhat like that to be printed for the order. If any weak spots show on this third sheet, they are "spotted up" with small pieces of paper on the make-ready sheet in back of the plate. If the plate is of good workmanship, and fairly even, but little of this secondary spotting up will be necessary.

In cases of copper plates which contain much fine detail work, flourishing and the like, delicate and intricate patching will often be required before the makeready is complete. Frequently such patching up is done with very thin paper to obtain certain results. A small piece of french-folio in the right place will accomplish wonders, but there is such a thing as putting on too much make-ready, which would be worse than having no patching at all. The right idea is to apply just a little at a time until the desired results are obtained. Practice and experience will teach the careful operator the correct principles of make-ready.

The plate is now laid in position on the "plank" (or platen) of the press. The best position for a plate, of course, is about the center of the plank. On short runs it is not necessary to glue the plate in position.
As a copper plate is usually of slightly larger surface than the size of the stock to be printed, the gage marks for positioning the stock must be made on the surface of the copper plate. These guide marks are made merely by punching three small "holes" with a sharp-pointed tool. The feeding is done by laying the stock over the plate, using the points for guide marks.

INKING, WIPING AND POLISHING

The plate is inked with a small hand roller made especially for plate printing. The roller is soft, and as it is passed vigorously over the surface of the plate the ink is deposited in all of the engraved crevices. Before the first inking, pass a soft, clean, dry brush over the plate to clear it of any small "hairs" of metal.

After the plate has been inked, take a small "ball" of cheesecloth and with it wipe the face of the plate of all color. The wiping is done rapidly but lightly, so that the ink is removed only from the surface of the plate. By gradually changing the foldings of the wiping cloth it may be made to serve for numerous wipings.

On the right-hand side of the press is an extension table containing the inking apparatus and a box of whiting. After the plate has been wiped the operator lays his hand in the box of whiting, then with the palm, covered with the whiting, he polishes the plate surface, freeing it of any ink stain possibly remaining after the wiping. To insure clean printing, all copper (as well as steel) plates must be polished with the whiting.

Now the sheet to be printed is laid in position on the plate, and the whole is passed under the "D" roller, completing the printing operation.

STEEL-PLATE PRESSWORK

This is done in practically the same manner as copperplate printing, on the same kind of machines having a "D" roller, only some of the presses used for steel-plate printing are sufficiently large and powerful to take a plate up to forty-five inches wide.

Making ready on steel plates is more intricate and tedious than on copper plates for the following reasons: Steel plates are usually larger and thicker; they frequently contain fine shadings, pictorial effects, delicate line work, ornamentation, etc. All of these features must be cared for expertly in the make-ready. The patching up is done on the back of the steel plates with heavy paper, and even with cardboard; and, remarkable as it may seem, the proper patching will work wonderful effects, even through a thick, heavy steel plate. A large plate will print slightly "hollow" in the center, and this can be remedied by building up on the back with graduated ovals of paper.

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Steel-die stamping

When a steel plate contains considerable fine ruling, exceedingly beautiful printing can be obtained by having the stock dampened. This procedure is very advantageous for diplomas, certificates, and other work, printed on parchment or a heavy bond paper.

STEEL-DIE PRESSWORK

Steel-die stamping and embossing are done on both hand and power stamping presses, although the major portion of die work is being produced on hand machines. It should be understood that a stamping press is altogether different from a plate-printing press. The plate-printing machines have a "D" roller which gives a rotary impression, while the stamping machines are operated by levers which act upon vertical screws giving a hammerlike impression.

The steel dies can be worked from the bottom (face up) or from the top (face down), as preferred. The majority of pressmen seem to prefer the top position for the die.

The die is held in place by a small metal holder called a "chuck." This chuck is removable from the machine, being taken out by the operator after each impression for re-inking and wiping.

The finest quality of embossing for business and social purposes is done on the hand stamping presses.

The stamping press

Illuminated designs for monograms, coats of arms, menu headings, business cards, programs, etc., are all produced on hand machines, and the registering of the various colorings is absolutely accurate. But it should



Steel-die stamping press

be understood that a trained operator is necessary to produce such art work successfully. A first-class makeready is essential for each good die-stamping job.

MAKING THE COUNTERDIE

The condition of the counter (or "male") die has a great deal to do with the success of printing and embossing. The counter must be firm enough to force the stock into the intaglio places of the steel die, and yet the counter must be to a certain extent resilient.

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Many pressmen use ordinary strawboard for the foundation of the counter, covering this with a piece of bristol board, trimming, and then covering all with a piece of rubber sheeting. Such a counter is good enough for an ordinary job, but for a long run of particular printing and embossing the counter building described in the following paragraphs will be found to accomplish the best results.

The foundation is made of medium-weight tar board. This should be of about the full size of the die, and should be glued firmly to the counter-block. Fish glue, or elastic glue, will do better than other pastes for this purpose.

Over the tar board is then glued a piece of wedding bristol, or any variety of stock having the soft kid finish. The counter is now struck a number of times with the steel (or "female") die, bringing out the subject in distinct relief. The detail is worked up on the counterdie by slow, gradual blows, rather than by rapid and powerful blows. After a dozen or so impressions have been taken on the counter, if any weak or low places show in the relief, these are "spotted up" with small pieces of soft paper, taking care not to use too much glue or paste.

