

THE MIRACLE OF LITHOGRAPHY



30 YEARS OF POLYGRAPHIC

THE MIRACLE OF LITHOGRAPHY

In 30 years of progress

Polygraphic and offset
have grown up together

POLYGRAPHIC COMPANY OF AMERICA

310 East Forty - Fifth Street, New York 17, N. Y.

Murray Hill 4-1200



◀ Here are the elements of color lithography: four blobs of ink, four rollers, four proofs from single-color plates. Each plate prints a pattern of tiny dots which, superimposed on each other, make the four-color picture on this page.



played a significant role in the development of the process and especially in raising the standards of the highest quality offset work. Indeed the two stories are so closely related that it would be impossible to tell the one without the other.

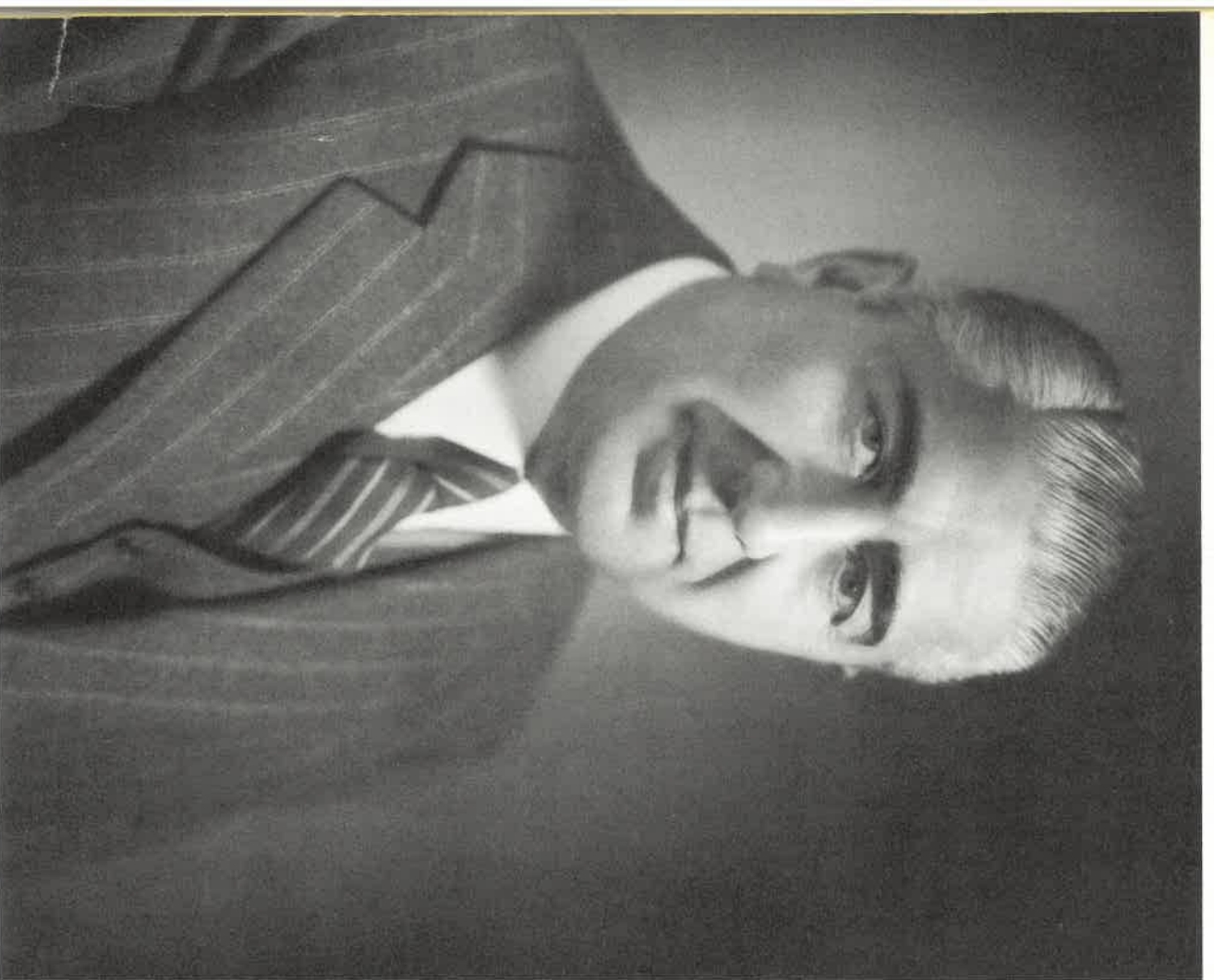
The Lithographic Process

Photolithography, or offset, is one of the three major printing processes now in use. The first and oldest of these is letterpress, stemming from the ancient art of the woodcut and the invention of movable type by Johannes Gutenberg about 1450. In this process, raised type or a raised image is inked and pressed with great force into the paper. The second process is photogravure, derived about 1890 from the old art of copper engraving. In this method, a screened image or typeface is photographically fixed on a copper plate, then deeply etched into the surface to produce a pattern of tiny wells for holding the ink. The paper, pressed against this plate, draws up the ink by absorption.

