1940

History development and function of illustration in the American press

Lloyd F. Whiting

The University of Montana

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THE HISTORY, DEVELOPMENT AND FUNCTION
OF ILLUSTRATION
IN THE AMERICAN PRESS

by

Lloyd F. Whiting
B.A., Montana State University, 1929

Presented in partial fulfillment of the
requirement for the degree of
Master of Arts.

Montana State University
1940

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INTRODUCTION

As may be judged by the earliest records, pictures have always interested people. They pre-date the establishment of alphabets by the primitive people and served as the first method of communication. Even today they form a common language among all people. Prior to the invention of reproductive processes, pictures were confined to the church and the homes of the wealthy. Then the invention of block printing made it possible for the poorer people to secure pictures. The further improvement of printing processes and equipment—finally climaxed with the development of photo-engraving—has resulted in general use of, and interest in, pictures of all types and subjects.

Until the perfection of photo-engraving, books and magazines were the principal users of illustration in the United States, with only an occasional isolated woodcut appearing in the newspapers. The books and periodicals were usually illustrated by copper or steel engravings. The first successful efforts at printing pictures on a large scale and systematic basis occurred in the illustrated weeklies—in particular, Frank Leslie's Illustrated Newspaper and Harper's Weekly, both of which were started during the 1850's.
Afterwards Harper's Monthly and Scribner's Magazine (the name was later changed to Century Magazine) became the dominating publications in the reproduction of pictures, through their sponsorship of wood-engraving. Then, photo-engraving made it possible for newspapers to print pictures both economically and quickly.

Under the leadership of the newspapers the use of pictures was greatly accelerated. Several results of this have been the development of rotogravure, the establishment of tabloids, and the invention of methods transmitting pictures by telegraph, telephone and radio. In more recent years, picture magazines have pioneered in even greater use of pictures.

This study does not attempt to cover the entire pictorial field but only those features that have resulted in the illustration of published material in the American newspapers. Undoubtedly such pictures have played an important part in the history of this country as well as increased the interest and knowledge of the people in many subjects. The use of cartoons has had a definite effect on this nation's history. The publication of pictures of travel, scenery, places, and people not only have enlarged the newspaper readers' knowledge of their own country and countrymen but also given them a greater comprehension of the rest of the world.
Of course, a good many pictures that have been reproduced are purely sensational. These can be only justified by the fact that the people wish to see them, as can be judged by the success experienced by publications using this type of pictures: for instance, The National Police Gazette, The New York World and Journal, The New York Daily News, and the present day picture magazines. That they succeed, by graphic representation, to convey images in a more vivid manner than do competing verbal accounts, is no just condemnation.

Undoubtedly most comic strips are decidedly not humorous but they do serve a purpose of tying the country closer together by establishing national characters and symbols.

Because they can spread information through exact reproduction, pictures have helped men to accumulate and increase his knowledge of all subjects. This is especially apparent in scientific and technical fields.

Before the historical trend in the reproduction of pictures can be noted, it is necessary to have a knowledge of the various ways that pictures may be reproduced. Mechanical difficulties always have limited the number and quality of illustrations, and the increased use of pictures has coincided with the perfection of new image-printing methods and equipment.
There are three general ways of transferring ink impressions to paper. The first of these, and the most common method, is from any raised surface and is known as letterpress or relief printing. The other two are planographic, which utilizes flat surfaces, and third, intaglio by which the printing areas are below the surrounding non-printing surfaces.

Relief or raised printing
Planographic, or flat surface printing
Intaglio, or below the surface printing

Relief Printing of Illustrations

Woodcuts—The earliest form of relief printing was xylography—block printing—and was used for many years prior to the invention of movable type. Later, the early printers used relief blocks or woodcuts for illustrating their books. Woodcuts continued to be the only form of letterpress illustration until the later part of the nineteenth century. The highest perfection in woodcut engraving was reached between 1870 and 1890.

Two other ways are in general use now for the printing of illustrations by relief.
Line Etchings--Pen drawings or other similar items that are strictly black and white in character are reproduced by line etchings, or as they are commonly known--zincs. A photographic negative is exposed over a sensitized sheet of zinc. The action of the light hardens those portions of the surface it comes into contact with, and these then resist the action of an acid. The surrounding metal is etched away in a bath of acid.

Copy used for a line etching may be a pen, pencil, or charcoal sketch, typewritten or printed copy, a signature, music or anything in which the lines are separated by white space.

Special effects, somewhat resembling the line and dot effect of halftones, may be secured for line etchings by the use of mechanical patterns through the use of Benday screens. These are named after their first inventor, Ben Day. By the use of Benday screens lines, dots, stipple, texture, etc., may be included as part of a line etching.

Stipple or screen effects also may be secured by the use of Mistogramy sheets. The artist draws his pictures on this prepared paper, and when they are completed, a special solution is applied to the sheet that develops out dots that are latent in the prepared paper.

Halftone--The printing press, in general, can not put varying amounts of ink on illustrations in order to secure
gradations of tone. These tones must be secured by breaking up the illustrations into small dots of varying sizes and spacing.

This effect is secured by placing a screen in the camera between the negative and the copy. When the copy is photographed through the screen, the light reaching the negative is split into a pattern of pin-point-dots, corresponding in tone to the highlights and shadows of the copy.

The screen used consists of two pieces of plate glass, engraved with fine parallel lines, cemented together in such a manner that the lines crisscross at right angles. The number of lines to the square inch varies from 50 to 250—and more—to the inch. The proper screen for a half-tone depends on whether the paper the illustration is to be printed on is coarse or smooth. Coarse paper requires a coarse screened halftone.

When printed the number of dots and their size govern the tone in any given area. The eye averages the total of the dots and white spaces so as to give the illusion of continuous tone.

Two other relief illustration methods served a definite need prior to the perfection of photoengraving; but since then their use has been very limited. These are wax engraving and chalk engraving.

A wax engraving is made by first coating a metal
plate with wax composition. The design is then scratched completely through the wax, and when completed the wax plate is electrotyped. The lines of the drawing appear in relief on the electrotype. Ruled forms, maps, charts, diagrams, etc., may be reproduced by this method.

Chalk engravings are produced in much the same manner as wax engravings and may be used for similar purposes. A chalk coating is applied to a metal plate and the design drawn through the chalk to the surface of the plate. This is then used as a matrix and a stereotype is made.

Planographic Printing

Lithography--The principle of surface printing was first discovered in 1776 by Alois Senefelder. His experiments showed that a greasy image would not take water, but would take greasy ink, while the cleaned, dampened portions of the stone bearing the image would not take the greasy ink. This led to the invention of lithography.

At first lithography used as surfaces fine-grained sandstones that were obtainable only in Austria and were necessarily printed on very slow presses. Later it was discovered that grained metal plates made of zinc or aluminum could take the place of the stones.

The picture may be transferred to the stone or plate either by hand or by photography--the latter process being
known as photolithography.

By hand method, the picture is traced off in outline and then transferred to the stone or plate. The lithographer then works in tones with a soft greasy pencil. When the image is completed, the crayon is fixed and etched in so that it is almost part of the surface of the stone.

For photolithography the stone, metal plate, is covered with a light-sensitive coat of gelatine. A halftone screen is placed on this and then on top is laid the negative of the picture. The action of light through the negative renders the gelatine it reaches insoluble.

Offset—The use of metal plates for lithography has developed another way in which the process may be used to print illustrations as well as other matter.

The metal plate is curved around a cylinder and printed on an offset press. The press gains its name through its manner of printing. The inked and wetted lithographic cylinder revolves to make contact with a rubber-blanketed cylinder. The impression left on this rubber surface is then transferred to paper that revolves on another cylinder.

Collotype and Aquatone—Illustrations may be printed by planography in two other ways but both of these are too expensive for general usage. They are based on photogelatine printing and are called Collotype and Aquatone. The collotype process uses a glass plate covered by a light-
sensitive gelatine solution in a manner similar to photolithography. But the very nature of the plate and its light contact with the paper being printed makes it very difficult to handle heavy black areas.

The collotype process is employed for the reproduction of originals containing fine detail such as paintings of old masters, tapestry, glassware, jewelry, and ancient documents, with their stains and creases. Under ideal conditions, collotype reproduces all the finest lines to the deepest shadows that the original contained.

For Aquatone a zinc sheet is employed in place of the glass plate and a screen twice as fine as a halftone screen is used. No screen is used in the collotype process. Regular offset presses will print Aquatone plates.

**Intaglio Processes**

Intaglio has been used since the beginning of printing to illustrate printed books but such illustrations could not be printed with the type and were usually inserted as a separate sheet. Intaglio plates are first inked, and then the top surface is wiped clean. Next the plate is brought into contact with paper where the ink is sucked out, leaving a reproduction of the picture.

The intaglio method of producing pictures is similar to the way many artists obtain "weight" in a picture—by
applying varying amounts of color. In an intaglio print, solids have a greater quantity of ink than the middle tones and highlights.

Copperplate engravings, etchings, and steel engravings were the main intaglio methods of illustration before photography made possible the perfection of rotogravure and photogravure.

Copper was the principal metal used for both engravings and etchings although iron was sometimes used for etchings, and between 1830 and 1865 steel was used a great deal for engravings. In engraving the lines are cut by hand by the use of special engravers' tools, while etchings are made through the action of acid on metal.

A characteristic difference between engravings and etchings may be noted by the manner in which lines are ended. In an engraving lines gradually taper to an end because it is impossible to end a line abruptly by means of a gouging instrument. Lines end squarely in an etching, and in addition lines do not gradually increase or lessen in thickness. Etchings are prepared by first coating a metal plate with an acid-resistant. The design is then scratched in with needles of varying fineness.

Mezzotint engraving is an intaglio process. A sheet of copper is roughtened by what is known as a rocking tool until the plate is a mass of sharp teeth. An impression of
the plate at this stage would produce a solid black velvety print. The subject is then drawn or traced on the rough surface and a tool called a scraper is used to secure a surface with different gradations of tone. Mezzotints combine perfection of tone with richness and softness. Photogravure has superseded mezzotints.

Dry point is another engraving process formerly employed. Although sometimes used in connection with etchings, dry point does not use acid. Instead an etching needle is used to scratch the design onto the metal plate. The needle leaves an irregular ridge on either side of the line it makes, to which ink adheres in printing and produces a blurred effect.

Aquatint and Stipple engraving were etching methods used to secure special effects of tone. In Aquatint this was secured by etching with an acid through a layer of powdered rosin on the plate. The acid entered the minute spaces between the exceedingly fine grains, producing a line in printing. Stipple engraving is done by means of small bunches of needles, with which irregular dots are made in the etching ground and then bitten by acid. It was chiefly used for faces on the reproduction of portraits.

Steel-Engraving was principally used during its comparatively short popularity in the middle of the nineteenth century for engravings which were to be duplicated.
engraving was first made in steel and this was then pressed into a sheet of soft steel any desired number of times. This sheet of steel then was hardened. The perfection of electrotyping and stereotyping destroyed the value of steel engraving by taking away its usefulness as a means of duplicating.

Photogravure and rotogravure are the present day intaglio printing methods. A photogravure resembles a fine grained mezzotint. It is produced by first roughening a metal plate to produce a grained effect. The image is next transferred to the plate by the gelatine process and then the plate is etched. The grain is made deeper and heavier where the shadows are to appear. The plate when finished is printed by intaglio means.

The rotogravure plate also has a slight grain but a screen similar to a halftone screen is used to produce most of the grained effect. Rotogravures are printed on large copper cylinders.

**Duplicating Processes**

Electrotyping and Stereotyping are both duplicating methods. They are used in order to save wear on the original form and to secure any number of duplicates of the original in order that the same material may be printed a number of times simultaneously on the same press or on a number of presses.
Color Process

The reproduction of pictures in full color, although more complicated, follows the general lines of black and white printing. All three ways of printing are adaptable to color printing. However, four plates or halftones must be made instead of the one required for single color printing. One of these plates will be for black printing, and one for each of the primary colors—red, blue and yellow. The portion of each of these colors in the painting or photograph is determined by the use of filters. The particular filter in each case excludes all color except from the one to be recorded.
WAYS OF REPRODUCING PICTURES

Relief Printing  Planographic Printing  Intaglio Printing

Relief Printing

Woodcut  Line etching  Halftone  Chalk and Wax engraving

Planographic Printing

Lithography

Lithography  Photo-Offset  Collotype  Aquatone

Intaglio Printing

Copperplate engraving  Photogravure  Rotogravure

Etching  Dry Point  Mezzotint  Aquatint  Stipple
CHAPTER III

PRINTING OF ILLUSTRATIONS BEFORE 1600

Pictures have always been the first method of communication between peoples, and in all languages pictures have preceded alphabets. Before printing methods were invented and perfected, the production of pictures was accomplished entirely by painting and drawing. This of course made them expensive, and only the rich could afford to possess good pictures.

The spread of xylography (woodcuts) through central Europe, during the fourteenth century, made it possible to satisfy the desire of the poorer classes of people for pictures for the first time in history.

For several hundred years before Europe began using block printing, it was carried on a large scale from Kans, the capital of Japan, to Turfan, 400 miles west of Tun-huang. The earliest well-defined block printing extant dates from 770 A.D. and was found in Japan, although it is believed that block printing was carried from China to Japan. The earliest dated book, the Diamond Sutra, was printed in China in 868. Playing cards and money, as well as books, were printed.

For a long time the Kosen world lay as a barrier between the Far East and Europe; but the Mongol conquest
during the thirteenth century made possible trade between Europe and the Far East. As a result of this, travelers and missionaries undoubtedly carried the knowledge of block printing to Europe.

The first examples of block printing in Europe were playing cards and image prints of religious subjects. The latter included prints of the Virgin with the Holy Infant, the most popular Saints, and subjects from the Bible. The pictures were simple in outline, and in many cases were intended to be colored by hand.

The earliest dated of these was produced in 1423. It shows St. Christopher fording a river with the child Jesus on his shoulder. Under the picture are these lines: "In whatsoever day thou seest the likeness of St. Christopher, in the same day thou wilt from death no evil blow incur."

Immediately after the invention of printing with movable type, illuminations, borders and initials were supplied by hand by illuminators. The desire for cheap books gradually did away with this practice.

In 1493 Kroberger published his Nuremberg Chronicles, a history of the world written by Hartman Schedel. This book contains 1809 illustrations, but only 645 blocks were used. Three cuts of a monastery did for 32 monasteries, 44 portraits of a king for 270, and 26 of a Pope for 326 individuals.
By the end of the fifteenth century, shading and cross-hatching were being used by the best wood-engravers. Within a few years wood-engraving reached a stage that since has been hard to equal. The names of Albrecht Dürer and Hans Holbein stand out in this period.

After the time of these early artists, woodcut illustrating sank into decay as copper plates came into general use as book illustrations. Woodcuts continued to be used only in the cheaper publications.

With the coming of the printing press to the colonies in America, the use of illustration paralleled that of Europe. Small woodcuts were used occasionally in newspapers and broadsides but copper engravings were used for the better pictures appearing in magazines.

The earliest woodcut portrait to be printed in the colonies was one of Richard Mather, and was cut by John Foster prior to 1670. Although one of the three known copies of it was found bound in a copy of Increase Mather's Life of Richard Mather, it is believed the portrait was printed separately and not as a book illustration. The first American book illustration appeared seven years later in an edition of Hubbard's Narrative of the Indian Wars, also printed by Foster.

Although the first copper engraving printed in America was believed to have been R. Simson's *Map of Rariton River*, in 1685, it is possible that it was printed in 1886 in London instead. This leaves a portrait of Increase Mather, by Thomas Emes, of Boston, which was printed in Mather's *Blessed Hope* in 1700, and his *Ichabod* in 1702 as the earliest copper plate engraving printed in the colonies.

Proclamations usually contained a small woodcut of the colony's seal—the first one, the work of John Foster, appeared in 1676—but no other illustrating of proclamations or broadsides was attempted until 1718. This evidently was not profitable because 14 years elapsed before another illustration was used. Then a woodcut was used in connection with an execution on Boston Neck, in 1732. Thereafter "each printer had his execution block which could be modified to suit a single or double hanging."  

The first illustration in American newspapers was a woodcut reproduction of a new flag for the United Kingdom of England and Scotland and was printed in the *Boston News-Letter* of January 19-26, 1707-8.

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2 See Wroth, *ibid*, p. 284 and footnote 11 on page 328.

3 Chauncey Worthington Ford, *Broadsides, Ballads, etc., Printed in Massachusetts 1609-1800* (Historical Society, 1922), p. vii of "Introductory Notes."
The limited amount of illustration appearing in colonial newspapers took two forms—small illustrations, engraved on wood and metal, for advertisements, and cartoons. The scarcity of workmen and the time required to make cuts limited their use.

Also, the presses in use during the eighteenth century differed very little from the fifteenth century wine-press-type affairs. These wooden presses limited the amount of impressions that could be imposed and consequently limited the size of woodcuts.

Advertisements for runaway slaves or indentured servants were illustrated by small pictures of a person running. Pictures of ships were used to advertise cargo space or passenger accommodations; scythes and sickles denoted hardware stores; clock faces were used for watchmaker's establishments; houses for real estate dealers, etc.

Later, half—and even full column—width pictures were used to denote certain advertisements. In The Pennsylvania Packet and General Advertiser, in 1771, appeared a column width cut of a spinning wheel in the advertisement of James Cummings, dry goods man, whose address was "At the Sign of the Spinning Wheel." In 1785 and 1786, The New York Daily Advertiser began to use many column-wide cuts—one of a chair for a cabinet maker, a rose for a perfumer, and a horse and
man for a livery stable. 4

The most famous cartoon of colonial days was Benjamin Franklin's "Join or Die" cartoon. This one-column, two-inch woodcut showed a snake divided into eight parts, each of which bore the initials of one of the colonies. The purpose of the cartoon was to impress the readers of his Pennsylvania Gazette with the necessity for united action at a congress of representatives of the colonies at Albany in the summer of 1754. The meeting had been called in anticipation of the approaching French and Indian War.

William Bradford in his Pennsylvania Journal, October 31, 1765, made a pictorial protest against the Stamp Act that was to go into effect the following day. He made up his front page in imitation of a tombstone and announced that the paper was "Expiring: In Hopes of a Resurrection to Life Again," and was bidding "Adieu, Adieu to the Liberty of the Press." A skull and cross-bones, printed in the lower right-hand corner of the page, were captioned, "An Emblem of the Effects of the Stamp. O! the Fatal Stamp." Later, the Boston Gazette and the Maryland Gazette also used the skull and cross-bones.

The friction between the colonies and Great Britain,

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just before the outbreak of hostilities, was the occasion for the revival of Franklin's "Join or Die" cut. Starting July 7, 1774 and continuing in every issue until the paper ceased publication April 6, 1775, Isaiah Thomas printed in his *Massachusetts Spy* a cartoon consisting of a dragon to represent Great Britain and Franklin's snake, then in nine segments, with the legend, "Join or Die." This appeared across the full width of the front page, just under the title. The Snake device appeared in many colonial papers in 1776.

After the revolution, Benjamin Russell helped create public opinion in favor of ratification of the constitution by running a cartoon in his paper, the *Massachusetts Centinel* and *Republican Journal*. This cartoon represented the "Feder­al Edifice," and "National Dome" of which was to be supported by pillars representing each of the states. As the states approved the Constitution, one pillar after another, each inscribed with the name of a state, was put in place in the picture. By 1788 all but North Carolina and Rhode Island had ratified the Constitution. The woodcut was then printed showing North Carolina's pillar raised part way, with the legend, "Rise it Will," and Rhode Island's pillar broken off at the base, with the wording, "The Foundation good—it may
yet be saved."^5

The first two efforts at Colonial magazine publication occurred within three days of each other in Philadelphia, in January, 1841. Neither was successful, and both were soon abandoned by their respective publishers, Andrew Bradford and Benjamin Franklin.

After that, magazines multiplied at a rapid rate—too fast a pace judging from the fact that most of them existed only for short periods. Twenty were started between 1741 and 1776, one during the revolution, and 79 between 1783 and 1880.

Most editors of periodicals had the ambition to embellish their publications with copperplates, and frequently it was announced that "As soon as a number of Subscribers equal to the expense of this magazine are procured, every number shall then be ornamented with some pleasing representation."^6 Although the number of these pictures was limited because of their great expense, they did find a very welcome place in the home—since in many homes they were the only pictures—and they did help to popularize art.

The first American magazine to be illustrated to any


great degree was the Royal American, which planned to present its readers with two copperplate engravings. Twenty-two were presented in its fifteen issues. Some of these were engraved by Paul Revere, who also illustrated the Newport, 1772, edition of Church's History of King Philip's War, and the New York, 1774, edition of the New Voyage of Captain Cook.

The folio Bible, published by Isaiah Thomas in 1791, contains a group of fifty copperplates; while Dobson's edition of the Encyclopaedia Britannica, printed in Philadelphia between 1790-1797, contains 543 copperplates in its 15 volumes.

These last marked a turning point in American copperplate engraving: for, while poor plates did appear occasionally in periodicals, the copperplates and later steel engravings during the nineteenth century were generally very excellent.
CHAPTER IV

PRINTING OF ILLUSTRATIONS, 1800-1850

After years of decay, wood-engraving was given new impetus through the efforts of Thomas Bewick, late in the eighteenth century, and from that time the drawing, engraving and printing of woodcuts improved until the height of excellence was reached in 1825.

Thomas Bewick was born near Newcastle, England, in 1753 and at the age of 14 he was apprenticed to Ralph Beilby, an engraver in that city. In 1775 the Society for the Encouragement of Arts offered a series of prizes for the best engravings on wood. Bewick was one of three persons winning the prizes. Two years later he entered into partnership with his old master. In 1785 Bewick began to engrave the blocks for his General History of Quadrupeds, which was finished in 1790. This and his History of British Birds (1797) are the principle monuments to Bewick's ability as a wood-engraver.