The details of the counterdie having been made sharp and distinct, the steel die is inked and wiped, and an

Use of the counterdie

impression is taken in color. Then with a sharp knife the wedding bristol is trimmed away, cutting close to the embossed places. The trimming should be done on a *bevel* so that the descent to the tar-board base will not be abrupt. Now with a piece of emery paper the beveled portions are smoothed nicely, so that no rough countermarks will show in the printing.

The counter is next completely covered with a top sheet of soft stock such as kid-finished note paper, applying just enough glue or paste to cause the top sheet to adhere firmly.

Over all is placed a piece of rubber sheeting, leather, or oilcloth of the kind used in the average engraving plant. Adjust the pressure of the press to suit the weight of the stock to be printed, and the stamping is then ready to proceed with.

In the cases of extra-deep dies, heavier counterdies are essential. These are made the same as is the counterdie described in the foregoing, with the exception that several layers of the wedding bristol are applied. As each layer is pounded up and the flat parts cut away, another layer is put on, and so on until the male die is perfect in all details. For a deeply sunken die, a counter of three or four plies is better than a counter made of a single piece of heavy cardboard.

When it is desired that no countermarks whatever

shall show on the back of stock to be printed and embossed, instead of trimming the wedding bristol close to the embossed places, trim within a few "hairs" of the edges of the die (on all sides), and then bevel the sharp edges of the counterdie. Afterwards smooth the edges nicely with emery paper. For this kind of counter expert pressmen prefer black English moleskin for the covering instead of the ordinary rubber sheeting.

Some pressmen make the foundation for the counterdie of mat board, or bookbinders' board. Some also make it of heavy leather. Any of these materials will produce good results if the work is done carefully.

Should the ink squirt, or "spit," as the first sheets of the stock are printed, something is wrong with the counterdie. It may be that the trimming has been done too close to the embossing, thus permitting the ink to squeeze out of the die under pressure; or it may be that the relief of the counter is too high.

To eliminate squirting, first raise the top sheeting and inspect the face of the counterdie underneath. If the detail is broken on account of trimming too close, patch up the broken places with pieces of kid-finished paper, or tear off the top layer of cardboard, replacing it with another. Work up the detail with the steel die again, and trim carefully, leaving a *bevel*.

If no broken places are revealed, it is evident that

Inking and wiping

the "spitting" is caused by the male die being too high. Reduce the height of the detail in relief by rubbing over it with fine emery paper. Replace the top sheeting and the trouble will no doubt cease.

INKING AND WIPING THE DIES

On hand stamping presses the dies must be removed for re-inking and wiping after every impression. Each time the die must be replaced in its position on the press carefully, else it would not register with the counterdie, and the latter would be crushed.

The color is applied with a brush, the intaglio places being painted over so that all are covered with the ink. The operator must become proficient in applying the right amount of color for the occasion. The die must not be "filled up," and yet all of the hollows are to be perfectly covered. A little patience and practice will quickly overcome any difficulties in this direction.

After the die has been inked the face of it is wiped across a pad of paper. In some plants ordinary old newspapers are utilized for wiping dies, although the standard wiping paper is better for the purpose on account of its texture, and because it is clean.

Comparatively few engravers mix their own colors in these days, as all varieties of plate-printing ink, ready for use, can be bought economically from the manufacturers. Dammar varnish is used to add a high luster to embossing inks. Special drier and varnishes should be purchased from the engraving-ink makers. It would not be a good plan to add foreign substances to inks other than drier and varnish, and in most cases the inks require no "doctoring."

Feeding guides are formed of common pins, although there are patented gages which can be bought at the supply houses. For close-register work the guides must be set so that they will not sway or move in the least. When several colors are to be printed, it is important that the guides for each color strike the same positions on the stock for each consecutive printing.

STAMPING IN GOLD, SILVER OR BRONZE

A heavy mixture of the gold, silver or bronze ink is used. The die is inked and wiped in the same manner as with black or colored inks.

After the printed sheets are thoroughly dry, they are run through the press again in close register the steel die in this instance requiring no inking or wiping. This is called burnishing. The result will be even more brilliant if a strip of tinsel or copper foil is laid across the face of the die and held securely in place. The second "blank" impression, striking in the intaglio tinsel or foil, polishes the printed design beautifully. All

Retouching and slipsheeting

gold, silver and bronze stamping should have the burnishing, as otherwise the printing and embossing will be "sandy" and dull. This second stamping also makes the design work out more sharp and distinct.

RETOUCHING IMPERFECT STAMPING

Even with the most efficient operators, some sheets will be imperfectly printed, due to improper inking of the die. It is not a good practice to run such sheets through the press again. The better way is to "paint" in the broken lines with a small camel's-hair brush, using merely a touch of regular ink.

The "painting" is not so difficult as it may seem, and through that method spoilage can be held down to the minimum.

SLIPSHEETING

With few exceptions, all printing produced from copper plates, steel plates and steel dies should be slipsheeted as the product comes from the presses. Slipsheeting means the placing of blank sheets of common paper between every two printed sheets of stock to prevent the inked characters from marking on the back of the stock laid over it. Offset occurs on the slipsheets, of course, but this keeps the regular stock from marking. Small piles of the slipsheeted work are laid away

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in trays, or racks, to dry. When the printing is dry the slipsheets are removed, to be used again.

SLIPSHEETING WITH TISSUE PAPER

Before delivering to the customer, all plate printing and embossing is slipsheeted with white tissue paper. In large establishments this work is done in a separate department by experienced girls. The usual method is to lay a strip of tissue between the printed surfaces of two sheets of product, then place the backs of two printed sheets together without tissue between, and so on. This saves time as well as tissue.

