

ENGRAVING.

A Lecture delivered before the Franklin Institute, March 8th, 1880.
By JOHN SARTAIN.

The art of engraving on metal is unquestionably of very ancient origin, and must have followed closely on the discovery of the art of working metals themselves into articles of use.

The desire observable in all men, including the most barbarous races, to adorn their implements and costumes with ornamentation of one kind or other, whether color stains, carving, or incised lines, proves that a love of art is universally innate in human nature. Almost as soon as man had learned to make out of iron, or other metal, a sword, he would seek to embellish its handle, at least, with ornament in the nature of chasing or engraving. Thus must the art of engraving have become a familiar every-day affair even in pre-historic times. In the book of Genesis two men are named (Bezaleel and Aholiab) as being "filled with wisdom to work all manner of work with the graver," and in the other writing attributed to Moses we read these words, "Take now plates of gold, and engrave thereon, as in the engraving of a signet, 'Holiness to the Lord.'" This form of expression indicates a practice quite well known at that time.

But the art of engraving on metal plates for the express purpose of printing from them with ink on paper is quite a different matter, and is of a comparatively recent date. In the year 1452, a goldsmith of Florence, Italy, named Tomasso Finiguerra, made an impression on paper from a silver pax he had engraved for the Church of San Giovanni, of that city, the subject being "The Crowning of the Virgin." This pax still remains among the valued treasures of that Church of St. John, and the precious print from it is carefully preserved in the French National Library at Paris, where it was discovered by Zani in November, 1797. The pax itself was ordered from Finiguerra by the Consuls of the "Company di Calimala" in 1451, and the proof (a fac simile of which you see before you on the screen) was printed from the finished work before the artist introduced the niello into the engraved lines, as was the practice of the goldsmiths of Italy of that period. All this is authentic, and establishes beyond

controversy that to this Florentine artist belongs the honor of having originated the art of plate printing.

In addition to the fac simile of the *undoubted* print by Finiguerra, I ask your attention to fac similes of two other prints that have been attributed to him: one, a Madonna, with the infant Saviour on her lap, and surrounded by numerous figures; the other is the circular print of the Gray collection (now in the Art Museum of Boston), and which has the arms of the Medici family sketched with the pen in the middle space. In the absence of all other evidence than that of style, I should say that it is the work of Baccio Baldini, after a drawing by Sandro Botticelli. If this print belongs to the early period ascribed to it, the Medici shield must have been inserted long afterwards, because the arms of that family used to have but five pellets, while the drawing on the print has six, as you see. The change from five to six occurred as late as 1533, when Catharine di Medici was married to the Dauphin of France., one of the stipulations of that arrangement being that a sixth pill, decorated with the French fleur-de-lis, should be added. The Medici, you know, were noted money lenders, and our modern pawnbrokers hang out *their* sign, but with the number abbreviated to three and those gilded. This fac simile of the Boston print was engraved about seventy years ago, by my father-in-law, Mr. John Swaine.

It was the custom of these artistic goldsmiths to fill in the lines of their engraving on silver with a semi-metallic substance called niello, which is a compound of copper, lead, oxidized silver, sulphur and borax. These were melted and thoroughly mixed together, and after cooling were crushed in a mortar into a fine powder. The plate was cleaned in a way that Benvenuto Cellini describes, and the powder spread over it. Heat was then applied from below, when the niello would melt and flow down into the lines at a temperature much lower than that which would affect silver. When cold it was ground down to the level of the silver surface, and the work was complete.

Before putting in the niello, Finiguerra was in the habit of filling the lines of his engraved plate with black and grease, and making an impression by pouring on to it melted sulphur. It afterwards occurred to him that this might be done on paper, by the aid of a roller, if sufficient pressure could be brought to bear upon it; he tried it and succeeded, but was for many years far from appreciating the value and importance of his discovery. It was not until about the year 1460

that plates began to be engraved for the express purpose of being printed from.

Engraving on wood was practiced in China many centuries before it was known or used in Europe, and whether Italy or Germany has the best claim to the honor of the invention, or of the earliest productions in this line of art remains an unsettled question, the preponderance of evidence being rather in favor of Germany. It is true there is record of a series of nine wood-cuts that have disappeared and have been sought for, thus far, without success. They are described by one who saw them in the year 1720 as representing eight scenes in the life of Alexander of Macedon and a frontispiece, in which last is a dedication to Pope Honorius IV. They were designed and engraved by the two Cunio, twin brother and sister, when but sixteen years old, and who lived at Ravenna in 1284–5 while executing these works. These prints may not have passed altogether out of existence, and may yet be found some day—possibly in the great Vatican library, since, having been inscribed to the artist's relative, the Pope, a copy was, without doubt, presented to him. He who has the good fortune to happen on these cuts will have as much reason to rejoice as did the Abbate Zani when he found the Finiguerra print in the library at Paris. Such a discovery would secure the claims of Italy to priority in *wood-block* printing, as well as that already conceded of *plate* printing.

