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the Art of Production

A BIMONTHLY JOURNAL FOR THE GRAPHIC ARTS AND MAGAZINE PRODUCTION MANAGEMENT

DeadMetal Timeline

A brief historical tour of some of the major events in the graphic arts, with emphasis on magazine production & manufacturing technology.

Prehistory

35,000 BC. During the period from 35,000 BC to 15,000 BC the Reindeer man of Northern Europe developed picture-writing before the alphabet and, using gravers and borers made of stone and other implements (such as fish bones), they would draw on the walls of caves a pictorial record of the events of the day. Perhaps this was the first of our newspapers and magazines. These engravings developed into bas-relief forms and eventually into sculpture. With an appropriate share of grunting added, this may have been the beginning of what we call multimedia today.

These bas-relief sculptures were carved from large blocks of limestone. Most of this work is found in central and western France. The wall engravings were made with sharp flint instruments, and while col-

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Printing in the 15th Century

PART I

His full name was Johann Genfleisch zur Laden zum Gutenberg, and while no printed piece actually bears his name, Gutenberg is generally regarded as the inventor of printing. It is certainly through his efforts that the printed word spread throughout the modern world.

The Gutenberg Bible was the first book of any magnitude printed from movable type. It appeared in 1455 as the two-volume Latin Bible. When it was produced by Gutenberg, it was originally known as the Mazarine Bible. It is today referred to as the Gutenberg Bible, or the 42-line Bible.

Johannes Gutenberg
From an engraving published in Paris, 1584

Not very much is known about the printer himself. For a while he stayed with the Genfleisch family in Mainz, moving on to Strassburg in 1434, where he spent the next 10 years or more.

By 1438 he had formed an association in Strassburg. He had taken several loans out from his partner, Johann Fust (Furst) to form a business, but it appears that a lawsuit was filed against him by Fust due to his failure to make payments on a loan. Fust obtained Gutenberg's printing equipment, which was used as collateral for the loans, and set up his own shop with Peter Schöffer (the younger Schöffer married Fust's daughter) and both men operated the printing shop in 1457.

While Gutenberg wound up broke as a result of the lawsuit, he continued to operate a print shop in 1460 and, growing older, the Archbishop of Mainz gave him a pension in 1465 for clothing, wine and grain, along with an exemption from certain taxes. In 1468 (believed to be on February 3) Gutenberg died. He was probably somewhere between 60 and 72 years of age. A Mainz Jurist, Dr. Konrad Humery, acquired Gutenberg's remaining equipment. In the following year, various stories began to circulate regarding who invented printing. Today's scholars have little doubt that it was indeed Gutenberg who was responsible for the typesetting and printing of the first Latin Bible, and not Johann Fust and Peter Schöffer, as thought earlier.

The market for the sales of the Bibles was, of course, churches and monasteries. Over the years, only one copy is known to have been sold for private use. The large format of the books lent itself to group readings by learned men to the gathered masses. As was the custom of the day, the purchaser was left to arrange for the binding and illumination.

The Gutenberg Bible is a symbolic reference to the process of printing where reusable metal type was the prime means of duplicating manuscripts. This meth-

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LETTERS

From the Editor:

The purpose of this journal is to give the reader an overview of some of the main technological areas in the graphic arts, with emphasis on magazine editorial and advertising production, both past and present.

The journal is intended for all those involved in magazine production and for those individuals working in related graphic arts fields. It is our hope that this journal will be of interest to those who wish to know more about the exciting, dynamic and challenging aspects of production. Without pretending to cover all aspects of magazine manufacturing in great detail, we trust that the subjects covered in the journal will be useful, interesting and challenging to those individuals with experience in magazine production and related fields.

In general, some of the text was born out of lectures dealing with magazine production technology I gave at New York University School of Continuing Education over a 15-year period when, in the late 1970s through the mid-1980s, a new age of electronic publishing was emerging and taking shape. This journal will attempt to trace the technical developments of our dynamic graphic arts industry. Emphasis will be placed on the introduction of the computer in the field of magazine production as we attempt to bridge the technology of the past with the challenges of the digital world.