OPERATION OF POWER DIE AND PLATE PRESSES

Power die and plate presses are in successful operation in many of the larger engraving plants. Practically the same classes of ordinary plate and die work can be done on the power machines as can be produced on the hand machines. However, the power presses will not take plates or dies larger than six by ten inches.

The power presses are being used mainly for long runs of illuminated stationery, business cards and letterheads, colored greeting cards, etc. They will produce about one thousand impressions an hour. The inking and wiping are done automatically, but all of the feeding is done by hand. These machines will handle

Details of operation

copper plates as well as steel plates and steel dies. It is understood, though, that the copper plates will not serve for a very large number of impressions.

Make-ready on the power machines is done in much the same way as on the hand presses, except that very little patching is done on the backs of plates. Counters for steel dies are made like those for the hand embossing presses. Steel plates for business cards, and steel dies for greeting cards (for example), can be run four (4) together on a sheet, the stock being cut apart afterwards.

The edges of all plates and dies should be rounded so that the wiping paper will not tear when passing.

The inking rollers and the fountain should be washed after the close of each day's work. If the color is allowed to cake on the rollers, it will be impossible to produce first-class presswork.

A power machine should be carefully oiled every day, and it would not be amiss to oil it twice during a day—in the morning before starting, and after lunch.

Through devoting study to the wiping apparatus, the pressman can save a great deal of wiping material, as some plates or dies will necessitate less wiping than others; and experience will determine how to set the wiping mechanism for each job.

In a like manner, careful attention should be paid to

the amount of ink to be used for each job, for it is possible to waste considerable ink on a power machine.



Power die and plate press

Excessive inking may not cause imperfect printing, as the superfluous color is carried away on the wiping paper, but this causes a wastage of both ink and wiping material. Set the fountain at the beginning of the run so that there will be a slight feed of ink, then gradually increase the flow until the supply is just sufficient.

When stopping a press, it should be done so that the stop is made immediately after an impression has been taken, as this leaves the plate or die clear of color.

Although common pins, adjustable gages and type quads are used for feeding guides, quads are preferable, as they can be glued down firmly. For close-register work they should be covered with gummed paper to prevent stock slipping under guides.

Printing and embossing inks, both gloss and dull finish, are being especially made for power presses by engraving-ink manufacturers. It would be well to buy these inks ready for use rather than to have the colors mixed in the plant. Many operators mix their own gold, silver and bronzes for each order, but they find it more economical to use black and colored inks carried in stock from the ink specialists.

Extremely deep steel dies cannot be run on power presses, for the reason that the ink must be deposited in the crevices by hand with the aid of a brush.

It would not be economical to print very short runs on power presses, and plates larger than six by ten inches must be printed on "D"-roller plate presses.

after the first day of Soplander Harrisburg, Donny framic 1100. Vardh Second Abrech At Mame

Styles

UNDER the heading of commercial engraving and printing there are listed such articles as business cards, letterheads, billheads, physicians' prescription blanks, announcements, certificates, advertising calendars and other work of a business nature.

Articles listed under the head of social engraving include wedding invitations, marriage announcements, church, at-home and calling cards, guest, dance and dinner cards, birth announcements, greeting cards, betrothal cards, tea cards, private stationery, condolence acknowledgments, children's invitations, houseparty invitations, bookplates, heraldry, etc.

The style of engraving for wedding invitations may be either plain script, French script, shaded Old English, or Astor Text. Plain script is preferred in most cases. When the wedding is to be a church affair, the invitation should be accompanied by a card of admission to the church. With the invitation should also be inclosed the at-home card of the bride and groom, giving the address of their future residence and the date after which they wish to receive friends.

There are really no set rules for the sizes and paper

610 Hast First Street Wil Cily, Ronny Inania . We wond. Mrs. Walter Wade, Sterens Will to at home after the first of fully

Kinds of lettering

stocks for calling cards, although a fine white bristol board, of medium weight, and with a dull finish, is the stock most generally used. The average size for a gentleman's personal card as used on the example shown here is $3\frac{1}{8}x1\frac{1}{2}$ inches. The sizes generally used for ladies' cards are larger, as will also be seen by the reproductions.

Roman, script and Old English lettering are all fashionable types for visiting cards, and it is permissible for a person to select other styles of lettering.

For other varieties of social engraving such as birth announcements, engagement announcements, dance, dinner and tea cards, invitations, etc., plain script, French script, roman and Old English letterings are all being used. (See frontispiece.)

Business cards and business stationery are being engraved in many styles of lettering. Plain faces such as roman, gothic and plain script, however, are used more for business purposes because such faces are easier to read than intricate lettering like Old English.

For personal note paper, writing cards and envelopes, it is the custom for the buyer to choose his or her own exclusive style of monogram design. The design should be distinctive, yet simple and beautiful. The stamping may be done in black or any standard color, or in gold, silver or bronze. Expensive crests

Brs. William B.Sibley

Hiss Theres

719 Spruce Street

and monograms are illuminated in a number of harmonious colors. Stock dies may be used with good effects for many orders of monogramed stationery.

Gilt-edged stationery is being used in connection with monograms to some extent, also stationery with borders of delicate tints; but it goes without saying that plain white note paper of the highest quality will always be in vogue.

For wedding invitations, announcements, etc., the embossed flat panel effect (no color) is popular. The engraved form is centered in the panel, and liberal margin is allowed.