Thus we see that line engraving on metal was practiced long before it was imagined that it was capable of being used to print from, but, on the other hand, we see that engraving on wood was originally devised for the express purpose of being printed from. The origin or first use of the latter in Europe is veiled in obscurity, and even if the Cunio prints should be met with, it would still remain uncertain how much had been done prior to their date. Pope Honorius IV, to whom those cuts were dedicated, governed the church but two years, from the second of April, 1285, to the third of the same month, 1287, an epoch anterior to all books printed in Europe that have hitherto been found. But, before books were printed, engraved blocks of wood were used for printing playing cards and other matters, and this may have suggested the idea of engraving entire pages of words on single blocks, which, in turn, gave place to the further improvement of movable types.

That wood engraving was already extensively practiced in Venice

before the year, or at least as early as the year 1400, is evident from the following decree of the Venetian government in 1441, at which time the art is described as having fallen into almost total decay, owing to the too abundant importation of foreign productions in this line.

“MCCCCXLI. October the 11th. Whereas, the art and mystery of making cards and printed figures, which is used at Venice, has fallen to total decay; and this ~~for~~ consequence of the great quantity of playing cards, and colored figures printed, which are made *out* of Venice; to which evil it is necessary to apply some remedy; in order that the said artists, who are a great many in family, may find encouragement, rather than foreigners. Let it be ordered and established, according to that which the said masters have supplicated, that from this time in future, no work of the said art, that is printed or painted on cloth, or on paper, that is to say altar pieces (or images) and playing cards, and whatever other work of the said art is done with a brush and printed, shall be allowed to be brought or imported into this city, under pain of forfeiting the works so imported, and xxx livres and xii soldi; of which fine, one-third shall go to the state, one-third to the Signori Giustizieri Vecchi, to whom the affair is committed, and one-third to the accuser. With this condition, however, that the artists, who make the said works in this city, may not expose the said to sale in any other place but their own shops, under the pain aforesaid, except on the day of Wednesday at San Paolo, and on Saturday on San Marco, under the pain aforesaid.”

Then follows the subscription of the Proveditori del Commune, and that of the Signori Giustizieri Vecchi.

The effect produced by this law of protection was all that had been expected. The art revived, and afterwards flourished to the extent, that, in addition to supplying the home demand for prints of the kind described, they commenced pirating the works of their neighbors, underselling the foreigner as the foreigner had before undersold them. Albert Durer suffered so much in this way that he made the *then* tedious and hazardous journey across the Alps from Nuremberg to Venice, to obtain redress from the authorities if possible.

I will now endeavor to describe the several processes of engraving in the order of their invention. They are seven in number. Engraving on wood, line engraving on metal (which includes etching) mezzotinto, aquatinta, soft-ground etching, chalk or stipple, and lithography. All these are wrought by skill of hand of the artist, and stand apart

from those productions of the actinic property of light on sensitized films, made by the aid of the camera. These heliographic works are very beautiful, but are outside the province of this discourse, which is devoted to hand work only.

In wood engraving an artist first makes a drawing on a block of well-seasoned box wood, cut crosswise of the grain, and of about seven-eighths of an inch in thickness, corresponding to the depth of printer's type, because the engraved cut is frequently inserted among the set-up types to be printed along with it. The smoothed side of the block is prepared for drawing on by rubbing into the grain the white facing composition on enamelled cards, moistened, or with flake-white. At one time it was the custom to impart a tooth to the surface, for the freer delivery of the lead pencil stroke, by using bath brick finely powdered and moistened with water, and, when dry, smooth with the palm of the hand. The engraver then cuts away the wood between the lines of the drawing, leaving the wood standing on which the lines are drawn, and which are to receive the ink from the printer's roller, for the process of printing from a wood-cut is the same as from type, and by means of the same character of press. It is a surface printing and the ink used has to be of a consistency, and only in such quantity, as to deliver where it touches and not flow down into the engraved lines and dots, but rest only on the face of the lines and points left standing. This is exactly the reverse of the process of printing from an engraved copperplate, in which the incised or sunk lines are what must be filled with ink, and can only be made to deliver to the paper by means of a very severe pressure of the roller press.

The instruments used are gravers, tint tools, scoopers or gouges, and chisels or flat tools. The graver is used in the manner of a plough, and being driven forward ploughs out a furrow, delivering the material removed freely up the face of the graver. To economize time flat tools are employed in the wide open spaces. I abstain from the affectation of using the French word *burin* because the plain English word graver is better and more expressive.

Sometimes it may happen, through accident or error, that it becomes necessary to work over again some part. The remedy then is to introduce a fresh piece of wood into the defective place. A circular hole is drilled nearly through the block, of a size sufficient to cover that which has to be obliterated, and a nicely fitting plug inserted. It is then levelled exactly and the part re-engraved.

Chiaro' oscuro drawings on tinted paper, having the high lights touched in with white chalk, are easily imitated in wood engraving by using a second block with the high light cut out. Suppose this tint block printed first with ink of a grey color and the picture-cut afterwards printed over it with black, an appearance will be produced of a drawing done on grey paper with the high lights touched in with white.

There is in Vienna an art publishing club a good deal interested just now in attempts to revive this practice of *chiaro scuro* engraving on wood, by which in old times very effective work was done by the use of two or three blocks. Mr. Baxter, of London, produced beautiful prints in oil colors by printing the successive tints from different engraved blocks. These effects have since then been rendered by the art of chromo-lithography.

