IV

THE TYRANNY OF THE RULE

THE SEVENTEENTH AND EIGHTEENTH CENTURIES

In the first half of the seventeenth century five very remarkable men made or published prints. Roughly speaking they were contemporaries. Between them they had great influence on the kinds of prints that were to be made for a long time. For three of them print-making was a business, a business to be minded just as carefully as any other commercial undertaking. These three were Rubens, Callot, and Bosse. Another made prints to please himself, apparently paid no attention to commercial considerations, and died in an asylum. This man was Hercules Seghers. The fifth man was Rembrandt, who went bankrupt years before he died and, never being discharged, had thenceforth little interest in money-making. Thanks to the later development of photography and photographic process, while we remember a good many prints of the Seghers-Rembrandt tradition, we have forgotten all but a very small part of the prints that came out of the Rubens-Callot-Bosse tradition, except as oddities that we sometimes see in old-fashioned houses and collections.

Sir Peter Paul Rubens, an ambassador, a knight, an internationally famous painter, and especially, a very astute and successful business man, saw the great financial advantage to be gained by having engravings made after his paintings and selling them in large editions. Some of the prints after his pictures are the work of outsiders working for their own accounts and purposes, but a great many of them were published either by Rubens himself or by firms in which he was a partner. There are said to be early trial proofs of some of these engravings which are worked over in pen and ink to indicate corrections and changes that were to be made in them, much as though they were author's galley proofs. The handwriting in these pen lines has been recognized as that of Rubens himself. The only touched proof of a Rubens print that I know of in America is in the Metropolitan Museum. It is a counterproof of the first state of an etching of St. Catherine, by Rubens himself. Perhaps it is the only print he made with his own hands.

What this means is that Rubens organized a school or group of engravers who worked under his immediate supervision and presumably in his pay. For their translations of his paintings and sketches into black and white they devised a linear scheme which answered two quite different requirements. Not only was it desirable to construct a linear network that should be the instrument of an average Rubensy purpose, but it was just as desirable to find a method of incising the copper in such a way that the plates would yield very large editions before they began to show appreciable wear.

Until photography and photographic process took the place of the reproductive print made by the older processes, the size of the edition that could be pulled from a plate was a matter to which almost all print-makers, original as well as reproductive, gave much thought. The great discovery that a larger profit could be made from the snobbery to which a limited edition appeals is comparatively recent, and can be regarded as one of the *sequelae* of the pervasion of photographic process. Seymour Haden was,

perhaps, the last of the well-known etchers who was old-fashioned enough to regard his plates as bonds from which he might at regular intervals take off the coupons he called proofs. To do this he adopted the trick, invented in Paris in his youth, of 'steel facing' his plates so that he might be able to keep on printing discreet editions of his etchings and dry points over periods that in some instances lasted for about forty years. Steel facing was not available to the print-makers of the seventeenth and eighteenth centuries, and so they had to give thought to the depth of their lines and their distances apart, for shallow lines and lines that were too close together wore out in the most disheartening way.

With these requirements as their basis the Rubens school of engravers worked out a linear net that was most admirable from the point of view of Rubens himself. It was actually one of the most successful instruments of an average purpose that has ever been devised. Any sketch, no matter how fleeting its indications, and any most elaborately detailed oil painting of the Rubens type, could be tossed into the hopper of the engraving shop, and out of the other end would come a print that had all the familiar trade-marked Rubens look. They all looked alike when they were finished. It was through these prints that Rubens's international influence was exercised. Two of the greatest events in the history of landscapes, whether painted, engraved, or etched, are the engravings after, first, Brueghel, and, second, Rubens.

Callot was a professional etcher, not a painter who also etched. The distinction is important. It is significant that so few of the original prints by men who were not primarily painters are remembered. Callot was greatly influenced by the fashion for swelling lines that had been started in the second half of the sixteenth century by the virtuoso engravers. One of the greatest of these virtuosi was Goltzius. As we shall see, this swelling and diminishing of schematically laid lines had its immediate economic aspects as well as those of mere fashion. The engravers after Rubens were naturally and easily influenced by the full-blown Goltzius type of linear work. Etching, however, was much quicker than engraving,

but the ordinary etching needle did not lend itself to the creation of the swell and diminuendo of the individual lines as did the engraver's tool. To achieve this it was necessary for Callot to use a specially designed etching point that is called the *échope*. Whether he invented it I do not know, but he was the first to use it brilliantly and successfully. When used with care in the laying of lines that are systematically and not freely drawn, it enables its user to produce a very fair imitation of the swelling engraved line. It is often difficult to tell with the unaided eye whether a line in a print by Callot is an etched or an engraved line, especially because, as he used the old hard etching ground, it was possible for him to sink his engraving tool in an etched line before the ground was removed from the plate, and so give it its final polish and finish. His work was extremely popular, he printed large editions, and there were many copies and piracies of his prints, which very early became the object of assiduous attention from the collectors. The earliest literary account of the foibles of the typical print collector is to be found in La Bruyère's *Characters*, which was first published in 1688. The prints cited by La Bruyère are those of Callot. There is so much of method in Callot's work that the copyist-forger was frequently very successful in his imitations. This is one of the little penalties of methodical and schematic work, no matter how brilliant or direct it may appear.

Bosse was a small but active manufacturer of prints who took a great interest in theoretical matters. A friend and pupil of Desargues, he wrote important books on architecture, on stereotomy, and on perspective. He also wrote the first technical treatise on engraving and etching. He utilized Callot's tool for the production of etched lines that swelled and diminished, and that for their full effect had to be schematically laid. He also told how etching could be used for the preliminary work on a plate, after which it could be finished with the engraving tool. It was a technical trick that saved time and labour, and thus became very common among reproductive engravers. In the course of time, in one or another of its forms, it became a standard practice.

Bosse's book on etching and engraving of 1645 was not only the first on its subjects, but for more than a century it remained the standard one. It went through a number of editions, and a hundred and twenty years after its first publication it was edited and brought down to date by Cochin. A comparison of the first and last editions is very interesting and suggestive, for much had happened between them—especially the introduction of the modern soft etching ground in place of the old hard one.