Bewick developed a technique that became known as "white line." Formerly wood-engravers considered their pictures as being black lines on a white background, and grays and blacks were produced by increasing the number of cross strokes, as if drawn on paper. By the new method this was reversed. The block was considered as a black surface, and the color was lessened by increasing the number of white
lines.

Instead of using planks of soft wood such as pear or apple, Bewick employed instead the hard wood of the box tree, and cut the blocks across the grain of the wood. Formerly the cutting was done with a knife drawn toward the engraver, but under the new technique the graver was pushed away from the engraver.

Overlaying of cuts, and the counter process of slightly lowering surface portions of the engraved blocks, were either originated or rediscovered by Bewick.

With the revival by Bewick, wood-engraving became very popular in England and Bewick's influence was soon felt in the United States.

Dr. Alexander Anderson of New York was the first American engraver to attempt to duplicate Bewick's example. Anderson's first engraving efforts were on metal. But in 1794, when nineteen years old, he chanced to see a sketch of Bewick's life and examples of his work. He had previously engraved on metal the illustrations for a book The Looking Glass of the Mind, but after seeing Bewick's work, he reproduced them on wood.

After practicing medicine for several years, Anderson again took up wood engraving, and in 1804 produced the first American edition of Bewick's General History of Quadrupeds. He continued to engrave woodcuts until two years before his
death in 1870. His last cut, engraved when he was 93 years old, was a picture of the "Hudson County Court House and Jail" for Barber’s Historical Collections of New Jersey.

Not only did Dr. Anderson do good engraving himself but he instructed Joseph Alexander Adams in Bewick’s white line technique. After several attempts to educate himself in wood-engraving, Adams called on Dr. Anderson. There he was shown Bewick’s method, was loaned several of Bewick’s works, and later Anderson sent customers to Adams occasionally. Adams became the foremost wood-engraver in the United States during the years prior to 1850.

Through Bewick’s efforts wood-engraving technique was perfected, but still the printing of illustration by woodcuts was expensive, difficult and generally highly unsatisfactory.

One of the biggest obstacles was the inability of the letterpress presses to handle large woodcuts adequately. Wooden presses gave way to iron presses after the perfection of the first one in 1798 by Lord Charles Stanhope of England, scientist, mathematician and inventor. George Clymer, in Philadelphia, early in the nineteenth century invented the "Columbian" press that was larger, stronger and easier to operate than the Stanhope press.

Woodcuts require not only more impression than type surface, but also an inequality of impression to print lighter and darker shades. Because of the need for this
added pressure, presses still were inadequate for the printing of large woodcuts. The Stanhope press proved unqualified to print Harvey's "Dentatus," a block of 15 x 11¼ inches, and it broke under the pressure of the Columbian press.

Letterpress printers soon realized that copperplate printers and lithographers had a superior method of doing press work. This advantage is explained by Theodore De Vinne as follows:

Applying impression by means of a scraper or a cylinder gradually passed over the surface of the stone or the copper, they could give strong impressions with comparatively little exertion and little risk of breakage. They had a decided advantage over the woodcut printer, who, by one sudden blow, diffused a greater force over a surface a hundred times, sometimes a thousand times, greater than the surface impressed at one instant on stone or copper. The power of the hand-press was weakened by its diffusion over too large a surface.\(^7\)

William Nicholson, (1753-1815) English inventor, is recorded as being the first person to devise a workable design for a printing machine driven by power. He, however, did not succeed in introducing his ideas and Frederick Koenig produced the first practical power printing press. It was used November 28, 1814 to print the London Times. This cylindrical printing press, driven by steam, was capable of 1,000 impressions per hour.

Leather rollers supplanted on the cylinder press the inky balls previously used for hand-presses, but these did not ink woodcuts properly. The rollers necessarily had a seam where the ends of the leather were joined, and this caused streaks across the printing form. A London printer named Foster made the first successful composition covered rollers, and the casting of composition rollers in molds soon followed.

Still more, in order to print woodcuts well, it was necessary to have paper of uniform thickness and reasonable smoothness. Until the Didots of France and the Fourniers of England developed, between 1801 and 1810, a machine for making paper in a continuous web, such paper was very expensive.

Even improvements in press, paper and inking arrangements did not convince the printing trade that fine woodcut printing could be done only with hand-made paper and on a hand-press. It was believed that good woodcut press work required the use of only small forms, overlays, and inking by hand. This method was expensive but not always good, because of the varying skill by which pressmen could cut overlays.

The expense and inferior quality caused most publishers to illustrate their books by copperplates or lithographs.

Alois Senefelder of Munich in 1796 invented the
lithographic process; and after he patented it in 1801, it rapidly became a popular method of reproduction. Lithography was established commercially in America in 1822, and resulted immediately in an increase and variety in book and magazine illustration. The first cartoon to be lithographed in America is thought to be "A New Map of the United States" issued in 1829.

Whether it was "the result of the new, simple, and cheap method of reproduction or whether it came of the intense interest and protest Old Hickory's Acts and Policies aroused," lithographed cartoons became very popular during Jackson's administration. They continued to be issued in large numbers up through the Lincoln-McClellan presidential campaign of 1864.

These lithographs were generally printed on separate sheets varying in size from 10x12 to 14x20 inches, and sold at 12½ to 25½ apiece. They were intended to be nailed upon walls or else passed from hand to hand. Not only were they crude, but in many times they were indecent.

In 1848 the firm of Currier & Ives became the principal publishers of campaign caricatures in lithograph sheets. The use of lithographed caricatures ended when the illustrated weeklies began publishing political cartoons.

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Lithography was used to illustrate many books and reached a high point of excellence during this period. Hall's *Indian Tribes of North America*, published in Philadelphia, 1834, contained a series of Indian portraits printed by lithography.

Between 1815 and 1830 a process was developed that for a period of thirty or forty years aided greatly in the reproduction of engraving. This process was steel engraving.

John Perkins, Massachusetts inventor and engraver, invented steel engraving in 1815. He first engraved a banknote or postage stamp on soft steel, and then hardened the steel. This original he pressed into a sheet of soft steel as many times as needed to fill the sheet. The sheet was then hardened.

By this method any number of copies of an engraving could be secured comparatively easily and quickly, and it proved to be a means of decreasing the cost of engraving used in books and periodicals. By copperplate engraving each additional engraving required the same amount of tedious toil. Steel engraving made it possible to secure cheaper duplicate, and also to decrease printing costs by printing several copies of the same engraving at the same time.

About three times as many impressions could be secured from steel engravings, and also the hardened metal permitted more minute and delicate engraving. The first steel
engraved art subject appeared in 1830 in a book of poetry, entitled The Social Day. Prior to this all line-engravings on metal had been printed from copper.

By 1865 there was a tendency to abandon steel engravings. This was largely because electrotyping took away from steel its superiority over copper in number of impressions from an engraving. By means of electrotyping, both copperplates and woodcuts could be plated for long runs.

The first realization of the electrotyping process was discovered by Thomas Spencer of Liverpool, England, in 1837—thirty-eight years after Alessandro Volta, of Pavia, Italy, had constructed the first electric battery. While experimenting with a battery, Spencer used an English copper penny as one of the poles instead of a plain piece of copper. A deposition of copper from the solution in the battery took place upon the penny, and upon removing the wire which attached the penny to the zinc plate, a portion of the copper deposit was pulled off the penny also. 9

Later experiments proved the value of electrotyping to the printing industry, and by 1840 it had been developed into a practical method of reproducing printing surfaces.

The first attempt at commercial electrotyping in America was made by Joseph A. Adams, wood-engraver, who produced a metal mold by pressing soft metal onto a woodcut. Using a Voltaic battery, a copper shell was then deposited on the mold. The method was not practical, because in making the impression the woodcut was destroyed. Wax molds proved more satisfactory.

After either copper or metal have been deposited on the mold, this copper or nickel shell is removed from the mold and backed with a semi-hard metal. This is then fastened to a block of wood and trimmed to printing height.

Stereotyping process, first used in the early part of the nineteenth century in the United States, proved of only limited value in the printing of illustrations during this period before 1850; but it did aid greatly in the production of cheaper books.

William Ged of England experimented as early as 1727 with the idea of founding entire pages of type; but because of lack of cooperation from other printers, this effort to make matrices of type pages was unsuccessful. During succeeding years other experiments were conducted by various persons, but it remained for Lord Stanhope of England to successfully develop stereotyping.

Type pages were securely locked in the chaise, the surface of the type oiled to prevent the subsequent mold
from sticking, and then soft plaster-of-paris was pressed onto the type. When the plaster became solid, a matrix of the type page was made. This matrix, after being thoroughly dried, was placed in a casting pan and a metal cast made of it. Only one impression could be made from each plaster matrix.

Improvements were made constantly, and in 1848 the first successful papier-mâché matrix was made in France.

David Bruce, in 1813, introduced stereotyping in the United States. The Larger Catechism of the Westminster Assembly published by J. Watts & Company, of New York, was the first book produced by stereotyping. Bibles, school books, and works of popular authors were readily adapted to stereotyping.

Charles Graske, New York engraver, introduced the papier-mâché matrix into the United States in 1850, and four years later he stereotyped a page of the New York Herald. Later he did stereotyping for other New York newspapers.

The chief users of copper and steel engravings before 1850 were The New York Mirror, Graham's Magazine, Picture Gallery, Certain's Union Magazine, Snowdin's Ladies Journal, and Godey's Lady's Book. Sometimes a publisher paid more for a new plate than for all the literary content of the issue. Nevertheless, many magazines offered two steel or copper engravings in addition to a regular colored fashion plate in
each issue. The coloring was done by hand.

That these engravings were appreciated can be determined from the fact that the picture periodicals and the large weeklies with woodcuts had the greatest circulation. Because of their expense, many engravings were exchanged from one magazine to another.

The most notable example of book illustration during this period was in connection with the publishing of the Harper's *Illustrated Family Bible* in 1846. It was embellished by 1600 wood-engravings by Joseph A. Adams and his pupils—1400 of them being original designs by J. G. Chapman. The printing of these woodcuts by Adams showed superior workmanship. They were facsimile line work, rather than "white line."

The *Family Magazine*, first started by Criegen Bachelor in 1833 but acquired the next year by Justus Starr Redfield, was one of the earliest illustrated American periodicals and imitated the *London Penny Magazine* of Charles Knight. A little later came the *Boston American Magazine*, and in 1843 Chevalier Wicoff published his unsuccessful *Picture Gallery* for three months.

Examples of newspaper illustrating between 1800 and 1850 are to be found only infrequently. A cartoon, by John Wesley Jarvis, was published in the *Federal Republican* of Washington in 1814 and then reprinted in the *New York Evening*
This picture was occasioned by the repeal of the Embargo Act.

Other cartoons did not appear until 1839 when two humorous drawings were printed in the **Morning Herald**, published by James G. Bennett, the elder. The first one, legend "Great Democratic Meeting in Tammany Hall, of Buttenders, Pointenders, Huge Paws, Ring Tails, Locofocos, Ninth Ward Roarers, Ball Rollers, etc., etc.," appeared November 1st. The other appeared November 5th, and was entitled "Humors of the Election. Great Procession of Huge Paws, Buttenders, Roarers, Rowdies, Rousers, Indomitable, Damnables, Hunkers, Bunkers, Clinkers, Stinkers, Battlers, and Albany Basin Rattlers—First Night of the Election—All Hell Let Loose."

The **New York Herald** in its first year published a two-column woodcut of the ruins of the Merchant's Exchange by a disastrous fire and a two-column map of the burned district. The same newspaper three days later printed a map of "The Seat of War" in connection with the Canadian rebellion centered in the vicinity of Niagara Falls.

Bennett portrayed the "Grand Funeral Procession in Memory of Andrew Jackson" by publishing a large woodcut engraved by Thomas W. Strong of New York. This picture filled the whole first page and part of the second.

According to William Grosvenor Bleyer, in his *Main Currents in the History of American Journalism*: 

When the editors of rival newspapers charged that this cut was 'Faked' from previously printed illustrations of Queen Victoria's coronation procession, the Croton Water Celebration, and President Harrison's funeral procession, Bennett published a letter from Strong to prove that the woodcut had been made especially for the funeral of General Jackson. A year and a half later, the Herald eclipsed this achievement by issuing an eight-page pictorial annual containing a variety of woodcuts, such as, scenes in the Mexican War, a cartoon, and pictures of an actor and an actress in the parts that they were then taking on the New York stage. In view of the fact that the making of woodcuts was a slow, laborious, and expensive process, Bennett deserves great credit for his enterprise in pictorial journalism.  

The "mammoth" weeklies of this period used many woodcuts, some of them very large, in their special numbers issued every Fourth of July and Christmas. *Brother Jonathan*, in its Fourth of July issue, 1848, printed a woodcut captioned "Chapultepic" that measured 20½x41 inches. The paper described this as being:

> The largest fine wood-engraving ever printed in the world. Larger ones, for showbills, have been cut on mahogany, but never on box—the finest, most compact, and most valuable of all our imported woods... Several hundred blocks, cut across the grain, and measuring from one to six inches, were nicely cemented together to form the eight pieces on which the picture was first engraved to be afterward stereotyped and then soldered in a single plate.

After 1846 many newspapers used type-revolving presses and this necessitated the almost total abandonment of wood-


cuts. Several earlier efforts had been made to perfect a rotary type press by which type would be fastened to a cylinder; but it remained for Colonel Richard March Hoe, an American, to perfect such a press.

This press is described by R. R. Bowker as follows:

In 1844 he (Hoe) patented what he called the Planetary press, in which small cylinders were grouped around a larger one, like planets around the sun. Out of this was developed the famous Hoe rotary or lightning press, in which the form was carried on a huge cylinder, the other three fourths of which was raised as an inking surface, about which the two, four, six or eight impression cylinders and attendant inking rollers were grouped. This press, first used by the Public Ledger of Philadelphia, and in 1848 by Le Patrie, Paris, finally superseded in the office of the London Times the curious Applegath press of 1846, in which the type was carried in an upright polygonal drum and the sheets were printed on end. Colonel Hoe's patent of 1847 included the ingenious device of the "turtle," a curved chase with column rules thinner at the base than at the face, in which ordinary type could be "locked up" for use on the cylinder. In the largest presses ten printings were made at each revolution of the great cylinder, five men feeding from each side, one above another, on this enormous five story press, eighteen feet high, producing 20,000 impressions an hour. 12

Flat surfaced cuts could not be printed on such presses and the very few used had to receive special treatment. Occasionally a woodcut would be stereotyped in a curved casting box in order to conform with the curve of the cylinder.

CHAPTER V

THE ILLUSTRATED WEEKLYS

By 1850 the daily newspapers had abandoned even their former feeble attempts at pictorial journalism, and illustrations almost entirely disappeared from both the news and advertising columns of the penny papers. This was partly because of the rule of some of these newspapers that required uniformity in typography. However, the major reasons were the mechanical difficulties incidental to the reproduction of pictures.

Beginning in 1846 and extending for a period of 20 years, many of the metropolitan newspapers were printed on type-revolving presses direct from type in curved containers. It was impossible to print flat surfaced cuts on such presses.

During this period, illustrations were confined to the comics, juveniles, mechanical journals, women's magazines, annuals, the illustrated weeklies, and the two most popular literary magazines of the period—Harper's Monthly and Scribner's Monthly. Most of these featured woodcuts, although the women's publications and annuals contained both woodcuts and steel engravings.

Of these, the weekly illustrated newspapers, Harper's Monthly and Scribner's Monthly were the main forces that kept pictorial journalism alive until improved reproduction
processes made it possible for the daily newspapers to enter the field of illustration.

The first of the pictorial weeklies was *The Penny Magazine* of London, established March 31st, 1832 by Charles Knight and the Society for the Diffusion of Useful Knowledge. This eight-page publication contained only three illustrations in its first number. Weeks were required to prepare woodcuts for the magazine, and although stereotyping and a steam printing press were used, only 333 copies could be printed per hour.

Undoubtedly this publication was premature—the reading public was not prepared for pictorial journalism—but it did lead to the establishment of *The Illustrated London News* May 14, 1842, by Herbert Ingram. Thirty-two woodcuts were used in the first issue of the *News* and 26,000 copies were sold. By the end of its first year, circulation had reached 66,000. So successfully did Ingram solve the then difficult problems of securing, engraving and reproducing pictures that the *Illustrated News* not only was successful but has survived to the present day.

One year later *L' Illustration* in Paris and *Illustrierte Zeitung* in Leipzig followed the *News* into the field of pictorial journalism.

The first attempt to establish a pictorial journal in the United States was made by Chevalier Wikooff, well-known
New York publisher. In 1844 he brought a small corps of artists and wood-engravers from Europe and issued an eight-page weekly, *The Picture Gallery*. This publication did not appear regularly because of the shortage of wood-engravers, and finally ceased entirely after a few issues.

In 1851 two illustrated weeklies were founded, one in Boston and the other in New York City.

The first of these was Gleason's *Pictorial Drawing-Room Companion*, established by Frederick Gleason, successful Boston publisher. After five preliminary numbers containing only a few woodcuts, Volume I, Number 1 was issued on May 3, 1851. Maturin Murray Ballou was editor of this sixteen-page journal.

Eight pages of the *Pictorial* were devoted to woodcuts with very little letterpress on these pages. Subjects portrayed included scenes from both abroad and America, natural history, ships, and military scenes. Only little effort was made to picture current events. This was confined to portraits of prominent persons—such as presidents, kings, and queens—reproductions of famous paintings, and scenes of battle.

Among the engravers employed by Gleason was a man using the name Frank Leslie—a name he was destined to make famous as "the pioneer and founder of illustrated journalism
in America. Born in Ipswich, England, March 29, 1821, Henry Carter at the age of thirteen showed a remarkable ability as a wood-carver. In submitting engravings to various publications, he used the pseudonym of Frank Leslie.

Carter went to London ostensibly to enter a dry-goods house as a clerk but in reality to be nearer the office of The Illustrated News. Within a few years he became chief of the engraving room of the News. In 1848, at the age of 27, Leslie came to New York City. The directory for the following year listed him as "Leslie, F., engraver, 98 Broadway."

During Jenny Lind's tour in 1849, Leslie arranged with P. T. Barnum to issue illustrated programs for her concerts.

Gleason's Pictorial Drawing-Room Companion was a success. The subscription price was $3.00, except during the second year of the periodical when the price was raised to $4.00. When the price was reduced to $3.00 again, the circulation increased to over 100,000 copies, which netted Gleason $25,000 a year.

Late in 1854 Gleason sold his publishing enterprises to Ballou. The magazine, under the title of Ballou's Pictorial Drawing-Room Companion, continued to be issued until 1859.

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The second illustrated weekly started in 1851 was the American Illustrated News of New York City. T. W. Strong, publisher of this paper, attempted to illustrate current happenings; but these pictures were printed so long after the events had occurred that the pictures lost their news value. The shortage of wood-engravings and competition with Gleason's Pictorial caused the American Illustrated News to stop publication after a few issues. Both Strong's and Gleason's papers were offered at six cents a copy, but the former contained only eight pages—half the number of its competitor.

Learning that P. T. Barnum was interested in the establishment of an illustrated weekly in New York City, Frank Leslie visited Barnum at his Bridgeport, Conn., home Thanksgiving Day, 1852. As a result of this interview Leslie became managing foreman of the Illustrated News when it was established by Barnum and Moses Y. Beach of the New York Sun January 1, 1853. Each of the owners contributed $20,000 to start the weekly. Within half a year Leslie purchased Barnum's interest, and at the close of 1853, the newspaper was merged with Gleason's Pictorial.

Commenting on the failure of this enterprise, Frank Leslie stated the founders imagined "that there was no more difficulty in managing an illustrated than an ordinary newspaper."
Instead, they were faced with a shortage of wood-engravers, a limited supply of proper wood blocks, and even more serious, were unable to find a press in New York capable of printing woodcuts successfully.

Leslie also stated that because the publishers were:

Compelled to put their paper to press ten days before its date, they were necessarily compelled to exclude all subjects of immediate interest—such as constitute the staple matter of a newspaper. So far as mere pecuniary calculation went, the enterprise could not be regarded as a failure, as, even in the face of all these disadvantages, the paper had reached a circulation of about seventy thousand copies. The proprietors, however, fatigued and disheartened by the hourly obstacles and anxieties which they had to encounter to meet its artistic requirements, finally resolved to abandon it, expressing, nevertheless, their conviction, that such a speculation would pay magnificently if undertaken at a later period, and under the proper conditions of success.14

Deciding to enter the publishing business for himself, Leslie started Frank Leslie's Ladies' Gazette of Fashion and Fancy Needlework in January, 1854. Thus the first of three "Frank Leslies"—none of whom were baptized with that name—began the publishing of illustrated periodicals.

By December 15, 1855, Leslie thought the proper period had come for starting a picture weekly, and on that date the first number of Frank Leslie's Illustrated Newspaper was issued. It was announced in this issue that arrangements had

14 Frank Leslie's Illustrated Newspaper, December 15, 1865, I, No. 1, p. 6.
been perfected that would make it possible to have:

Pictorial delineations of almost the same promptness as the written intelligence of the fact itself. Other arrangements that we have entered into will place us in possession of illustrations of the most salient features of the European news, thus rendering our journal the most comprehensive and interesting pictorial record of events to be found in either hemisphere. 15

This weekly pictorial consisted of sixteen pages of large quarto size. Subscription price was $4.00 per year, and 10¢ a copy, 40,000 copies of the first number were issued. The first issue contained illustrations of striking incidents in Dr. Kane's arctic exposition.

Two of these, a large picture on page one labeled "The Arctic Explorers. Drawn by Wallin. From an ambrotype by Brady," and a full page illustration on page nine entitled "Dr. Kane and His Comrades Abandoning the 'Advance.' From a Sketch made on the spot"—show evidence of having been engraved by the method developed by Leslie to speed up engraving of woodcuts.