The material gathered for this journal will come in part from my experience in magazine production over the course of the past 40 years and from those professionals in the field that I have had the pleasure and honor of working with. We hope you enjoy the read!

Letters from readers will be published in future issues of the journal. Send your correspondence to: The Editor, *The Art of Production,* 1223 Hemlock Farms, Hawley, PA 18428-9064.

All communication will be treated as letters to the editor, unless otherwise instructed. We may edit letters for length, style or clarity. We welcome your thoughts on the topics covered in this journal and your suggestions for future articles. Please let us hear from you. Thanks!

— Richard Sasso

DEADMETAL

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ored with pigments, little has survived. Some of the finest examples of clay sculpture are from Le Tuc d'Audoubert in France and Mesopotamian records of crop yields appeared on clay tablets, representing the earliest-known stage in the invention and development of writing in 33,000 BC. An example of some of these clay balls (later they were shaped into tablets) as found in Syria, show a circle (representing the number "10") above a pictograph of an animal, such as a sheep or a goat. They became accounting records of transactions made by the merchants and bureaucrats of the Uruk civilization of the time.

Reindeer man used brushes made of animal hair or crushed vegetable fiber to paint on cave walls. Other cave members made pigments by grinding, with a mortar and pestle, iron oxide or red ocher for the red pigment, kaolin or chalk for white, and manganese dioxide and charcoal for the black pigment. This was a limited, but effective, palate of colors. Fire for heating the pigments made different hues. Stencils were made by blowing pigment from their mouth over their hand, which was pressed against the wall of the cave.

3200 BC. The earliest writing discovered to date comes from Mesopotamia and is credited to the Sumerians about 3200 BC. The Sumerians kept careful records of many transactions which they drew as tiny pictures on clay tablets. Over the next 200 years, the pictures were replaced by wedge-shaped patterns from the cut-off reed that was used to record the transaction. The patterns created were representations of a sound or a syllable. This form of writing was called cuneiform writing and appeared during the period when the Egyptians developed their own form of writing which used pictures, or glyphs, as they wrote on stone and then on papyrus with a reed pen. Two other forms of writing developed during this period: the glyphs from the Indus Valley and, in China during the Shang dynasty, we find the earliest surviving examples of Chinese writing using some 2,000 characters. When the Egyptian civilization began, the Sumerians had already reached a high level of culture by the year 3500 BC. This one race, which contributed greatly to the civilizations of Egypt and Greece, vanished almost 4,000 years ago.

3000 BC. The oldest known piece of papyrus dates back to 3000 BC. This writing material was invented by the Egyptians as a less expen-

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the Art *of* Production

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piWord GAME

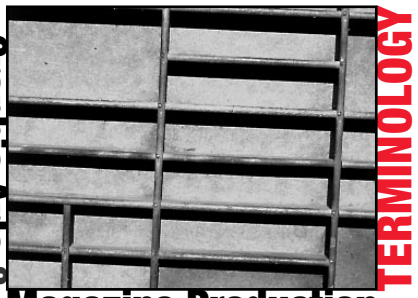
CLUE THEME: IN A JAM

ClueWord: __ __ __ __
(Unscramble the four colored letters below)

piWords
(Unscramble the four piWords below)

a) T C I T H S __ __ __ __ __ __
b) S I N R T E __ __ __ __ __ __
c) D A S L E D __ __ __ __ __ __
d) E L S B A L __ __ __ __ __ __

Answers appear on page 8



Aliasing & Anti-aliasing. Aliasing refers to computer pixels on the edges of illustration and type lines, making the copy look ragged as the lines are slanted or curved. This is due to the fact that in low resolution images (e.g., the 72-pixel computer monitor) these pixels are rather large and therefore appear more noticeable to the eye. A higher resolution output device minimizes this problem, or an anti-aliasing technique can be applied to the type or illustration.