Bosse's ideal was the tidy, regular, systematized, linear structure to which I have referred as a net of rationality. Some of the sentences in the introduction to his book are so interesting in view of the economics of print manufacture that I shall quote them. His prose style is as untidy as his prints were precise and regular, and so it is impossible to turn them literally into English and at the same time make sense of them. In my versions I have tried to play fair with both Bosse and my readers.

In the first place, Bosse clearly distinguishes between pictorial invention and composition on the one hand and linear quality and structure on the other hand. Little as he may have suspected it he was proceeding along the lines of the old Aristotelian-Scholastic distinction between substance and attributable qualities. It is a distinction that has only gone out of fashion in print-making and appreciation during the present century. Thus he says: 'The first among those to whom I have obligation is Simon Frisius, the Dutchman, who, in my opinion, should have great glory in this art, in as much as he handled the point with great mastery, and in his hatchings strongly imitated the neatness and firmness of the engraver's tool. . . . I speak only of the neatness of his etched lines, leaving aside the invention and the composition (*dessein*), it not being my intention to talk of such things.' He then says that 'Callot greatly perfected this art', and that 'if it had not been that his genius carried him to little figures, he would doubtless have done in big etchings all that can be done in imitation of the engraver's tool'. After this he makes a statement, which throws light not only on an aesthetic matter but very distinctly on an economic

one. 'For myself, I admit that the greatest difficulty I have met in etching is to make hatchings that swing, big, fat, and thin, as needed, as the engraver's tool does, and with which the plates may be printed for a long time.' It is interesting to notice, in view of this, that the present-day commonness of the various editions of his book implies that they were printed in large editions, and that the last edition, which was printed more than a hundred and twenty years after the first one, was still illustrated with impressions from many of the plates he made for the first edition. Bosse then makes an apology and defence of his attitude: 'It is not that I do not appreciate work done in etching that has not this neatness . . . but all will agree with me that it is the invention, the beautiful outlines, and the touches, of those who have worked the other way which makes their work appreciated rather than any neatness of the way they laid their lines. I believe that those who etched the other way would have acquired greater success in their business if they had availed themselves of my system of laying lines.' Here we have a clear-cut statement of the reasoning of the commercial print manufacturer. It would be hard to make a more practical definition of a tool for an average purpose, in which accuracy of representation of the personal characteristics of things was not as important as their reduction to an economically advantageous neatness of syntactical statement.

At the end of his book Bosse devotes several pages to printing —but with the remark that it is a different business. It is obvious from this that in his time printing was not regarded as a thing that the engraver or etcher should do himself. We have travelled a long way since that time. Then the test of a man's ability as a printer was how much alike he could get a long series of impressions. In Whistler's time it was seriously advanced that the etcher's artistry as printer was shown by how many different kinds of impressions he could pull from the same plate. That can be regarded as the erection of a technical incompetence into an artistic virtue.

In his discussion of the use of the engraver's tool Bosse gives one little detail that is of considerable interest—he tells how to

remove the burr from the sides of engraved lines. He makes no comment upon this, but takes it for granted that it is to be done. The reason was twofold. It is not desirable that the impressions from a plate in which the lines have been schematically laid should be too rich, as that interferes with the brilliance which is one of the chief attractions of that kind of linear work. Also, and more important still, the deliberate removal of the burr in the beginning, instead of waiting for it to wear off in the course of printing the edition, meant that a very much larger number of impressions could be run off before there was any appreciable difference in quality among them. The early masters did not remove the burr from their plates, with the result that their early impressions are much richer than the somewhat later ones and have quite a different quality. This is very marked in the engravings by Mantegna and by Lucas of Leyden. When either had finished one of his plates it contained a good many very shallow lines with a good deal of burr. As soon as the burr vanished, his plates became pale and ghostlike. They are only to be understood in very early impressions of a kind that are extremely difficult to come by. Dürer, always keen about the economic aspects of his work, seems to have produced more evenly printed editions than his contemporaries, great as may be the difference between a very early impression from one of his plates and a somewhat later one. His rectification of an oversight in his engraving of the Prodigal Son is illuminating about his practice. He forgot to do part of a tree in the background and at the last minute, after the plate had had its burr diminished, he put it in, but forgot to work it down, with the result that the early impressions of this plate show a very strong burr on some of the lines of that tree. It would seem to indicate that he did not do his own printing. The impressions of the engravings by many of the early masters were at their most brilliant just when the burr had worn away and before there was any wear of the lines themselves. In the eighteenth and early nineteenth centuries, when people, accustomed to several centuries of brilliant schematic well scraped line work, had come to value their contemporary

engravings for their brilliance and not for their richness or colour, it was these 'silvery' impressions of the older print-makers, printed just at the right moment in the wear of the plate, that were most sought for and highly valued. It is merely another instance of how a later period prizes things for qualities that are different from those that gave them their values when they were made, for the artists who made the old engravings judged them by how the lines looked before the plates showed wear.

The strong persistence of the ideal of the business-like systematized technique of draughtsmanship and of working the plate in such a manner that a large edition could be run off from it before it showed any material deterioration, is exhibited in Mr. Hind's opinion of 1908 that the greatest of the portrait etchers was not Rembrandt but Van Dyck. He says that Van Dyck produced plates 'which are perhaps the most perfect models of portrait etching in existence', and that Rembrandt cannot claim such praise, for although his work 'is even more wonderful in its penetrating genius than that of Van Dyck', 'it is essentially inimitable and has perhaps never succeeded except in the hands of the master himself. Van Dyck on the other hand has remained the pattern of the best of modern portrait etchers' (by which, as appears elsewhere in his book, Mr. Hind meant Legros and William Strang), and his portraits make 'a far more direct and intimate appeal' than those of Rembrandt. It is interesting to notice that in his *History of Engraving and Etching*, from which I have quoted with his kind permission, Mr. Hind did not mention that supreme example of portraiture on the copper, Rembrandt's 'Young Haaring', a print as far removed from the tradesman's ideals of longevity and easy brilliance as can be imagined.