The wood used for the cuts was "Boxwood" from Turkey, because of its extreme hardness. However, the trees only grow to a few inches in diameter and so, in order to secure large wood blocks, it was necessary to bolt a number of small bits together. After "the Artist on the Spot" had supplied the subject for a woodcut, other artists placed the

15 cp. cit., p. 6
design on the wood block selected. When this was completed, the screws which held the small parts of wood together were unloosed, and the block was divided again into a number of pieces:

Upon each there is but the fragment of the drawing, one has a little bit of sky, another a group of children cut in two in the middle; another, part of a house, another a trunk of a tree; another is covered with foliage. Ten or fifteen engravers now seize these fragmentary pieces, and work night and day; not a moment is lost; they silently and industriously pursue their work, and the surface of the several blocks are cut away save where they are marked by the image of the artist's pencil, and we have left the surface which makes the impress on our paper known as a wood-engraving.

Some large pictures were divided into as many as 32 pieces with that number of engravers working on the same picture. When printed, some of the pictures showed white lines where the separate blocks were joined, but these were of only minor importance.

The Christmas season generally brought a large pictorial extra in Leslie's. As a folded-in supplement to the issue for October 25, 1856, the Illustrated Newspaper contained a 20 inch by 30 inch woodcut of "The Monarch of the Glen." It shows evidence of having been engraved in 24 pieces. Another huge woodcut supplement accompanied the March 7, 1857 issue, portraying "General Wayne's Assault on Stony Point."

16 Frank Leslie's Illustrated Newspaper, August 2, 1856, p. 123.
News stories were illustrated by large, striking pictures and were printed about two weeks after the events they portrayed had occurred—"a promptitude in news illustration never before known in America and not matched by any competitor until after the Civil War." 17

While the majority of the woodcuts were engraved from sketches or painted pictures, some were drawn from ambrotypes supplied by M. A. Brady, through his National Gallery of Daguerreotypes. This later method was used mainly in the production of portraits of eminent men. 18

For the most part, news events featured in Leslie's were of the sensational kind—crime, train collisions, mine disasters, burning steamers, battles, etc.

The Burdell murder in the winter of 1857 "was the turning point in illustration in this country." 19 Burdell, a popular New York dentist was murdered in Mrs. Cunningham's boarding house on Bond street where he boarded and had his office. Although his newspaper was on the verge of collapse, Leslie had pictures drawn of the scene of the crime, then raised the necessary money, and published over 200,000 copies.

17 Frank Luther Mott, op. cit., II, p. 453.

18 Frank Leslie's Illustrated Newspaper, March 15, 1856, p. 214.

of the edition. This aided Leslie's financial situation and enabled him to continue his newspaper publication. By the end of 1858, he claimed a circulation of 100,000. This number reached 164,000 before the Civil War. During the war the illustrated weeklies secured tremendous circulation which they held for many years.

A formidable competitor to Leslie's was started January 3, 1857, when Harper's Weekly was established. At first it was intended as a literary weekly, but gradually began to feature news, and while few pictures were used in the early issues, woodcuts were used in increasing numbers. The first full page illustration was a picture of President Buchanan and his cabinet, printed April 11, 1857, and the first double page picture—one showing the steamship Leviathan—was published March 6, 1858.

Beginning August 15, 1857, Frank Leslie also printed each weekly edition of his newspaper in the German language under the title of the Illustrirte Zeitung. As the revenue from his publications increased, Leslie increased the number of his publications. It was his ambition to provide an illustrated periodical for all classes of people.

Among these were the Lady's Magazine, Lady's Journal, Boy's and Girl's Weekly, Chimney Corner, Pleasant Hours, Boys of America, Jolly Joker, Comic Almanac, New England Almanac and Illustrated Almanac. All these bore the name of Frank
Leslie. Only one of his publications did not contain his name as part of its title. That one was *The Day's Doings*, "Illustrating Extraordinary Events of the Day, Police Reports, Important Trials, and Sporting News." The editor of the *New York Times*, July 3, 1872 called this periodical a "wicked and disgusting sheet," but Leslie retaliated by saying that he was indebted to the *Times* for the news items on which the pictures were based.

By an act of the New York legislature in 1857, he acquired legal rights to the name of "Frank Leslie."

Leslie displayed remarkable journalistic enterprise in the manner in which he "covered" the heavyweight championship fight held 30 miles from London, England, at Farnborough in 1860, between John C. Heenan, the Benicia Boy, and Tommy Sayer, the English favorite. He sent reporters, engravers and illustrators to cover the fight. Among the illustrators was Thomas Nast. Twenty-hours after Heenan and Sayer had fought with bare fists, Leslie's men had an extra on the streets of London. They then hired a special train to take themselves, 20,000 printed copies, and the engraved plates to the boat, which was delayed four hours in order that they might make connections. Landing at New York, they not only scooped the town with the first detailed story of the fight, but were able to furnish pictures of it. The plates were rushed to the composing room, and May 12, 1860
a fight edition of Frank Leslie's Illustrated Newspaper was issued. Over 374,000 copies were sold.

Of lasting value to the city of New York was the pictorial fight by Leslie's against the "Swill Milk" abuse during the early history of the periodical. Most of the dairies supplying milk to the city fed their cows refuse from the distilleries. Although this stimulated the production of milk, the cows developed sores all over their bodies and their tails rotted off. The milk from these cows was filled with germs. The combination of the dairies, distilleries, and city politicians resisted all attempts to correct this evil.

Leslie's editorial campaign against this practice was vigorous but his picture campaign was even more effective. Pictures showing the foul dairies and diseased, stump-tailed cows were printed in all their horrible reality. City officials made a pretense of investigating the situation but did nothing to correct it. The paper printed a cartoon showing three aldermen whitewashing a stump-tailed cow. This led to an indictment against Leslie for criminal libel but the charge was dismissed by a grand jury.

Finally, a committee from the New York Academy of Medicine was appointed, and in a report made in the spring of 1859, substantiated all of Leslie's charges. Complete victory came when the state legislature, in 1861, forbade the
sale of milk from cows fed on distillery waste.

Another illustrated weekly was started in New York City, in competition with Harper's and Leslie's, on November 12, 1859, and was entitled the New York Illustrated News. John King published this paper for a year and one-half and then sold it to T. B. Leggett. Many woodcuts were printed --a number of them appearing as folding pages--but the literary content of the weekly was inferior to Harper's. Early in 1864 it was purchased by W. Jennings Demorest, who added to it music, fashions and patterns, and a woman's department. August, 1864 it was merged with Demorest's Mirror of Fashion.

Gleason's Line-of-Battle Ships prominently featured illustrations during its 14 month career beginning November, 1858. Special papers were also issued to commemorate important holidays. Of these, the Fourth of July, 1859, issue of Constellation, published by George Roberts, is of particular interest.

Each of its eight pages measured four feet, two inches, by eight feet, four inches, and was filled with large woodcuts. Over 50,000 copies were sold of this mammoth-sized publication.

The first illustrated paper of a purely religions character was The Illustrated Christian Weekly, first issued in March, 1871 by the American Tract Society. Harper's
Bazaar, started November 2, 1867, in its illustrations featured fashion, patterns, and fine art pictures.

The Civil War created prosperity for both Leslie's Illustrated Newspaper and Harper's Weekly. A week after the firing on Fort Sumter, Leslie's paper contained a four-page folding picture of the bombardment. Both papers sent artists to the battlefront where they worked under great handicap and constant danger.

Many full and double page pictures of military engagements were printed and the illustrated weeklies issued extra editions for big events. Harper's Weekly excelled in its literary content while Leslie's was noted for its liveliness.

Not only were artists sent to the front, but army officers were engaged by the illustrated newspapers to send in sketches. This practice led to the temporary suspension of Harper's Weekly by Secretary Stanton on a charge of giving "aid and comfort to the enemy" by printing pictures showing General McClellan besieging Yorktown. Fletcher Harper, publisher of the weekly, went to Washington where he succeeded in having the suspension removed.

Harper's Weekly laid the foundation for its later prominence by hiring in 1862 George William Curtis as political editor and Thomas Nast as an illustrator. Nast had spent some time previously working on Frank Leslie's Il-
Illustrated Newspaper and the New York Illustrated News.

Thomas Nast's signature first appeared in the Harper's Weekly, August 30, 1862, in connection with a full page illustration of "John Morgan's Highwaymen." This was followed in September by "A Gallant Color-Bearer," and "The Rebel Army Crossing the Potomac." However, even before this time Nast had contributed an occasional picture to Harper's Weekly. The first of these was submitted in March, 1859, and depicted police scandal in New York City. Thus in his first appearance in the periodical, Nast chose the subject—civic abuse—that was to make him famous in connection with the weekly.

Nast's emblematic cartoons of the Civil War created a tremendous impression among the Northerners, and shortly before the close of the struggle President Abraham Lincoln declared "Thomas Nast has been our best recruiting sergeant."²⁰

Through three decades the political views of Harper's Weekly were descriptively portrayed by Thomas Nast's vigorous drawings. The Tammany Tiger, the elephant and the donkey, as political symbols, were the creation of Nast's pen.

The Democratic party in national convention at Chicago in 1864 declared in its platform that the war was a failure and pledged itself to arrange an early peace. This

prompted Nast to draw a cartoon, "Compromise with the South," that proved to be a powerful political weapon. In this cartoon the Southerner, with one foot in the grave of "Union heroes who fell in a useless war," grasps the hand of a crippled Northerner. At the graveside Columbia weeps, and behind the Southerners, negroes are seen again in chains. Extra editions of Harper's Weekly failed to supply the demand for copies of this cartoon.

During the presidential campaign millions of copies of it were printed, and these "unquestionably had more weight in deciding the outcome than any other single effort."21

Ablest of Harper's Weekly's campaigns, and the one that brought the greatest fame to Nast, was the one against the "Tweed Ring" in the years 1869-72. Of the daily newspapers, the New York Times—mainly through editorials by Louis J. Jenning—was the only newspaper in New York that fought against Boss Tweed's corrupt city government. However, Nast's cartoons were "a weapon even more powerful than Jenning's vituperation."22 Among the most eloquent of these were "The Tammany Tiger Let Loose" published in Harper's, November 11, 1871, and "A Group of Vultures Waiting


for the Storm to 'Blow Over', September 23, 1671.23

News pictures, other than those originating in an illustrated weekly's particular territory, were both difficult and expensive to secure. In order to give greater pictorial coverage than it was possible to secure through their own artists, the weeklies copied many pictures from other illustrated periodicals. In some instances electrotypers were exchanged between European illustrated newspapers and New York ones.

Commenting on this practice, Frank Leslie's Illustrated Newspaper, in 1870, stated that it was true that it took important pictures from foreign illustrated periodicals and republished them under the heading "Spirit of the Illustrated Press." It further stated:

"We take the pictures on the same principle that the European newspapers copy out from American newspapers. Such American intelligence and criticism on current affairs as, it is supposed by them, may interest their readers, and vice versa. We cannot be expected to have that sufficiently ubiquitous individual 'Our Special Artist,' in all parts of the world at the same moment; and we reasonably expect that the illustrated newspapers

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23 During Nast's series of cartoons, Tweed is reported to have said "Let's stop them damn pictures. I don't care what the papers write about me—any constituents can't read. But—damn it—they can see pictures." Quoted by William Benchet, in his "More Fodder for Photomaniacs," North American Review, CXXXIX, (Jan., 1935), p. 20. Nast was offered a bribe of $500,000 provided he would go abroad and stop drawing for a year. George Richards, "Pictorial Journalism," World Today, IX, (August, 1905), p. 849.
of France, Germany and Great Britain will properly and adequately illustrate the leading events of their respective countries, as we may be expected to illustrate, and it is our duty to illustrate those of ours. They have the right, and are welcome to use our illustrations for the instruction or amusement of readers which we cannot, in the nature of things, reach; and we claim an equal right to use their pictures for the intelligence and amusement of the American public, whom, in the nature of things, their publications cannot reach."

Efforts were constantly being made to improve the appearance of the printed woodcuts and also to reduce the cost of engraving them. A very important development was the joining of photography and wood-engraving. Pictures were photographed onto wood blocks before going to the engraver. This practice was in more or less general use after 1866. It made possible the reproduction of pictures as drawn by the artist or as appearing in "nature." It did away with the necessity of drawing the picture onto the wood block—a difficult task since the picture had to conform to the size of the block and also the picture had to be drawn in reverse—and it enabled the artist to make sketches any size they desired since the camera could enlarge or reduce them.

Three difficulties had to be overcome before photography could be useful to wood engraving: (1) the collodium film had to be modified or done away with; (2) the silver

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24 Frank Leslie’s Illustrated Newspaper, April 9, 1870, p. 50.
nitrate had to be prevented from sinking into the wood; and
(3), steps had to be taken to prevent the block from warping
from absorption of moisture.

The collodion film had to be modified in order that
it would not peel up before the graver, or be cut in such a
way that outlines were destroyed. The silver nitrate had
to be kept out of the pores of the wood since it would turn
black when exposed to light, and so prevent the engraver
from seeing what he was doing.²⁵

Even with the aid of photography, woodcuts were ex­
pensive to engrave and print. In 1865, Harper's Monthly
claimed that it had printed 10,000 engravings on wood, "the
cost of which will average about thirty dollars each."²⁶
Frank Leslie, in 1873, was spending $4,000 a week for his
art department in connection with his various publications.²⁷

Frank Leslie, as a member of the New York state board
of directors of managers for the Centennial at Philadelphia,
published an elaborately illustrated volume Frank Leslie's
Historical Register of the United States Centennial Expo­
sition, 1876 (1777). This volume caused Leslie to experience

²⁵ Frank Leslie's Illustrated Newspaper, December 16,
1865, p. 153.
²⁷ Frank Leslie's Illustrated Newspaper, March 15,
1873, p. 3.
a heavy financial loss.

The financial depression of 1877, heavy living expenses, and litigation in connection with the divorce of his first wife, wiped out Leslie's fortune. His divorce and his subsequent second marriage proved to be very sensational. After divorcing his first wife, by whom he had three sons, Leslie married Mrs. Mariam Florence Squier, divorced wife of E. G. Squier, well-known author and editor of Leslie's newspaper for many years. In 1879, Leslie brought suit against his two surviving sons because they were using the name "Frank Leslie" in connection with a periodical they were publishing. When Frank Leslie died January 10, 1880, he left liabilities aggregating $300,000. In June, 1881, his widow had her name changed, by court action, to "Frank Leslie."

Through journalistic enterprise, she capitalized on the death of President James A. Garfield, that same year, and wiped out most of her debts. After being shot by an assassin July 2, 1881, Garfield lived until Monday evening, September 19th. The Illustrated Newspaper had already gone to press when the news of his death arrived, but Mrs. Leslie immediately had the presses stopped. The entire force started the preparation of a new edition. Sketches were received of the death-bed scenes Tuesday morning, new engravings were made, and by Wednesday evening copies of the
edition were for sale on the streets. Two hundred thousand extra copies were sold.

A week later she had sketches made of the funeral services in Washington, on Friday, and then succeeded in having 30,000 copies of The Illustrated Newspaper in Cleveland by Monday in time for the burial ceremonies.

Harper's Weekly continued to be published until May 13, 1916, when it was swallowed by the Independent, and Leslie's Weekly survived until merged with Judge in 1922, although long before this they had lost their significance in the field of illustration.

The development of photo-mechanical processes of engraving and their adoption by illustrated Sunday newspapers and the daily newspapers, made the news picture coverage of the illustrated weeklies too slow. This, combined with the commonplace of good illustrations in all type of publications, spelled the death knell of the illustrated weeklies.
CHAPTER VI

HARPER-SCRIBNER ERA OF WOOD-ENGRAVING

The enthusiasm shown by the reading public for the illustrated weeklies such as Leslie's and Harper's carried over into the entire field of book and magazine publishing. Publications containing illustrations were the most popular, and consequently the publishers found them most profitable. Improvement in engraving technique was reflected by the issuing, during the sixties and seventies, of elaborately illustrated books, such as annuals, gift books, de luxe editions, and volumes of travel and description. Not only did they serve as elegant adornments for the living room table, but in many cases, such publications were the only source of art for American homes.

The use of copper and steel plates continued as the medium for the higher type of engravings until after 1865, but the use of wood-engraving increased steadily.

The founding of Harper's New Monthly Magazine, June, 1850, marked the beginning of an era that was to lead to the perfection of wood-engraving to a degree never surpassed. The phenomenal success of the magazine itself resulted from its publication of fiction from great English novelists, travel stories, biographical articles, and above all else—pictures and more pictures from woodcuts.
In November, 1870, Harper’s Monthly received formidable competition when Scribner’s Monthly appeared to serve the same middle-class public with literary material fully illustrated. The resulting competition led to the improvement of illustration in both of the periodicals and "soon America led the world in illustration."\(^2^8\)

Alexander W. Drake, as superintendent of Scribner’s Art department, is credited with much of the progress made in wood-engraving. As one of the pioneers in the process of photographing original pictures upon wood blocks prior to engraving them,\(^2^9\) Drake greatly enlarged the field for both artists and engravers.

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\(^2^9\) Ellsworth, *op. cit.*, p. 70, states "Mr. Drake developed the process of photographing the original picture upon the block..." Mott, *op. cit.*, III, p. 466, says Drake’s "promotion of the method of photographing on wood as an aid to the engraver was perhaps his most striking single contribution to the art of illustration." However, photography on wood was used many years prior to the establishment of Scribner’s Monthly. J. D. Brinckerhoff of New York is credited by Robert Taft in his *Photography and the American Scene* (New York: Macmillan, 1938), p. 420, as being the first to successfully solve the problems of photographing on wood. In the *Photographic and Fine Art Journal* for February, 1855, the first published example of Brinckerhoff’s work appeared. Robert Price of Worcester, Massachusetts, and C. B. Boyle of Albany, New York, both secured patents in May 5, 1857 and February 8, 1859, respectively, for process for photographing on wood. Such methods evidently were common knowledge by 1865 because Frank Leslie’s *Illustrated Newspaper*, December 16, 1865, described problems confronted in photography on wood.
Previously artists drew their pictures backward, with the limitations of the block size still further cramping their work. With the aid of photography they could make their pictures any size they wished, and later enlarge or reduce them to fit the wood blocks.

In a brief period the entire character of woodcuts changed under the sponsorship of a "new school" of wood-engraving. "Sweeping lines gave way to very short lines" and engravers soon learned "to achieve the effects of charcoal, pencil, clay, wash, or oils." Formerly wood-engravers attempted to interpret the artist's drawing—under the new method, they tried to reproduce it faithfully. The pictures drawn by V. E. Kelly and engraved by Frederick Juengling, in *Scribner's*, led in the trend towards the new method of engraving.

*The Century Illustrated Monthly Magazine* (the name of *Scribner's Monthly* was changed when the management of the magazine was changed in 1881) in April, 1881, listed the characteristics of wood-engraving in the United States as: (1) originality of style; (2) individuality and (as a corollary) variety of style; and (3) chiefly—faithfulness in the reproduction of a wide range of subjects by diverse

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30 Mott, *op. cit.*, III, p. 188.
31 Wood-Engraving and the Scribner Prize," Century, XXI, (April, 1881), p. 938. The article continues: "This magazine has held that whatever may be the function of the engraver, it does not argue license to play at will with the personality of the artist, but simply freedom to vary from conventional ways of approaching it.

"When Scribner's was established in 1870, and for several years after, the native resources of magazine illustration were limited to a few designers upon the blocks, who either made original drawings or copied paintings, in which the quality of the painting was swallowed up (as it could not help to be) in the pictorial mannerisms of the draughtsmen.

"By the time the pictures reached the public eye, the skies, foliage, and accessories of one were indistinguishable from those of another, for all were cut by a traditional formula—often conventionally correct, but generally lifeless and without charm. Occasionally portraits were rephotographed upon the block to be cut almost as conventionally. As a consequence, the magazine fell into a rut, with little more or less of each draughtsman in each issue, while a whole world of art lay at their feet, which they could not make available, because demands upon the engravers to approximate more closely the painter's mood were met by the traditional reply that it was 'impossible to cut a block in that way.' If not impossible to cut, it was impossible to print. For it is both fair to many engravers to say that their conventional mannerisms were largely due to the imperfections of the printing machinery then in general use. Of what use was it to cut blocks finely, to try new textures, to invent new styles, when the press could not print them decently? The woodcuts which have made many engravers famous would have been rejected ten years ago, by magazines here and abroad, as thoroughly unprintable.

"The approach to the desired result was made by a flank movement. Engravers were found who were willing to cut blocks upon which were photographed wash drawings and pencil work, and in doing so as to retain some of the technique of the artist. Their experiments were extended to charcoal, crayon, pen and ink, etc., and before long engravers learned to throw themselves into the spirit of the new work." p. 941.
This magazine encouraged young people to take up wood-engraving by offering prizes for the best amateur work submitted. Mr. Drake, Timothy Cole, engraver, and Theodore De Vinne, printer, were judges of the annual contests.

Timothy Cole not only became the most noted engraver of Harper's, but was a leader in the "new school" of wood-engraving. Juengling and George Kruell were other well-known exponents of this method. William J. Linton was the spokesman for the engravers who insisted that their work should be interpretive.

The excellent work of the engravers, however, would have amounted to little if reproduction methods had not kept pace. The perfection of stop cylinder presses by Col. Richard R. Hoe provided a press that not only had the strength to print woodcuts but also possessed an adequate ink distributing system. In addition, Theodore De Vinne's pioneering in printing methods made Century the best-printed magazine in the world. He led in the use of dry paper and calendared paper, in the use of hard press packing, and in the use of makeready and overlay in printing woodcuts.