After all has been said on the subject, the phrase "correct forms of social and commercial engraving" simply means good taste and common sense.

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Mr. Lames C. Quitwieler

Miss Madeleine Steele

Selling

To sell the engraved product under the most favorable circumstances, the printer should have a neat, comfortable salesroom. Herein should be arranged glass cases containing specimens of social and business engraving, and the general furnishings should be in good taste. Upon the walls should be hung frames exhibiting fine samples of larger work such as school and college diplomas, certificates, bonds, etc. Even though the printer seldom receives orders for such things, it would be well to show specimens of them, as exhibits of this class add a "quality atmosphere" to the place. It is also a good idea to show attractive samples of heraldic designs, monograms, crests, menu headings, bookplates, calendar backs, business stationery, etc. Displays of rich illuminated work add touches of color and enhance the beauty of the salesroom. Keep all specimens under glass, not only for the purpose of keeping them clean, but also to indicate to customers that you consider your work valuable enough to care for it in that way.

Buyers of the best engraved product include many members of the "smart set"—persons who are accus-

The salesroom

tomed to the nice things of life; therefore the printer should have his salesroom furnished artistically. It need not be a large room, and it need not be fitted out expensively, but every article in it should be good. There should be several comfortable chairs; a writing table for the use of visitors; a table for order-taking; and the floor should be covered with a rug of fair quality. Additions like an umbrella rack, a big clock, etc., are worth while. The papering of the room should be done in plain material of gray-green or gray-brown. Either color will set off the hangings and furniture to excellent advantage.

In such an environment it is possible to influence the sale of more goods than in surroundings less pleasing. It should be remembered that the public is in the habit of going personally to the engraver to place orders much in the manner as a person would go to the photographic studio or painter's studio for portraits. The dignity of the business should not be lowered by having a mean, commonplace salesroom. In any business it pays to receive visitors politely, and to make them feel welcome and comfortable. Do not allow the buyer of engraving to stand, perhaps for an hour, while giving an intricate order. Give him or her an easy seat. Give service, and adjust your prices so as to cover the cost of giving good service.

The salesman's work

With the caller comfortably seated, there is opportunity for the live salesman to "talk up" the qualities of engraved specialties other than those the customer came to order. There is chance to suggest that an individual bookplate, or a personal monogram die (for example), would be an excellent thing for the customer to own in addition to a copper plate for visiting cards. This is the way to create new business while the customer is in a receptive mood.

The salesman of engraving should thoroughly study the practical side of the art. It is not essential that he be an expert engraver, but certainly he should know how the technical details of the business are handled, and he should be able to explain technical matters to the customer, if called upon to do so. For instance, a layman may want to know the difference between an engraved plate and a lithographic stone, or he may desire to understand how a plate for a bank note is made, etc. All of this kind of information the salesman should be able to give in a clear, understandable manner.

Whenever possible the salesman should explain to customers the many reasons why the engraved product is seemingly costly. Explain how carefully the engraving must be done; how expertly the plate inking, wiping and polishing must be performed; and how every piece of printing must be slipsheeted. Give some idea as to the great amount of time the engraver must devote to the cutting of a steel die. Always show specimens of the fine work first, then, if necessary, descend gradually to the ordinary samples. Always talk quality, and keep the buyer's mind concentrated upon the quality idea. Never advocate low prices.

On occasions when the printer is executing particularly fine work, overruns should be made of the jobs to be used as specimens. Present such specimens to certain customers who may have expressed their appreciation of art in engraving. Such gifts will frequently lead up to profitable business. Fine samples cost money, but they are the engraver's most economical and most effective "salesmen."

A printer located on the ground floor of a building which has show windows is of course in a better position to sell engraved work to the public in general than is the printer otherwise situated. The show windows should be trimmed attractively with specimens of the best engraved product, and there should be frequent changes in the display. During one month could be shown an exclusive exhibit of illuminated work. During another month a display of business stationery could be made. Fine social-work specimens, such as wedding invitations, dance, dinner and tea cards, announcements, etc., could comprise another distinctive showing. Greeting cards could form another, and so on. It would not be advisable to exhibit all classes of plate printing and die stamping at one time. The modern idea in window trimming is to demonstrate one specialty at a time.

Where the engraver is located on the upper floors of a building, he should arrange to have specimens of his work framed and hung in the entryway. It might also be practicable in many instances to have a showcase, containing samples, set out on the sidewalk.

"Industrial exhibits" should prove to be a good form of advertising for printer-engravers having large show windows. For a period an expert works in the window engraving steel and copper plates before the eye of the public. This exhibit is followed by one demonstrating presswork. A "D"-roller press or a stamping press is installed in the window, and the public can thus see exactly how the plate printing or embossing is done. "Industrial exhibits" of this character attract very wide attention, and are of educational value to the people. That such exhibits are the means of winning many new customers for the engraver is evident. The public is always interested in an out-of-the-ordinary window attraction, and folks will travel from a distance to see an engraver at work or a plate press in operation.

The printer should make it a practice to take the

address of every person who calls to order engraving. In this way a substantial mailing list of patrons is compiled. At intervals advertising matter concerning engraving specialties should be mailed to all persons on the list. Through this method the printer keeps in touch with his customers, and numerous repeat orders, as well as new orders, are gained.