Mr. Hind calls attention to the fact that when Van Dyck started his set of portrait etchings, which is known as his *Iconography*, it was a failure because the public demanded 'more finished work', and that the scheme was finally carried out by a long series of engravings of the Rubens school after sketches which Van Dyck supplied for the purpose. Of these perfunctory and stupid prints

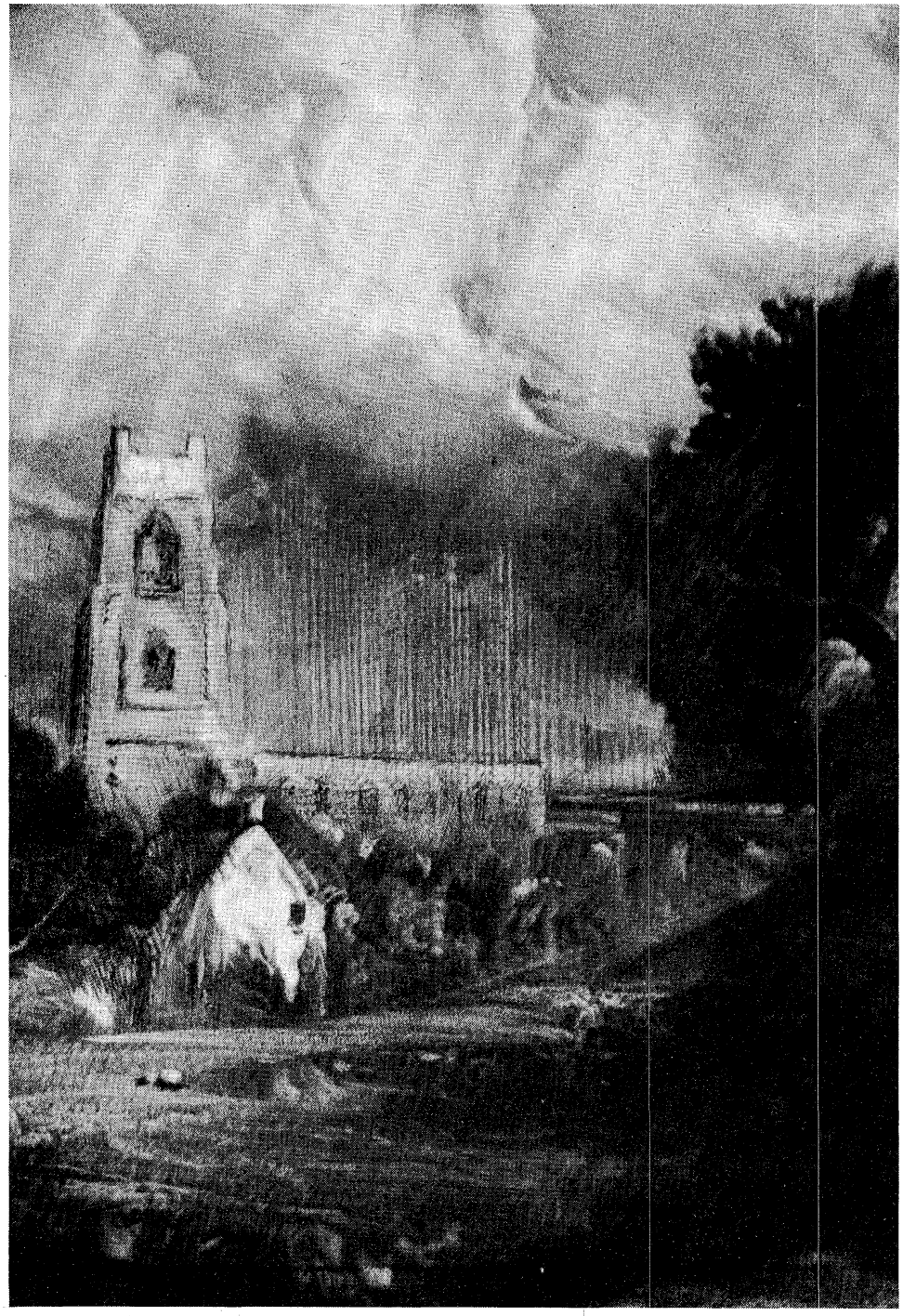
Mr. Hind says that it was 'the elaborated engravings of the *Iconography* that formed the pre-eminent factor in fixing a standard for future engravers of portrait'. Mr. Hind was right, but the fact to which he calls attention is a very sorry and most important commentary upon many things.

Seghers, a little known artist, whose prints are of the greatest rarity, made many experimental plates, in which he indicated many of the ways that were to be travelled by etchers in the future. He not only sometimes printed his plates in coloured ink on coloured sheets of paper, but he made many landscapes that had a great influence on Rembrandt and a few of his contemporaries in the Dutch school. One of his plates was actually reworked by Rembrandt, who inserted large figures in a landscape, and others of them were probably the first original etchings of the low-lying Dutch countryside. Several of them were reworked and republished by Everdingen.

Rembrandt, the patron saint of non-commercial etchers, was a prolific etcher as well as a painter, but in both media he worked as differently from Rubens and Callot and Bosse as possible. The chronological sequence of his prints shows that in his development he strove to achieve expressiveness and neither systematization of his linear structure nor long life for his plates. Following Seghers in free experimentation, Rembrandt used etching, engraving, dry point, and what is called sulphur tint, on his plates. The sulphur tint was a way of producing extremely delicate tints that wore out with astonishing speed. The dry point burr also wore out very fast. Although many of his plates are in practically pure etching, he frequently used combinations of the media I have mentioned. It is doubtful whether any of his predecessors had been so 'impure' a worker. Dürer, on occasion, used a touch of dry point in his engraving, as in the 'Promenade', but was usually careful to cut away the burr before printing. He made only three pure dry points and five etchings. Lucas of Leyden, in 1520, mixed etching with engraving on the same plates, but seemingly did very few plates that way. I know of no print carried through in engraving by