By the middle of the 1880's wood-engraving had reached a stage of near perfection. However, although they were not susceptible to criticism as to their quality, their quantity was censored. Charles T. Congdon, in the North American Review, November, 1884, said that Century and
St. Nicholas pictures were good:

Well-drawn, well-engraved, and admirably printed. They are instructive, and for those who will not think, they help the text. It is true that they are mannered, and there are so many of them that they become sometimes as wearisome as a book extended from one volume to ten; but it is encouraging to feel that we have at least reached the extreme point, beyond which we can go further, unless we give up letterpress altogether. 32

Hardly had wood-engraving reached its full glory when the perfection and development of the halftone wiped out, almost overnight, a profession that had taken years of infinite pains to perfect. The halftone, at first, did not equal the best wood-engravings; but greater economy of the halftone made it possible for publishers to continue the use of wood-engraving. A full page wood-engraving cost $75 to $250 and required three or four weeks to make (if engraved by a single person); while a halftone, at that time, could be produced in one afternoon at a cost of $9 to $12.

Although the Century, in 1890, did not wish to agree "with those who think wood-engraving in America has seen its best day, and is likely to be superceded by mechanical processes", 33 the use of woodcuts diminished rapidly. So perfect had wood-engraving become that the change to halftones is hardly noticeable in the printed pages.


CHAPTER VII

THE WEDDING OF THE CAMERA AND THE PRINTING PRESS

The wedding of the camera and the printing press (a phrase coined by Stephen H. Morgan) has had a tremendous influence on the printing industry. Photoengraving, the result of this union, filled a very definite need. Also, it was a primary contributing factor in improving presses, paper, rollers and ink—since the printing of halftone demanded new methods and equipment. All of this, combined with the invention of type setting and type casting machines, has resulted in the great growth of the printing business.

Although the printing press very definitely serves the historians by reproducing and preserving pictures and the written word, it has failed to record with certainty two of the most important chapters in the history of printing. Both the details of the invention of printing and the invention of photoengraving are shrouded with mystery. The Coster-Gutenberg controversy has been conducted for a long time with no apparent possibility of complete agreement of all experts.

While photoengraving is comparatively new, already it is difficult "to disentangle the amazingly intricate pattern
of overlapping inventions and experiments. " Similarly, processes and methods seem to have been devised by several men within a short period of time in widely separated places. Heated, and at times bitter, discussion of claims, counter-claims, and technicalities has only added to the general confusion.

The history of the halftone process owes its beginnings to the experiments in photography by Dr. Johann Heinrich Schulze, a German, in 1727 and his discovery that the action of light on silver salts caused them to turn black. Several Englishmen, Sir John Herschell, Thomas Wedgwood (son of the famous English potter) and Sir Humphrey Davy, early in the nineteenth century, were among the first to experiment with photography.

However, the joint discoveries of two Frenchmen, Joseph Niepce and Louis M. Daguerre, that plates sensitized with bitumen exposed to the action of light in the camera gave permanent negatives, marked the definite beginnings of both photography and photoengraving. The first photoengraving was produced by Niepce in 1827, and in a note, he stated that on December 14, 1829, "he found a substance to fix the camera so it might be used in making a printing

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January 7, 1839 Francois Arago, speaking before the French Academy of Science, revealed that Daguerre had succeeded in making permanent images on polished plates. He urged that the invention be purchased and published for the use of the entire world. In the summer of 1839 the French government passed a bill giving pensions to Daguerre, and since Niepce was dead, to the son of Niepce. A public demonstration was given August 19 before an enthusiastic audience. Details of the process were published and then translated into many languages—thus becoming public knowledge.

Mungo Ponton, during this same year, 1839, found that bichromate of potash, in combination with albumen or some other colloid, became insoluble in water through the action of light. This idea was further developed by Fox Talbot, 1851, Gillot, 1859, and others—and combined with the use of gelatine—formed the basis for many processes.

In developing processes for letterpress illustration printing, photoengraving experiments were conducted along


two lines. The reproduction of drawings or pictures in two tones, black and white, such as in pen and ink sketches, proved comparatively simple, and experiments resulted in development of the line etchings of the present day.

Much more difficult was the perfection of the method by which all gradations of tone—such as those intervening between the deep shadows and broad light of a photograph—may be secured. Many tried to achieve this result with varying success, but from their combined efforts has come the halftone.

Before passing on to the historical development of photoengraving processes, one other method used to produce illustrations in relief may be mentioned. This is typographic etching—also called wax engraving—and was used during the latter half of the nineteenth century for maps and diagrams. It owed its success to electrotyping rather than photoengraving, and is still used at the present time to reproduce ruled forms, charts, maps, and other items of a similar nature.

The first patent issued for a method of engraving using a wax mold and electrotyping was issued in 1841 to Edward Palmer, an Englishman. This process was named glyph-
by its inventor.

In 1872 Alfred and H. T. Dawson patented a process similar to glyphography which they called typographical etching.

A copper or brass plate is first coated with wax and upon its surface a design is drawn, impressed, or photographed. This drawing is then traced through the wax down to the surface of the plate with sharp steel points or needles. Care must be taken that all lines are cut through the wax, or the surface of the electrotype will not be type high all over. If lettering is wanted, ordinary printers' type is used to stamp the letters. The space between lines and letters is next built up by adding melted wax by hand. The mold formed is black-leaded and then electrotyped. This method is still used.

Wax engravings were first used in America in 1850 by Jewell & Chandler of Boston, and later the map-making firm of Rand, McNally employed it extensively.

A similar method to wax engraving is the chalk plate process. A chalk-like material, about 1/16 inch in thickness

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37 The wax-coated matrix is built up by adding wax by hand through the use of heat and various special tools. According to L. A. Legros "one of the earliest works illustrated by Palmer's process is 'The History and Antiquities of Brentford, Ealing and Chiswick,' by T. Faulkner, 1645, and the word glyphography occurs at the foot of many of the illustrations contained in it." Legros, Typographical Printing Surfaces, (New York:Longman's Green, & Co., 1910), p. 404.
is spread and pressed onto a steel plate. The illustration desired is drawn on the chalky surface and the lines are then cut through to the steel plate. The mold thus formed is used as a stereotype mold. The chalk-plate process was invented by Maurice Joyce, a Washington, D.C. stereotyper. The Chicago Tribune, when it first began the use of illustration in 1885, employed the chalk-plate.

The first etched line blocks were made by Gillot, a Parisian lithographer, in 1859. He took impressions in a special acid-resisting ink from designs drawn on lithographic stones and then transferred them to zinc plates. The plates were etched and the parts protected by the ink appeared in relief. The full benefit of this method of making printing blocks was not realized until photography was used to print the artist's drawing on a light-sensitized zinc plate. Gillot's son, in 1872, was the first to use the photographic method.

Under this method a zinc plate was coated with a mixture of egg white (albumen) and potassium bichromate, and then a reversed negative of the subject desired was placed against the coated plate. This was then exposed to light. The light, which was only able to pass through the transparent parts of the negative—the black portions of the original subject—hardened and made insoluble the albumen mixture it reached; the remaining areas being unaffected.
The zinc plate was lightly inked and then washed in cold water. The water dissolved the unexposed albumen, leaving the lines of insoluble albumen in relief. The plate was again inked and then etched. The acid attacked the clear zinc spaces, and by continued etching, a relief zinc plate resulted.

The zinc plate could be used for a form of lithographic printing immediately after exposure and washing—doing away with the need for etching. The hardened albumen lines would take printers' ink and the clear zinc areas would not. Diagrams for the United States Patent Office were published by such a means.38

The "swelled-gelatine method" of making relief plates was the most popular method during the early eighties because it did not require that the lines of the original be clear, black and sharp.

This method was based on the fact that gelatine when soaked in cold water will swell but bichromatized gelatine, if first exposed to light, will not swell. A glass plate is coated with a solution of gelatine and bichromate of potash. The photographic negative in reverse is then placed on the plate, and exposed to light. Upon washing, the parts of the gelatine not acted upon by the light absorb water and swell.

38 Taft, op. cit., p. 424.
Thus an intaglio is formed by the gelatine. A relief was obtained by pouring plaster of paris over the intaglio. This was then impressed in wax, and the wax electrotyped to form an electrotype relief printing block.

In the United States Louis E. Levy and David Bachrach, Jr., were the first to patent a swelled-gelatine method of photoengraving. In January, 1875, they patented their process under the name of "Levytype." Levy, with his brothers Max and Joseph, that same year organized the Levy Photo-Engraving Company in Baltimore. In 1877 they moved to Philadelphia and established the Levytype Company. Later Max and Joseph established similar plants in Chicago and Cincinnati.

For relief printing, the swelled-gelatine process could be used only for black and white drawings and pictures, no gradation of tone being possible. However, modification of the process could be combined with intaglio and planographic printing to reproduce the intermediate tones between pure white and pure black. The Woodburytype and the Alber-type represent processes used to produce tone by means of intaglio and planographic printing, respectively.

Walter B. Woodbury, in 1866, patented a process that he called Woodburytype. By this method a bichromated gelatine film was exposed under a negative, and then washed in warm water to produce a gelatine relief of the negative. The action of the water dissolved the unexposed portions of
the film, while the other parts were rendered insoluble to depths corresponding to the intensity of the light they had received.

This gelatine relief plate, under pressure, produced an impression in a lead plate. The intaglio lead plate thus formed, when inked and placed in a suitable press, would produce an impression on paper. Since the hollows in the lead plate contained varying amounts of ink, different shades of light and dark were secured. The deepest portions of the mold naturally took the most ink and produced the darkest shadows, while the shallowest portions took the least, and produced the most delicate tones.

The Woodburytype was used principally for book illustrations. John Carbutt, Chicago photographer, became interested in this process and in 1870 moved to Philadelphia where he began the publication of Woodburytype prints.

The light sensitivity of bichromated gelatine also formed the basis of a number of processes that utilized the planographic method of printing, and which are now known as collotypes. Some of the previous names used for this type of photolithography were heliotype, heliograph, lichtdruck, phototypie, Albertype, and Artotype.

By these processes a bichromated gelatine film was exposed under a negative, and then by suitable treatment, a printing surface was produced which took up ink in portion
to the amount of light action which the film had received. The shadows took up the most ink, the highlights absorbed none, while all intermediate tones were faithfully reproduced.

A Frenchman named Poiterin, in 1855, was among the first to discover that the exposed gelatine would take ink, while it repelled water. However, J. Albert of Munich developed this basic idea under the name of Albertype. This process was patented in the United States November 30, 1869, and Edward Bierstadt of New York received the American rights.

The relatively high cost of Albertypes restricted their use, but in 1879 several improvements were made and the process was reintroduced under the name of Artotype, with Bierstadt still controlling its rights.

The Albertype and Artotype processes were used mainly for book illustrations, although local photographers used the Artotype process to reproduce individual prints of celebrities.

The major disadvantage of both the intaglio and lithographic processes was that special paper and special presses were needed to print the illustrations, and the illustrations could not be placed on the same page as type.

The final solution of the means by which gradations in tones in pictures could be reproduced by relief printing was
due to the work of many men over a long period of years. The halftone process as developed can be used for planographic or relief printing, although it is more often associated with the latter since relief printing accounts for 90 per cent of all printing.

Most of the investigators tried to secure variations in tone by breaking up the image of the picture into lines and dots in such a manner that the number and size of such lines and dots in any given area would determine the tone of that area.

Various means were employed to secure these lines and dots—such as a net, gauze, glass screen or a mechanical device as originated by Frederic Ives—until the final perfection of the cross-ruled screens by the Levy Brothers.

As employed today the screen is placed "out of focus" between the negative and the sensitized surface which is to receive the halftone image. Such a position permits dispersion and diffraction of light rays, and makes dots of varying size. However, before the principle of placing the screen out of focus was perfected, many experiments were made in an effort to secure variation of tone.

Fox Talbot, English photographic pioneer who first produced negatives, secured a patent in 1852 for a process using an open-weave fabric as a screen. This fabric was placed between the photographic negatives and the sensitized
plate. None of the earlier investigators used a camera. Meisenbach was among the first to make a negative from a positive in close contact with a screen.

Experiments were conducted in widely varying places. Among the most important ones conducted outside of the United States were by A. J. Benchtold, of France, in 1855; Edward and James Bullock, England, 1865; Carl Gustaf Carelman, Sweden, 1871; J. W. Swan, England, 1879; G. Meisenbach, Germany, 1882; and A. Borland, England, 1885. A full discussion of contributions of each of these, and the many others who helped develop photoengraving, is beyond the scope of this study.

Frederick von Egloffstein, a German who later served as a general in the Union army, conducted experiments in photoengraving at Philadelphia. In 1865 he patented a process that employed a screen of lines ruled 300 to the inch. The plates produced were etched in intaglio. A group of New York capitalists became interested, and the heliographic Engraving Company of New York was organized. Although much money was spent, no plates were produced commercially.

In 1869, William A. Leggo of Montreal used ruled screens to produce relief printing plates for the Canadian Illustrated Weekly. After a few issues of this weekly, however, lithography was used. In 1872 the Leggo brothers came
to New York and found the Graphic Company which started the Daily Graphic, March 3, 1873 and used photolithography.

The Leggo brothers used a process they called "granulated photography" to secure tints and shadings in much the same way that Ben Day tints are now used. A negative of the desired picture was placed in contact with a transparent screen and a positive made. This positive was retouched, and clouds and highlights were scraped in. From this retouched positive a negative was made, and then it was transferred to the stone for lithography printing.

Stephen H. Morgan became manager of the photo-mechanical department of this weekly, and his experiments led to the publication in the Graphic, March 4, 1880 of a halftone entitled "Shantytown," which has been declared to be "the first dated halftone."39

The Graphic was produced by lithography, and naturally

39 William T. Innes, in an article, "The Truth About the Halftone Process," Inland Printer, (June, 1927), p. 422-4, attacks this statement and shows other pictures from the Graphic, which he states were prior halftones. "Steinway Hall" published in the Graphic, December 2, 1873, is credited by Innes with being the first halftone to appear in a daily newspaper. Taft, however, gives Horgan credit and sums up Horgan's and Ives' work as follows: "To Horgan goes the credit of producing the first halftone published in an American newspaper; to Ives goes the credit for producing the first successful method used in producing halftones in such well-known magazines as Harper's Monthly and The Century, and for the successful method of reproducing the halftone in color." Taft, op. cit., p. 437.
processes devised for it were restricted in use. Frederic Ives, in this country, originated the first commercially successful halftone process, which he patented August 9, 1881.

Ives' process began with the formation of a gelatine relief plate (similar to the Woodburytype process) of the illustration to be reproduced. In this gelatine relief "the light parts of a picture stand out in hilly contour. . . . while the black parts remain in valleys. By taking a plate cast from this the dark parts become the hills and the light parts the valleys." 40 A rubber blanket was prepared by cutting many parallel V-shaped cuts across it, crossed by other cuts not quite so deeply furrowed. This surface of tiny pyramids was inked so that not only the top of the pyramids, but also their sides and the ditches between them were coated. The inked surface was then pressed against the plaster relief. Where the cast is high the inked pyramids were flattened out; but where the cast was low, only the merest point of ink was left on the plaster. When the rubber pad was removed the original picture, in black and light, appears in the plaster. This could then be photographed on a relief plate made, since the picture on the

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east was now in line and point.\textsuperscript{41}

In 1885-6 Ives substituted an optical method of producing the "V-line" effect instead of the mechanical one of the rubber pad. He used a cross line sealed screen;\textsuperscript{42} but since his activities were shrouded by secrecy, his priority right to this method can not be determined. However, this is the same principle used by George Meisenbach of Munich and others.

Mr. Ives' discoveries involved three cardinal principles:

1. Ruling screens in which the lines are exactly the same width as the intervening spaces;
2. Sealing these screens together face to face to form squares;
3. Placing the screen at an established distance in front of the sensitized plate in accordance with the focal length of the lens and size of the stop used, thus creating the 'optival V.'\textsuperscript{43}

Until screen making was perfected, the use of half-tones spread slowly. Louis E. and Max Levy conceived a way


\textsuperscript{42} Morgan states that "Mr. Ives contributed to negative making which the whole world is indebted to him, was making the first sealed cross-line screen and the suggestion as to the distance the screen should be from the sensitive plate in the camera." Quoted from article "A Photomechanical Pioneer Dies," \textit{Inland Printer}, XCIX, (June, 1937), p. 41.

to make screens and then devised precision machinery to make accurate ruled screens. This they patented on February 21, 1893, and this is the process still in use today.

Halftone screens vary in the number of lines to the inch from coarse to fine, as follows: 30, 60, 75, 85, 100, 110, 120, 125, 133, 140, 150, 166, 175, 200, and 250. In order to secure best results, a screen must be selected for the engraving that will correspond to the paper to be used in its printing. Newsprint requires that halftones be made with coarse screens while coated and gloss enamel paper takes extremely fine line halftones.

The Levy brother's screen, and the improvement of printing equipment and methods, opened the way to the wide usage of the halftone, and made photoengraving the important industry it is today.

\[44\] Special patterns or screen effects, somewhat resembling the dot and line effect of halftones, maybe imported to portions of line etchings. This is known as the Ben Day process (from the name of its inventor) and uses various screens to produce lines, dots, stipple, texture, etc. to the zinc cuts as desired.
Although the periodicals already mentioned—the illustrated weeklies, Harper's Monthly, and Scribner's (and its successor—Century) Monthly—were the principal users of illustrations during most of the last half of the nineteenth century, other periodicals also used illustrations. The humorous magazines such as Puck, Judge, and Life, and the sensational National Police Gazette were especially lavishly illustrated. Many other magazines advertised their pictorial contents by including the word "illustrated" as part of the magazine's title. The use of pictures in newspapers gradually increased during this period; but only during its last sixteen years—from 1884—did pictures become a significant force in the regular daily press.

The National Police Gazette was started in New York in 1845 by George Wilkes and Enos Camp, and during its early years acted as a crusader against crime, gambling and vice. By publishing all known facts about the criminals of that time, it tried to lift the veil from the underworld.

While the Gazette succeeded in securing the antagonism of both the police and the underworld, its success as a publishing enterprise was mediocre until Richard K. Fox took the magazine over in 1876. During the early years of his
ownership, its pages were filled with highly colored stories of crime and scandal, with illustrations to match the text. According to the Gazette's historian, Edward Van Every, Fox used as his basic publishing idea the sentence "If they can't read, give 'em plenty of pictures." In later years the Police Gazette was gradually translated into a sporting and theatrical paper.

For approximately twenty years after 1846, most large newspapers were printed on type revolving presses. Consequently illustrations were not acceptable to these papers because of the difficulty in handling the flat surfaced cuts.

However, an occasional cut did appear. For example, during the controversy between the Times and the Herald, of New York, in May, 1861, over their relative total circulation figures, the Times printed two caricatures of Bennett, editor of the Herald--"the first pictorial illustrations ever carried in the Times."46

The development of stereotyping and rotary presses gradually allowed the return of pictures to the newspaper columns. By 1873 it was estimated by Rowell's American


46 Elmer Davis, op. cit., p. 64.
Newspaper Reporter that only four per cent of the papers of the country were refusing illustrations. Numbered among these, however, were most of the large city dailies; but they also soon capitulated to the demands for illustration.

Manufacturers, such as the makers of typewriters and sewing machines, by including pictures of the product in their advertisements led the vanguard of pictorial advertising.

The Leggo brothers arrived in New York from Canada in 1872 with $750,000 which they used to form the Graphic Company. The Daily Graphic was begun March 3, 1873 with the then ambitious purpose of bringing "pictures of the news of one day on the following day." This paper, of tabloid format, eclipsed all previous publications by the rapidity and excellence of its illustrations. It started with an attempt to give a daily record of news, and its conductors made every effort to bring about a system of rapid sketching and drawing in line. But the public of New York in 1873 . . . cared more for 'pictures,' and so by degrees the paper degenerated into a picture-sheet.47

This first illustrated daily was printed by lithography, and its publication continued until 1889. Frequent changes in the ownership of the newspaper greatly handicapped its chances for success, and finally the financial and mechanical difficulties of reproducing pictures forced the suspension of the paper.

David S. Croly, in 1875, upon taking charge of the New York Graphic predicted "the time is coming when every large city in the world will have its daily illustrated paper devoted to the pictorial reporting of the current events of the day." He further stated:

"News is what newspaper readers want now; 'news pictorial' is what they will want then. The great crimes, the terrible accidents, the society-shaking scandals must be illustrated. As these appeal to the emotions rather than to the judgment, their pictorial illustra-

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48 Will Jenkins credited The Montreal Star with being "probably the first daily newspaper on the American continent in which news illustrations appeared as a regular feature, and to Henri Julien belongs the honour of being the first artist to devote himself to the daily illustration of news." Quoted from Jenkins, "Illustration of the Daily Press in America," International Studio, XVI, (1902), p. 254. He does not give any dates and the present librarian of The Montreal Star was unable to supply any information concerning this statement. A temporary daily illustrated paper was issued by the James H. Osgood Company during the World Peace Jubilee held at Boston in 1872. Under the title of Jubilee Days, sixteen issues of a four-page quarto sized paper were issued. J. D. Howells served as its editor and Augustus Hop- pin made the drawings. Engravings for it were made by the Chemical Engraving Co. "in three hours after the receipt of the drawings." Murrell, op. cit., II, p. 26.
tions will be most welcome to the public; and the picture paper of the future will occupy the field that the novel and the story paper does now.49

After trying out his ideas in the Graphic, Croly concluded the public "does not seem to care so much for mere news pictures—illustrations of actual events—as I supposed they would," he then believed the public wanted something higher and better in illustrated than in non-illustrated papers. Under these amended views he considered "portraits of beautiful women and famous men, charming and striking scenery, sketches illustrative of the affecting, the interesting, the humorous phases of human life, all that relates to the love of the husband, wife, and children, for parent and friend," as suitable subjects for pictorial journalism.50

Undoubtedly the Graphic made significant contributions that led to the complete union between the photographic camera and the printing press. On a number of occasions this newspaper used the "granulated photography" process devised by the Leggo brothers to secure gradations of tone in the pictures reproduced.