Quite a revolution in the art of wood engraving has occurred in this country in the last few years, and is the result of the use of photography for placing on the block the drawing to be engraved.

By the introduction of this method copies of large drawings and boldly executed sketches are transferred to the surface of the block previously sensitized for the purpose—with a minuteness of detail altogether beyond the power of an artist's hand to draw. This naturally necessitated a corresponding minuteness of execution with the graver, at the same time, however, leaving little room for the display of the engraver's skill in freedom of flowing lines. In the old style the direction given to the line aided in expressing foreshortenings and the perspective of rounded forms, and our admiration was frequently excited by examples of masterly graver cutting. In the new school we have what may be by many considered better, the manner of the original artist copied is *more* prominent, the manner of the engraver *less* so. About the best work done anywhere at this time is that produced in New York, and this is not disputed even in Europe. The famous engraver, Thomas Bewick, of Newcastle, England, to whose labors is due the revival of the art toward the end of the last century, would not have believed it possible to engrave and print such cuts as are now published monthly in the city of New York.*

Line engraving on metal plates for the purpose of printing dates back to 1460, as we have already seen, eight years after the print was

* Numerous original examples were exhibited and referred to in illustration of the history and progress of the art, from Albert Durer, Burgmaier and others, down to the manner of later times.

taken by Finiguerra from his Pax of the Crowning of the Virgin, although that print is believed to be far from the first of his printing, which some writers place as far back as 1440, only that Pax has a certain known date, 1452. Among the engravers who preceded Marc Antonio Raimondi the most prominent were Sandro Botticelli, Baccio Baldini and Andrea Mantegna, but these were not equal to Marc Antonio, whose works eclipsed all that had been done before in that line. He engraved a great many plates from the pictures and designs of Raffaello, and that great artist took great interest in the work and corrected the outlines on some of the plates with his own hand. A fine example of this engraver's best work may be seen in the print of Poesy after Raffaello, seen on the screen. This is not the original, but a very accurate fac-simile copy.

The mode of procedure at this stage of the art was extremely simple, and called into requisition only four tools, a graver, scraper, burnisher and steel point.* The clean, polished surface of the copper plate is covered with a thin film of white or bees' wax, spread while the plate is just warm enough to melt it. When the plate has cooled, the outline drawing or tracing is transferred to this slightly adhesive surface by pressure. This process reverses the subject, which is an advantage, for all engraving intended for printing must be the reverse of the way it is intended to be in the print. The forms are then faintly scratched through the wax with the steel point. Then the plate is warmed and the wax wiped off. All the outlines and shades are then cut into the plate with the graver, and the rough barb or burr that hangs to the edge of the plowed line is removed by means of the scraper. When a proof impression has been taken by the printer, it may, perhaps, be seen that some lines have been cut deeper than is desirable, and others not deep enough. This is corrected by re-entering the faint lines and cutting them broader, and those that are too black are crushed a little with the burnisher. The plate is rubbed with oil and a roll of flannel, and is finished.

By this extremely simple process were engraved those superb examples of this kind of work done by the graver alone, without etching, which I direct your attention to on the screen. First, there is the print by Paul Pontius, the Fleming, after Vandyke, of the "Dead Christ and the Marys." In this style I cannot imagine anything

* These tools were exhibited and their use explained.

finer. Correct in drawing and definition of form, faithful to the style and characteristics of the master, and with a confident freedom of graver line that is marvelous, and yet not obtrusive. And this masterpiece is wrought without the aid of the local tints and the charm of *chiaro oscuro*, but simply by the light and shade of the objects in the picture, for it was not then known that the engraver's art was capable of giving all the qualities that a picture possessed except its color.

The next is a dashing piece of graver work by Bolswert, the Hollander, conveying an idea of Rubens' style remarkably well, although by such coarse means: and lastly, in this class of work with the graver, the group of Angels supporting the Tuscan Diadem over the arms of the Medici, after a fresco by Pietro di Cortona, in the ceiling of an apartment in the Pitti Palace, in Florence. I believe this to be by the French engraver Claude Mellan. It is almost all done with one line, without crossings, and is a brilliant example of that peculiar style.

I will now endeavor to explain the process called etching, the invention of which has been vaguely and erroneously attributed to Parmigiano, who, besides being an admirable painter, was an alchemist, and wasted his substance and his health in trying to discover the philosopher's stone, in which unfortunate pursuit he is supposed to have fortunately happened on this method of engraving. But it is quite certain that the etchings by this artist were done long after Albert Durer had practiced the same art in Nuremberg, and, so far as we know at present, Germany must be credited with this admirable invention. In describing the process I will direct your attention to examples of the different kinds of work belonging to this group.

The foundation of the art is this, that acids corrode and eat into the metals, while resins and bitumens *resist* the action of acids. Therefore, if you cover the face of a copper or steel plate with a varnish of this nature you effectually protect the plate from the acid. If after having done this you scratch lines or dots through this protecting coating with a steel point, the acid gets access to the metal in those parts and corrodes it so deeply that, after the varnish has been removed by the aid of spirits of turpentine, these lines can be filled with printer's ink and will hold it the same as if they had been cut in with the graver, and a little better too. And this is etching. The varnish coating is called etching ground, and is compounded of asphaltum of Judea, Burgundy pitch and white wax, and is spread on the plate by means of heat.