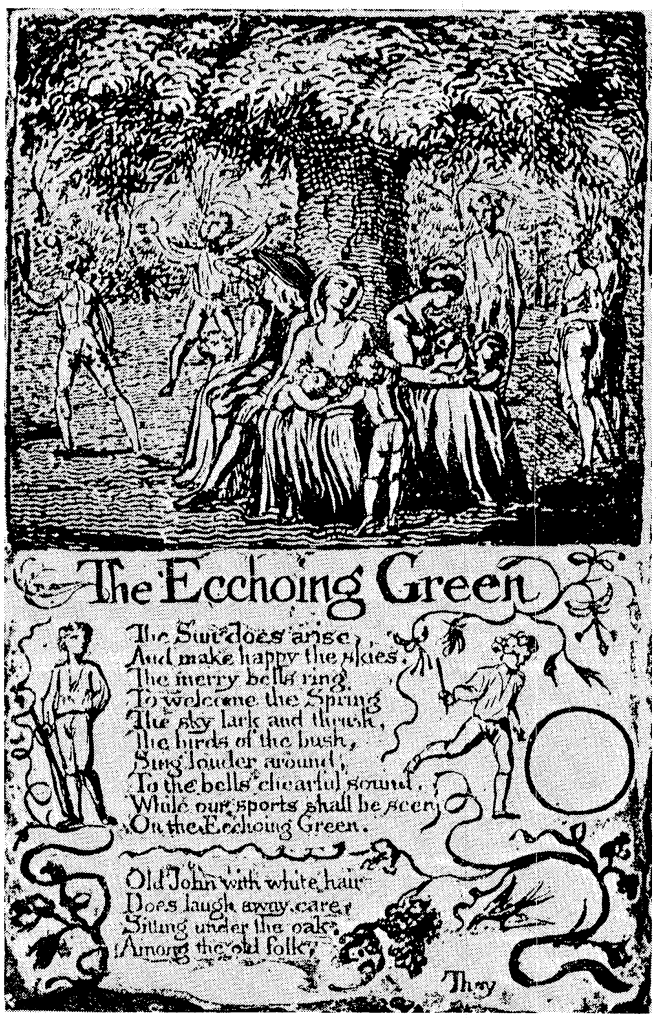
Rembrandt, but he frequently used the engraver's tool to point up his etchings, and sometimes, as in the 'Diana Bathing' and the 'Dr. Bonus', used it for important passages while the rest of the plate was etched. A number of his later plates were carried through in practically pure dry point. He used touches of sulphur tint in some of his finest portraits. It is doubtful if any other print-maker of comparable rank ever made such drastic changes in the composition of his plates as Rembrandt did in his great dry points of the 'Large Three Crosses' and the 'Christ Presented to the People'. The only meaning of this can be that he did not care about the limitation which such practices put on the size of his editions. Moreover he had at no time a standardized scheme for the laying of his lines. His shading was done for light and shade and especially for colour, and not for surface bosses and hollows. All his drawing was highly autographic and idiosyncratic. At the end of his career as etcher, it can be said, he had no technique; that he knew only particular occasions and needs and invented ways of meeting them as they arose. For this reason during his own life he had little influence outside the small group around him. The men who exert what is called influence in a quasi-commercial occupation such as print-making are those who provide plainly stated and ready made recipes for the use of others.

In Rembrandt's own time and through the eighteenth century his greater masterpieces were not according to the doctrines of the dominant Rubens-Callot-Bosse tradition. It is interesting to observe how such an authority as Bartsch at the end of the eighteenth and the beginning of the nineteenth centuries was bothered by the greatest of Rembrandt's prints, just as he was by those of Mantegna, who, he said, had great genius but was a bad engraver. Rembrandt had to wait until the high tide of romanticism in the nineteenth century before his most remarkable accomplishments were recognized. Until past the middle of the nineteenth century all the world credited him with many etchings which obviously he could never have made. His influence, when it finally arrived, was among a group of etchers none of whom had his



45. Portion of a mezzotint by Lucas (1802-1881) after Constable. Enlarged.

46. Figure from the aquatint 'Por que fue sensible', from Goya's Caprichos of 1803. Enlarged.



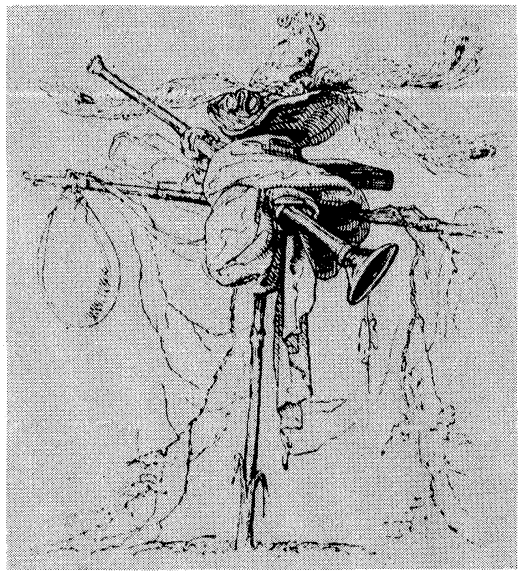
47. 'The Ecchoing Green', from Blakes' *Songs of Innocence* (1789). About actual size.

48. Portion of Daumier's relief print 'Empoignez les tous', from *Le Magasin Charivarique*, 1834. About actual size.

49. Three impressions of a wood-engraving from Bewick's *Land Birds* (1797). (*a*) a proof on China paper ; (*b*) from the textless edition of 1800 ; (*c*) from the edition of 1832, on better paper. Enlarged.