Many engravers are using newspaper display advertising with good results. It would be poor business policy to offer cut-rate prices in newspaper advertising, however, for the class of people using the engraved product is interested more in quality than in "bargains." Engravers in all of their publicity should talk about the excellence of their work. Mention the fact that refined men and women use first-grade engraving. Remark also that fine social engraving is as important in polite circles as correct dress. This is judicious advertising, and it will bring profitable returns to the advertiser.

If prices are quoted, let them be fair prices, and not so low as to eliminate profits.

Large engraving firms, doing a national mail-order business, have derived good results through advertising in the classified columns of the popular magazines.

Certainly the engraver should keep his name and business before the public eye as constantly as other 50

successful business men in other lines are doing. Judicious advertising has aided all of the larger engraving concerns in gaining many new customers, and the right kind of publicity will also help the smaller engravers to build up business.

Prices

THE costs and retail selling prices of engraving and printing vary somewhat in every city. The reasons for this are that materials and labor cost more in some sections than in others. Thus, the best that can be done in this article is to quote the average costs and retail prices in force in the larger cities. Every employing engraver should have an efficient cost system, which will indicate what the cost of his production is precisely. Everything should be charged for at a rate bearing a fair margin of profit. For example, do not let the customer have the stock at actual cost, as many printers and engravers do. Charge, say, twenty-five per cent additional for handling the stock. This is worth at least twenty-five per cent, as at first your money is invested in the stock; then it costs something to have the stock counted, carried, wrapped and delivered. Consider, further, that the paper stock used in the engraving art is usually of the finest quality, and of a nature which will soil easily, thus requiring more careful handling than common stock. To this should of course be added profit on the stock of, say, twentyfive per cent on small orders, as the amount is nominal.

In an interesting article in the *Engravers' Bulletin*, Alfred E. Vose writes concerning costs:

Reports from twenty-five firms show that the average hour cost of the journeyman engraver's time, including overhead expense and metal used, is \$1.15. This would be divided about as follows: Wages, 70 cents; overhead, 25 cents; and metal, 20 cents. The output per hour on card and wedding work was shown to be as follows: Script, 62 letters; Gothic (or block), 31 letters; Black Old English, 26 letters; Roman, 22 letters; Shaded Old English, 19 letters; Shaded Roman, 15 letters. In order to realize \$1.50 per hour, which was conceded to be a fair trade price, it would be necessary to make the following charges per letter: Script, 21/2 cents; Gothic (or block), 5 cents; Black Old English, 6 cents; Black Roman, 7 cents; Shaded Old English, 8 cents; Shaded Roman, 10 cents. The average one-line calling-card plate contains eighteen letters and using the above basis would be worth, in Script, 45 cents; Gothic (or block), 90 cents; Black Old English, \$1.08; Black Roman, \$1.26; Shaded Old English, \$1.44; Shaded Roman, \$1.80. Wedding plates average twentytwo letters per line, which would cost, in Script, 55 cents; Gothic (or block), \$1.10; Black Old English, \$1.32; Black Roman, \$1.54; Shaded Old English, \$1.76; and Shaded Roman, \$2.20.

There has been a strong movement among the engravers for several years to change the standard of charging from the line to the letter basis. You will realize the justice of this more fully if you will stop to consider that some name plates have less than ten letters, while others run up in the vicinity of thirty. A fiveline business plate in one case may have fifty letters, and in another over one hundred. We feel positive if the letter basis were once adopted it would prove very satisfactory.

Cutting on steel plates or dies naturally requires quite a little more time than on copper and is worth proportionately more. It must also be kept in mind that the costs given are based on the full time of forty-eight hours per week, and any lost time would make more or less of an increase.

Plate printing is a slow process, and the output is limited. A man with a feeder can turn out from twelve to fifteen hundred cards per day. The average hour cost in this department is about seventy-eight cents. This would make the cost of printing one hundred cards forty-two cents; adding the stock to this would make the net cost about fifty-two cents. The prevailing price to the trade is approximately sixty-five cents. There is an extra cost of five cents for omitting a line or where the card overlaps one end of the plate; ten cents extra where two sides or ends overlap. An extra charge is also made for printing in any color except black, and is determined by the amount of time required. Business cards require a little longer time in printing and cost about ten cents per hundred more. Wedding sheets and cards require still longer time, and the cost goes up in proportion to the size.

In the hand-stamping department the hour cost will average fifty cents. The time required to set up an ordinary monogram or address die and stamp one quire in color is twenty minutes, and costs seventeen cents. The set up and stamping of five quires would take about one hour and cost fifty cents. The average daily output of an operator is from forty to fifty quires. These figures show the fallacy of stamping single quires at seven and eight cents, and making the customer a present of ten cents, in addition to the labor. Bronze and illuminated work all take extra time, and the price should be based on the hour cost.

Power stamping has developed and increased wonderfully in the past ten years. The presses have been perfected, and almost any design up to five by eight inches can be handled satisfactorily. The hour cost in this department is from \$1.35 to \$1.50 for small, and \$1.75 to \$2 for large presses. The time required in setting up a small die and getting the press ready to run is about one hour; the larger dies require from one and one-half to two

hours. This fact would explain the seemingly high price for small quantities, as this entire make-ready time must be included in a one-thousand run, while it is spread out pretty thin in a run of ten to twenty thousand. The ink and wiping paper used on a small die do not cost a great deal, while a full letterhead die will usually average over one pound of ink for each thousand sheets. The scale of prices for this class of work is based first on the size of the die, and second on the quantity. The trade price for running a small die not over one by three inches is three dollars; this increases through the different sizes up to a full letterhead die, which is \$4.50. A ten-thousand run figures two dollars per thousand for the smaller size and three dollars per thousand for the larger. These presses run at a speed of one thousand to fifteen hundred impressions per hour, but the average net production would not be over five to six thousand impressions per day.