The Burgundy pitch has the property of causing the compound to adhere tighter to the plate, and without the tempering wax the point would not cut so smooth a line through it. Your ball of etching ground is tied up in a piece of strong silk, the plate on which the ground is laid, having been made perfectly clean and free from grease, is held by a hand-vice and heated over a gas flame, or some other way, until it is hot enough to melt the etching ground, so that it comes through the silk on to the plate; then, with a soft dabber covered with fine silk or with kid leather, it is distributed evenly over the surface of the plate by dabbing, or on that part where your work is to cover. While it is still hot it must be held face downwards and smoked black by means of a flame from a torch made by several strands of wax taper. Without this blackening of the etching ground its semi-transparency would prevent you from seeing your work as you progress. The plate being cold you transfer your outline drawing or tracing by pressure, and proceed to make your etching with a steel point, just the same as you would make a pen and ink drawing on paper, but your hand must be kept from resting on the plate by a bridge, which may be made by a thin board resting on a book on each side of your plate; but engravers have a strip of wood fastened at each end of the etching bridge. Your etching done, it is bit in with aquafortis, a mixture of one part acid and about three parts water, nitrous acid being used for copper and nitric acid for steel. Hard steel bites better than soft. The work must now have a bank of walling wax built around it with a spout formed in one corner, and while moulding it into shape with the thumb and finger, take care to press it perfectly close down to the plate lest the acid should get under it. The bubbles that form on the lines during the biting must be swept away with a soft feather. In two or three minutes the aquafortis should be poured off into a wide-mouthed bottle and water instantly poured on, the work feathered as before to clear it from acid, the water poured off, and the plate dried with blotting paper or a soft rag tenderly pressed on it. The strength of the line can now be ascertained by scraping off a little etching ground on some light part. If found to be deep enough, paint over all the first grade of light tints with any kind of varnish that will harden quickly. English engravers use Brunswick black (I use red sealing wax dissolved in alcohol). This is called by engravers stopping out. Put on the same acid again, and bite the next darker grade of tints; operate as before and then bite in the third gradation, etc.

The gradation of tints need not be left *altogether* to the successive bitings, as by etching the dark parts of your plate with a stronger and broader point, and a firmer exercise of the hand, the biting of those parts is hastened.

The etching ground is now removed with spirits of turpentine and the work rubbed with oil and a woolen cloth, called the oil rubber, and then a proof taken by the printer. Where the lines are bit too dark bruise them down with a burnisher; where they are not dark enough you can either re-bite them or re-enter them with the graver. If you re-bite, dissolve some etching ground by heat applied under the plate—on the margin, if you have a broad one outside of your subject. If there is not an empty space on your etched plate large enough, you take a separate plate and, having heated it sufficiently to dissolve etching ground, you feed your dabber from this store, evenly spread, and deliver it over that part of your etching that is to be re-bit, which must be heated just enough to take the etching ground from the dabber on to itself. This is a most delicate operation and requires a steady hand, for the etching ground must be delivered only on to the *surface* of the plate between the lines and dots and none suffered to get into the work already bit. As this is not smoked you are able to see the strength of line you are obtaining while the biting is going on, and can stop it just when it is deep enough, according to your judgment.

Whatever addition you desire to your work of lines, more tender and delicate than the faintest of your etched lines, is produced with what is termed the dry point, that is, abstaining from the further use of acid, you scratch in with a point all the fainter tints of your picture and remove the burr only to just that extent that a printer's proof from your plate shows to be necessary. I will now point out the different styles of etching from the fine examples here displayed before you.

Some of these painters' etchings are what have been termed dry etchings, that is, they are, as you see, printed clean, without burr, and resemble a pen-and-ink drawing on paper. Such are those by Berg- ham, Salvator Rosa, Callot, Mortimer, Vandyke, Angelica Kauff- mann, Ruysdal and others, and, contrasted with them, a class of etch- ings that depend much on skilful printing, having their darks massed and emphasized by blurring over the ink from the deeper lines so that no clear white paper shall appear between them. Of course the

impressions from plates printed in this way are variable and uncertain, and some etchers escape being at the mercy of the printer by roughening the surface of the plate over the darks to make it hold the ink, and by spreading it obtain middle tint at the same time. Sometimes this tint is produced by corroding the plate, and sometimes by mechanical abrasion. It has been said of aquatinta engraving, that it was invented by the evil one expressly to torture those who practice it, and the same may be said of blurred etchings as an exquisite torture for plate printers.

During the past few years there has been gradually growing a passion for etching, and quite lately it has intensified into a perfect furor. Eminent artists, who know what they are aiming at in certain effects, are producing works in this way that the world will not let die; but, unfortunately, there are many who have not yet acquired a knowledge of the simplest principles of art, have also caught the infection and joined in the hot pursuit, and

As their imagination bodies forth
Things without form, they give their airy nothings
A local habitation and a name.

I fear that I have dwelt so long on this branch of my subject as to exhaust the patience of my audience; but I have desired to explain as fully as I could the *modus operandi* of etching and satisfy many inquirers at one time. The prevailing epidemic reminds one of some lines by Alexander Pope, which, by slight modification, are applicable to the present state of things.