Offset differs importantly from both these processes, though superficially it has some elements of each. Its image is photographically imposed on a metal plate, as in gravure; the image is slightly raised from the plate, as in letterpress; but printing is done by an entirely different principle. In offset lithography the plate never comes in contact with the paper. The inked plate prints off on a special rubber roll, called a blanket, from which in turn the still ink-wet image is lightly transferred or "offset" onto paper. (The important stages in this process are shown in pictures and text beginning on page 15.) As may be seen from the nature of the offset process, it requires little printing pressure, hence it is the lightest, fastest, most economical of modern printing methods.

The principle of offset lithography, like that of other printing methods, goes back to an older art form, but one so recent that its invention may be precisely placed. In 1796, Anton Senefelder, a poor Austrian artist, discovered that a piece of porous stone upon which he had distractedly jotted a laundry list in greasy crayon could be used as a printing medium. On wetting and then inking the stone, it became a printing plate. The greasy markings repelled the water but held the oily ink, while the exposed portions of the stone, which took up the water, rejected the ink. All lithography still depends on this ancient principle that oil and water do not mix.

A search had been going on for years prior to this discovery for some cheap method of reproducing pictures in



ROBERT M. WERBLOW, *president of the Polygraphic Company.*

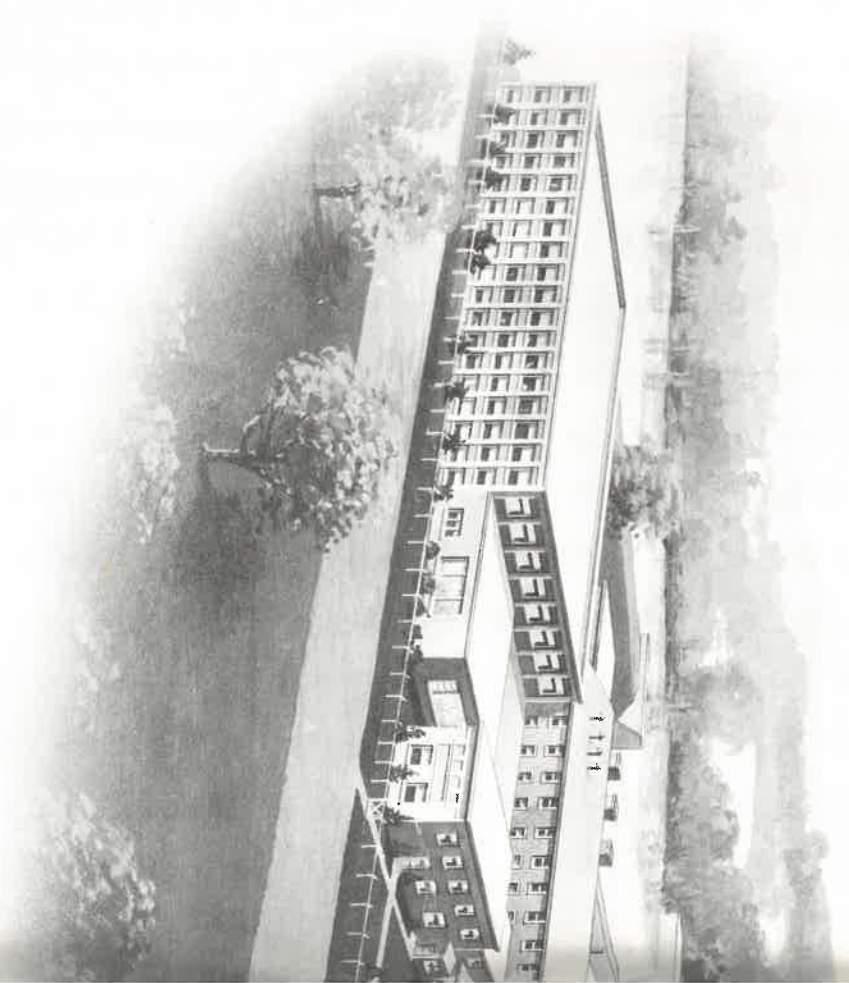
The Polygraphic Company of America appeared on the scene just as offset lithography was struggling up out of the stone age. Polygraphic got into the business in a curious way, through the back door. It came about like this:

In 1924, Robert M. Werblow, a young New York banker with a talent for sales, saw the opportunity to acquire, together with his brothers, a cut-film business then trying to break into the photolithographic trade. The time seemed ripe for this development. The industry was still using the old, glass photographic wet-plate for getting negatives to print on metal. It was messy, uncertain, cumbersome, hazardous. The new idea was to replace the wet plate with dry cut or strip film, prepared to any dimensions. It could be handled and developed as easily as any modern film. Robert

JAMES WERBLOW, vice-president and sales manager of Polygraphic.