RETAIL PRICES OF VISITING CARDS

A large Eastern engraving establishment enjoying the reputation of being engravers and printers for persons of prominence in the social set, quotes retail prices for visiting cards as follows:

Engraving

Astor Text, one line, not exceeding fifteen letters	5.		\$3.00
Engraving each extra letter			.15
Engraving (Script) calling plates, name only .			1.00
Mr. and Mrs. (Script) plate, name only			1.50
Address or day, per line			.50
Engraving facsimile autograph			1.50
Gothic (or block) letter plate, name only			1.50
Address or day, per line			1.00
Roman-letter plate, name only			2.00
Address or day, per line			1.25

Prices of visiting cards

Engraving (continued)

Black Old English plate, name only	•	 	\$2.50
Address or day, per line			1.50
Shaded Old English plate, name only		 	3.00
Address or day, per line			2.00
Shaded Roman plate, name only		 	3.00
Address or day, per line			2.00
Black French plate, name only			3.00
Address or day, per line		 	2.00
Shaded French plate, name only		 	3.50
Address or day, per line		 	2.50
Erasing address, per line	• •	 	.25
Adding address, per line (Script)	•	 	.50
Adding address, per line (Gothic, or block)			1.00
Adding address, per line (Roman)		 	1.25
Adding address, per line (Black Old English)		 	1.50
Adding address, per line (Shaded Old English)	 	2.00
Adding address, per line (Shaded Roman) .	•	 	2.00

RETAIL PRICES OF WEDDING INVITATIONS

Printing

Printing	cards	\mathbf{from}	plate,	pack	of f	ifty	•	•	•	•	•	\$0.75
Printing	cards	from	plate,	, pack	of	one	hu	ndı	red		•	1.00

The engraving concern we have referred to quotes prices for one hundred wedding invitations, with two sets of envelopes, engraved in plain script, from \$14 to \$16, according to number of lines engraved; \$4.75 for each additional hundred; \$1 per hundred extra for panel effect.

Prices for invitations in other letterings, such as Astor Text, Black Old English, Shaded Old English, etc., would cost, of course, considerably higher. The prices would be based on the cost of cutting each line or letter.

Prices to be charged for other varieties of social engraving such as announcements, church cards, athome cards, etc., should be based on the cost of letter cutting, the stock, the presswork, and general expense items. It will be necessary to charge a higher rate for steel-plate engraving than for copper-plate engraving.

PRICES FOR COMMERCIAL WORK

There are great variations in the costs of cutting steel plates and steel dies for general commercial engraving. For example, it may cost twenty-five dollars to engrave one plate, and to cut an intricate plate, containing much shading, may cost several hundred dollars. It is difficult to give estimates on such work, and the safest plan would be to charge the customer for the actual time involved after the plate has been completed. Many of the larger engraving concerns follow this system so far as intricate work is concerned.

GENERAL PRICES FOR ENGRAVING (ONLY)

Business Cards

Gothic (or block)			•		р	er	lett	er,	.06 up
Script, corner lines									. 35
Script, center lines							•		\$0.50

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Prices for engraving

Business cards (continued)

Black Roman and Old E	nglis	h		pe	er le	etter,	\$0.08	up
French Script				-	66		.09	"
Shaded Old English and I	loma	n			66		.14	"
Shaded French Script .					"		. 14	"
Erasures, center lines .							. 50	
Erasures, corner lines .		•					.25	

Business Announcements

Script,	center lin	es		•	•	•	•	•	•			•	\$0.60	$\mathbf{u}\mathbf{p}$
Script,	paragrapl	h li	nes										.70	"
Gothic	(or block))							р	er l	ette	er,	.07	66
Roman	and Old	Eng	glisl	h						66			.10	"
Shaded	letters									66			.15	"

Steel Plates

Script	•	•	•	•	•	•	•	100 per cent above copper prices
Lettering								50 per cent above copper prices
			\mathbf{Ph}	us	cost	of	ste	el to above prices

Business Dies

Charge for steel extra over size 1x3

Script			•		•	•			per letter,	\$0.06	up
Gothic	(or	blo	ck))					66	.06	66
Roman									66	.08	"
Shaded	lett	ers							66	.20	66

Address dies, same price as above of like size and text. Monogram dies, one dollar and upwards according to design.

PRICES OF PRINTING (ONLY) FROM PLATES

Wedding Invitations, Etc.