“Shut, shut the door, good John,” fatigued, I said,
“Say that I’m absent—say I’m ill—I’m dead!
The dog-star rages, and ’tis passed a doubt
A Bedlam full of etchers is let out;
Fire in each eye, and etchings in each hand,
They rave o’er proofs, and madden round the land.”

Having now gone through with work done with the graver alone, and also with that done with acid and the point alone—each pure and simple—it is necessary to say something of the achievements—the triumphs of the engraver’s art, produced by a combination of these two methods during the past two centuries, and I am happy to have it in my power to illustrate this branch of my subject by rare impressions of engravers’ progress proofs of many important plates. I show you only a few now, as they will suffice for the purpose, and there is not room for more.

Alongside of these proofs of the etched state of the plate you see impressions of the same plates in the finished state, and they present through the eye a clearer statement of the method of procedure than I can convey in words. Take, now, this admirable plate by Robinson of "the Wolf and the Lamb," after Mulready, which, of its kind, may be regarded as a perfect work. The broad masses of dark, you perceive, are all laid in with the etching point and bit in, as are also such portions of the light as demanded the peculiar character of line which a graver cut cannot give. Such is the work on the broad mass of light on the fence in the foreground and the ground itself on which the figures stand, which latter is full of a character which could not possibly have been given with the graver. The lights of the drapery and all the flesh tints are left to be done with the graver, and by examining the two impressions together of each of the plates shown, you will come to understand the method of procedure in a general way. The etching and finished print of "Mercury and Argus," after Turner, and those of the "Temple of Jupiter at Egina," from the same painter, show this difference in treatment, that, being landscapes, there is a good deal of dry point work in the light tints, and as little graver work as possible. Where you see an etched tint fainter in the first than in the finished state, it has been darkened by rebiting; where it is too dark it has been reduced by crushing down with the burnisher, only, in the case of etched draperies, the darkening is done by re-entering with the graver rather than by rebiting. You will observe that where a dark drapery is etched, having a dark background also etched, the lines invariably stop short of the outline, leaving a white space like a chalk line. These lines are left to be carried forward to the boundary by the graver, because if done with the etching point they would all bite into a blot, since the curve they must take as they approach the edge brings them crowding nearer together; therefore they have to taper thinner and thinner, which can only be done with the graver.

But time presses, and I must rapidly close this branch of the subject without doing justice to it. One fine print you see, the "Massacre of the Innocents," after Le Brun, is only half a print really, and shows what has sometimes been done when a plate is inconveniently large. You see that the left side, as you view it, has a waving and not a straight boundary like the other side and top and bottom, because it is the middle of the subject, and has to be joined to the

other half. The other half is in the Phillips collection, belonging to the Philadelphia Academy of the Fine Arts.

I think you may see before you now the perfection of work in line engraving and etching. The flesh tints in the plate of the "Princess Charlotte," after Lawrence, by Henry Golding, have certainly never been surpassed, and I doubt if they were ever equaled, I mean particularly the head, neck and bosom, and left arm and hand. This plate was four years on the engraver's table; he worked till he was eighty, and yet you will not find his name in any of the dictionaries of engravers, although you will find hundreds that are of little or no account. I cannot imagine it possible that Leslie's picture of "May-day in the Reign of Queen Elizabeth" could be better engraved than you here see it in the print by J. H. Watt; but who ever hears the name of Watt on the lips of those who talk about engraving? With regard to etching, Unger, of Vienna, is the prince of etchers, partly because of his unsurpassed execution, and partly because he gives the exact character of the painter he translates from. Look at that Ostade, that Ruysdael, Vanderwelde; and Rubens is so faithfully given in that triple print, that the very color is revived in the imagination. Then there is that triumph of the art in his copy of the gorgeous Makart "Catarina Cornaro receiving the Homage of Venice," the original of which was so lately lost to this country.

If Unger etched after Rembrandt, he would be even better than Rembrandt himself, whose extravagant coarseness in some parts of his plates it is only affectation to admire. If Rembrandt had possessed the use of mezzotinto for his peculiar effects, as John Martin had, what wonderful things he would have left us!

In the beautiful print before you, by Le Bas, after Teneirs, "the Distribution of Bread to the Poor," now in the Louvre, you see a remarkable union of the freedom of a painter's etching with the elaborate completion with the graver. It is a perfect copy of the painting, and it appears to me to be of the same dimensions.

Le Bas was French. The extreme opposite of his free style is that of Wille, who also flourished in Paris, but was of German birth. The print on the screen, copied from Schalken, is a fair specimen of Wille's style, which is mechanical and without feeling or artistic spirit; but his astonishing skill in the most exact and elaborate management of the graver in cutting pure silvery lines earned for him an immense reputation. His influence is of a kind that has caused it to be said,

“It would be better for the art had he never been born.” Bervic was his pupil, but free from the faults of his master, and he with Edelinek, Audran, Drevet, Nautenil and their like, raised this branch of French art to a high degree of perfection, and it is well maintained in this later time by such men as Henriquel-Dupont, Forster, Jules Francois and others.