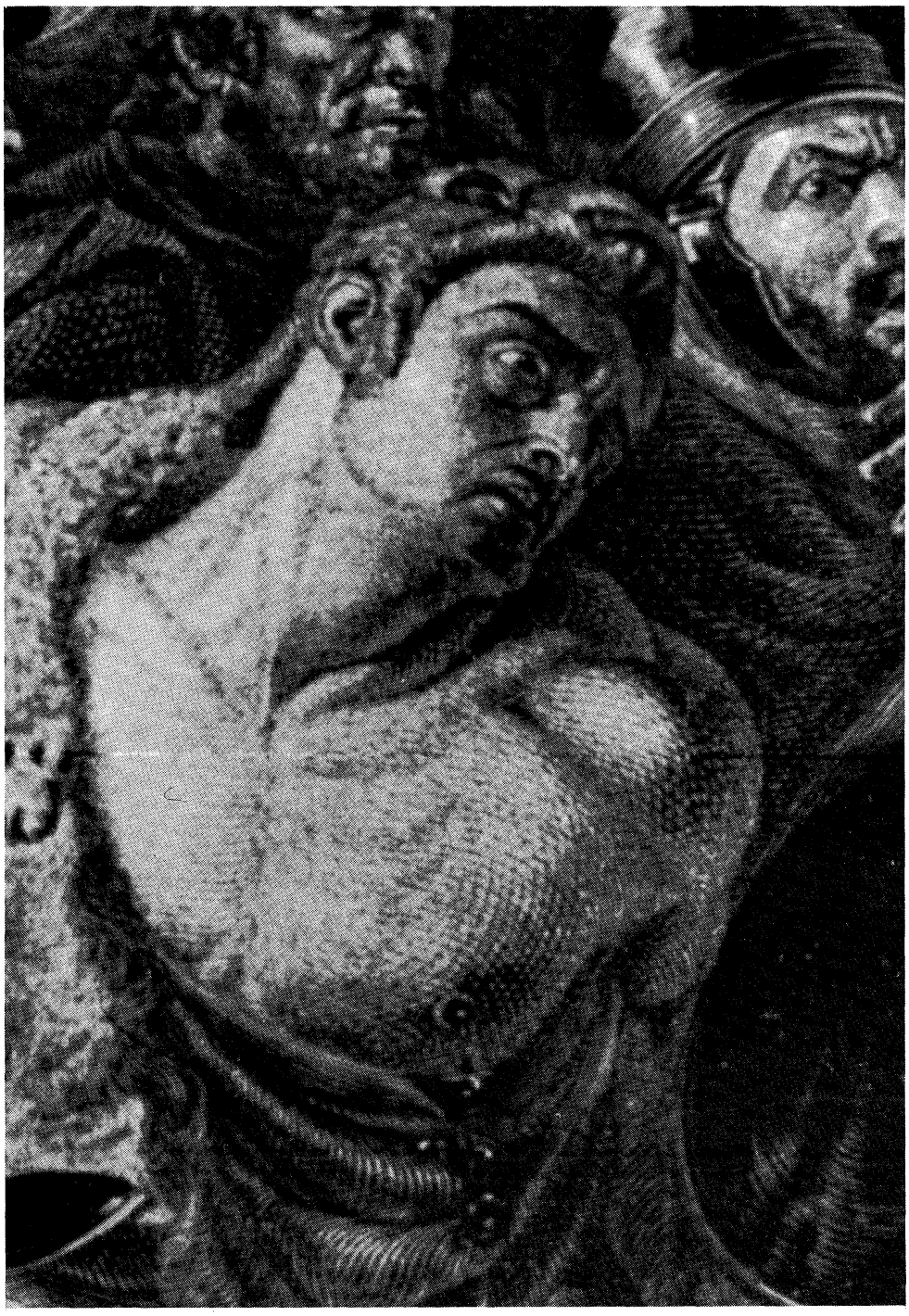
50. Portion of Nesbit's wood-engraving of Rinaldo and Armida, 1822, on China paper. Enlarged.

51. The same portion of the same engraving by Nesbit, on good book paper. Enlarged.



52. Two 'facsimile engravings' of drawings on the block, from *Puckle's Club*, 1817, one on China paper, the other on good book paper. About actual size.

53. Two wood engravings from Thornton's *Eclogues of Vergil*, 1822. One by Blake, the other anonymous. About actual size.



54. Portion of Harvey's wood engraving of the 'Death of Lucius Quintus Dentatus'. Shortly before 1820. Enlarged.

55. The classical statue of Niobe and her Daughter, as engraved on wood from the *Penny Magazine* in 1833. Reduced.

56. Portion of a proof of a wood engraving of a drawing on the block by Daumier, for *Le Monde Illustré*, in the 1860's. Enlarged.

ability to draw or to compose, and none of whom had any imagination or human sympathies. The fact that he often thought out his technical procedure instead of following a mere recipe, was seized upon as justification for a great deal of technical incompetence that carried with it few compensating qualities. Actually, the so-called Revival of Etching that took place in the mid-nineteenth century was merely a revolt from the extreme technical capacity of the descendants of the Rubens-Callot-Bosse reproductive tradition in favour of a greater freedom of handling. But it was not a revival of the art and craft of etching, which so far from having disappeared had actually reached a state of amazing technical control over the laying of the lines, the biting, and the printing of the plate. Thus Rembrandt, who was the most highly disciplined and trained of workers, became the patron saint of a group of hasty sketchers who set up sketchiness as the criterion of what they liked to call 'the true function' of etching. It is to be doubted whether any other etcher, no matter of what school or time, has ever produced plates which required such careful technical forethought and planning as, for example, Rembrandt's 'Presentation in the Temple in the Dark Manner' or his portrait of the Young Haaring.

I shall comment upon the work of only a very few of the horde of later engravers who, in different countries, achieved reputation by following and developing the several variant recipes for standardization of linear work. A time sequence of the works of the French portrait engravers of the seventeenth century brings out with great clarity this search for system. At the beginning we find such an artist as Mellan using a system of shading by parallel lines with little and sometimes no cross-hatching. Later, Nanteuil, a great virtuoso of the engraver's tool, and a quite perfect representative of the intellectual attitude of the reign of Louis XIV, developed an elaborate system of flicks and cross lines, in which can be clearly seen the germs of that final degradation which, in the nineteenth century, took its name from the bank-note portraits from which all personality of both sitter and engraver had van-

ished. His need for system was closely related to the fact that much of the work on his plates was done by assistants. Nanteuil's discipline sat so hard upon him that there is no discernible difference between the portraits he did after his own drawings and those he made after portraits by other men. What came through into the print in either case was only what could be caught and held by his deliberately contrived net of rationality, which was invented for the purpose of portraying the masks that did duty for the faces of the men in high places under the King.