On March 4, 1880—the seventh birthday anniversary of

49 Quoted by Solon R. Barber, "Rise in Pictorial Journalism Seen by New York Editor in 1875," Editor & Publisher, LX, (July 30, 1927), p. 44.

50 Barber, loc. cit.
the paper—the Graphic reproduced a tone picture for which the transfer print had been "obtained direct from the original negative." This print was made by Stephen H. Morgan and has been widely claimed as the first halftone to appear in a newspaper. The Graphic called attention to it as follows:

On the lower left hand corner is an illustration entitled 'A Scene in Shantytown, New York.' We have dealt heretofore with pictures made from drawings or engravings. Here we have one direct from nature. Our photographers made the plate from which this picture has been obtained in the immediate presence of the shanties which as shown in it. There has been no redrawing of the negative. The transfer print has been obtained direct from the original negative. As will be seen, certain of the effects are obtained by the use of vertical lines. This process has not yet been fully developed.

The New York Truth, from its founding in December, 1879, made illustration a regular feature in its columns. It employed the "soft metal process" (a modification of the Woodburytype), and two or three days were required to turn out cuts. In order that current news might be pictorialized, stock illustrations were kept on hand.

Valerian Gribayedoff describes this practice as follows:

Thus the accompanying thrilling design (a one column cut of a man falling as a woman fires a gun at him) of avenging womanhood was used no less than nine times—to illustrate a base seducer's doom, a case of parricide in the coke regions, an amateur theatrical performance, the attempted assassination of a Russian general in St. Petersburg, etc., etc. The different attempts on the czar's life also called for a stock cut which showed Alexander II staring blankly into space while a dynamite
bomb plays havoc with the background. Portraiture was also of 'stock' nature, the same cut often representing at discreet intervals a large number of different individuals.51

The steady and successful use of pictures in the regular daily press dates from the adoption of illustration by Pulitzer's New York World. Joseph Pulitzer acquired the World in May, 1883, and during that year used a few illustrations. The first of these was a diagrammatic illustration of a murder, appearing in the issue of October 17, 1883. In 1884 the World secured the services of two talented artists, Valerian Gribayedoff and Walt McDougall. At first their efforts were confined to illustrating biographical sketches and cartoons, but soon they were pictorializing the daily news. Both have claimed to be the originator of news illustration.

The issue of the World for February 3, 1884, contained a caricature by Gribayedoff entitled "Wall Street Nobility." This was used to illustrate an article by Mr. Pratt, the paper's financial editor, and was the first of a series of humorous portraits, on the familiar plan of large heads and

small bodies. 52

Pulitzer, during the presidential campaign of 1884, strongly supported Grover Cleveland's candidacy. Large four- and five-column cartoons, belittling Blaine, the Republican candidate, were printed on the first page of the World. These were drawn by Valerian Gribayedoff and Walt McDougall. 53

52 The World created considerable trouble for itself a few weeks after its first pictorial display by printing a cut of "the society buds of Brooklyn." Gribayedoff said that the "soft metal" process and printer's ink created an effect "not altogether what either proprietor or artist desired. Owing to certain irregularities in the lineaments of the victims, caused by the superabundance of the black fluid, whereby one lady was disfigured by a blotch on her nose, another afflicted with a slight obliqueness of vision, still another ornamented with an incipient beard, the ambitious effort aroused howls of indignation from both ends of the Brooklyn bridge. Rival newspapers sent reporters to the parents of the unfortunate to secure expressions of opinion on the ethics of journalism and the dire threats were hurled at the World owner's head. One of the infuriated parents was credited with the intention of taking justice into his own hands in the form of a horsewhip, and Assistant District Attorney Allen of New York gravely announced that Mr. Pulitzer had rendered himself liable to indictment for criminal libel. The protest was grounded less on the basis of the distortion of fair features than on the argument that the privacy and sanctity of American homes had been ruthlessly invaded and forced into the garnish of vulgar publicity." Gribayedoff, op. cit., p. 477.

53 Bernard Gillan, who later helped make the magazine Judge a powerful factor in the molding of political opinion, drew a series of caricatures of Blaine during the campaign of 1884 for Puck. These cartoons showed Blaine as the "tattooed man" and according to D. C. Seitz were "probably the most far-reaching ever drawn . . . and did dreadful damage to the Republican candidate." Quoted from Seitz's The éleve Rang (p. 294) in the sketch on Bernard Gillan in Dictionary of American Biography, VII, p. 266-7.
Line etching replaced the "soft metal" process about this time and greatly speeded up the publication of pictures. During the ten years following 1884, zinc etchings were used generally by the newspapers. Most pictures, however, were still sketched by the "artist on the spot," since a camera of this period could not do the work of the simplest camera of today.

The tremendous success of the world dates from its liberal use of illustration. In 1885 Pulitzer decided to gradually get rid of pictures because he thought they tended to lower the dignity of the paper. Immediately the circulation dropped. The world then began using more cuts than ever before, and the circulation soon reached 250,000—a figure no American daily newspaper had reached previously.

The American Press Association decided to add outline cuts to its line of stereotyped material being supplied to small newspapers, and in 1884 started an engraving plant to make zinc etchings. Stephen H. Morgan was placed in charge of it—where he remained for the next seven years.

The American Press Association by 1892 was supplying 500 newspapers of the country with column-wide stereotype plates and approximately 250 pictures a week. Practically nine-tenth of the daily papers were using this service.54

54 Seyer, op. cit., p. 396.
James Gordon Bennett, in the early 1890's, hired Morgan to serve as art director for the New York Herald in an attempt to recover circulation losses caused by the New York World. Although offered a life-time job, Morgan only lasted two years on the Herald because the entire staff of the paper was against the use of cuts. He was fired when a mechanical expert told Bennett that any man who thought a halftone could be printed in a daily newspaper was crazy.

The Boston Journal, in May, 1894, succeeded in stereotyping a halftone and publishing it on their newspaper press; but difficulties encountered prevented the regular use of halftones.

Morgan, after leaving the Herald, went to work for Whitelaw Reid, publisher of the New York Tribune. January 21, 1897, the Tribune published on its front page a halftone illustration of Thomas C. Platt, newly elected senator from New York. This marks the beginning of the halftone as a regular newspaper feature.

Other newspapers immediately adopted the halftone, and by 1900 it was in common use. The conservatism of some newspaper publishers retarded the employment of halftones by a few papers.

Stephen H. Morgan in the Inland Printer, May, 1904, described the early printing of halftones on newspaper presses as follows: "The method employed on the Tribune is
to lay an original zinc halftone on the matrix (of the type page) when the latter is in the curved casting box, close up the box and pour in the stereotype metal as usual. The halftone then was securely imbedded in the cast.

In 1895 William Randolph Hearst acquired the New York Evening Journal, and Pulitzer thereby secured a formidable competitor not only in the field of sensational journalism but also in the use of newspaper illustration.

The comic supplement, Sunday magazine sections, and picture sections were developed during this period, and excepting that their illustrations were zinc etchings instead of halftones, were similar to their present day successors.

In competition to the sensational publications of the "yellow" newspapers, the conservative New York Times, under the direction of Adolph S. Ochs, began publishing an Illustrated Magazine Sunday Section September 6, 1896. This was printed on good coated paper and illustrated by halftone photographs. It was popular from its start.

This section scooped other American newspapers by publishing, July 4, 1897, sixteen pages of pictures of Queen Victoria's Jubilee. Not only were these the first pictures published in New York of the Jubilee, but the smooth stock

used enabled them to be clearly reproduced. The Times was forced to suspend publication of the section in September, 1899, because it was too successful. Its circulation had become so great that the Times lacked facilities for printing the increasing number of copies required.

The Spanish-American war offered the Journal and the World many opportunities for sensationalism, among which was the first use of full page line drawing illustrations.

After the sinking of the Maine, the World devoted its entire front page to an illustration of the ship. The Journal outdid this by a spread of a similar illustration over two inside pages.

The metropolitan newspapers that featured illustration developed art staffs whose members were expert in some type of drawing—"portrait, society, yachting, naval, military, sport, or humor." To meet the demand for speed, the background portions of a picture—such as for a public meeting—were prepared in advance and later the central and important features were added. The artist on the "yellow" papers was required to do even more. "He was constantly called upon to draw things he has never seen and sometimes things no one has ever seen or ever will see."57

56 Jenkins, op. cit., p. 255.

In order to enhance their pictorial coverage of news, most papers systematically clipped pictures from other papers and periodicals. These were filed and used as the occasion demanded. Since pictures could not be sent as rapidly as news, many news items were illustrated by pictures from the files. This generally necessitated the cutting, pasting, and retouching of the original pictures in order to secure an illustration suitable for the current news item.

Illustrations in the advertising columns increased at the same tremendous rate during the 1890's as they did in the news columns. The manufacturers of bicycles displayed their product by using large amounts of advertising space and also by art posters. Illustrations had become so regular a feature of advertisements by 1896 that the Western Druggist prophesied that "when the history of advertising is written, the present will be known as 'the picture period.'"58

58 Prestrey, op. cit., p. 356.
The early years of the twentieth century—a century which seems destined to go down in journalistic history as the "Pictorial Age"—saw a gradual increase in the number and the quality of the pictures printed in the newspapers of the United States.

From a mechanical standpoint this represented a constant struggle to adopt methods and equipment in such a manner that they would produce well printed pictures. Because of the nature of its gray-to-black printing surface, the halftone does not lend itself readily to rough paper such as news print. Then, too, the goal in newspaper press building has always been to meet the demand for faster and faster presses, although the quality of the print has also been improved. In order to print halftones on such presses—using newsprint—the problems of etching engravings deep enough so that they may be used with the stereotype process, of perfecting of plate making equipment in order to produce better stereotypes, and of developing inks and inking apparatus in order to get even and quick distribution of ink, had to be solved. The printing of colored pictures made necessary presses with more accurate register than those of earlier times.
From a journalistic standpoint the greatest number of pictures printed, and those of greatest news value, were secured in the newspaper's own locality. Until the World War of 1914-18 created a demand for pictures of that struggle, pictures taken any distance from a newspaper office were received so long after a news event that they had only feature value—not news value. However, news picture services and syndicates were being operated and expanded—of which more will be said in other pages.

A very important incident in the history of pictorial journalism occurred in April of 1914 when the New York Times began running a rotogravure picture section in its Sunday edition.

The development of rotogravure goes back to January 1, 1878, when Karl Klietsch, chemist, artist and engraver, produced his first successful prints by the intaglio printing method of photogravure. This invention he did not patent but sold as a secret. In 1890 Klietsch went to Lancaster,

59 Klietsch was born in the village of Arnan, Bohemia, May 31, 1841. During his youth he became a roving portrait painter but later, with his father, he conducted a photograph studio at Brunn. The invention of photogravure came as the result of his study of photomechanical methods. In 1879 Klietsch received the Voightlander medal for photogravures. Carl Albert, "Karl Klietsch, Inventor of Photogravure and Rotogravure," Inland Printer, LXXXI, (May, 1928), p. 83.
England, to teach the firm of Story Brothers the photogravure process. There, in December of that year, he etched a portrait on a copper cylinder—instead of on a copper sheet as for photogravure—and that was the beginning of rotogravure.60

A power rotogravure press was installed October 11, 1893, and August 7, 1895 Klietsch founded the Rembrandt Intaglio Printing Company at Lancaster. The process was used exclusively for art reproductions.

Klietsch tried to keep rotogravure as a secret without patenting the process, but his workmen gradually carried knowledge of it to various countries. Ernest C. Bradshaw, who worked for a while as Klietsch's photographer, brought rotogravure to the United States in September, 1903, and built the first rotogravure press at Brooklyn. He founded the Rotary Photogravure Co., of Passaic, N. J. In 1907 the

60 Rotogravure is the spelling generally used at present. The following definition of the word "rotogravure" is given by Stephen H. Morgan, in The Inland Printer, LXIII, (July, 1919), p. 407: "The word 'rotogravure' is a registered trademark word which undoubtedly came from the name of the German syndicate, the 'Rotogravur Tietdruck Gesellschaft,' of Berlin, whose machinery and processes were introduced into this country by the Sackett and Wilhelm Company, of Brooklyn, New York. The proper name for the process and its product is 'rotary photogravure,' and it is quite natural that in these busy times there should be an effort to abbreviate these two words. So why not use the English word 'rota,' meaning a wheel or roll, and 'gravure,' the French for 'engraving,' and by combining the two call it 'rota-gravure' hereafter?"
Vandyck Gravure Company, of New York, came into existence.

From a newspaper standpoint, the introduction of rotogravure into Germany is most important. There the word "rotogravure" was coined and patented by Ernest Rolffa and Dr. Edward Mentors. By a method devised by these men, the Frieberger Zeitung in 1910 began printing its illustrations from intaglio etched copper cylinders and its letterpress from stereotype plates on an ordinary press.

A syndicate was formed in Germany to introduce German rotogravure presses, paper, ink and workmen into the United States. The first of these presses in this country was installed by the National Cash Register Company, Dayton, to print its house magazine in 1912. That same year London Illustrated News and the Hamburger Fremdenblatt, Germany, began issuing rotogravure supplements.

Adolph Ochs, publisher of the New York Times, while traveling in Germany in 1913, saw the developments in rotogravure and imported two presses and the necessary workmen.
The Times issued its first Sunday rotogravure in April, 1914.61 Immediately its Sunday newspaper sales increased, and by the end of the year showed a gain of 100,000 weekly.

The New York Times was soon followed into the rotogravure supplement publishing business when The Cleveland Leader, The Philadelphia Public Ledger, The Boston Herald, and The Chicago Tribune installed the necessary presses for this printing process. Currently with these installations came the World War and an intense reader interest in news pictures of the front. Rotogravure supplement sales soared as a result of this, and news pictures down to the present time have formed the bulk of the material printed in rotogravure sections.

The Times not only printed its Sunday supplement but in September 1914 began publishing a magazine, The Mid-Week Pictorial, on its rotogravure presses. The Times World-Wide Photo Service was organized in 1919 to supply photographs

for both the Sunday paper and the *Mid-week Pictorial* of the *Times.*

The use of rotogravure has increased rapidly in the United States. Rotogravure sections not only attract much more reader interest but during recent years have carried an increasing amount of advertising. In 1938 the combined circulation of 65 rotogravure sections totaled 15,500,000 copies. Only about 12 newspapers print their own rotogravure sections.

During the last ten years much progress has been made in color-gravure printing. Experiments in this were conducted by the *Chicago Tribune* as far back as 1918. Today color-gravure is being widely used, and is particularly successful for advertisements.

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62 The *New York Times* uses rotogravure presses to print its *Annalist* and its *Sunday Book Review* and *Magazine.* This makes "possible an excellence to typography otherwise unobtainable in such publications, and a fineness and fidelity in the reproduction of photographs which had never previously been achieved in any newspaper supplement." *Davis, op. cit.,* p. 330.

63 Dr. George Gallup and his research bureau made a detailed study of Sunday readership, for Kimberly-Clark corporation, makers of rotogravure. Rotogravure was found to have a high position in readers' interest--"not only did it outrank competing sections in the number of Sunday readers who scanned through it, but also in the number who stop to read average inside pages carrying advertisements." *James S. Tyler, "What's Happening to Rotogravure?" Advertising and Selling, XL* (August 27, 1936), p. 26.
CHAPTER X

TABLOIDS

An innovation in American journalism occurred June 29, 1919, when the Illustrated Daily News was started in New York City by Robert R. McCormick and Joseph Medill Patterson, publisher of the Chicago Tribune. Startling as its appearance was, this tabloid created a sensation not only in its handling of pictures and news, but in its miraculous growth in daily circulation sales. Within two years the Daily News had acquired the largest following of any newspaper in New York City. At the end of twenty years of publishing, in 1939, this newspaper had the third largest circulation in the world.

The first issue of the Daily News contained sixteen four-column pages, each page of which was about half the size of those of a seven-column newspaper. Halftones appeared on almost every page of the paper. The paper was plainly patterned after the London Daily Mirror. Patterson, despite the tremendous success of the Chicago Tribune, wished to engage in other journalistic endeavors; but it was not until he met Lord Northcliffe, in England in 1919, that
"his desires crystallized about the tabloid." 64

Both the Daily Graphic of New York, 1873-1890, and the Daily Graphic of London, had some of the characteristics of tabloids—small format, use of pictures, etc—but successful tabloidism dates from the establishment of the London Daily Mirror in November, 1903, by Viscount Northcliffe (then Alfred Harmsworth). The Daily Mirror was started as

64 Bessie, op. cit., p. 79. Lord Northcliffe told Patterson "New York's got to have a picture tabloid... If the rest of you don't see the light soon, I'll start one myself." Ibid., p. 78.

65 William Grosvenor Bleyer stated that the success of "tabloid daily" was due to four factors: their convenient size, the large number of pictures, the condensed form in which the news was presented, and the emphasis upon human interest." Bleyer, op. cit., p. 426. With these characteristics in mind it is interesting to note that some earlier newspapers possessed certain of them, but not a combination of all of them. In most cases, the earlier papers did not run a great many pictures of news value. Towne's Pennsylvania Evening Post and Daily Advertiser of 1763-84, naturally lacked pictures. B.H. Day's Sun, J.G. Bennett's Herald, Joseph Pulitzer's World, and William Randolph Hearst's Journal all dramatized the sensational and abnormal elements of the news but these papers lacked the format of the tabloid, and pictures were used sparingly. Two news tabloids made their initial and final appearance in 1891 in New York City. The four page, 4 column Morning Advertiser, published by Colonel John A. Cockerill, was an immediate failure. Frank A. Munsey purchased the Star, and Feb. 1, 1891, issued it in tabloid form under the name of Daily Continent. It was discontinued in June of that year. January 1, 1901 Alfred Harmsworth published a half-page size edition of the New York World for Pulitzer, but the next day the World returned to its regular format. The two "ad-less" papers published by Scripps—The Chicago Daily News, 1911-17, and The Philadelphia News-Post, 1912-14, were of tabloid size.
a woman's paper; but within three months it announced its change to a tabloid picture paper by stating that it was "the first illustrated half-penny paper in the history of journalism." Another tabloid featuring pictures was started in 1909 in London under the title of Daily Sketch. 66

In its first issue the Daily News stated:

We will give you every day the best and newest pictures of the interesting things that are happening in the world. Nothing that is not interesting is news. The story that is told by a picture can be grasped instantly. Ten thousand words of description could not convey to you the impression you receive when you look at Millet's painting, "The Angelus." You could read all that has ever been written about the Peace Room in Paris, where the peace conference is being held, and get no clear idea of it. Look at a single picture of the same room, and you know exactly what it is like.

With the pictures we shall give you short, concise news stories, covering every happening recorded by the news gatherers. Pictures and stories together will supply a complete understanding of the events of the day, and that is liberal education.

For a time it appeared that the Daily News would not succeed. By August of 1919 it had reached a circulation low figure of 26,625. Then the New Yorkers began to discover that the paper was easy to read in the subway; that, as the News had promised, the pages could be turned "in the subway without having it whisked from your hands by the

66 When Harmsworth began publishing the Mirror after having made a success of the London Daily Mail, Lord Salisbury remarked that, "Having invented a daily newspaper for those who cannot think, Mr. Harmsworth has now invented one for those who cannot read."
draft," and you could hang to a strap and "read it without the skill of a juggler." The News, in turn, was discovering two great circulation builders—crime and sex. These marked the beginning of the Daily News' great success.

Following the Daily News' example, tabloids were started in many cities of the United States. The ones featuring pictures were especially successful, and of these the New York Mirror and New York Graphic are interesting because they were in direct competition with the Daily News. William Randolph Hearst started The Daily Mirror in June, 1924, and in September, 1924, Bernarr Macfadden, publisher of physical culture and popular fiction magazines, began issuing the Evening Graphic.

The ensuing battle between the tabloids for reader interest can only be termed a stream-lined version of the Hearst-Pulitzer fight. Those practices in the earlier conflict that were termed "yellow journalism" were renewed with added vigor during the 1920's. In addition to these, there was an even more powerful weapon—the unrestricted use of pictures.

During this period, sensational stories and even more graphic pictures concerning Peaches Browning, Kip Rhinelander, Richard Reese Whittemore, Gerald Chapman, Arnold Rothstein, Fatty Arbuckle, Joyce Howley, and the Mirror-revived Hall-Mills murder case, were ballyhooed through the tabloid pages.
The pictures were secured by any available methods, and some of them were faked. The New York Graphic prided itself upon its "composite"67 pictures. These were drawn by artists from information supplied by some person, real or fancied, who claimed to have witnessed the events portrayed. The Graphic defended this practice as being "practically the truth."

Reluctantly the management of the New York Daily News on the morning of January 13, 1928 ordered the presses stopped. When this order was obeyed at 8:00 in order to protect the newspapers' franchise, 150,000 copies were off the press—each containing a picture showing Ruth Snyder being electrocuted at Sing Sing. The picture had been obtained by bringing a photographer in from Chicago, and getting him admitted to the execution chamber by having him pose as a reporter. There, seated in the front row, he had used a camera that was strapped to his left ankle.

The first repercussion from publishing the picture was the cancellation of a $10,000 advertising contract. Captain Joe Patterson, publisher of the News, was vacationing in the Canadian woods, and he was located only after great

67 "Composite" pictures should not be confused with the "photomontage" that tabloids use successfully today. The latter combines real shots of a single news story for a dramatic effect.
difficulty. In the meantime, copies of the edition were selling at 50 cents each. Patterson ordered the picture re-run in all editions for the next day.