The plant at North Bennington, which Polygraphic bought in 1936 and later expanded, stands beside a small stream in the rolling Vermont countryside, approximately forty miles east of Albany, New York.



The officers of the Polygraphic Company meet in the board room of the New York headquarters, with President Robert M. Werblow at the head of the table. Left to right: Harold B. Seales, assistant treasurer; Albert A. Clune, treasurer; James Werblow, vice-president and sales manager; Robert M. Werblow; Earl E. James, vice-president in charge of Vermont plant operations; Harry Sykes, vice-president in charge of greeting card production; Joseph A. Hyland, vice-president in charge of book manufacturing.





printer whose account it was and to whom he had been trying to sell film for two years.

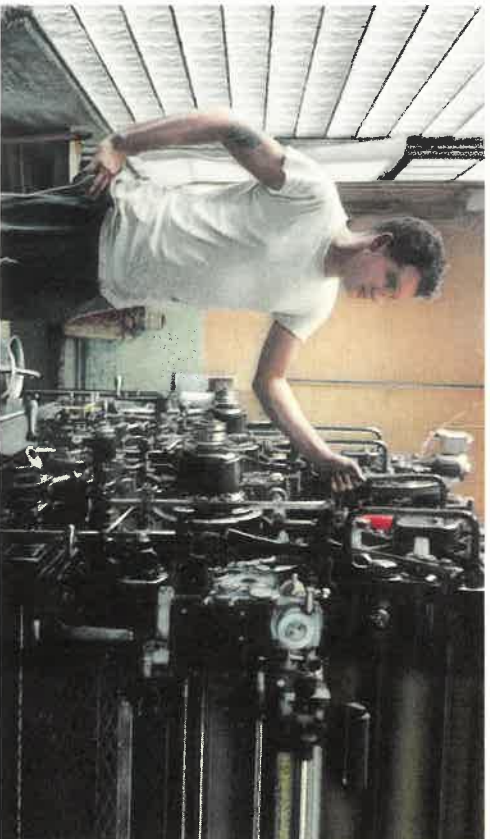
"Mr. Jones," he said, "I'm going to take this job away from you."

Polygraphic got the job—its first—and delivered it in such good order, at such low cost that Paramount asked it to bid on the printing of a decorative fan for promotional distribution in movie houses over the country. Polygraphic got that job, too, and Paramount was a steady account thereafter. Polygraphic undertook to print Paramount's line of sheet music, then still being done by the old lithographic process on stone. "With Paramount," says Werblow, "we took music printing out of the stone age." In a short time, nearly all photolithographic plants had moved over to the use of film. Thus Polygraphic helped modernize the industry

and, in addition to its sale of film, found itself in the printing business.

The Growth of Polygraphic

The offset process was still only a tiny part of the total printing trade, struggling to improve quality and live down its early crudities. To increase its sale of film, as well as to keep its presses busy, the Polygraphic Company had to go out and sell offset as a process. Through the Thirties it put on lectures and plant tours to acquaint advertising men, sales executives and others with the process. It sent out



Donald Davis, press operator



Dexter G. Shultz, paper-cutting machine operator



Mrs. Barbara Sprague, folding machine operator

The sturdy type of New England
workman seen on this page
is independent,
and quick to acquire skills.
He was a major factor
in bringing Polygraphic to Vermont.

Spencer A. Haynes, color photographer



Charles Griffith, color stripper

literature. It proselytized businessmen's clubs. And it lost no opportunity to press offset's advantages.

Chief among these were speed and economy. One of the company's earliest coups in 1932 was to come in low bidder on the printing of U. S. Patent Office specification pamphlets, receiving copy one day and going to press the next, printing 32 pages up. Offset plates could be prepared so fast, stripping in a variety of copy with a minimum of hand work, that Polygraphic could offer 24-to-48-hour service. The use of pictures was no more expensive than text, since no engravings were required, and color was little more expensive than black-and-white. In this field Polygraphic and offset came to take over most of the printing of large color display advertising.

Meanwhile, Polygraphic did not sit on the sidelines in new developments. It put considerable money into research, exploring and compounding its own offset inks and chemicals to improve quality. It experimented with a device called a "talkie-typesetter," which was one of the first, though unsuccessful, attempts to set type directly on film by photographic means. It also developed a one-man photo-engraving outfit for small plants and newspapers to push the sale of its film in engraving as well as in offset.