The admirable engraving by Robert Strange, after Benjamin West, entitled “*Ah! si quâ Fata aspira!*” was completed in 1786, and for it he received the honor of knighthood. I will narrate a story in connection with this print, in as few words as I can; it displays a mean malignity on the part of King George the Third, of England, towards this engraver, that is astonishing. Those who visit the Museum in the Philadelphia State House will remember a whole-length portrait of that king in his youth; it was painted by Allan Ramsay, son of Allan Ramsay, the Scottish poet, and is one of a number of valuable pictures, the munificent gift to the Pennsylvania Academy of the Fine Arts by Mrs. Joseph Harrison, Jr. Ramsay was painter in ordinary to the king, and therefore was often called on to repeat his portrait for presentations, so this may be a duplicate, or it may be the identical painting I have to refer to. It is all the same. The king sent word to Strange, through Sir William Chambers, the architect, that he desired him to engrave this picture of himself and another, also by Ramsay, of Lord Bute (who was a crony of his), and he should be paid one hundred guineas on each plate, and all the profits from the sale. The engraver declined, and gave as a reason that it would interfere with a project he had of going to Italy to copy and engrave certain pictures in public galleries there. This angered the narrow-minded monarch, and he commenced a system of the most malignant persecution against the engraver, and continued it for near a quarter of a century. All connoisseurdom knew of the king’s displeasure, and the subscriptions to Strange’s prints suddenly ceased. In Italy his steps were dogged by a man named Dalton, who was the king’s librarian, and as soon as it was ascertained what pictures Strange intended copying, his plans were frustrated by an application from the agent, in the name of the king, to parties without whose permission copies could not be made. I will read you one of the certificates afterwards obtained by the engraver.

“We Vincentius Malvetius, Cardinal Presbyter of the S. R. C., Archbishop of Bologna, and Prince of the S. R. Empire, To all and

every one who shall see these presents, certify and attest; that M. Dalton, bookseller to the King of England, asked a permission from us, in the year 1763, to allow M. Bartolozzi to make a drawing for the said King of England, of the picture representing the Circumcision of our Lord Jesus Christ, painted by the celebrated John Francis Barbieri, Knight, commonly called Guercino da Cento; and we have granted M. Dalton's request, the permission was given accordingly.

"In testimony whereof we give these our letters, sealed with our usual seal, and signed by us at our Archbishop's Palace at Bologna, this 20th day of December, 1773.

"(Signed) Vinc. Card. Malvetius Archipiscopus.

"Paulus Canonicus Comes a Secretis."

It is needless to point out the mistake of the Italian in calling Dalton bookseller, instead of Librarian to the King.

This print by Bartolozzi, after Guercino, is in the splendid collection of Mr. Claghorn, and was once exhibited in the annex alongside of the Academy building. Having defeated Robert Strange abroad, the next thing was to head him off at home, and for this purpose inducements were held out to Bartolozzi to make England his home, which he did. Drawings by Strange were rejected at the Artists' Exhibition under the excuse that they were colored, although those by Bartolozzi, of the same character, were admitted. In the formation of the laws of the new Royal Academy, under the patronage of the King, engravers were excluded, in order to keep out Strange, although Bartolozzi was admitted, an operation which the king understood, no doubt, although he is said to have been puzzled to know how an apple could get inside the crust of a dumpling.

Finally, West, the peacemaker, suggested the engraving you see before you, which being shown at Windsor, the painter obtained leave to bring Robert Strange with him to the royal residence. A complete reconciliation resulted, and from that time forth the plates bore the inscription, "Engraved by *Sir* Robert Strange."

It is possible that the King's animosity may have been intensified by the fact that our engraver had been a Jacobite, and out with the Scottish army for the Pretender Stuart, in 1745, when his career very nearly came to a close. After the battle of Culloden, Strange was being pursued by some soldiers under the lead of an officer, and was seen to take refuge in a house that stood alone. The men were posted around to render escape impossible, while the officer entered suitably attended.

The lady of the house was seated in the parlor, and to her the gentleman apologized for his intrusion, but said it was his duty to arrest the man who had taken refuge there. She told him that she had no right to object, and accordingly the search was made, but nowhere could the fugitive be found. The disappearance was most extraordinary. The officer again apologized and bowed himself out. As soon as it was perfectly safe, Strange emerged from his place of concealment, which was under the lady's ample skirts. She afterwards became Mrs. Strange, and this you will say is not *strange*.

The third style of engraving in the order of my list is mezzotinto, and its invention dates back to 1640 at least, as there is a print in this manner, bearing date 1643, done by Ludwig von Siegen. He and Prince Rupert were acquainted, and to the latter the invention has been credited by some, but whether rightly or not will probably never be known.

The leading characteristic of the process is pretty well described in an anecdote of the camp, true or false. It is said that Prince Rupert, in strolling through the camp, observed a soldier grinding out the rust from some piece of armor. Part was done and part not begun. This suggested to the mind of the general the idea of roughening a plate all over so as to hold printers' ink, and then to remove this in parts forming the lights of a print.