Audran, at the end of the century, had a direct influence on the system. He was perhaps the outstanding member of the group of engravers who reproduced the tapestries and other decorations of the palace at Versailles. The plates were so big and there were so many of them that speed was of the essence, and the liberal use of etching in them provided the only way of achieving it. There was little or no retouching or polishing up.

After Watteau's death in 1721, his wealthy friend Jean de Jullienne embarked upon a great plan to immortalize his memory by subventioning and publishing the two long series of engravings after his work that are known by the catch titles of the 'Big Watteau' and the 'Little Watteau'. The big one contained reproductions of Watteau's paintings, the little one reproductions of his drawings. They were originally issued as sets, the big one being limited to one hundred copies of 'first proofs'. No one had previously undertaken to present to the world at one time a corpus of prints representing as many as possible of the paintings and drawings of an artist. The character of Watteau's works was the antithesis of that of the great machines that decorated Versailles. It was desired to represent this character as closely as possible in the prints, and not to have it boiled down to the stiff consistency of a highly systematized and rigid linear texture. For this purpose Jullienne called to his aid the younger Audran and, especially, Tardieu and Boucher. They used etching and engraving, plain and mixed, to achieve their ends. It was a highly novel undertaking. Out of it there came a series of prints that are remarkable

for their lightness, their blond sparkle, and their wit. It is doubtful if the general character of an artist's work had ever before been more boldly, more summarily, or more charmingly, translated into another medium. The technical means by which this was achieved is perhaps most easily to be observed in the plates reproducing the chalk and sanguine heads and figures which Watteau made as studies for his paintings. The media used in these studies were crumbly and not smooth and slick like the traditional pen and wash drawings which went to the ordinary engravers. More than that they were deft and light handed as few drawings that have ever been made. The way in which the feeling for these qualities was preserved or indicated in the prints after the drawings is one of the major triumphs of reproductive engraving, but, having been made without any apparent systematization or difficulty, it has rarely been recognized for what it actually is.

Shortly after the Jullienne publications were finished several technical innovations were made by the reproductive print-makers in their desire more closely to approach the character of original drawings. I have no doubt that the French fashion for framed drawings, which came in with the Regency style in interior decoration, had much to do with it. Aquatinting was developed to imitate wash drawings, roulettes were introduced with which to make crumbly lines like those of chalk, stipple was developed to make imitations of drawings lightly washed with colour, soft ground was invented to imitate the quality and texture of pencil drawings. Any and many of these processes were used on the same plates, and many prints were made in colour. The colour prints after the water-colours and gouaches of such an artist as Hubert Robert, in spite of all our modern improvements, still hold their charm and interest. Some of the small portraits in colour, such as one of Mme Bertin, are marvels of delicacy and brilliance. The engravers began to put forth what were called 'facsimiles' instead of translations.

While these things were happening there also grew up in France a fashion for very small and finely worked portraits, and,

under the lead of such engravers as the younger Drevet and Ficquet, incredibly minute work was done, sometimes in pure engraving, sometimes in an indissoluble mixture of many techniques. In many of these prints the lines and dots are too small to be separately studied by the unaided human eye. One of the prices paid for this minuteness of scale was that the so finely reticulated surfaces wore out very fast.

At the end of the century someone invented the physionotrace —a contraption with which it was possible for an itinerant portraitist to make quick and easy tracings of profiles and transfer them to the copper in small size. Another device much used at this time was the camera obscura, quickly followed by the camera lucida, both of which came into use as aids to the unskilled in taking off the profiles of hills, valleys and buildings. Probably the most triumphantly successful use of the camera obscura in the making of prints is to be seen in the first states of Girtin's *Views of Paris*. Curiously, but quite logically, you have to be a much more accomplished draughtsman to make a good lively drawing with the aid of a camera of any kind than without it.

The attempts to make printed pictures with tints had begun early in the sixteenth century, as can be seen in a few prints by such artists as Marc Antonio and Daniel Hopfer. But these attempts were sporadic and had little consequence until the middle of the seventeenth century, when the first mezzotints were made. This method had a few followers in Holland and Germany. It was never popular in France, possibly because the typical French palette was high in key. But in England, where the palette was lower, mezzotinting became the standard British way of reproducing the portraits and fancy subjects of the day. Great skill was devoted to its practice and refinement, but it had a comparatively short life, and by the middle of the nineteenth century it had become antiquated. Curiously it was never used by a great artist as a medium for original work. Although Turner did all the work on a few of the plates for his *Liber Studiorum*, it is practically impossible to see any material difference between them and the plates in the

same set that were done by the professional mezzotinters. The last brilliant flare-up of the mezzotint may be seen in the small prints that Constable, in the 1820's and 1830's, paid Lucas to make after small rough sketches which he furnished for the purpose. Constable corrected the proofs of the many states, and in so doing introduced so many and such great changes that it is fair to say that the impressions should be called original prints and not reproductive prints. There can be few documents of greater interest to anyone who desires to watch the artist's mind at work, than a well-selected series of the trial proofs of a number of these Lucas-Constable prints.

The trouble with all these ways of working on the copper was that copper is a very soft metal, and even under the hands of the most experienced and skilful of printers wears out with extravagant speed. This was especially true of the processes in which the surface of the plate was broken up very finely, as was necessary for the making of tints and tones. Books illustrated in these ways could only be printed in comparatively small and expensive editions which could not reach the general public. In many instances, such as that of the *Microcosm of London*, the letter press of the entire edition was printed at one time, and the plates were reworked and printed off from time to time as the book sold, so that the illustrations sometimes bear watermarks of many years later date than that which appears on the title pages. It would seem that most of the copies of Blake's *Songs of Innocence*, the pages of which were painted up by hand, were only made after orders had been received for them. It is to be remembered that the illustrations which have become part of the visual heritage of the general public —those in such books, for example, as Dürer's *Apocalypse*, the Florentine *Epistole e Evangelii*, and, in England, *Alice in Wonderland*—have always been printed from relief blocks which could be locked up with type in the printer's formes and run off in repeated and enormous editions.