By the middle Thirties, however, Polygraphic's interest in film came to be overshadowed by its printing business. Offset lithography had begun to catch on. Its low plate cost, ease of correction, simple press make-ready and high press speeds were strong selling points in the cost-conscious Thirties. Polygraphic took on such solid accounts as John-Manville, International Business Machines, The National Broadcasting Company, Pan American Airways and many other national accounts. Its presses grew in number, and behind them a sound organization skilled in all branches of photolithographic sales, arts and services. In 1940 Polygraphic sold out its film business to a subsidiary of du Pont and concentrated wholly on offset lithography.

The Move to Vermont

By 1936, in fact, the business was growing so well that the Polygraphic Company had to plan for expansion. It had begun operations in small quarters on lower Lafayette Street in New York City, moved uptown in 1930 to 310 East 45th Street, and soon was sprawled over four floors of a large printing trades building at that address. But even this was becoming cramped, and working conditions were none too good in New York for further expansion.



Joel Towart, black-&-white photographer



Bruce La Vigne and Charles Griffith, color strippers

Robert Werblow and his associates made the important decision, which took courage at the time, to move their main operation out of New York. Later many other industries, notably chemicals, synthetic textiles, electrical appliances and manufacturing of all types, discovered the benefits, on an even larger scale, of decentralizing out of large centers of population. Indeed, since the war, there has been a steady exodus of business concerns to small towns. But at the time Werblow decided to move most of Polygraphic's printing operations out of New York, such a move was novel and considered risky.

Looking about for a new location, Polygraphic located, through mutual friends in the paper business, a vacant plant at North Bennington, Vermont. The building they found in this beautiful, historic valley of southwestern New England was a red-brick factory which had once housed the E. W. White Company, makers of the Kiddy Kar. All Vermont was then at low ebb, with its small industry, mainly textiles, shut down and its traditional occupations of dairy farming, lumbering and quarrying doing little better. So eager was Bennington for new industry that it offered the company a tax-free status if it decided to settle there. But Robert Werblow kindly turned down the offer. If the company were to settle there, he said, it would be a paying part of the community, meeting its taxes like everyone else. With this forthright introduction, in the New England grain, Polygraphic was assured of a warm reception.

The company's officers, for their part, liked the country and they liked the look of the people who lived there. In 1936, therefore, Polygraphic moved most of its presses into the factory beside rushing little Paren Creek on Water Street. Behind in New York remained the administrative, sales and art services, plus a few presses for rush single-color work and experimentation.

The advantages of the move were not immediate and it took some working out. With the presses went a key force of skilled craftsmen, who require years of development, to set up operations and train local labor. Paper mills were economically close. A teletype line brought the new plant into instant, fast communication with New York. The trailer-truck put it within overnight reach of New York and other key cities and rail centers. All the developments of swift, modern communications were working toward such decentralized operations. Polygraphic now has a fleet of big trailer trucks plying the routes between Bennington and New York and the rail heads giving it shipping access to the whole country.

But the longest-range advantage of the move to Bennington was the quality of the labor and community relations Polygraphic found there. The New England small-town



Every morning Lithographic Superintendent Jack Schoenberg (left) reviews the day's production schedule on this big board with his foremen.

6 7 8 9 10 13 14 15 16 17 20 21 22 23 24 27 28 29 30 31



POLYGRAPHIC
COMPANY OF AMERICA



FINE COLOR

LITHOGRAPHY

BENNINGTON, VT.

NEW YORK, N.Y.