100	invitations or an	nne	our	icer	nen	ts				\$1.00	\$3.85
100	reception cards						۰.	٠.		.70	1.45
100	at-home cards	•							۰.	.70	1.45
100	church or train	•	•							.60	1.20

Prices for printing

	Visiting and Business Cards Includin														
50	visiting	cards										\$0.30	\$0.40		
100	visiting	cards										.55	.70		
100	with ove	er two	nam	es .								.60	.80		
100	business	cards,	, size	not	exc	eed	ing	$2^{1/_{2}}$	x4	3-16		.60	.80		
100	business	cards,	, size	not	exc	eed	ing	3x4	$\frac{3}{4}$	•	•	.65			
100	business	cards,	, size	not	exc	eedi	ing	$3^{1/_{2}}$	х5	3-16	•	.75			

Mourning Border

50	visiting	cards	•	·	•	•	•	•	•	•	•	•	\$0.25	\$0.65
100	visiting	cards		•	•	•	•	•	•	•	•	•	.50	1.10
0		1.		1	- 11		20	1		3.0				

Quantities of above less than 50 charged for as same

Commercial

Letterheads					•			•		per	100,	\$0.60) up
Letterheads	(extra	larg	ge)							66	100,	.78	5"
Noteheads										"	100,	. 60)"
Billheads .										66	100,	.80)"
Professional	staten	nents								"	100,	.90)"
Business sta	tement	s.								66	100,	.60 to	.75
Business cire	culars									66	100,	.90) up
Envelopes .	• •									66	100,	. 60)
School comm	nenceme	ents								""	100,	.90)
Business and	nouncer	nent	ca	rds						66	100,	.7	5 up
Club or socie	ety inv	itatio	ons							"	100,	.88	5"
Paneling pri	inted w	ork								50c.	per 1	100 es	xtra
Color work,	first 50	0 or	un	der						30c.	per 🗄	100 e:	xtra
Color work,	more t	han a	500							25c.	per 1	100 e:	xtra
Printing q	uantiti	es of	ab	ove	les	s tł	nan	100) 11	ill b	e cha	arged	for

as same.

Folding, Inserting, etc.

Wedd	ling in	vitati	ons										per	100,	0.25
With	cards												""	100,	.30
Tying	; birth	cards	s, p	er	100,	wi	ith	ribb	on,	in	bow	/ k	not		2.00
Paddi	ing, 10	0 shee	ets f	to	pad										.10
Hand-press embossing

Postage

(added to all card orders sent by mail)

Plate and 50 cards cost .	•					\$0.05
Plate and 100 cards cost						.10

PRICES OF HAND-PRESS EMBOSSING

Color

1 or 2 qui	res						р	er (quii	re,	\$0.10
3 to 5 qui	res							"			.08
10 quires								"			.07
500											1.25
1,000 .											2.00

Bronze

1 to	20	qui	res	•	•	•	•	•	•	•	•	•	•	p	er	qui	re,	\$0.18
1,000)																	6.00

Stamping Business Cards

100	to	400	•	•			•	•		•	•	•	•	•	per	· 100,	\$0.50
500	to	900	•												""	100,	.40
1,00	0 a	ınd	ove	r			•								"	1,000,	3.50
Rep	re	sent	ativ	e's	na	me	in	cor	ner						""	100,	.40
Leg	al	bac	\mathbf{ks}		•		•								"	100,	.60
Leg	al	bac	ks												"	250,	1.00

Illuminating

Backgro	un	ds	•	•	•	•			per quire,	\$0.40	up
1-letter									"	.50	"
2-letter									"	.65	"
3-letter									66	.80	"
						-					

All sketches and proofs charged at cost

Imitations

THE typographical printer having a well-organized plant can produce fairly effective imitations of engraving, plate printing, and embossing with the aid of the essential materials. By this it is not meant that the imitation work will be as good as real engraved product, for there is no letterpress process by which the exquisite art of the engraver and plate printer can be duplicated; but, by careful manipulation of type, color and presswork, a close imitation of plate printing and stamping can be executed.

First, type-faces must be selected which are much like the lettering cut by engravers on steel and copper plates. Type-faces such as Black Old English, Shaded Old English, Engravers' Roman, Light Gothic, Heavy Gothic, Plate Gothic, Script, French Script, etc., imitate the handwork of the engraver nicely so far as the design is concerned. Of course, the type characters are too regular to make an exact duplication of hand lettering, but that is a defect which cannot be avoided.

Second, the type forms should be set up in such a manner that they will resemble the formation of hand lettering done on a steel or copper plate. The average

Details of typographic printing

engraver spaces words a little closer than does the average typographer. In engraving, there is never extra space between capitals like AV, WAT, etc.; thus in type composition such white space should be eliminated through mitering the offending characters.

Third, good printing ink of a heavy body should be used, and the color must be run full. Any color of ink may be used as desired. The color may be either of high gloss or of dull finish, as preferred. To obtain a brilliant gloss, mix a little dammar varnish and a few drops of turpentine with the ink. To get the dull finish, simply add dry color (blue for black, blue or green ink; red to red ink) and mix thoroughly until all of the powder has been absorbed.

Fourth, the press make-ready must be done exceptionally well. After all light places have been carefully "spotted up" with tissue paper, and after the impression is even, with no "hills and hollows" showing on the back of the printed sheet, the pressboard (which should be extra heavy) is covered over the make-ready. Only one top sheet of manila is drawn over the pressboard, and as a result of this method the make-ready is "hard" and absolutely smooth on the surface. If it is necessary, add a few tympan sheets, placing them *under* the pressboard. If built up accurately, this make-ready will result in all of the type matter printing on the stock perfectly, and no impression will be visible on back of the stock after it is printed.

Adjust the gudgeons of the inking rollers so that the rollers will pass lightly over the form. If there are not gudgeons of various sizes in the plant, glue strips of tough cardboard to the runners of the press. Build up the strips until the rollers have been raised enough to accomplish the desired purpose. Run a full flow of color—as much as the form will take without the letters "filling up"—and at intervals wash out the form with brush and benzine.

For ordinary plate-printing effect, dull-finished ink, used in the manner mentioned, will give the best imitation of engraving which can be obtained.