A few technical experiments, for they cannot be called more than that, were made in Holland in the seventeenth century and

in England in the middle of the eighteenth century, towards some method of producing relief blocks that would yield prints with adequate detail and tonality and at the same time produce large editions. But, practically, they came to nothing. Everywhere, however, the old techniques for making relief blocks on wood or soft metal had survived, principally for use as decorations for popular chap-books, song sheets, trade cards, and advertisements. The only large-scale original woodcuts of any artistic quality I recall in the eighteenth century were the two lone folio size woodcuts that Hogarth designed. Looking at them today we can see their power and colourful effectiveness, but their contemporaries had little use for them and Hogarth never repeated the experiment. They inspired no more interest or emulation than had the few and remarkably handsome woodcuts after Rubens in the first half of the seventeenth century.

In England the relief techniques survived in the shops where they made trade cards, coats of arms, emblems, bill heads, headings for ballads, and coarse-textured pictures for penny children's books. It was in one of these shops that Bewick served his apprenticeship and later was a partner. It is impossible to say when or where the discovery was made that the engraving tool could be used on a wooden block the surface of which ran at right angles to the grain of the wood instead of parallel with it. The method seems to have been in use in the shop in which Bewick worked. It remained for him to discover that it made possible the production from wood-blocks of lines that for practical purposes were as fine and as closely laid as those that were customarily laid on copper in any of the ordinary commercial processes of engraving and etching. More than that it made possible the production of tints, of black lines on white grounds, and of white lines on either tints or black grounds. The wood-blocks were capable of yielding very large editions. Nothing of this kind had been known before. Bewick made a number of publications which had but little effect on the public, but finally in 1797 he put forth the first volume of a popular ornithology, which he both wrote and illustrated, and that con-

tained a great many anecdotal tail pieces which immediately captured the public attention by their salty, rural sentimentality. Bewick's *British Birds* may be said to have wagged their way into fame with their tail-pieces. The story of the development of this technique under the hands of Bewick and others constitutes a very important part of the story of prints during the nineteenth century. It brought the wood-block back into books, and gave the greater public for the first time copious illustration for its texts.

Almost simultaneously with Bewick's publication of the *British Birds*, there appeared the *Songs of Innocence*, written and illustrated by William Blake, and the *Caprichos* of Francisco Goya. The *Songs of Innocence* were printed from relief etchings on copper. The *Caprichos* were the first set of original and powerful works of art to be made in aquatint. Disregarding the artistic qualities of these two polarly different masterpieces of imaginative picture-making, the importance of their techniques did not emerge until long afterwards, and then in connection with processes of photo-mechanical reproduction of which no one in their time had ever dreamed. During the same years in which these three books or sets of pictures were being made, Aloys Senefelder, in Bavaria, was working out his discovery of a totally new graphic process, using completely novel materials and methods, and producing a kind of print that was absolutely unprecedented. Lithography is the only great historic graphic process of which we know the name of the inventor. What is even more remarkable is that he worked out most of the technical capabilities of the medium even as we have it today. Here at last was a graphic process in which the only person who had to have a technical training in process was the printer—for literally anyone who could make marks with either a pen or a pencil could, with the services of the printer, make a lithograph. Granted the ability to draw it was no longer necessary for anyone to study the handling of a highly artificial linear or other technique in order to make a printing surface. It was not necessary for the draughtsman who made the lithograph ever to have been in a lithographic establishment, ever to have

seen a lithographic printing press, or even to have seen one of the stones from which the prints were pulled, for he could draw at choice directly on the stone or on paper, with a pencil, a pen, a crayon, or a brush, provided only that the pigment that came from it was greasy. I have myself, in a demonstration, made a print from a drawing that I made on a stone with a lipstick borrowed from a lady in the audience. Once his drawing was made, all the artist had to do was to hand it to the printer, who did the rest. But all this only came out in the nineteenth century.

Senefelder's discovery did two very remarkable things. It freed the original artist or draughtsman from the tyranny of the reproductive engraver's nets of rationality, and it enabled the public for the first time in many generations to get direct first hand exactly repeatable pictorial statements about things seen and imagined that could be printed in practically unlimited editions. The reign of second-hand visual information was drawing to its close.

Only five years after Senefelder made his discovery Wedgwood got a print by the action of light on a piece of chemically sensitized paper. Never before in all the history of the techniques of the repeatable picture had so many things of such vital importance been worked out in so short a time.

As we look back over the book illustration and the informational prints of the seventeenth and the eighteenth centuries, it becomes apparent that with very few exceptions they were pictures which were at one and two removes from the visual statements made by their titular makers. This is but another way of saying that the printing surfaces from which the illustrations and prints were struck off were not made by the draughtsmen or illustrators but by copyists of their drawings. In many instances, such as the reproductions of paintings and statues, the objects reproduced were copied by some draughtsman, and his drawing was then copied by the engraver, who did not work directly from the original work of art. The situation had implicit in it all the difficulties of which Pliny talked in his account of the Greek botanists.

We are apt to forget how long into the nineteenth century this situation persisted. Thus, for example, Walter Crane was sent to study drawing in an engraver's shop so that he would be able to make drawings that the engravers could understand and translate into their lines with the least difficulty.

The most that anyone looking at one of these engravings could hope for was that the broad general scheme of the composition was indicated in a generally adequate way, and that the iconographic detail was more or less truthful. The print never conveyed any information about the surface of the original or the manner in which it was worked. I may perhaps make my point in another way—if there were several paintings of the same general composition and incident, and there were engravings available of each of these paintings, no study of the prints could possibly determine which of them represented the original and which the copies or adaptations.