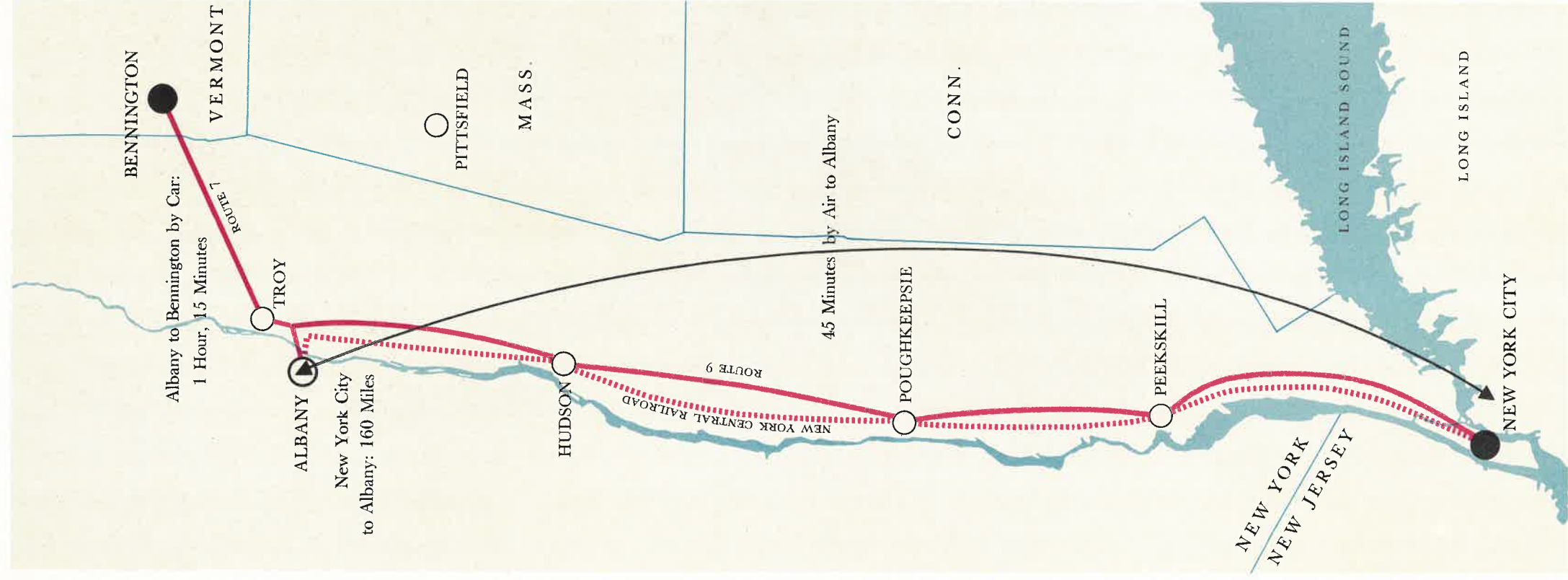
POLYGRAPHIC
COMPANY OF AMERICA
BENNINGTON, VT.
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workman is sturdy, independent and willing. He not only takes quickly to training but he takes an interest and pride in his work, an important factor in any trade as dependent on good craftsmanship as offset lithography. Moreover, he is intelligent and steady. Many of the men originally hired are still on the job. There is nothing like the turnover found in large metropolitan cities. The atmosphere is entirely different. The New Englander, as Robert Werblow is quick to tell you, "works with you, not for you."

Today the Polygraphic Company employs some 600 people, about 400 in Vermont and the rest in New York. By printing and offset industry standards, this is a large operation. The Vermont plant has nine big presses, mainly two-color Miehle and Harris rotary offsets, ranging in size up to the biggest, most modern and automatic Harris taking a sheet of 50 x 72 inches. Such a plant is capable of a wide range of work. Its production now falls into three main divisions: commercial lithography, such as high-quality brochures, catalogs, posters; textbooks as well as vivid, low-cost children's books; and greeting cards, in which Polygraphic has designed and developed a highly successful line for all occasions. Both the greeting cards and the Christmas children's books provide the steady, bread-and-butter business that enables Polygraphic to maintain an efficient low-cost operation while offering speedy work and high quality to its commercial and publishing clients.

Since printing depends so heavily on individual craftsmanship and good taste, the self-contained Vermont plant steadily pursues a program to ensure both. Each new job is closely scrutinized by a conference of art and camera foremen to secure the best values obtainable. The latest instruments and techniques are used to aid in achieving final results. Lithographic printing foremen hold daily morning meetings and monthly dinners to run down problems and keep craftsmanship under surveillance. Paper,



▲ *Polygraphic's location at Bennington combines all the advantages of favorable Vermont working conditions with easy access to the major markets. Albany is only forty miles away by car, while New York can be reached in a few hours by either rail or highway.*

▲ *A Polygraphic truck, bearing the company's symbolic "Polly," loads at Bennington for the night run to New York. As the big trailer trucks leave Bennington in the late afternoon, their sister trucks start north from New York. Thus Polygraphic does not lose a single hour of working time.*

humidity, inks and other physical factors are closely controlled. The flexibility and speed of offset lithography loses nothing by being placed in Vermont, but rather gains by the nature and accommodation of the work force. Polygraphic had no trouble, for instance, getting a crew on short notice to come in and work all one weekend to get out a rush job recently. It still sells speed and economy.

Polygraphic also still keeps abreast of new developments. A technical committee representing all departments meets in Bennington once a month to discuss and evaluate the latest advances. A test laboratory is maintained to try them out. As fast as they prove advantageous, they are adopted. The latest instrument to be acquired is a big, electronically controlled color-separation camera which is the last word in photolithographic optics. The plant now uses the most recently developed densitometric equipment to obtain a high fidelity of tone and color reproduction. With the highly skilled staff and specialized equipment it has built up, Polygraphic's Vermont plant is now capable of turning out some of the best offset lithography in the country.