The surface of the plate is covered with myriads of dots by means of a mezzotinto grounding tool or rocker. It is (as you see) like a broad chisel of steel, scored on one side with fine grooves, equidistant and of equal depth. Thus is formed on the edge a row of projecting teeth, the end being sharpened at a bevel and curved, so that it can be rocked from side to side, held slightly inclined with the teeth on the plate and advanced forward between parallel lines while rocking. At every new covering the direction has to be changed, so as to avoid, if possible, going over in the same direction twice. When the surface is completely covered and made black with dots the ground is complete, and if a printer took a proof from it it would yield a perfectly black impression. The picture is then made by scraping away these dots down to the very bottom, where the pure high lights are to be, scraping them partly away for the middle tint, and leaving them as left by the rocker for the extreme dark. Formerly mezzotinto was used pure and simple, without a foundation of deep etching as now, and it derives its name of "mezzotinto," half tint, from the softness of its effect. But

at this day an etching is made, sometimes quite elaborate, before the mezzotint ground is laid, and it is intended that this should show through the mezzotint after the scraping is done. The mixed manner of line, stipple and mezzotinto is now the prevailing style in England, and has been for the past forty or fifty years, for framing prints. Line engraving continuing to be used for plates of smaller size, especially for book illustrations. Large line plates are seldom engraved, except for art unions, and there are instances of amateur clubs, composed of men of means, who subscribe money to enable an eminent engraver, like Mr. Doo, to devote himself to first-class work in this line.

I show you here a large plate by Samuel Cousins, after a picture by Sir Thomas Lawrence. It is a superb work, and is almost a pure mezzotinto; any one not blinded by prejudice must say that a more faithful translation of a painting could not be made. The drag and sweep of the painter's touch is imitated, as well as all the other qualities, except its color. The same engraver finished a mezzotinto plate last summer, of "the two Princes in the Tower" (from which the wood-cut I now show you was copied), and was paid more than eight thousand dollars for it. It was smaller than this plate of Pius VII. and there was not half as much work in it.

It will be conceded that there is no class so difficult to satisfy as the painters, and there certainly can be none better qualified to judge of what is most desirable in art. Now, the forty who constitute the Royal Academy at London had occasion, after the repeal of George III's vindictive regulation, to select one engraver as a representative of the entire profession—the whole art, irrespective of style—and the choice fell on the man of mezzotints, Samuel Cousens.

There is a confusion of terms among persons not over well-informed on art matters that needs correcting. For example, there are many, who, if asked what these line engravings are will promptly answer "those are steel engravings." Next ask them whether these mezzotints are also steel engravings, they will answer, "No, of course not; they are mezzotints; they're not steel." Now the fact is those mezzotints *are* steel engravings, and the others are not. Mezzotints are *always* done on steel, and line engravings are frequently done on copper. All that are seen here, except the mezzotints, are copper. There is no sense in the term "steel engraving." It expresses nothing of style, and the fact of a work being done on steel ought not to be a

recommendation, for it makes it none the better, except to the publisher, who can get from it a larger number of impressions.

The printing of mezzotints, when done rightly, is different from line printing, and the two styles ought not to be carried on in the same printing office, because the material and the method used in line work is so much easier than the other that the men are sure to use both for mezzotints. This is ~~what~~ brings the style into discredit—bad printing—and publishers go so earnestly for the cheap that the prospect is hopeless. As Thomas Carlyle says, “cheap and nasty,” and the latter is accepted for the sake of the former.

Plate printers’ ink is made by grinding a fine kind of charcoal into linseed oil that has been burned and oxidized until it will draw into unctuous threads between thumb and finger. Lampblack, such as is used in woodcut printing, won’t do at all. The best and only proper black is made from the skins and seeds of grapes after the juice is pressed out for wine. Manufacturers of Mayence and Frankfort buy up this material, burn it and grind it, and it is called Frankfort Black; and these Frankfort manufacturers supply all places in the world where good work is done. During the first Napoleon’s war with England the commerce with the continent was cut off, and English plate printers could not obtain Frankfort Black. Then the Society of Arts offered a liberal premium to any who would produce a black having the quality of Frankfort Black and to be no dearer. They continued the offer for at least twenty years after the continent was open to their trade, but the want remained unsupplied. In good printing, with the proper black, the print should appear, on looking along it towards the light, like black velvet on white satin, the hot polished plate giving a satiny polish to the paper, while the ink stands up from it like black velvet.

Impressions from plates engraved in the style termed “aquatinta” resembles in appearance an India ink or Sepia drawing, according to the color of the printers’ ink used in printing. The invention is attributed to a French artist named St. Non, and a little later than the introduction of mezzotint; it was successfully practiced by a German lady, Madame Catharine Prestel. It was introduced into England by Paul Sandby about the middle of the last century.

The etching ground in this method is resin, and in France is spread on the plate in a shower of fine powder, and then fixed as it falls by means of heat applied from beneath the plate. The English method

is to dissolve the resin in alcohol and pour it on to the plate. When the alcohol has evaporated the resin is found in small granules all over the surface, with fine cracks between them, leaving the copper thus exposed so that when aquafortis is applied it will corrode the plate at these cracks and not where the grains of resin adhere. The guide lines of a tracing or outline drawing are transferred on to this resin ground, a banking wall of wax with a large spout at one corner is formed on the margin around the subject, and the high lights are touched in with stopping-out varnish, the same as in etching, already described. Every successive gradation of tint is produced by this stopping-out between each biting till the deepest tints are obtained. The plate is then cleaned with spirits of turpentine and with alcohol, the resin yielding only to the latter solvent.