To imitate further steel-die stamping, an embossing plate and a second impression (without color) will be necessary. Glossy ink should be used, run very full. The feeding must be accurate so as to maintain perfect register, as otherwise the effort will be a failure. An embossing die of zinc will serve this purpose. For making the die, print a reverse impression of the form to be embossed in good black ink. Send this print to a photo-engraver, who will make a zinc die from the proof.

It is also possible to give the steel-plate effect to shaded photo-engravings such as are often used for

printing business letterheads, billheads, cards, certificates, etc. For work of this class smooth-finished bond and writing papers should be utilized instead of papers with rough surfaces. Mix a small portion of dry color with a good quality of regular printing ink, and makeready as for a halftone or a line plate in ordinary work; that is, cut overlays so that all solid places in the plate will receive extra impression, then cut out all highlights so that they will have less impression than other portions.

Cover the make-ready with a heavy pressboard. Adjust the inking rollers so that they will not squeeze into the intaglio places of the plate. Run a full color, and during the printing of the work wash out the plate frequently.

With persistent study and practice the typographical printer will soon be able to produce some creditable imitations of plate printing and stamping. With typefaces such as Engravers' Old English, Plate Text, Engravers' Roman, etc., carefully printed on kid-finished stock in full color of dull-finished ink, the results will be gratifying.

Imitation of engraved work should be executed only for that class of customers who are not willing to pay the necessary higher prices for genuine engraving. From the engraver's viewpoint, the highest quality

Close imitations

of printing is that produced from steel plates, copper plates and steel dies. To imitate steel and copperplate work exactly is impossible.

THE BAKING PROCESS

This is a typographic process through which plate printing and die stamping can be imitated to a remarkable degree. The work is set in type and printed, and the freshly printed sheets are powdered with rosin or a patented chemical. By passing the sheets over a flame the powdered print is baked and made to rise on the surface with an embossed result. A special patented machine should be used for this process.

Miscellaneous

It is recommended by the National Association of Steel- and Copper-Plate Engravers that the engraver or printer retain all plates and dies as his property, the same as lithographers retain the stones which they work from. This may be a good plan when the customer does not insist on having his plate or die returned; for the engraver or printer, through retaining the plate or die, is in a better position to receive and fill repeat orders from the patron.

WATER-COLORING EMBOSSED DESIGNS

Illuminated headings for menus, stationery, etc., are frequently printed and embossed in only a single color (black or gray), and afterwards the illuminating is done by painting over the design in various tints of water colors. Where there is to be a number of delicate colors, this procedure is more economical than if separate dies are cut and each color printed on the press.

The water-coloring is done by experienced persons specially trained in such work, although the art is not difficult, there being distinct outlines to follow.

Various colors are also applied to plate-printed and



embossed subjects by means of an air brush. Sometimes simply a background of light tints is deposited. In other cases registered color work is done with the air brush through the aid of cutouts, or "friskets."

PROCESS ENGRAVING ON STEEL

Process engraving on steel is a recent discovery, Louis F. Bockmann of Chicago, Ill., being one of the pioneers in developing this art.

This process is somewhat like that of three- or fourcolor-process halftone printing. The three engraved plates are made from one negative, the colors being separated by the stopping-out method, and by a careful manipulation of the acid in biting. Expert hand engraving is essential, however, in finishing the plates, and some of the work is also done on a ruling machine.

Beautiful pictorial subjects can be reproduced by means of the three-color-process steel engraving, and the finished product is superior to process letterpress printing for obvious reasons.

STOCK BLANKS WITH ENGRAVED BORDERS

From well-known dealers the printer or stationer can purchase, when needed, stock blanks with beautifully engraved borders for orders of bonds, certificates of award. stock certificates, diplomas, cards, member-

ship certificates, charters, etc. The stock blanks may be had with various colors of borders.

SECURING ASSISTANCE ON LARGE ORDERS

For large orders of plate printing and illuminated embossing, the smaller engraver not having power presses can secure the assistance of the larger firms operating such machines. The smaller engraver makes his own plates or dies, but has the presswork done outside on the power presses on a trade arrangement as to cost. For instance, it would pay the smaller printer to send out presswork orders like fifteen thousand letterheads, ten thousand menu headings in colors, twenty thousand greeting cards, etc.

It is understood that a large engraving concern will handle a large order entirely for the smaller engraver.

The smaller printer should not attempt to handle any order which would be too large for his facilities. A very large run would tie up the plant, and would hold back the regular work.

THE TRADE ENGRAVER

It is advisable for the smaller engraving and printing concerns to have certain plates and dies, which they are not in a position to handle profitably, made by efficient trade engravers, but such work should go to "legitimate" trade engravers who charge fair prices.

The cut-rate trade engraver is considered an evil to the industry in general, mainly for the reason that he makes possible the cut-price retailer of engraved products. The buying public is after good work and not low prices, so far as the engraving line is concerned, and there is no excuse for the price cutter in the field.

All of the larger engraving establishments will accept orders for special plates and dies, sketches, etc., from the smaller engraving concerns at trade prices. The larger houses are equipped to produce the finest quality of work.

In the beginning, it will be well for the owner of a new engraving plant to secure the coöperation of the larger concerns in the making of plates and dies which are out of the ordinary class. Gradually the mechanical facilities of the shop can be increased so that in due course of time every plate and die ordered can be produced in the plant without difficulty.