The well-known statue of the Laocoon was excavated early in the sixteenth century. It was engraved, etched, and cut on wood, at frequent intervals by different men, some of whom had seen the original, some of whom worked from drawings specially made for the purpose, and some by men who worked at first or second hand from prints that had previously been made. A group of these prints is here reproduced in chronological order from the 1520's to the 1890's, either enlarged or reduced so that the head of Laocoon is the same size in each. Each engraver, of course, phrased such information as he conveyed about it in terms of the net of rationality of his style of engraving. There is such a disparity between the visual statements they made that only by an effort of historical imagination is it possible to realize that all the so dissimilar pictures were supposed to tell the truth about the one identical thing. At best there is a vague family resemblance between them. Had they represented butterflies instead of a known single statue, one would have said that they represented different families of the genus Laocoonidae. A comparison of them immediately raises Pilate's question. It is easy to see that here we have

posed as a practical matter one of the most difficult and abstruse problems known to the epistemologists.

When we think that it was on engravings of this kind that the comparison and discussion of the qualities and relative merits of works of art was based, it becomes easy to understand why so little of the art criticism and discussion of the past has any value for us of today, except in so far as it throws light on the thought of its times, and why the subjects about which the critics and theorists talked, the qualities they looked for and found or did not find in works of art, are so amusing and puzzling to us of today. The predicament was not peculiar to works of art, for it was inherent in every sort of visual information about everything in the world.

Thus whenever we read a book, especially about art, archaeology, or aesthetic theory, written prior to about the beginning of the first world war, it is well to ask ourselves to what extent the writer had both a dependable memory and a first hand acquaintance with the objects he referred to, to what extent he knew them through reproductions, and what sort of reproductions he depended on. Perhaps the most pregnant remark in Bosanquet's standard *History of Aesthetic*, is hidden in a short footnote which points out that when Lessing wrote about the Laocoon and expression in art he had never seen the original and probably depended for his visual knowledge of it upon engravings. It would have been difficult for Bosanquet, whose book was published in 1892 at a time when photography and the photo-mechanical processes were still in their infancy, to be aware of what he had done in his casual footnote, but when he had fired that one shot he had utterly wrecked most of the biggest tanks in the armies of eighteenth- and nineteenth-century connoisseurship and aesthetics.

There is an old and well-known French proverb and pun—*Que c'est meilleur d'être raisonnable que d'avoir raison*—which can only be translated by forgetting about the pun and saying that it is better to be reasonable than right.

When it came to things and objects about which they had no

immediate first-hand acquaintance and for information about which they had to rely on words and the available printed pictures —e.g. Goethe showing his engravings to Eckermann—the people of the eighteenth and most of the nineteenth century could only be reasonable, for it was utterly impossible for them to be right. They had not the means available to think in particularities, which are always irrational, and they had to think in generalities. Thus it came about that they thought their generalities were true, and that when observations did not agree with the generalities it was the observations that were wrong. To a very considerable extent they were still in the situation and the frame of mind that had caused the Greeks to think as they did about some of the basic problems in philosophy. Thus just as the ancient Greeks developed the Platonic doctrine of Ideas and Aristotle's essences, so the eighteenth century developed the ideas of the Truth of Science and of the Laws of Nature. It did this very largely because it was impossible for it to state exactly the particulars it saw in such a way that the statement could be verified. It was impossible for it to make and publish a pictorial statement that could not be challenged for its accuracy. Also it was impossible for it to make another pictorial statement about the same thing that should be like one that had already been made. In other words, it was impossible to verify any qualitative visual information except by going to where the thing was and looking at it, and when this was done the information was never accurate. An experiment leading up to visual recognitions of identity could be exactly repeated, but it might just as well not have been, for there was no way of stating the result of either experiment in such a way that the reports were either exact or exactly alike. All the eighteenth century could do with the pictorial means available to it was to take a series of visual statements and draw a sort of statistical average of what they contained. But no statistical average has ever existed in nature as a concrete fact. The moment we begin to think in terms of averages we confess that we have lost contact with the concrete things from which the average is calculated.

Today we talk very little about either the 'Laws of Nature' or the 'Truth of Science', and, if we know what we are doing, we hold them in no very great respect, for we know that it is our business to challenge them, and that if we can find even a single instance in which a so-called law of nature does not work, that law will have to be recast, and that it is we who shall have to recast it. It is rather comic to think of a mere human being either making or recasting so august a thing as a law of nature, but that is just what he does. This is a very recent notion, and it has come about very largely through our experience with visual information and statements. An example is provided by the photographs of an eclipse that were taken in 1919 in Brazil and the Gulf of Guinea, which verified Professor Einstein's hypothesis about the action of gravitation on light. No man until very modern times could have produced a picture that would have been accepted as evidence that light was subject to gravitation. Similarly the photographs taken in the Cavendish Laboratory of vapour condensations in cloud chambers were accepted as evidence that the atom, instead of being simple, was exceedingly complex. Between them these two sets of photographs called for the complete recasting of what for several hundred years had been regarded as Laws of Nature, and involved such a radical overturn of basic notions as had probably never before happened in the history of thinking man.

V

THE TYRANNY BROKEN

THE NINETEENTH CENTURY

With the nineteenth century we come to a period in which the printed picture may be said to have come of age. Not only did it use all the older processes but it invented more new ones than had been known in all previous history. I imagine that the number of printed pictures produced between 1800 and 1901 was probably considerably greater than the total number of printed pictures that had been produced before 1801. They were made for all classes of society and for every conceivable purpose. By the end of the century the exactly repeatable pictorial statement had become a commonplace in books, in periodicals, and in the daily newspapers. It was spread on exterior walls for advertising and propaganda, and on interior ones for decoration. It had become an absolute necessity in manufacture and engineering of every variety. The most important single development in the century was the discovery and exploitation of photography and photographic process. First it eliminated the draughtsman, and then it eliminated the engraver from the making of exactly repeatable pictorial statements, and after that it went on