The Daily News was both attacked and defended in publishing the pictures; but most of the arguments ignored the fact that the more conservative papers had tried to do the same thing that the News had done—only through the use of adverbs and adjectives.

At its twentieth birthday, in June, 1939, the New York Daily News had a daily circulation of 1,848,320 copies. This is more than half the total of all Manhattan's morning papers, and is the third largest circulation. The London Daily Express (2,466,323 copies) and London Herald (over 2,000,000), however, have national rather than city circulations.

The immense circulation of the tabloids has been achieved without a corresponding decrease in the circulation of the more conservative papers, or a like increase in population. This fact indicates that the tabloids have created a new group of newspaper readers.

Only in the larger cities are all the tabloid features of size, sensationalism, and pictures combined. However, the small format is becoming increasingly popular. In 1939 fifty
newspapers in the United States and two in Canada were using it. 68

68 1940 International Year Book Number, Editor & Publisher, LXXIII (January 27, 1940), p. 193.
As the demand for news pictures increased, the larger metropolitan papers augmented their art departments by hiring more staff artists and staff photographers. The growing interest in pictures was also felt by the newspapers situated in other cities than New York; but in many instances they were not in a position to maintain an art department of any size. The logical outcome of this situation was the establishment of picture agencies to supply any newspaper who desired to purchase the service.

The first of these agencies was the Bain News Picture Service, started by George Grantham Bain in 1895. Prior to this he had conducted a free lance bureau for a few years, and had during those years acquired a picture morgue.

Important early picture cover assignments of the Bain News Picture Service were the election of President McKinley, Queen Victoria's Jubilee, and the arrival of Admiral Dewey.

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69 Bain became interested in photography while he was a student at St. Louis University. In 1892 he accompanied the Rev. James H. Lee to the Holy Land where he made photographs for a book the minister intended to publish. For information on early picture services, see Jack Price, "Press Pictures Have Come Far in Half a Century," Editor & Publisher, LXXI, (February 19, 1938), p. 37-8.
at Naples. Bain set a price of $5.00 for an ordinary news picture, with an increased price based on the news value of the picture.

Other firms and men were soon attracted to the field, and the number of syndicates increased rapidly as the market for news pictures increased. The firm of Underwood and Underwood in 1901, added news picture service to its photographic and stereopticon view business.

International News Photos was started in 1909 primarily to supply Hearst newspapers with pictures. As a result of this vast coverage, the syndicate employed a staff three times larger than that of any of its competitors. This organization distributed Hearst's features in general-news matrices, printed supplements, and all sorts of mailed material.

In 1910 a German camera named Ica Trix was introduced; and when this was fitted with a Ziess 4.5 lens, it became the most popular news camera. The increased speed of this camera proved a great boon to news photographers. Since its construction, camera lenses have become progres-

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70 Bain had the first woman newspaper photographer, Frances Benjamin Johnson, covering the Exposition at Buffalo the day President McKinley was assassinated. Although on the scene when the tragedy occurred, Miss Johnson did not take any pictures because "she was so unnerved at the sight."
sively faster and have constantly opened up additional possible news picture sources.

The American Press Association was the next large concern to enter the picture business, but this department was discontinued when the Western Newspaper Union took over the American Press Association. In 1919 The New York Times started its Wide World Picture Service.

In 1922 the New York Daily News began syndicating news pictures when it organized the Pacific & Atlantic Photo Syndicate. Charles Mathews was its director for one year, and then he left to start Acme Newspictures. In 1924 Acme changed its name to United News Pictures, but resumed its former name in 1925. In 1931 The Pacific & Atlantic Photo Syndicate and Acme Newspictures were merged, and the title of the latter retained.

The increased demand for news pictures was reflected when the large cooperative news-gathering organization, The Associated Press, added a news photo service. The Associated Press began its picture service by furnishing one-column cuts of prominent persons to accompany biographical sketches. This consisted of a set of 452 pictures. Fifty newspapers subscribed for these in the form of photos, and 400 took mats. In order to keep these pictures up-to-date, the Associated Press then supplied four additional photographs weekly of noted persons.
Arrangements were made by the Associated Press with Paramount News Service, in the summer of 1927, to receive "clips" (individual pictures) from Paramount's news reels. This was made possible by the perfection of enlarging methods that eliminated from the enlargements what is technically called the grain. At the same time Paramount developed a special machine capable of printing 1000 enlargements per hour.

In August, 1927, The Associated Press News Photo Service began supplying 60 pictures a week to 100 of its members. These were all glossy prints, no mats.71 A mat service was the next logical outgrowth of this expanding distribution of pictures. Each day The Associated Press mailed from New York City a page of news mat photos that still retained much of their news value when they reached the west coast five days later. Mat distributing facilities were next established at Chicago, then at Atlanta and San Francisco. In order to secure better pictures from abroad, the AP started a wholly owned and controlled subsidiary picture organization in Europe.

With all the large news gathering facilities—The Associated Press, Hearst's International News Service, and

71 "AP Picture Service to Start August 1 Serving 100 Member Papers," Editor & Publisher, LX, (July 23, 1927), p. 14.
The United Press through its affiliation with Acme—increasing their news picture services, the competition became keener and the need for speed in distributing the photos became greater. By automobile, motorcycle, train and airplane the pictures were rushed to their ultimate destination. And then, after years of effort and experimentation, feasible means of sending pictures by radio, telegraph and telephone were perfected and adopted. However, this latter step for a long time threatened to disrupt the Associated Press by causing dissension among its members.

The realization that in telegraphy lay the answer to the demand that pictures be received by newspapers while they still possessed news value, had long been present.

The New York Tribune, in June, 1875, displayed remarkable journalistic ingenuity in connection with its story of a shooting match between the American Rifle team and a Great Britain team at Dublin. Using the descriptions received by telegraph, the paper devised a series of targets showing the shots of the successful competitors marked on them, and these were reproduced in the following morning’s edition.

Mason Jackson, writing in 1885 on the effects of telegraphed news, stated:

This rapid treatment of intelligence is somewhat
damaging to the illustrated newspaper, for by the time it can publish sketches (pictures) of interesting events in far distant countries the freshness of the news is gone, and the public mind is occupied with later occurrences. Until some method is invented of sending sketches by electricity, the pictorial press must endure this disadvantage, but in the meantime it spares no pains to overtake the march of events.*

The Chicago Times-Herald, according to its editor, Cornelius McAuliff, was the first newspaper in America to send line drawings by wire. These were sent June 21, 1895 by "Teleautograph."**

Mr. Amstutz, about this same time, patented an apparatus that he named the "Artograph," the secret of which: "Lies in the discovery... 'that a picture, perfect in detail, may consist of absolutely nothing but parallel lines.' On this principle he (Amstutz) based his contrivance 'for sending pictures by wire, the details of the picture depending on the breadth of the lines of the portrait or other picture.' The lines are extremely fine, running forty to eighty an inch."***

The Telediagraph, invented in 1898, was another machine designed to transmit pictures by telegraph; but while many inventors interested themselves in the problem, commercially successful sending of pictures by wires required the invention and adaption of the photo-electric cell, and

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of a synchronizing device.

On November 14, 1920, a group of scientists and newspaper officials gathered in the office of the New York World and a similar group in the office of the St. Louis Post-Dispatch. There, in darkened rooms, they witnessed the exchange of pictures from New York to St. Louis as demonstrated by Edouard Belin, French scientist, on an apparatus he called a telestereograph. It combined telegraphy with the principle of gelatine-relief.75

The newspapermen agreed on the success of the experiment, but believed that:

75 Following is a description of the method: "The transmission is simply a matter of preparing a bas-relief of the photograph and then tracing that bas-relief with a stylus connected with a telephone transmitter. The latter varies the current flowing over the wire in accordance with the relative height of any point of the bas-relief record at any given moment. At the receiving end this current variation is translated into various gradations of light.

"The first step is to prepare the transmitting record or plate. A copper cylinder forms the base of the record, which, incidentally, is of the size and appearance of the old-fashioned phonograph records, and its surface is coated with a 5 per cent shellac solution. Meanwhile a carbon print is made in the conventional photographic manner from the photographic negative to be transmitted, after which the print is wrapped face-to-face with the shellacked copper cylinder. The cylinder with the print is then placed in hot water, with the result that the gelatine in accordance with its own degree of blackness, while the unexposed gelatine is washed away with the paper. In this manner a coating of uneven thickness is formed on the cylinder of a photograph in bas-relief." Arthur T. Robb, Jr., "News Photos Fly Over 1,000 Miles of Wire as Scientists Marvel," Editor & Publisher, LIII, (November 20, 1920), p. 7.
News pictures of sufficient worth to warrant transmission to distant parts of the country are not numerous enough to make worth while the maintenance of direct leased wires free of all other matter, as the process requires. 76

A few months prior to this experiment in 1920 photographs and cartoons of the Republican Convention at Chicago were transmitted by wire to New York where they were published the following morning. This was in the nature of an experiment by Herbert E. Ives and his research associates of the Bell Telephone Laboratories.

H. G. Bartholomew and Captain M. D. McFarlane, under the sponsorship of the London Daily Mirror, developed a system, named Barthane, 77 of sending photos by cable. It was first used to carry a snap of the international crew races of 1920. The following year pictures of the Dempsey-Carpentier fight were sent by this means.

These and many similar experiments were made, as companies endeavored to devise equipment to transmit

76 Robb, loc. cit.

77 A light-sensitive apparatus perforates a strip of paper tape. This is then fed into an automatic sending machine as for any cablegram, and the perforations cause corresponding electrical impulses to flash across the ocean to where a receiving apparatus responds by punching a similar pattern of holes on a strip of tape there. This perforated tape guides a photographic apparatus that reforms the picture on a sensitive film. George H. Gray, "Pictures by Wire and Wireless," World's Work, LIX, (October, 1930), p. 46.
pictures. However, the most successful method during the 1920's was for the sender to describe the picture to the receiver. By this means, the former told the latter where each line started, the direction it took, and where it stopped. A transparent, checkered chart or graph in which each vertical and horizontal line is designated by a letter or figure, was placed over the picture. The lines of the picture were traced and a description sent over the wire of the places where they touched the lines on the graph. The receiver then drew the picture into a corresponding chart. The shading was similarly described.

On May 19, 1924, the American Telephone and Telegraph Company transmitted a 5x7 inch picture from Cleveland to New York in four minutes and thirty-six seconds. A wire picture from the Republican National Convention at Cleveland was published by the *New York Times* on June 9 of the same year, and the following day this newspaper printed a picture of the American Electrical Congress at Mexico City that was received from Cleveland by telegraph.

Further experimentation led to the inauguration of a halftone and manuscript facsimile service, in 1926, by the American Telephone and Telegraph Company. Originally only New York and Chicago and San Francisco were included in this picture transmission set up, but later telephotography was extended to connect eight major cities.
This telephotography set up was offered by the A.T.&T. as a public service not only to newspapers but also to advertising agencies or to anyone who desired any written, drawn, printed or photographed material duplicated in some other city. Japanese characters, hieroglyphics, signatures, tabulations of figures, etc., could be transmitted as well as photographs. A degree of sharpness was lost in the transmission of the pictures.78

At the convention of the AP and A.R.L. in April, 1927, radio transmission of pictures was demonstrated to the assembled newspapermen when a facsimile message and portrait of Lord Burnham, proprietor of the London Daily Telegraph was received. This equipment was developed by the Radio Corporation of America and it was stated it could be used to transmit:

News pictures, portrait photographs, fashion drawings, documents of interest to banks and bankers, legal papers, architectural plans, technical designs and wiring diagrams, advertisements or any other

78 An electric "eye" in the sending equipment determines the proportion of white and dark in each one-hundredth inch square. If the square is solid black, an oblong one-hundredth of an inch wide and two-thirds of a hundredth of an inch in depth will be recorded on the received picture. If the square is half black and half white, it will be reproduced as being one-third solid black. This characteristic results in a softened blending where black borders on white.
At the transmitting station, a photographic negative of the picture to be sent is placed around a glass cylinder in the center of which is a very powerful light. This light is focused down to a very small point on the picture, and is moved back and forth across the inside of the glass cylinder. This means that for any single crossing the transmitter has covered a narrow line width of the picture. At the end of each stroke the cylinder turns slightly forward to present a new line width of the picture to the light. So this light is picking up the values of all the small parts of a line across the picture as it makes the traversals. If it is a light part of the film, the light has no trouble in penetrating the picture; but if it is dark part, the light gets through but little, if any. How this light passes to a photo electric cell which is the sensitive eye of the outfit. This cell is sensitive to the amount of light which gets to it, and it shows this sensitivity by charging a very small electric current which is passing through the cell. So, if much light gets through to the cell, maximum current will be passed. If but little light is transmitted through a dense part of the negative, but little electric current will be registered.

This controlled electric current is much too weak in itself to be of any use however. It has to be made many times stronger in a vacuum tube amplifier. This is done in much the same manner that the usual radio broadcast receiver builds up the weak radio signal to operate a loud speaker. But in this case, the photo-electric current impulses are made so large that they will actually control a radio transmitter—in fact the very largest that are in existence: so that the weak current impulses generated from the light values of the picture are able to radiate signals which will carry to all parts of the world. The actual control is accomplished by having the amplified signals change the numbers and length of dots sent out. So, for a light part of the picture (negative), very few and very short dots will be sent out. For a gray part of the picture, many small dots will be sent; and for a dark part of the picture, long heavy dashes will be sent out."
In many ways the technical problems are the same in both wire and radio transmission of pictures, with the exception of one main underlying principle. In sending pictures by wire the varying shades of black and white are translated into varying intensity of sound. On the other hand, the length of the radio signal, not the intensity of the signal, represents the varying shades of black and white.

The operation of the equipment, developed by RCA, is described as follows: "Inside this glass cylinder is a very strong light which passes back and forth building up the tone values of the picture. In the same manner as with the halftone engravings, as all newspaper people know, the radio pictures are made up of line upon line of many small dots. These dots are of different sizes and spacing, the grouping being made automatically, from the tone values of the original picture acting on a photo-electric cell. The current impulses from the photo-electric cell are amplified many times and then carried to the radio transmitting station, where the impulses are hurled through space.

"At the receiving station, these impulses are built up again by amplifiers and lead to the Photo Radioscope. "At the Photo Radioscope, a hot air gun is set to be traveling back and forth. This it does in exact synchronism with the strong light at the transmitting point.

The hot air gun is heated electrically, and is shooting a very fine stream of hot air at specially prepared paper all the time. If this hot air strikes the paper, it makes a mark in dark sepia. But it is kept from hitting the paper normally by a cold stream of air at right angles to the hot. In the supply of this cold air stream is included a small valve which is directly operated by the incoming radio signals. So, if a radio signal is received, the cold air is shut off, and the hot air has a chance to hit the paper. Therefore, the light sepia marks are blended together to give a finished picture at the receiving point of much the same character as a rotogravure print."
In June, 1933, the American Telephone and Telegraph Company abandoned its telephoto service. This was largely because of lack of sufficient patronage. Improved airplane service had made possible the rapid transportation of pictures by air, and in many instances this method was better than by telephoto. Frequent delays occurred in the wire transmission of pictures because of the "first come, first served" rule governing the use of telegraph lines. Also, the pictures by wire were sometimes not clear. Some of them appeared as if they had been taken through a screen door, and the newspapers found they could get more satisfactory reproductions if the pictures were received by fast carrier than by telephoto.

The A.T.& T. abandoned its public telephoto service after having expended $2,800,000 in experimentation, but it did not give up its experiments. In October, 1933, the company announced a greatly improved telephoto apparatus. They immediately contacted picture syndicates as possible customers for their equipment.

Only one of the syndicates was interested—the Associated Press. Early in 1934 its members were informed of the proposed establishment of a telephoto service in a booklet entitled: "Announcing AP News Pictures by Wire." This stated:

A transcontinental telephotograph service, which will
carry news and feature photographs into newspaper offices on leased wires paralleling those delivering news stories, is being established by the Associated Press through the cooperative action of its members in principal cities in all sections of the country. The pictures transmitted by wire are so perfect in quality as to defy detection in many instances from the original photograph itself.

The step is truly a sensational one, representing the realization of one of the fondest dreams of progressive newspaper men everywhere—a forward step comparable only to the coming of telegraphy years ago. Plans for the service have been made with great care, have been studied from all angles, and it is now possible to announce that telephotography on a scale never before attempted will be a reality within a few months—some time in the fall of 1934.

Equipment for the service is in the progress of manufacture, and will be put into operation in more than a score of cities when the service is inaugurated. The effect will be the most startling change in newspaper content since the telegraph reduced from days to minutes the time required for news transmission.\(^81\)

Rather than risk a possible defeat of the proposed service by submitting it to a vote of the entire membership, Kent Cooper, manager of the Associated Press Picture Service, contacted likely subscribers to the service. By this method he found about 35 newspapers that were willing to underwrite the entire project, and it was announced that only those members that subscribed for the service would pay for it.

The first newspaper to sign up for the service was the Baltimore Sun—the same newspaper that was the first one in the United States to have a telegraph wire strung into

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its office. The plan called for 10,000 miles of leased telephone wire in the United States. The annual cost of $1,000,000 was to be prorated among the subscribers. In addition to this, $16,000 worth of equipment had to be purchased for each sending and receiving station.

Immediately with the announcement of the proposed picture service, strong dissension broke out within the Associated Press membership. This was led by William Randolph Hearst through vehement attacks by his counsel, John F. Neylan; Roy W. Howard, head of Scripps-Howard newspapers and United Press; and Adolph Cooh, publisher of the New York Times.

They criticized the administration of the AP for taking over a service that the A.T.& T. had been unable to make a success. The opponents said that many publishers would be forced to subscribe for the telephoto service, whether they desired to or not, provided their competitors installed the equipment. This they argued would work a hardship on small newspapers by increasing their overhead expense.

The opposition, however, failed to stop the plan, and early in the morning of January 1, 1935, the Associated Press Wirephoto placed its first picture on the wire—one of a New York celebration in San Francisco's Chinatown. Thirty-nine dailies were supplied directly and eight others by
"expedited delivery service." During 1935-36 an average of forty pictures was transmitted daily.

Heylan made another attempt to curb the wirephoto service at the annual meeting of the AP in 1935 but was not successful. By that time 26 stations were supplying 43 newspapers directly and 10 additional papers by delivery service. This number was increased April 18, 1936 to a total of 60 when the 27th station was established in Boston.

Since they were unable to stop the AP's wirephoto service, other picture syndicates began developing services. But before these competing services could get under way, the Associated Press and the manager of its Wirephoto service, Kent Cooper, were not only able to vindicate their stand for rapid transmission of pictures, but in a spectacular way, scored a scoop over all their competitors.

When Will Rogers and Wiley Post were killed near Point Barrow, in August, 1935, the Associated Press scored a scoop when it flashed the first news of the tragedy to its members, from Sergeant Morgan of the United States Signal Corps.

Three days later the fourth of a relay of planes, chartered by the AP, reached San Francisco with photographs that a doctor and a trading post agent had taken of the two famous men. Immediately the wirephoto was put into operation and AP scored another scoop. The first picture placed on the wires was one showing Rogers and Post beside their
plane at Fairbanks before the take-off for Point Barrow. Ten minutes were required to transmit the picture, and 25 minutes later it was out of the dark rooms and on its way towards the news press. This picture was followed at half-hour intervals by others.

Although pictures for Hearst and Acme Newspictures reached San Francisco by plane at the same time as the AP pictures arrived, the lack of wire facilities left all their papers, except Pacific coast ones, without pictures of this accident.

By June, 1936, after many experiments, three wire picture services were in the field, namely: Sound-Photo, owned by Hearst; Wide World Wired Photo, controlled by the New York Times Wide World Photos; and NEA-Acme Telephoto, of Scripps-Howard interests.

That the Wide World was interested in wire transmission of pictures, was first disclosed in February, 1935. During a series of tests, a transmitting machine happened to be in San Francisco the day the big United States dirigible Macon crashed into the sea off the coast. A photograph of the survivors being taken from the wreckage, and another one showing them being landed at San Francisco were sent to New York where they appeared in the Times the next morning.

The Wide World, NEA-Acme and Hearst's Sound-Photo all employed portable equipment and utilized ordinary
telephone lines, at ordinary long distance rates. Although varying in detail, their equipment sent signals over the telephone lines either by induction or by sound, without actual contact between the sending apparatus and the telephone circuit.

In order to meet this competition the AP announced the installation of 25 portable transmitters at strategic spots to augment its regular Wirephoto stations. These machines were placed in operation early in 1937.

The adoption of portable picture sending equipment opened up almost unlimited possibilities for rapid distribution of news photographs and initiated spot picture reporting. If it is desired, pictures may be sent from the railroad station where the presidential candidate is speaking, from the locality of the mine disaster or flood, from the scene of the prize fight.

These wire services have converted all syndicated pictures to the advantage of the larger newspapers of the country, and have caused the smaller dailies to turn towards better local photograph coverage of their own territories in order to meet competition. The small newspapers have been aided greatly by the development of comparatively inexpensive "one man" engraving plants.
CHAPTER XII

COLORED PICTURES

"Natural Color" photographs in the news columns of the newspapers are still in the experimental stage; but the desire for and use of colored pictures in books, periodicals and newspapers go back as far as the hand-colored fashion plates that appeared in magazines such as Godey's, Peterson's, and Frank Leslie's Lady's Gazette during the middle part of the nineteenth century.

Largely through the efforts of George Baxter, in 1848, the superimposition of colors became a recognized method of printing. In 1855, George C. Leighton produced the first colored plates for a newspaper. These appeared in the Illustrated London News.

Among the early users of printed colored pictures was the humorous weekly, Puck. The German edition of this periodical was started by Joseph Keppler and Adolph Schwarzmann in 1876, and an English edition added in March, 1877. At first it lithographed its cartoons in black and white. Later two colored ones were produced by woodcuts, and finally they were lithographed in several colors. Judge and Life also used color.