Anti-aliasing is a method to smooth the edges of illustration and type lines by using computer software to modify the pixels. The software modifies the pixels on the edges, by making them somewhat lighter, to give the impression of smoothness. This technique comes at a price, in that you lose a little sharpness on the edges as a result of anti-aliasing.

Baud Rate. An industry standard measurement of the speed in which data is transferred through a given channel, such as a telephone line. The specified baud rate is the maximum rate that the signal travels. The device used, for example a modem, is connected to your computer and to a telephone line. The modem's baud rate is the speed the data can travel. The actual speed of the data is measured in bits per second (bps). A bit is equal to a "1" or a "0." Modem speed started at about 300 baud and has steadily increased. The actual data being transferred is about 50% to 65% of the specified baud rate.

CGATS. The Committee for Graphic Arts Technologies Standards. Established in May 1987, the committee was originally formed with representatives from 30 industry organizations for the primary purpose of coordinating standards development in the graphic arts by representatives of one group. Current membership is now more than 70 representative organizations. In May of 1989 CGATS was accredited by ANSI (American National Standards Institute).

Digital Ad Lab. The Digital Ad Lab (DAL), is an organization founded by Time, Inc., R.R. Donnelley & Sons Company, NEC, Inc., World

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Printing in the 15th Century

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od marks a period of time, almost 550 years ago, that can rightly be regarded as the birth of printing. It represents the period when the process, as we know it today, resulted in the distribution of books and other printed matter in quantity. Gutenberg paved the way for Aldo Manuzio (Aldus Manutius), born in 1451, and others to follow. By the use of these hand-set typesetting and printing methods, printing rapidly spread throughout Western Europe.

The printed word gave us a record of the impressions of thought and activity that surrounded man's experience. It gives us our connection to the past, helping us shape the world of tomorrow and making us grow intellectually. How strange it is that although the invention of printing changed the world in such a profound way, no precise date can be attributed to its beginnings and that so little is known of the inventor himself.

Before the dawn of the 16th century, other contributions were to be made. The Venetian publisher and printer to the Holy See, Aldus Manutius, was born in 1451. He began his career as a printer in 1494. He worked at the art and produced popular books until 1515. He did more than any one man to spread learning to the scholars of Europe. Manutius was responsible for, among other things, the popular publishing of literary texts in Greek, in small-format books.

On the Production of the Bible

Here we take a brief look at some of the manufacturing aspects regarding the production of the Bible. There were actually two versions of the Gutenberg Bible. The earliest version was called B42.

There are 48 known copies of the B42 Bible in existence today, 19 of which (11 copies in the U.S. and eight in Great Britain) are considered "perfect and bound." There are 36 copies printed on paper and 12 copies printed on vellum. Today there are five copies of the Bible in their original 15th-century binding.

The B42 Bible contains 324 pages in Volume 1 and 319 pages in Volume 2. By some early estimates, 158 to 180 copies were originally printed. Other estimates indicatethat 130 paper versions and 40 vellum versions were printed, for a total of 170 to 180 copies.

While the major component in all printing ink is carbon, B42 owes its rich, dense black ink to its high mineral content. There is an unusually high content of copper, lead and sulfur in the ink. The lead is probably the most likely ingredient that gives the ink, even today, its beautiful gloss finish. Black ink was used in the printing process, with space left for the colorful initials, which were put in by the illuminator, or rubricator, in various sizes. The initials themselves were more than just decoration. They offered the reader a guide to show the various divisions of the text. The process of illuminating the pages was also left to the purchaser.

The paper comes from four main paper stocks used at the time. The "Bull's Head" stock made up 70% of the printing. Two "Grape" stocks were used, along with a stock called "Running Ox." Each sheet was folded twice to make two conjugate leaves. Five sheets were gathered inside one another to make quires of 10 leaves. In a perfect copy of B42 there are 324 leaves in Volume 1 and 310 leaves in Volume 2. The last two leaves are blank in Volume 2.

Little is known about the press used by Gutenberg to print the Bibles. One can imagine that a single-screw press was the one used during the mid-1470s, and that one or two of these presses could have handled the print job. As to where the shop was located, no precise location is known. It appears unlikely that Fust took a part in the printing, but there is some evidence that Schöffer gave a hand at operating the press with Gutenberg.