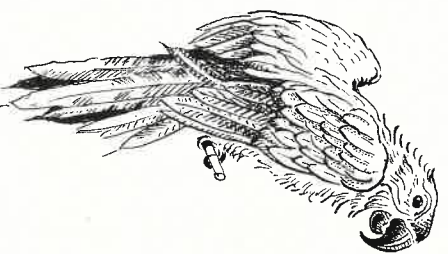
The Future of Offset

Robert Werblow likes to say that the surface has barely been scratched in photolithography. And the rapidity with which offset is still growing and new developments are welling up indicates that there is more than simple pride

or modesty in the statement. "All we need," he says, "are longer days and more strength."

New aluminum, stainless steel and multi-metal plates are now coming in that provide offset lithographic qualities heretofore unobtainable and press runs in the millions from a single plate. New inks and coated papers are constantly advancing to increase offset's range and adaptability. Photographic type-setting machines are in development that will be to offset what the linotype machine was to letterpress, allowing the rapid setting and composition of type directly on film. A number of books already have been set up in this way, and with further development the new machines will have a revolutionary impact on offset. Much research is currently being done to improve large web-fed multi-color offset presses with the object of making the economy of offset available to the newspaper and magazine industry.

Offset will some day, say its enthusiastic proponents, take over up to 80 per cent of the printing volume in the country. Most printing technicians agree that it is destined some day to dominate the market. By reason of its photochemical nature, offset lithography is the printing process most amenable to research and development and to the steady stream of advances pouring out of the chemical industry. The offset industry itself has taken to organized research only recently, and while research is still only on a small scale, it is moving rapidly in the right direction. In the light of this and of its history, offset lithography and the Polygraphic Company of America may be said to be only at the beginning of growth and development.



ONE JOB OF OFFSET LITHOGRAPHY

The next fifteen pages show pictorially the progress of one printing job through the major phases of the photolithographic offset process. It is a process simple in outline but infinite in detail. From the reproducing camera, which is the heart of the process, to the final press run, it requires skill, good taste and craftsmanship.