Frederic E. Ives was one of the pioneers in colored printing. In 1851, at an electrical exhibition in Phila-
The first full colored advertisement in an American periodical appeared on May 4, 1893 in the Youth's Companion, which had a circulation of 650,000. Ferrault's "The Awakenin' of Cupid," a Paris salon picture of 1891, was fitted to an advertisement for Mellen's Food. It was reproduced by lithography.

Colored printing on newspaper presses began in the early nineties, and its rapid spread was due to the comic supplements. William Kuntz, of New York City, was the first person to reproduce colored pictures by three relief-plate halftones. He accomplished this in 1892; but the process was premature as far as newspapers were concerned, and they continued to use line etchings for both color and black and white reproductions.

The first four-color rotary press for an American newspaper was installed by the Chicago Inter-Ocean in April, 1892. It required all week to print 40,000 copies of the first color Sunday supplement, but with more experience the weekly production was raised to 320,000 copies.

During the next three years color presses were

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82 S. H. Morgan, "Date of First Three-Color Printing," Inland Printer, XXXIII (September, 1904), p. 864.

The New York World issued its first "Colored Supplement" November 19, 1893. This consisted of four pages—two outside ones in color and the two inside pages in black.

The first colored Sunday comic was printed November 19, 1894 by the World. This part-page comic was drawn by R. F. Outcault, then a mechanical draughtsman on the Electrical World, and used a clown and a wolfhound as characters.83

Outcault drew a series of cartoons labeled "Hogan's Alley," based on the life of an urchin in the tenement district. When William J. Kelley, head pressman for the World, was asked about colors for it, he stated that if he were given something solid he would show results. Charles W. Saalberg, who was coloring Outcault's drawings, decided to make the kid's dress a solid yellow. The Yellow Kid became tremendously popular.

83 This cartoon in sequence showed "a clown and a wolfhound going to a picnic, the preparations for the meal, the meal, the siesta, the appearance of an anaconda, the disappearance of the hound, the awakening of the clown, an operation on the snake letting out the four legs of the dog, and the clown marching the anaconda-dog away on the leash. It was captioned "The Origin of a New Species.'" Quoted from William Murrell, op. cit., II, p. 137.
Outcault was soon taken over by Hearst for his Sunday Journal as part of the latter's raids on talented employees of the World. Outcault thereafter drew the Yellow Kid for Hearst; but Pulitzer secured George B. Luks, who later became a famous painter, to continue "Hogan's Alley." The two "Yellow Kids" continued to run in the rival newspapers.

These cartoons, coupled with the sensationalism of both the papers, caused another New York newspaper to coin the term "yellow journalism."

When Hearst installed his color press he began publishing an eight page colored comic section, called the American Humorist. The Journal described this as "eight pages of iridescent polychromous effulgence that makes the rainbow look like a lead pipe." The competition between the World and the Journal resulted in the constant improvement of color presses.

In 1898 the New York Journal commenced using color in run-of-paper. The American flag in red and blue appeared frequently, and such designs as shamrocks on St. Patrick's Day were used on special occasions.

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84 Bleyer, op. cit., p. 357. George E. Panoeast, Mechanical superintendent of Hearst Newspapers, stated that the printing of the first comic section was even funnier than the humorous subjects furnished by the cartoonist. For a while the register of color was weird and called for new methods of color plate making and electrotyping. "Color", Printers' Ink Monthly, (February, 1934), p. 56.
The use of color in newspapers has progressed until at present it appears in run-of-paper, in magazine sections, in comic sections, in outside margins, and in rotogravure sections.

On May 25, 1937, William G. H. Finch, inventor of the telepicture system of transmitting black and white photographs over regular long distance circuits, successfully demonstrated the sending of color pictures between New York and Chicago. He transmitted by this method a three-color picture of a Peacock.

The *Winnipeg (Man.) Free Press*, May 24, 1939, reproduced in four colors a spot news picture within 18 hours of the taking of the picture. This was in connection with the visit of King George VI and Queen Elizabeth in Winnipeg. This was stated by the *Editor & Publisher* to be the first four colored picture to be reproduced in such a short time.85

However, earlier that same month, on May 11, the *Chicago Tribune* "printed a page-wide reproduction of a natural color photo—taken 12 hours before—of a fire which destroyed four grain elevators in Chicago.86

This was the first of several natural-color photos to

85 *Editor & Publisher*, LXXII (July 8, 1939), Section 2, p. 4.
appear in the Chicago Tribune. On June 9, several records were established with the reproduction in the Tribune of natural color photos showing President Roosevelt welcoming the visiting British royalty in Washington. This was the first time colored pictures were presented as spot news along with the story of the event, and was also the first time the AF Wirephoto facilities were used to present a spot news photo in color. In connection with this the Tribune also "replated" color between editions of the same issue. Color negatives were sent by airplane from Washington to Chicago, engravings made from the negatives and these substituted for the earlier engravings made from the wirephoto negatives.

The Los Angeles Times, The Oklahoma City Oklahoman, The Peoria (Ill) Journal-Transcript, and The Dallas News also reproduced these same pictures in color. Altogether 25 papers in the United States and Canada received the pictures of the President and King, and all of them used the pictures in one form or another.

In addition, prints from the Wirephoto negatives were transmitted to London by radio and the Glasgow (Scotland) Record and Mail "printed the President-King pictures on Sunday, June 11, with favorable results."87

87 "AF Wirephoto Inaugurates Color Photo Transmission," Editor & Publisher, LXXII (June 17, 1939), p. 3.
Using colored film, the photographer in Washington exposed three negatives simultaneously through colored filters in a one-shot camera. The filters made it possible to record on one negative all the blue in the scene, and on the second the red, and on the third the yellow. These three primary colors combine in different proportions to make all other colors.

The three negatives were then developed and an ordinary black and white positive print was made. This was transmitted over the wirephoto and received by the newspapers. A halftone plate was made from each of the three negatives received over the wire, and later a stereotype plate was made for each of them. These were each printed with ink of the color to correspond with the color recorded on that particular negative by the photographer. The three primary colors were in this way brought together again in the same proportions that they had been recorded on the photographic negative.

It is a common practice to run a black plate along with the three primary color plates on the theory that this gives a better blending of color. In the particular instance of these wirephoto negatives, the Los Angeles Times made an extra plate from the blue negative and ran it in black ink.
By July 17, the Tribune was able to reproduce a local natural-color picture within ten hours after the event. Scenes of the second annual Police and Fire Drill show, held July 16 at the Soldiers Field, were reproduced.
CHAPTER XIII

PICTURE MAGAZINES

That the public wants to see pictures and appreciates excellent news picture coverage was demonstrated when a new magazine, Life, made its spectacular entrance into the publishing field in 1936. The magazine was devoted to the presentation of interesting pictures in a new manner.

Picture magazines had been popular for several years in Europe before Life was started. Among those having great appeal were Vu, Pour Vous, and Marianne in France; Berliner Illustrierte Zeitung, Illustrierte Beobachter, Münchener Illustrierte Zeitung in Germany; Züricher Illustrierte and Schweizer Illustrierte in Switzerland; monthly Nature in Italy; Wereld Chronic and Onaland in Holland; and the Weekly Illustrated, Illustrated London Times, and the Sketch in England.

The history of Life goes back to 1931 when Harry Luce, publisher of Time and Fortune magazines, became interested in picture magazines. At that time there was no publication that featured the cream of the world's pictures each week.

In 1936 an experimental department was organized by Time to work on a picture magazine. Pictures, Inc., was organized and prior magazine reproduction rights to AP, Acme, International News, and Wide World pictures were
secured. From these syndicates and from smaller agencies, pictures began coming in at a weekly total of over 5,000. Subsequently it was learned that ordinary newspaper photos rarely fitted the requirements. Pictures that told a story in sequence were needed, and for these the editors relied on staff photographers.

A name was next required for the proposed picture magazine, and "See," "Look," "Focus," "Picture," "Photo," "Parade," and "Snowboat" were among those suggested. This problem was solved when the title of the old humorous magazine, Life, was purchased. By October, 1936, $1,700,000 worth of advertising contracts had been sold for the proposed periodical, at a rate of $1,500 per page. However, before Luce could publish his picture magazine, Monte Boujaily, who for eight years was general manager of United Features Syndicate, brought out a revised Mid-Week Pictorial, Oct. 10, 1936. This had been published by the New York Times since the world war but had gradually lost circulation. Under Boujaily, circulation of the record issue reached 100,000 but this success did not last long.

83 Life was started in 1883 by artist John Ames Mitchell who wanted to publish his black and white drawings by the new zinc process. The magazine's most noted artist was Charles Dana Gibson.
The first issue of *Life* appeared November 23, 1936. A total of 450,000 copies were printed, with each dealer receiving the same number that they took of *Time* weekly. For the seventh issue, Jan. 11, 1937, 760,000 copies were published. In the meantime, second-hand dealers were asking $1.00 for the first issue of the 10¢ magazine, 50¢ each for the next two copies, and 25¢ for all others.

In order to meet the tremendous demand for copies of *Life*, many mechanical problems had to be solved. Both letterpress and rotogravure are used by *Life*, and the periodical is printed on glossy 60-lb paper. Since flat bed presses were too slow, rotary ones had to be modified to meet the magazine’s needs, most of which remain trade secrets. A heating system had to be arranged so that the ink used would dry instantly in order that both sides of the stock might be printed at the same time.

Figuring costs of manufacture and distribution, the management of *Life* found that each magazine was costing 15¢ to produce—6 cents of this representing the cost of the pound of stock used in each magazine. From the news stands only 6 cents were received by the magazine for each copy. During 1937 $3,424,000 were lost—an average of $65,000 per issue. Advertising rates were established on a basis of 250,000 circulation, but as they expired the contracts were renewed at figures based on the huge actual circulation.
of Life

Until January, 1937, Life held the picture magazine field to itself; but then Look was established, Pic appeared in April, Foto in May, Then and Now in July, See in October, and Picture in December, with others to follow later. All these can be classed in two groups, with Life in one, and all the rest in the other division. Life aims at news-in-pictures, the other picture magazines are based on features-in-pictures. At the end of 1938, the combined circulation of 13 picture magazines was estimated at 16,000,000 copies.

Next to Life, Look has the largest circulation. This magazine was started January 1, 1937 by Gardner Cowles and his son, publishers of the Des Moines Register and Tribune.

In 1925 Cowles had Dr. George Gallup interview housewives on reader interest and found that newspaper readers preferred to look at pictures rather than read type. Using this information, Cowles began experimenting with their Sunday rotogravure section. A headline and a series of related pictures were substituted for the usual mixed picture page, and a boost in Sunday circulation from 200,000 to 300,000 resulted. Cowles, in 1933 began a rotogravure picture service and supplied the firm with pictures it wanted. He found narrative-in-picture so successful that he began syndicating rotogravure sections to 26 large newspapers.

The first issue of Look consisted of 400,000 copies,
but this was increased to 1,000,000 for the second issue.

The magazine, printed by rotogravure, uses cheap paper.
During its first year Look accepted no advertising; afterward it based its rate on actual circulation.

Hollywood, Broadway, sports, pictorial history, death and sex are among the subjects specialized in by various picture magazines. For those that do not feature news-photos, "an editorial formula of half-death, half-sex" seems the easiest approach to success.\textsuperscript{39}

CHAPTER XIV

OFFSET

Wood-engraving reached a high degree of perfection, soon after the invention of printing with movable type, through the work of Durer and others. But when this influence had subsided, the woodcut deteriorated in quality until Thomas Bewick—through his "white line" engraving principle—pointed the path towards even greater height of excellence in wood-engraving.

During its period of decay, wood-engraving was used only for illustration in the cheaper printed books, such as the chapbook.

The more perfect reproduction of pictures, during this period, was done by means of the copperplate. Through various etching and engraving processes, this means of illustration developed much artistic skill.

However, as has been stated before, copperplates were printed by intaglio means, and consequently could not be printed at the same time as was the text the picture illustrated. Even so, it continued as the best way to "embellish" printed matter until the last half of the nineteenth century.

Then relief methods of illustration were perfected, and first the woodcut and later methods based on photoengraving came into common use. This preeminence of letter-
press for the printing of illustrations has continued to the present although the intaglio process of rotogravure has had considerable use.

Now it appears that the third method of printing—planographic—offers the greatest future possibilities for the increased use of pictures. This is marked by the recent improvements and interest in offset printing.

In the past, some of the finest reproductions of pictures have been made by lithographic means. However, it has been both a slow and an expensive method. It was not until fifty years after Senefelder discovered the principle of lithography that the first lithographic press was built to carry the heavy stone. These presses were capable of but 500 impressions per hour.

In the 1890's a method was found to substitute grained metal plates for the stones, and presses were then made capable of 1200 impressions per hour. The work by this speedier method was inferior.

W. Hubel of Nutley, N. J., pioneered in offset printing of paper, and in 1904 he constructed the first offset press at the Potter Printing Press Company. Offset allowed the use of curved cylinders and made possible the construction of high speed rotary offset presses. The process has been used since in commercial work, but it has only been in recent years that improvements in offset press building have opened the
the newspaper publishing field to the offset process.

The lithographic plates on the offset press are inked and wetted and then they revolve to contact a rubber blanket. The impression left on the rubber surface is then "offset" onto paper on another cylinder. The printing image on the lithographic plates is positive, negative on the rubber blanket and positive again when transferred to the paper.

The plates are prepared by photolithography. A photographic negative is made of the object to be produced—whether a drawing, photograph, object, proof sheet of type or printed page. The negative is then transferred to a sensitized zinc or aluminum plate by a chemical process, and the plate, after hardening, is ready for the offset press.

One economy of offset over letterpress printing is that no makeready is required for the former. Although it is sometimes necessary to place something similar to makeready under the plate and under the blanket to secure uniformity of pressure between plate and blanket, it is not necessary to increase the pressure in the solids and decrease it in the highlights as in the case of letterpress makeready.

A greater variety of paper may be used in offset printing. Even fine halftones may be produced on fairly rough, uncoated papers.

Offset makes possible the generous use of pictures, local and national; unlimited variety in advertising layout
and illustration; and more creative forms of commercial printing.

If it is the aim of a newspaper to give its community "pictures news reporting," the offset process is a distinct saving. Photographic coverage of local gatherings, sporting events, outings, clubs, fairs, school activities, and celebrations may be made by means of a candid camera and offset press, without the delay of having to send out for cuts, and, even at less expense than if the newspaper owns its own photo-engraving plant.

Since it is possible to reproduce by offset any material that can be photographed, it is not necessary that text matter be set in type. Typewritten material and hand-drawn letters may be used for this purpose. It is only when these latter are used that considerable saving is effected by offset newspaper publishing over letterpress.

This saving can be accomplished if the newspaper publisher is interested mainly in low cost production of a newspaper that will resemble the average shopping news or throw away. It is not possible to make this saving, however, if an effort is made to produce a newspaper by offset that will have the attractive appearance of the modern newspaper. At present, neat typographical makeup can only be achieved by setting matter in type on a standard line-casting composing machine and then pulling a clear proof to be used as copy for the
Photo reproducing process.

The first newspaper to be printed by offset was a demonstration issue of the Mt. Vernon (N. Y.) News on January 22, 1937. It consisted of 16 tabloid pages and the reading matter was typed on a variable spacing typewriter with proofs of type-set headings pasted on the page.

Since then a number of newspapers have adopted offset, most of them country weeklies. Among the earliest of these is The Steele County Photo News, Owatonna, Minnesota, started in March, 1938. It styles itself as the finest photolithographic newspaper in the Northwest. At Worthington, Minnesota, The Reminder is labeled "the world's Original Photo-Lithographed Shopping Guide."

Among other country newspapers using offset are the chain of small newspapers operated in Pennsylvania by the Long Publishing Company of Philadelphia; a group of Boston suburban newspapers—Wellesley Townsman, Belmont Citizen, Newton Graphic, Needham Times and Brookline Chronicle; The Dunn County Pictorial Messenger, Menomonie, Wisconsin; The Reminder, Watertown, South Dakota; The Peninsula Mirror, Palo Alto, California; The Boone County (Iowa) Messenger; and The Monahans (Texas) Express.

Offset is also making rapid inroads into the field of school publications. The Oak and Acorn, weekly publication of Menlo School and Junior College, Menlo, California, as
"America's first offset school periodical" is the pioneer in a publication field in which offset undoubtedly will make much headway.

In 1939 the Trenton (N. J.) Times installed an offset press, especially built by the R. Hoe & Company, to produce regularly a 16-page Sunday picture section. This press will print and fold from 4 to 16 pages, with all pages four colors, at a speed of 12,500 to 15,000 papers per hour.

Only in recent months has offset entered the regular daily field. At present the Opelousas (Louisiana) Daily World and Hartford (Conn.) News are being produced by photo-offset and both make a special feature of news pictures.

The first issue of The Opelousas Daily World appeared December 24, 1939, with John Thistelwaite as publisher and James Regis Fitzgibbon as managing editor. Previously Fitzgibbon had started the offset printed Monahans (Texas) Express, which he sold in November, 1939. The World publishes 8 tabloid size pages daily and uses a linotype for its

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These school newspapers are reproduced by photo-offset in combination with a Vari-Typer: The Daze, Millard School, Stamford, Conn.; The Siren, Stamford High School, Stamford, Conn.; The Arrow, Mamaroneck Junior High School, Mamaroneck, N.Y.; Highlights, Albert Leonard Junior High School, New Rochelle, N.Y.; The Mirror, Bronxville High School Bronxville, N.Y.; Polaris Daily, North High School, Minneapolis, Minnesota; The Nutmegger, Danbury High School, Danbury, Mass.; The Trotter, Takoma Silver Spring Junior High School, Silver Spring, Md.; The Sizmboard, Bay Path Institute, Mass.; and Jolly Roger, Roger Junior High School, Stamford, Conn.
The Hartford Newdaily is attracting considerable interest in the newspaper publishing field, since it is the first offset daily to be established in the metropolitan area.

Newdailies, Inc. was incorporated December 1, 1939 with Dice Clemow, formerly an editor of Time and Editor & Publisher, as its head. On March 4, 1940 it issued the first copy of Hartford Newdaily. It is intended to use 50 per cent of the space of the newspaper's 16 tabloid size pages for pictures. Much space is devoted to news-in-pictures--the number of pictures concerning some one news item or feature--as well as single news pictures on many subjects. Type matter is set on a linotype.

It is a recognized fact that photo-offset not only does offer unusual opportunity for reproducing pictures but also promises to reduce newspaper publishing costs. The wide-scale adoption of this process depends at the present time on the invention of more economical, and at the same time typographically pleasing, means of composition, and also on an adequate supply of skilled lithographers. Therefore, it is interesting to note the efforts being made to devise some apparatus to accomplish these improvements, and by doing so, make the production of pictorial newspapers more feasible.
At present, the Vari-typer composing machine is the only practical machine for the newspaper publisher who wishes to get along without a line-casting composing machine. This machine is manufactured by Ralph C. Coxhead Corporation, New York City, and sells for approximately $600.

The machine resembles a typewriter and is said to be as easy to operate as a typewriter. Over 70 English sizes and styles of type faces, and nearly 300 foreign, mathematical and symbolical fonts are now available. It requires only a few moments to remove one font and insert another into the machine.

The Vari-typer is so constructed that both the horizontal spacing and vertical spacing may be controlled. Without changing the size of type, it is possible to have 10, 12, 14, 16, or 18 letters to the inch. Three of these controls are built in every machine. The spacing is set for 9 lines to the vertical inch and may be shifted to 6, $4\frac{1}{2}$, $3\frac{3}{2}$ or 3. The mechanism is electrically controlled and actuated, and no matter how hard or lightly the keys are struck, the impression is always the same.

In order that the right hand margin may be a straight line, the Vari-typer is so equipped that it permits the control of inter-letter spaces for justification.

The type faces available for the machine at the pres-
ent time may be criticized collectively as being too nearly typewriter faces. They all possess lower case "m's" and "w's" that are condensed, and thin letter and points have more than their proportionate share of space around them.

A disadvantage of the Vari-typer, as well as of justifying attachments for typewriters, is that it is necessary to typewrite each line twice. First the line length is determined. Then the typist writes as usual, character by character, until a warning bell sounds. Their same line is rewritten along side the first line, and the justifying mechanism performs its purpose and makes all lines the same length.

The International Business Machine Company is at present perfecting a machine that will automatically justify all lines the same length the first time they are typed. The company is not ready to market the machine at the present time.

The Composograph is an attachment that may be used on most makes of typewriters. The line of copy is first typed in the usual manner—allowing up to eight characters variation in line width. The message is then retyped along side and every line comes out exactly even.

The Hooven and Underwood are justifying attachments for Underwood typewriters only. The letter is said to be the
simplest device as yet devised. The attachment must be placed on a typewriter at the factory. The justification is achieved by means of a six-sided escapement bar. Only standard typewriter faces are available, with the Underwood "Victoria" being nearest to printer's type. A standard typewriter costs £115.00; the justifying attachment, £35.00; and a duplex carbon and ribbon attachment, £25.00—a total of £175.00.

Systems and machines for setting both text matter and display type to be used for offset printing are now being developed. Among those for display type are Fototype and Printasign.

Fototype is a system that employs cardboard letters and a special composing stick in which the letters are automatically aligned. Nearly fifty different type faces are available, including faces which are said to be especially suitable for newspaper headlines.

The Printasign apparatus has been used by large department stores throughout the United States for several years to produce window signs and show cards economically and attractively. Its use is now being extended to offset printing for setting display type from 24 points upward. Only two seconds are required to switch type cases when using different type faces. The manufacturer will supply any desired type face or size on request. The machine is
very compact and light weight.

Among other machines, now more or less in an experimental stage, whose purpose will be to compose type matter for offset printing, are the Grotype, Dutton, Bloom-Friedman, Bagge, and Rutherford devices.