Only Gothic or Black Letter type was used in Germany during the 1400s. Gutenberg's typeface contained 270 sorts of the Gothic style used at the time to resemble the handwriting style of the day. No evidence exists as to the metal alloy used. Gutenberg's font contained about three times the number of characters found in a typical Roman font. In addition to the capitals, lowercase, punctuation marks, etc., there were many abbreviations (125 of them) and a fair number of ligatures and kerning pairs.

Computer-to-Plate Printing:
Successfully Using the Technology

by Richard Sasso

Computer-to-Plate technology, or CTP, affords the publisher an opportunity to supply editorial text and advertising materials to the printer in the form of digital data, and to electronically image plates for offset printing, thus avoiding the intermediate film preparation stages.

The benefits of this new technology center on: improved print quality, as a result of using first-generation digital data to "expose" the plate; a reduction in prepress costs, by eliminating film from the production process; faster publisher closing schedules, allowing advertisers and the editorial staff more time to prepare reproduction materials; and to some extent, because of the elimination of film and chemicals from the process, the process is more friendly to the environment.

To achieve the many advantages of the technology, publishers and ad agencies and their vendor-partners must work even more closely together than with earlier methods. There must be complete cooperation from all involved in the production process. The advertising agency must share in a leadership role with the publisher, the printer and the suppliers of prepress materials to ensure the successful transition to this new and exciting technology—putting ink on paper without the use of the traditional film process.

The printers will be the leaders here as they purchase new and, not unexpectedly, expensive equipment. But without the complete cooperation from the advertising community and its vendors, publishers will be hampered in their attempts to embrace the newly available technologies.

As yet, the agencies have not been able to meet this challenge squarely on. No doubt they will, of course, and they should know that the magazine production industry has been ready and waiting for almost two years now.

Professional industry associations play an important role by bringing together all the graphic arts professionals to develop, once again, a common set of guidelines and specifications, through their continued efforts and dedication to raising the level of quality of publication printing.

The communications revolution that began in the 15th century with the invention of moveable type continues with the best of the computer age now available to the magazine publishers and their advertisers. Computer-to-Plate technology ranks as one of the most advanced technological achievements of our time, and as such, will play a significant role in the way we produce our magazines.

The first mission of magazine publishing has always been to attract readership. We do this today with new production tools as we deliver the editorial product to the on-line reader, as well as to our core readership by our production of the traditional Gutenberg print product.

Never before have we had the opportunity to produce our magazines without the use of film. Today it is not only possible, but practical for us to use this most advanced technology.

Many challenges still face us during this period of transition. Plate imaging devices must improve, and they will; the publishing and advertising agency community and its suppliers have to find acceptable solutions now to transport digital data; and they must be comfortable with the proofing of this data, in advance of the press run, to ensure the highest quality possible.

On the magazine side, many publishers and their advertisers await the further commitment and transition from the ad side. One of our biggest challenges is to encourage and convince the advertising agencies and their suppliers to prepare all ad material for publication printing in an acceptable digital format. Magazine publishers stand ready to assist in the implementation of these new production techniques. Many other magazine publishers will soon be ready to go from digital data directly to plate, and some are ready now, but progress will be slow until digital data replaces advertising film.

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Color, and Wam!Net in October of 1996 "to put current technology and standards to the test, and report 'real world' experiences to help support the graphic arts industry's transition to digital advertising workflows." The mission statement of DAL reads, "The Digital Ad Lab is to act as a real world proving ground for the standards and technologies that will allow providers of print services to reap full benefits of digital technology." The group completed an extensive project in March of 1997 by placing digital ads in three major consumer magazines—*McCall's*, *Better Homes & Gardens*, and *Ladies Home Journal*.

Electrostatic. The electrostatic method of printing, also known as the Xerographic method, uses electrostatic principles to take pictures and reproduce documents. The surface of a specially coated plate has a positive electrical charge to attract a negatively charged powder after the image is exposed to light. Positively charged paper comes in contact with the image. The print is then fused with heat. The inventor of the basic process was Chester F. Carlson in 1948.