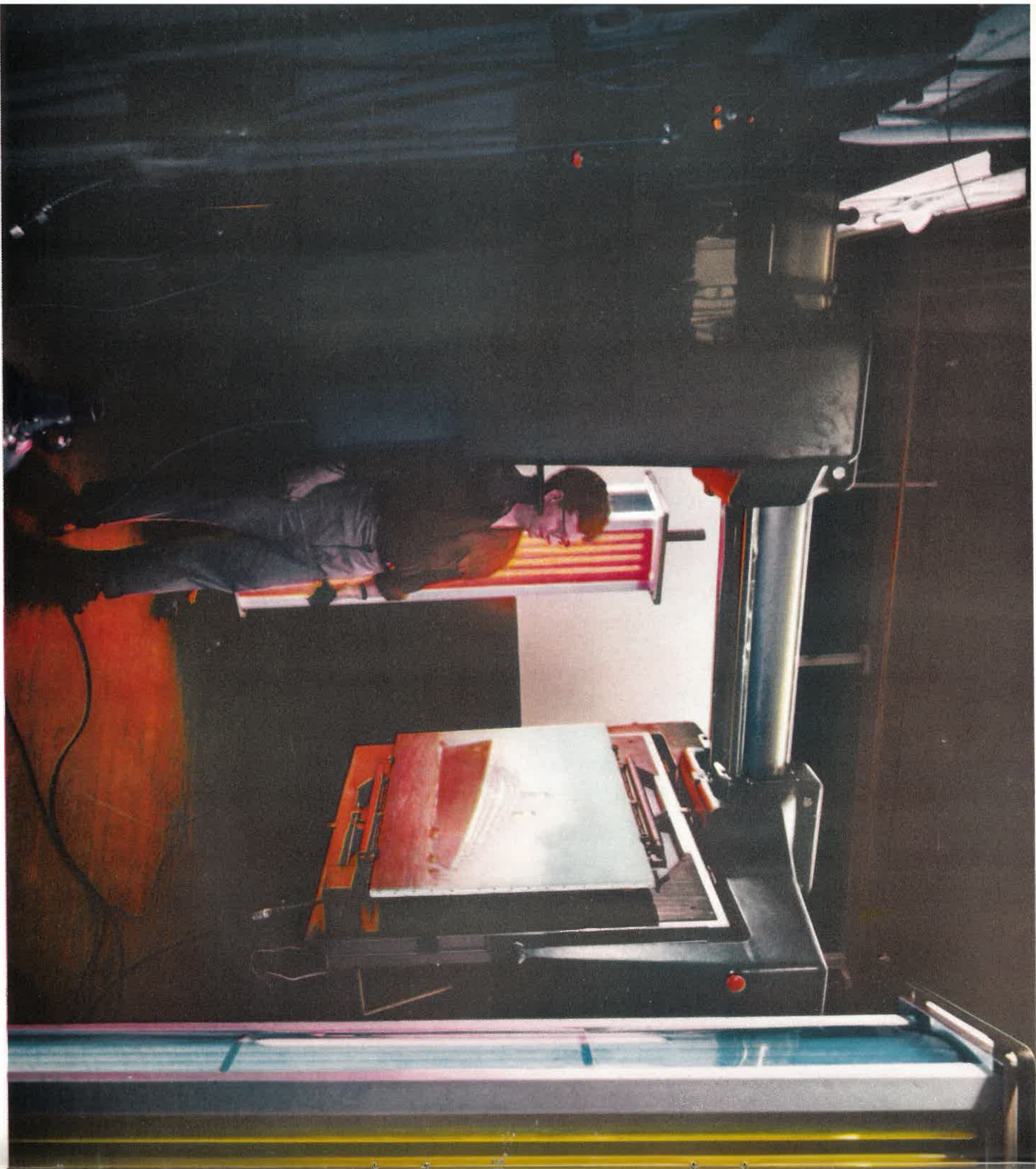


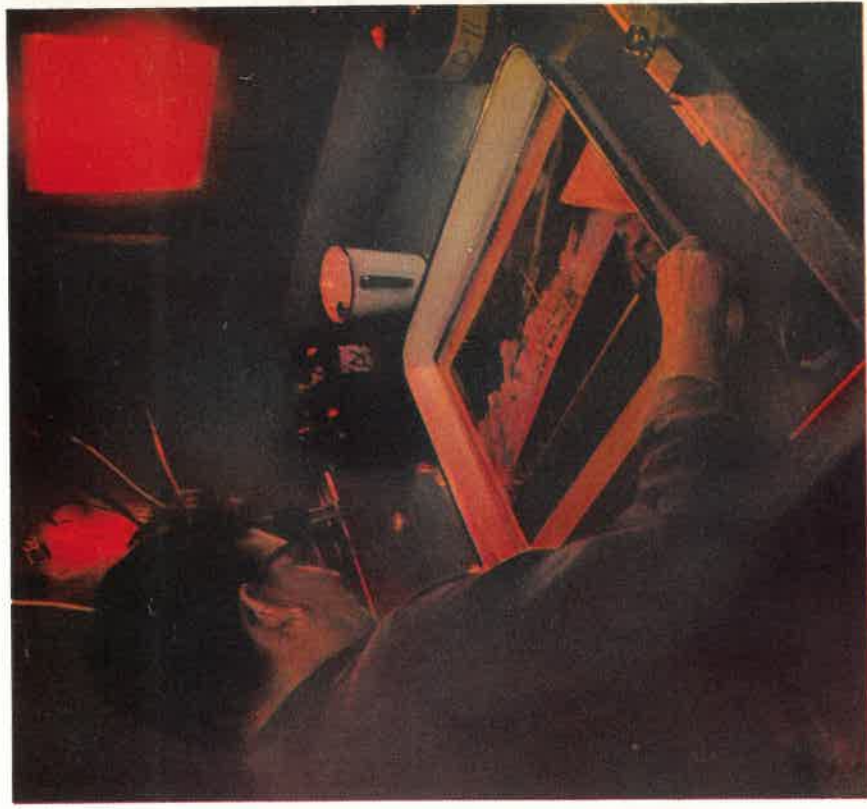
At work in the composing department



THE JOB ARRIVES

This printing job—a colorful poster for American Export Lines — arrived one morning at Polygraphic's Vermont plant in a job bag. All orders arrive thus from the New York sales office. The job bag contains the original art work and copy material, plus a long production order specifying the size, paper stock, trim and all other data necessary to satisfy the customer's requirements.





The film copy is developed under dim red light in the darkroom.

BEFORE THE CAMERAS

The first stage in photolithography is to photograph all copy to be printed. The ship painting goes to one of the big cameras (left) where all the color in the subject is broken down by filters into red, yellow, blue and black. Under batteries of colored lights which help separate the colors, the painting is photographed four times, once for each of the constituent colors. The negatives are then re-shot through a screen to break up their tones into tiny dots which will catch the ink.



An artist works by hand over the tiny dots in the color negatives to sharpen or shade them.



Areas in the negatives are retouched or masked to bring values as close as possible to the original art.



Art Foreman John Just directs a large force of specialists.

ART IMPROVES SCIENCE

The second stage of preparation takes place in the art department above. Here the photographic transparencies from the camera department are carefully checked for color values and minutely worked over by hand where necessary. The men who do this delicate work must combine a high degree of artistic skill with technical knowledge.