The Grotype, originating in Switzerland, assembles type or "patrices" somewhat after the manner of the Linotype. However, instead of a casting apparatus, the machine prints these "patrices" upon film so as to provide an original for plate-making.

The Dutton "Filcaleter", originating in Liverpool, England, is a display outfit which admits the use of plates, films, or papers for reproduction purposes.

The Bloom-Friedman machine has a Linotype-like mechanism having (1) matrices bearing photographically reproducible characters for engraved characters; (2) a casting mechanism revised and replaced by a camera to photograph these characters onto a sensitized surface. The result is a film of type with perfect justification, and line and word spacing. From matrices of one size, characters of many sizes may be obtained by varying the distance of the camera. A single font of type will suffice, therefore, for all sizes of that type face.

The Bagge Lino-Phototype is being developed by the Fototype company. The mechanism consists of a keyboard
similar to that of a typewriter, a master plate holder which contains the alphabet, camera lens, negative plate holder, justification rack, a vertical spacing device, and an indicator. After the full plate is developed, headings, captions and text matter may be cut and arranged to make up the newspaper page.

The Rutherford Photo-Lettering machine composes photographic images of individual letters and designs into words and patterns upon sensitized film, paper, or dry plate. Since it is possible to expand, condense, enlarge or reduce the type faces, the manufacturer claims 100,000 variations from each of the 300 master alphabet plates now offered.

Offset presses are built by a number of firms. The Webendorfer-Wills Co., an American Type Founders corporation subsidiary, has been leading the pioneering in the small newspaper offset press field.
CHAPTER XV

PAST, PRESENT AND FUTURE

Today the American people are more picture-conscious than they have ever been before, and are actively demanding pictorial display in ever increasing quantity—if not always in quality.

One need only consider the newspapers of the United States and Canada to have ample proof of this statement. These newspapers are spending $8,000,000 annually in picturing the events they report. Between 1931 and 1938 the daily press increased its use of pictures 40.8 per cent, and since the spectacular rise of the pictorial magazines the newspapers are resorting more and more to news illustration.

The majority of all periodicals published today carry illustrations of a kind and quality in keeping with the general character of the particular magazine. The picture magazines are naturally the prolific users of illustration. The other periodicals employ pictorialization in degrees ranging from the picture magazines down to the almost total lack of illustration in the high quality literary magazines and the condensed digest magazines. The covers of the periodicals when arranged on the magazine dealer's stand present a kaleidoscopic pattern of colors and pictures.
Book illustration too has reached a greater diversity and a wider scope. Color is becoming increasingly important and is even being employed in connection with wood-engravings. Photography has been used in the past for pictorial documentation but has only recently been applied to the illustrating and interpreting of literature. The picture novel is another indication of the increased use of illustration, while image reproduction plays an important role in children's books.

So rapidly has eye-consciousness developed among the people in recent years, that it would almost appear to be a product of the twentieth century. But this is not so. People have always been picture-conscious, but mechanical limitations have prevented the fullest satisfaction of their desire for picture reproduction.

Since the days of the illuminators during the early years of printing, illustration has served to aid the lag-gard brain, to enliven and supplement the text. Even earlier xylography had served a definite moral purpose through the reproduction of wood prints of religious subjects. Xylography also appealed to the baser side of man's nature by providing playing cards for gambling.

Besides the purely educational aspects, illustrations have been increasingly used for solely entertainment purposes. The comic strips and Sunday supplements have
been developed as a result. While many cartoons are drawn for entertainment, the cartoon has been most significantly employed as a moulder of public opinion.

The early efforts of the American press to employ illustration were both infrequent and crude. However, a brief study of printing conditions of the period reveals that it is remarkable that any attempts were made at illustration.

The first printing press to be operated in English speaking America was set up in Cambridge, in 1639, at the home of John Dunster, president of Harvard college. At this time printing was at a low status in Europe, and during the entire seventeenth century printers were persecuted and printing presses destroyed by a hostile English government. By the Star Chamber decree of 1636 and the Act of 1662 the number of printers in England was reduced to twenty, the number of type founders in the country to four, and all books had to be licensed.

For the first 150 years after the invention of movable type, printing was enriched through the efforts of scholars and men of wealth who tried to reproduce, or have reproduced, the beautiful masterpieces of the calligraphic period. Printers during this golden era were lodged in palaces, monasteries, and colleges.

All this was changed by the start of the seventeenth
century. Printing itself entered a transitional stage from the art of fine bookmaking to the industry of book manufacture. This occurred during a time of religious and political strife; and both the church and the state, realizing the power of the press, tried to suppress or curb its operations.

Printers and booksellers were in constant danger of imprisonment or death, and their publications were apt to be burned. Consequently the quality of workmanship fell off and printing reached the status of a dangerous and poorly paid craft.

The colonial printer also faced possible interference from the English government as well as from the local government or offended public. An even greater handicap was his lack of skilled labor and tools of the trade—type, presses, paper, and ink. All supplies had to be imported from England at great expense and delay.

Under such conditions it is remarkable that any printing at all was produced in the colonies during the seventeenth century. The illustrations, although few, printed during this period clearly show the ingenuity of the early American printers.

After the turn of the century, printing spread rapidly throughout the colonies, and the number of illustrations reproduced (mainly in books and periodicals) increased.
Colonial book illustrations were printed for the most part by copperplates, and during the eighteenth century engravers became numerous. Reproductions from the work of some of these engravers were especially sought after by the people of the colonies. They were bank-notes, and the printing of paper money formed an important item in the colonial printer's business. Benjamin Franklin records in his autobiography that he "contrived a copperplate press"91 in 1728 for Keimer to use in printing New Jersey paper money.

The colonial book publisher showed a desire to illustrate his books; and naturally, since he would wish to please his customers, this indicates that the people wanted and appreciated pictures in the books they purchased.

The quality of book illustration increased as the quantity increased, and by 1797 the "coming of age of American book illustration"92 was clearly seen. In that year publication of the third, and first American, edition of the Encyclopaedia Britannica, was completed. In its eighteen volumes, 543 copperplate engravings were distributed.

Woodcuts were used occasionally with letterpress material by colonial printers; but the difficulty of printing any wood cuts, except those of small size, prevented the

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92 Wroth, op. cit., p. 294.
general use of this type of illustration.

A few of the woodcuts that were published during this period were of outstanding political significance. Benjamin Franklin's "Join or Die" cartoon is in this category, and its ability to create public opinion favorable to the colonies is shown by the number of times different newspaper editors published this cartoon.

After the end of the Revolutionary War, Benjamin Russell effectively created sentiment for the ratification of the constitution through the use of a cartoon in his newspaper.

During the first 50 or 60 years of the eighteenth century work was started both on processes and equipment that were later to play important roles in the increased reproduction of illustrations. And although copper and steel engraving were constantly improved, this period is especially important as a foundation for later successes in letterpress printing.

Of special significance is the development of Thomas Bewick's "white line" method of wood-engraving. From the time Dr. Alexander Anderson introduced Bewick's idea into the United States, the woodcut gradually assumed a more important role in the field of illustration. The height of its perfection was reached in the 1830's; but almost immediately afterwards photoengraving wiped away nearly a century of wood-engraving progress.
At the beginning of the century, the printing presses in use varied only in a few details from the wine-press type affairs that were in use 300 years before. The principal improvement to the presses had been made in 1620 when Bleau of Amsterdam added a spring that returned the platen after the impression had been made, thereby reducing the work of the pressman by one-half.

The first iron press was invented by Lord Stanhope in 1798 and this signalled the beginning of new ideas and radical departures in the construction of printing presses. The first power-driven press was used by the London Times in 1815.

The changes in press construction, for the most part, did aid in the printing of illustration, but only with limited success until the last half of the century. One type of press—the type-revolving press—for a period of twenty years (approximately 1849-1869) prevented the use of illustrations in the daily newspaper press. This was because the metal type was placed in cylindrical containers and then printed. Such an arrangement precluded the use of flat-surface woodcuts.

The duplicating processes of stereotyping and electrotyping were also being developed during the first half of the eighteenth century. Although prior experiments had been made towards founding entire type pages, it remained for
the versatile Lord Stanhope to make outstanding developments in stereotyping. The invention of papier-mache about 1850 pointed the way for the use of stereotyping in connection with rotary presses. Contributions in the development of electrotyping were made by several persons in different countries. In America, Joseph A. Adams is most closely linked with early electrotyping.

The first photoengraving was a product of this period as well as were the first successful experiments in photo-photographing.

The principle of surface printing was discovered by Alois Senefelder in 1796. Lithography has played a very important role in the reproduction of pictures, especially in later years when combined with photography.

The progress made in developing all these processes and equipment formed the basis for still more developments that eventually led to the perfection of pictorial reproduction.

However, it would be unfair to the engravers of this period to say that only foundations for pictorial reproduction were laid during the first half of the eighteenth century. Excellent copper engravings are to be found in the books, annuals, and periodicals such as Godey's Lady's Book. After 1815 steel engravings as well as copper engravings were used. Naturally since such engravings could not be
printed with the text matter of the book or periodical, they were expensive to reproduce.

The publication of *Harper's Illustrated Family Bible* in 1846 is one of the important dates in the history of illustration printing. Undoubtedly the 1600 woodcuts contained in it presented many problems to the engravers and the printers.

The difficulties incidental to both engraving and printing woodcuts made their use in newspapers rare occurrences. Those that did appear were usually of a cartoon nature or illustrations for advertisements.

From the time of the administration of President Jackson to the Lincoln-McClellan presidential campaign in 1864, lithography provided the most important medium for the reproduction of cartoons. These political cartoons were very popular and were intended to be passed from hand to hand or else posted on walls.

The reproduction of pictures in books and periodicals was taken as the natural thing to do and to be desired from the viewpoints of the publisher and the reader. These pictures were the only ones to find their way into many American homes of the period. They were clipped from the periodicals and undoubtedly were retained long after the magazines had been destroyed. This was particularly true concerning the fashion plate pictures that *Godey's Lady's*
The home dressmaker found these invaluable in her work, and the lady of fashion retained them for reference.

The universal acceptance of pictures ended, however, when the first attempt was made to systematically portray the news of the day. The Illustrated London News had scarcely begun its pioneering in this field when William Wordsworth, British poet, condemned the use of pictures by writing a sonnet entitled "Illustrated Books and Magazines." He said, in part:

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How prose and verse sunk into disrepute
Must laquey a dumb art that best can suit
The taste of this once-intellectual Land.
A backward movement surely have we here,
From manhood—back to childhood; for the age—
Backwards caverned life's first rude career.
Avaunt this vile abuse of pictured page!
Must eyes be all in all, the tongue and ear
Nothing? Heaven keep us from a lower stage!93
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In later years as the scope of pictorial journalism broadened, other critics—in less elegant language—have expressed their fear that the news picture would develop a race of brainless people. Such expressions, however, have had little retarding effect upon the ever increasing use of illustration, since people have too clearly shown that they desire to see pictures reproduced.

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93 Poetical works of William Wordsworth, edited by William Knight (Edinburgh, 1850), VIII, p. 172. The sonnet was composed in 1846 and first published in 1850.
The only result of these criticisms is an indirect compliment to the power of pictures. They imply that people can understand and interpret pictures easier than text matter. And this, they argue, is a bad situation.

Naturally it is hard to defend and point out the educational importance of all pictures that are reproduced—just as it is hard to do this for every news item that is published. However, most news stories and news pictures have one common justification. This is that they tend to show a cross-section of the everyday life of the nation and the people.

The function of the newspaper press is to interpret and report the occurrences of the day by story and picture. In other words, the press serves as a mirror of the times. Obviously it is unfair to expect the newspaper to place itself first on a pedestal and then conduct quixotic crusades in an effort to have all people reach its higher level.

Human nature being as it is, (and as it has always been) sex and crime reporting and pictorializing have always been appreciated by the average person. The National Police Gazette featured both of these by vivid pictures and stories—and it was an outstanding success.

It was Frank Leslie's Illustrated Newspaper and Harper's Weekly that first showed the general appeal to the
public of all types of pictures. Pictures depicting current happenings, crime, sex, travel, war, history, inventions, politics, etc., all were enthusiastically welcomed by the readers of these two publications.

That these magazines were able to employ pictures to crystallize public opinion shows again the power of pictures. Surely Leslie's "swill milk" campaign and the work of Nast in Harper's Weekly in solidifying northern sentiment, and later in exposing the Tweed ring, did not tend to develop a brainless picture-conscious people. Instead the effect was exactly the opposite. The pictures caused people to do more thinking on the subjects portrayed.

The success of the illustrated weeklies in using woodcuts led to their adoption by many periodicals, and the word "illustrated" became common in magazine titles. Of all the illustrated magazines, Harper's Monthly and Scribner's Monthly are the most important because it was through their effort that woodcut engraving was perfected. Here again the universal appeal of pictures undoubtedly was a big factor in the success of these two publications.

Under the leadership of Harper's and Scribner's, wood-engraving reached a degree of perfection never before attained. The "new school" of engraving was developed which sought to reproduce the artist's drawing in exact detail instead of the former practice of interpreting the
artist's work. This led to wood-engraving that exhibited all the tones and textures of the original drawings.

The ingenuity of press builders, ink makers, paper makers, and the workmanship of printers and pressmen were combined to produce processes and equipment that brought about improved woodcut printing.

The tragic incident in the history of American press illustration is the fate of the woodcut. Years of skillful and painstaking work were required to bring wood-engraving to its artistic perfection. And then just when this goal was reached, photoengraving appeared and almost overnight totally destroyed the craft of wood-engraving. The woodcuts of this period were superior to the early photo-engravings, but the lower cost of the latter made it necessary for publishers to give up the use of woodcuts.

The development of photoengraving is undoubtedly one of the outstanding events in the reproduction of pictures. After years of experimentation towards securing gradation of tone from black to white in printed pictures, the principle of the halftone was realized by several men in widely varied localities at practically the same time.

In order to successfully print the halftone new problems of printing methods and equipment were confronted. The solution of these problems opened the field of picture reproduction to an almost unlimited scope.
The first illustrated daily newspaper, the New York Graphic (1873-1890) was not a successful publishing enterprise because of several reasons—chief of which were the various changes of ownership, and the cost and difficulty of reproducing pictures.

September 3, 1884 there appeared a cartoon in Joseph Pulitzer's New York World drawn by Valerian Gribayedoff and entitled "Wall Street Nobility." This marked the beginning of steady and successful use of illustration in the daily press.

More pictures soon followed in the World, and with each increased use of pictures the circulation of the World became greater. Any doubt Pulitzer might have that his subscribers did not only enjoy pictures but demanded them, was dispelled when he endeavored to decrease the number he reproduced. Immediately the circulation of the World dropped, and continued to decrease until more pictures than ever before were printed in the newspaper.

When William Randolph Hearst entered the New York publishing field in 1895, he began using many illustrations in his New York Evening Journal. Through the efforts of the World and Journal, the comic strip and Sunday supplement were developed.

The liberal use of pictures was just one characteristic of these two newspapers. The combination of all their
newspaper publishing practices caused the term "yellow journalism" to be applied to the World and Journal. One result of this was that the frequent use of pictures by any newspaper was taken as an indication of sensationalism. Only in recent years has this designation been altered because of the wide use of pictures in all types of newspapers.

The history of newspaper illustration clearly shows that any progress in reproduction, or increase use of, pictures has resulted in a corresponding growth of reader interest.

In 1896 the New York Times began publishing a Sunday magazine section that proved so successful that it had to be suspended in 1899. The circulation had become too great for The Times' printing facilities. The installation of the necessary presses by The Times, in 1914, made it possible for that paper to print a Sunday rotogravure section. The result was increased Sunday circulation.

One of the miracles of newspaper publishing has been the success of the tabloid New York Daily News. From its inception in 1919 this paper has included the liberal use of pictures as one of its characteristic features. This convenient sized newspaper with its sensational news and pictures has enjoyed circulation figures unparalleled by any other newspaper in this country.
The success of the Daily News encouraged other newspapers to increase their pictorial display; and to supply them with the necessary pictures, various picture syndicates were developed. This quite naturally led to the need for speedier methods of news picture distribution; and after many experiments, processes utilizing the telephone, telegraph, and radio were devised. Only recently, significant results have been obtained in the transmission of colored pictures by wire.

The present trend has not only been towards greater use of pictures but also toward the reproduction of more interesting pictures. Motion pictures and news reels, picture magazines, the use of visual aids in schools, and the photographic industry have all helped to make people more picture conscious. The printing of pictures has also had a cumulative effect. In the early days of photoengraving, the reproduction of pictures was considered such a novelty that any printed picture attracted attention. Today, most people have at least a limited knowledge of the principles of correct photography. Consequently they demand that published pictures have definite qualities of lighting, composition, camera angle, and interest. Therefore, better picture composition is apparent in both the news and advertising columns.

No longer do pictures with an "X" to mark the place
where the body was found suffice—the body must be shown with all horrible details. Static pictures have definitely ended their usefulness.

Of course the spectacular has greatest news appeal, and this is generally the tragic and the ghastly. Consequently murders, lynchings, riots, earthquakes, disasters, fires, train wrecks, airplane crashes, and war lend themselves readily to news illustration. Sporting events, although less spectacular, are also natural news picture subjects. In general, pictures of persons in the news are the most common classification of pictorial subjects in the newspapers.94

Perhaps as a result of the influence of picture magazines, newspaper editors are turning more attention to the idea of news-in-pictures. They are finding that a series of pictures based on a central theme can be made to tell a story that requires only a limited amount of text matter for description. If good photography and careful editing are combined, there is practically no limit to the subjects that can be pictorialized by this method.

The common practice among newspapers of playing up a feature in each news event causes more or less distortion of the news. A similar situation exists in the publication of news pictures. However, the picture reporter works

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under an additional handicap. He must be actually on the
scene of the news event; while a verbal reporter, if neces-
sary, can get his story from eye-witnesses.

In the past, the news photographer resorted to tricks
with his camera when he was unable to get pictures at the
scene of the event. Such pictures were conceived in the
mind of the photographer, and then he secured people to pose
while he photographed them.

This type of faking, along with the practice of photo-
graphing charcoal drawings as actual scenes (used during the
first World War for battle scenes) and the use of the com-
posograph—a photo built up from several photos—is rarely
employed today.

The introduction of the candid camera in 1928 by Dr.
Erich Salomen, along with the development of the super-sensi-
tive film and the photoflash, have opened up new fields for
the news photographer. He can now take pictures of people
as they really are, not as they would like to be. This,
however, has resulted in some instances in reproducing pic-
tures that show people in unbecoming poses.

The news picture is so comparatively new that laws
of libel, contempt of court, and private rights are only
now being developed to apply to news picture reporting.
However, there is a definite trend toward protecting the
private citizen against unauthorized publication of his photograph. 25

The immediate and outstanding success of the picture magazines—in particular Life and Look—shows without doubt that people are more eye-conscious than ever, and that the pictorial reproduction saturation point has not been reached.

Just as they did back in the days of Harper's and Leslie's, the magazines are pointing the way for the future reproduction of pictures. And in a like manner, the increased use of pictures by newspapers again is dependent on cheaper printing methods and equipment. The solution may be the development of offset printing.

In recent years people have become skeptical about news reports both in the newspapers and over the radio, and

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25 R. L. Smith in "News Camera on Trial," Forum, November, 1937, p. 270, suggested that the laws governing news photographs should include the following points:

1. No picture to be used without consent of the subject except:
   (a) where groups are brought together by common interest, as at a fire, political meeting, or riot.
   (b) where the subject has voluntarily put himself in the public eye.
   (c) where the picture accompanies a story of general news interest, defined as a story carried over the wires, in an opposition paper, or in any public document.

2. Candid camera pictures to be used like quotes in the accompanying story (as long as a speaker knows there are photographers in the audience, he will govern his actions as he does his speech. On the other hand, surreptitious pictures not taken in a public place could be actionable.)

3. No picture to be changed or faked without the consent of the subject. (This would not include routine retouching that does not impair the fidelity of the halftone cut.)
this skepticism has been crystalized now by the conflicting propaganda reports emanating from all points of the world. However, people still believe what they see pictorialized; and, as long as that is true, the continued growth of image reproduction is a certainty.
Illustration No. 1—While this early eighteenth century hand press differed in some details from the presses employed during the preceding 300 years it still retained the basic principle of operation.
Illustration No. 2—This is a flat bed cylinder press. The Hoe stop cylinder presses were of this nature, and were employed by Harper's and Scribner's during the 1860's.
Illustration No. 3--This type of press (used by some newspapers between 1846-1866) laid the foundation for the high speed rotary presses of today. These type-revolving presses prevented the use of flat surfaced woodcuts because of the shape of the large center cylinder. The presses were constructed with two, four, six, eight, or ten impression cylinders. The one shown here is from page four of R. Hoe's & Co.'s ... (Catalogue) of type revolving and single and double cylinder printing machines, power presses... (etc.). New York (c1867).
Illustration No. 4—This is one of the earliest presses using a continuous roll of paper. The picture is from the Atlas to Alexander Waldow's "Die Buchdrucker-Kunst," Leipzig, 1875
This print has been widely but erroneously advertised as "the beginning of halftone" and "the earliest dated halftone." It is a single-line lithographic halftone from the Daily Graphic of March 4, 1860, made by Stephen H. Horner to show one of the different lithographic methods which had been used by that magazine. Accompanying editorial comment does not claim this to be the first appearance of the process. "Steinway Hall" had appeared over six years before.

Illustrations No. 5 and No. 6 show efforts made towards gradation of tone in pictures reproduced by the press. These are taken from an article by William Innes, "The Truth About the Half-tone Process," Inland Printer, LXXIX (June, 1927), 422-4.
Illustration No. 6--The upper picture is a line etching. The lower picture is the same line etching with a benday effect.
APPENDIX NO. II

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