French Doors. A front-of-the-magazine gatefold, split down the middle, popular in European magazine publishing. The ads are visible only after the gate "doors" are open. These gatefolds first appeared in the U.S. version of *Elle* magazine from Hachette Filipacchi. Sometimes called double-gatefolds.

GIF File Format. Pronounced "jiff." Graphic Interchange Format. Developed in 1987 by Compuserve and based on a software algorithm called LZW, patented in 1985 by a computer company, now known as Unisys, to convert graphic images into computer file language. The GIF standard became popular worldwide as a common means of storing, viewing and transmitting photographics and other computer-generated graphical images because Compuserve didn't charge any licensing fees for its use. The image is broken up into smaller pieces, as described by a string of numbers. This compressed format has widespread computer compatibility, but it does lack certain fineness of detail found in other formats.

Heat Set. Referring to the web offset printing process where gas-fired ovens heat the web of paper after printing, before the paper reaches the folders. This process drys (or "sets") the ink

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sive and more available writing medium than the animal skins then used to make parchment and vellum. The papyrus plant (*Cyperus papyrus*), grown along the Nile, grew to be 10 feet tall. It was also cooked for the purpose of being eaten. It was not easy to make this swamp grass into a writing material for the ancient world. The interior of the stalk was cleaned and cut into wide, thin strips, about 20 inches long, which were placed close together in rows and covered with a paste of flour and water. The sheets were then dried in the sun and later polished with a shell.

Although no known date exists, it is generally believed that *The Book of the Dead* was written about 3000 BC in Egypt. It remains the oldest and most famous manuscript written on papyrus with a reed pen. The book was written in hieratic script, and hieroglyphics were used to decorate the manuscript, which dealt mostly with the funeral ritual.

2800 BC. It is believed that Chinese writing began around 2800 BC. While there was more than a few Chinese languages, anyone who could read could understand Chinese writing, since each symbol stood for an object and not a sound. The Chinese used a minimum of 5,000 characters and had experimented with movable type (using wood, pottery and bronze) before Gutenberg. In contrast to the enormous character repertoire of the Chinese, Gutenberg required less than 300 characters to complete the Latin Bibles.

2698 BC. The discovery of ink itself is one of the few inventions not associated with a specific individual. The development of ink took place over many years of trial and error and its roots go back centuries before Christ. The ancient Chinese historians credit the discovery of ink to the year 2698 BC. The Egyptians are credited with the art of making dyes for writing, which led to the development of printing inks. As mentioned in the Bible, black ink was made by the Hebrews by mixing soot (charcoal) with water, with gum added as a binder. While true ink, from lampblack, is attributed to Wei Tang about 300 to 400 BC, the Arabians made lampblack by mixing gum and honey into the oil, tar, or rosin they burned. Then they pressed the mixture into small cakes. Lampblack was followed by Indian Ink made later by the Chinese.

2600 BC. In 2600 BC the Egyptians began to use papyrus rather than the regular use of stone as the medium for writing.

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Production Management Education:

The Changing Environment and Responsibilities

by Dr. James P. De Luca

The graphic arts and communications industry is a product of accelerated movement at a speed never witnessed before in the history of mankind and civilization. The Industrial Revolution was considered remarkable with its rapid changes and innovations (spread over many years), which resulted in the betterment of mankind and furthering the quality of life for everyone.

Throughout the history of the graphic arts (with the changes that have taken place from the invention of moveable type to delivering the printed and electronic product by new technologies) quality and craftsmanship have continued to be maintained. Because the industry was segmented, as is the case today, with each professional company providing the services needed, it is the production manager who is still the overseer of the product.

All the elements of the final product flow through the production department, thus placing a burden on the production staff member to have a working knowledge of each segment of the entire graphic arts or publishing process. The production person must also have the capacity to communicate intelligently with all of these specialty segments. Each have a varied level of expertise and a language of their own.