The pieces are fitted on huge light tables.

Forms are checked for close register in over-printing.





The finished ship transparencies are checked on a light table.

THE PIECES COME TOGETHER

All the screened and retouched transparencies now come together to be placed in master form sheets. This is the composing department, where all elements of text and pictures are accurately stripped in as they will appear in the final printed form. On these tables, the compositors work with nothing heavier than adhesive tape. The process eliminates all the complicated lock-up that other methods of printing require.



To you and your NEW BABY

THE EXPRESSION
MAY BE DIFFERENT

Greetings

Merry Christmas

A Holiday
Message

Christmas Thank
FOR YOU

Glad You're
Joining Us

David's
CHRISTMAS

For you
at CHRISTMAS

Great
BUBBLING OVER...

Merry Christmas

OUR WOE IS ME!

TO SPEED
Your Recovery

With
Friendly
BIRTHDAY GREETING

How I 'SWING' it

No Matter

May I
be
With
You

NIGHT

A
P
C
W





POLYGRAPHIC'S PEOPLE LEAD A GOOD LIFE IN A BEAUTIFUL LAND

A company draws its strength from the people who work for it, and the people in turn draw strength from the land where they live. Polygraphic is proud of its people and proud too of the community which is its home and theirs.

Bennington lies in the gently rolling country of southwestern Vermont, close to the corner where that state joins Massachusetts and New York. Around and above it rise rugged mountains, green with fir and pine in the summer, glistening white with snow in the winter. Through it runs the route to the lovely Green Mountain vacationland of hunting and fishing, hiking and skiing.

Bennington is rich in history. Here, where the Battle Monument now stands, the Continental Army kept its stores against the British drive down the Champlain waterway from Canada; three miles north of town General John Stark and his Green Mountain Boys defeated the Redcoats and the Hessians in 1777. The dead of both sides in that crucial battle for American independence lie beneath stones of native marble in the graveyard of the Old First Church, whose parish was the first in Vermont.

Bennington today is a modern city, the home of numerous small and middle-sized businesses, the center of a rich dairying country and the site of Bennington College. It is

also the home of over 13,000 people, some of them descended from families that fought in the Revolution and some of them drawn in later years by the opportunities Bennington offered for good work and good living. In these people a visitor senses the qualities that seem to spring from New England's granite hills—quiet friendship, personal dignity, a sense of responsibility and a deep respect for the way they live and the work they do.

Polygraphic and Bennington have gotten on well. To a city which had a serious economic problem the company has brought a payroll of over \$1,000,000 annually and the life-blood of a going enterprise. Its officers take a prominent part in general community drives and activities. Robert Werblow is chairman of the board of directors of the largest bank. Two employees of Polygraphic serve on the Board of Education.

The relationship between the company and its people is based, as any human relationship must be, on mutual respect. Polygraphic employees respect the company and its insistence on maintaining high standards of quality work. The company in turn respects its employees, both as skilled workers and as individuals leading the good life which Bennington affords.



Arthur F. Robinson, superintendent of the Polygraphic warehouse, shows his grandson the eight-point buck he shot.





Polygraphic sponsors teams in bowling, basketball and softball. Here the softball team holds informal practice on a Bennington field.

OUTDOOR SPORTS

Living in the midst of a year-round vacationland, the people of Bennington love to get outdoors among the forests and streams. In recognition of this universal urge, Polygraphic goes so far as to allow time off in the hunting and fishing seasons, as part of the regular vacation schedule. But all seasons offer plenty of opportunity for healthy outdoor recreation.



William J. Kornitzer, Sr., photographic foreman, and his youngest son John, talk with Bill Jr., halfback on the Bennington High School football team, at half time in a night game.



To-Anne Marie Hendee, aged six months, entertains her mother and her father, George J. Hendee, photo composer platemaker.



Verd-Monts Royal Ti, a 14-months-old prize-winning St. Bernard, is the pride of Douglas Mattison, pressman.

George Tully, production supervisor, and his family picnic at Bennington Battleground.





By a covered bridge in Bennington, Henry George Graton, shipping department foreman, initiates six-year-old Madeline Jean into the joys of fishing.

A SALUTE TO VERMONT

At work and at play the people of the Green Mountain state display the qualities of character which seem to spring from a pleasant land with old traditions.

Leaving the Bennington plant, a Polygraphic truck passes the Old First Church, one of Vermont's historic landmarks. Built by the first parish in the state, it has been restored to its early Nineteenth Century beauty.



BENNINGTON

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POLYGRAPHIC

FINE COLOR LITHOGRAPHY

*The color illustrations in this book were entirely produced
from 35 millimeter Kodachromes as shown here above.*



This book was prepared for The Polygraphic Company of America by

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