After a proof has been taken it may be found that some of the darks are deficient in intensity. The remedy is to pour on a new ground after making the plate perfectly clean, and the resin will granulate over the previous formation and form a re-biting ground. You now prepare a paint of yeast, molasses and whiting, or of gamboge, sugar and whiting, and with a sable brush touch in where the deeper darks are needed. Foliage relieved against a sky lighter than itself should be treated in this same manner. When this composition is quite dry, cover the whole surface of the plate with stopping-out varnish and let it dry hard. If aquafortis were now applied it could have no effect, because the entire plate is protected. Next stand the plate on an inclined position, face outward, and pour warm water over it. Fermentation begins wherever the composition has touched, and forcibly bursts away the outer varnish, and the flow of water carries it off as fast as it is liberated. The aquafortis is then applied in the manner before described, the plate cleaned, and the work is done. If edges of some of the tints are found to be too harsh and abrupt they are corrected by the use of the burnisher.

It has been found that the liquid ground granulates into a better grain on copper than on steel, and that the addition of a little sal-ammoniac improves the biting quality of the aquafortis. Great care is necessary that not the least particle of dust falls on the resin ground while in a liquid state, as it ruins it and it must be cleaned off.

Stipple engraving, a style of work done with dots in place of lines, is the same in all its methods as that already described for modern line engraving, that begins in etching, except that the graver used is slightly

curved with its point downwards, and the handle reversed so as to present the tool at a greater angle to the face of the plate. It was invented by Bylaert, of Leyden, but introduced into England from France by the unfortunate Ryland, he who executed the two whole length portraits that Robert Strange had refused. I say unfortunate, because he himself was afterward executed for the crime of forgery.

With the introduction of stippling began the publication of colored prints. The examples before you, after Stothard and Angelica Kaufman, are not colored with the brush on to the print, but are printed in oil colors from the plate itself at a single impression, the colored inks being worked into the dots of the hot plate, with the finger in the small spaces, and with the dabber in the broader ones. Among the most successful of the earlier stipple engravers was Bartolozzi (equally skillful in line, however), and you here see impressions of the etching and finished state of one of his plates in this style.

The stipple was sometimes used to imitate the strokes of a crayon drawing, as in the print before you, after a group in West's "Christ Rejected" (one of the pictures presented to the Academy by Mrs. Joseph Harrison). When in this form it was known by the term "chalk engraving." Since the discovery of crayon lithography chalk engraving has gone out of use, because the real thing is better and easier than the imitation.

Soft-ground etching has also been driven from the field by the introduction of lithography. It is the simplest and easiest of all the methods, and but few words will suffice to describe it. The example before you is by George Morland, and the fac simile of Raffaele's study from nature for Adam in the "Temptation" is mainly by this method, but it had to be helped out afterwards with some dry point-scratching.

The ordinary etching ground has to be melted again and about one-third of its bulk of lard incorporated with it. From this it derives its name. In cold weather it requires more lard, and in warm weather less. It is spread over the plate and smoked in the same manner as hard etching ground, and then care must be observed that nothing touches it.

Take a sheet of writing paper, one inch larger every way than your plate, dampen it, and place it cautiously over your ground, turning the margin over the back of the plate, to which you fasten it with paste or otherwise; when dry, it will be stretched quite smooth. Take

an H or HB pencil, and draw your subject on it just as you wish it to appear, pressing harder where your darks are to be, and lighter for the more delicate parts. According to the weather, or as your ground is softer or harder, you select the pencil, remembering that the softer the ground the softer should be the pencil. When the drawing is finished, lift the paper carefully from the plate, and wherever you have touched with the pencil the ground will have adhered to the paper, leaving the metal plate more or less exposed. A wall of wax is then put around the subject, and the biting with aquafortis proceeded with as in other etching. If all things have gone right, a proof from the plate should resemble exactly the pencil drawing on paper, by the soft etching ground sticking to the under side of the paper.

Engraving on stone (called lithography) is not done with a graver, but with a steel or a diamond point. A smoothly polished stone is covered with a thin coating of gum water and lampblack, and the lines are drawn through this with the point, broader points being used when lines are wanted broader, not by pressing deeper into the stone. Thus the etched lines show white in the surrounding blackness, just as an etcher on metal plates is enabled to see his work by means of the smoked etching ground. The work being done, the lines are filled with greasy ink, and when the printer has cleaned off the gum and black the work appears as black lines on the white stone. After having submitted the work to the process of fixing, it is ready to print. There is quite a variety of lithographic processes practiced, but they are outside the boundary of my subject, even if there were time to touch on them.

I must now conclude, regretting that there is not time in a single discourse to take a broader survey of this interesting subject. I have crowded into it as much as I dared, and no doubt have fatigued you all.

Cheap Dyes.—Hugo Söderström calls attention to the importance of using cheaper dyes in place of some of the exotic products, such as the yellow wood of Cuba, fustic and quercitron. He mentions especially dyers' weed, saw-wort, broom, the wood of the mulberry and acacia trees, dried pear leaves, oak bark, the bark and young shoots of the poplar, sorrel roots, the leaves of the great nettle, and juniper berries, giving rules for their successful employment.—*Wollengewerbe*. C.