The question we are constantly faced with is: How do we keep up with the fast-moving changes and who will carry the responsibility? As electronics and digital communications continue to improve and become faster and more readily available for daily living, so too has the impact been felt by the corporate sector.

As we look back 20 years or more, there was a separation of work responsibilities in the manufacturing of the printed product. An individual may have been considered either a craftsperson or in management in the printing area and a professional in other areas. This process also included the necessary relationships among advertising agencies, publishers, printers and the manufacturers and vendors involved in the completion of the printed product.

Today, due to the advancement and reduced cost of both the personal computer and software programs, many responsibilities and obligations have been taken over by desktop operations. This has created a peculiar dilemma: Who is responsible for what, and where does a person obtain the appropriate experience and expertise?

The wide utilization of personal computers, easy-to-use software, faster data transmission, larger storage capacity and a continuous array of utilities (including desktop scanners and color proofing devices) has provided the industry with many so-called "computer driven competent experts." These individuals tend to produce the printed product via a workflow process governed by the software program used. What is in question is the level of acceptable quality and the level of productivity, along with responsibility.

Witnessed by many corporations is the limited knowledge of graphic arts printing production that the incoming work force brings with them. Many have good computer skills but are weak in how the printing process works beyond their daily responsibility as an employee.

Another concern falls into the category of personal communication skills. Many times when challenges arise or something goes wrong, the limited understanding of the production process and the terminology makes it difficult to communicate with the individual not educated in the process.

One of the most frequent problem scenarios today occurs in color management. The limited understanding of the differ-

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2000 BC. By 2000 BC Sumerian scribes recorded the list of kings that ruled these highly-organized people some 2,000 years before. In all aspects of everyday life, the Sumerians recorded on clay tablets every transaction that took place, both business and private.

1876 BC. During the Xia Dynasty, under King Zhong Kong, the Chinese kept such careful records of astronomical events that we find an eclipse took place on exactly October 16th in the year 1876 BC.

1500 BC. In 1500 BC Chinese writing appeared on oracle bones, and by 1200 a Chinese writing system was developed using pictographs to record numbers and clan names. These inscriptions included 2,000 characters, many of which are still in use today.

1400 BC. Mycenaean writing was found on baked clay around 1400 BC, in a script called "Linear B," at the Palace of Knossos in Crete. This writing seems to have been the basis for the the development of the modern Greek alphabet.

1200 BC. Carvalho in his writing *Forty Centuries of Ink* speaks of an ink formula for Chinese Indian Ink that dates back to 1200 BC. The recipe takes the soot that results from the burning of pine and the oil used as the fuel for lamps and mixes these ingredients with gelatin obtained from an asses skin. Musk was added to scent the oil.

900 BC. A stone tablet was found in 1868 which has its origin around 900 BC. It displays the oldest example of excellent Phoenician writing (in the alphabet of Tyre) during the reign of Mesha, the king of Moab. The tablet is in some ways as important as the Rosetta Stone. Easier to read than the Rosetta Stone, due to the fact that its characters resemble the Greek, the tablet is on display at the Louvre in Paris, France. The Tyre writing, as it ventured from Phoenician soil to the peninsula of Greece, was an important contributor to our progress from pictures to a 26-letter alphabet.

500 BC. The first appearance of Roman writing occurred in 500 BC.

196 BC. The creation of what would be called the Rosetta Stone took place in 196 BC. The four-foot-long black stone cut from basalt contained three forms of writing; writings at the top in Egyptian hieroglyphics; in the middle demonic writing; and at the bottom, writings in Greek. All three writings meant the same thing. The decoding process took over 40 years with many scholars having a turn at the task.

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sufficiently before cutting and folding the web into signatures.

Incunabula. A book printed before 1501 is one that was printed in the incunabula period. For example, manuscripts and books written and produced during the 15th century. Sometimes also referred to as cradle books since they were an artifact of an early period—a period of infancy in the development and spread of the printed word.

JAVA. Java is a networking language developed by Sun Microsystems in 1996 designed to run on multiple computers and operating systems. A program written for Java on the Macintosh, for example, could run as well on a PC using the Microsoft operating system and powered by Intel Corporation chips. The software is expected to be a de facto standard for how programs are written and used over the Internet. Java was designed to eventually run on any computer, making "platform" issues between Macintosh and Windows, for example, meaningless.

Kelvins. Referring to the color temperature of illumination for viewing proofs, art and printed signatures. Specified in ANSI PH2.30—1989 as 5,000 Kelvins, with a color rendering index of 90–100. This temperature has roughly equal amounts of energy in the red, green and blue portions of the visible spectrum range of 360 to 750 nanometers.

LAN. Local Area Network. A LAN connection allows multiple computers to be hooked up for the purpose of transferring files to multiple workstations and to share common resources, such as a printer, modem, etc. There are two basic LAN connections between workstations. The peer-to-peer LANs connect small networks and have no hierarchical structure. They are best suited for groups of up to five workstations. Then there is the centralized server. This LAN connection has increased security, provides file control and has a backup system.

Messotint. Sometimes called by its original name, messo tinto, it is an engraving method on copper or steel. Thick ink totally covers a plate that has many small holes. Highlight areas of the plate are scraped away. The messotint process was discovered by Ludwig von Siegen in 1642 with the objective of obtaining tonal effects. From about this date and into the 18th century, the Mezzotint was a popular form of reproduction, even though its roots go back to the 15th century.

Production Management Education

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ence between the colors on the monitor screen of a computer and the expected colors in a final printed product, tends to be a major area of confusion.

What's the answer and who should be concerned? The responsibility for properly educating staff members working in the production environment rests primarily on the individual. Yet, this does not mean that the employer should look the other way. The corporate world, industry associations and the educational institutions must address the issue of the computer in the graphic arts and how it has changed the way individuals learn the old and the new technology.

Everyone has the responsibility to provide quality applied education using actual physical interaction, with limited lectures, within each production segment of the manufacturing process. Much of the education, and not just training, can take place on the job but it must be in a structured program.

Because of the accessibility of desktop units, many people have become designers and production planners without taking time to expand their knowledge and professional growth. Too many individuals tend to rely on the corporation to provide the training. Attending short luncheon or dinner presentations, making field trips to manufacturing plants and/or attendance at exhibits or expositions gives a limited overview and is insufficient for those employed in the industry with production responsibility, especially as we enter a new technological age.

For learning purposes, graphic arts production should be treated as the equivalent of learning an art form or a craft by means of actual problem solving using industry standards. The quickest way to upgrade a work force is for corporations to consider developing and implementing a structured education program utilizing key personnel within the production department and by bringing in outside consultants to assist in the development and the monitoring of the process.

As we have seen, desktop systems have taken over. This, in turn, has shifted many of the responsibilities to those not

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Computer-to-Plate

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If the proprietary system manufacturers and the prepress vendors do not implement a common platform soon, major advertisers and their agencies, along with the printers and the publishers, will be forced to convert much of the advertising film we receive as publishers to digital data prior to the plate-making process.

While film is not dead yet, the reality is that it is indeed now possible to send a digital file from the publisher's office directly to the pressroom hundreds of miles away. An aluminum plate, for offset printing, can be imaged at high resolution (2,400 dpi) in a few minutes from the time the publisher supplies the digital data.

So what's holding up the transition? Who's holding it up? Is this a little like the type foundries' fear of Ottmar Merganthaler's Linotype at the turn of the century? Are we really talking about technical issues here that seem too difficult to resolve? Are we dealing with a major workflow change that can't be implemented? We doubt it.

Have the manufacturers, the vendors, the publishers and printers put in the full effort that is required to make this marvelous development a reality for the magazine publishing industry? The amount of progress here depends on whom you talk to. We think progress has been painfully slow.

We think it's time to let go of the past! Although the issues are not entirely the same, the gravure industry made the transition years ago when the New York Times Magazine Group converted to direct digital cylinder-making for *Family Circle* magazine.

Are we now ready to make this happen with heatset web offset publications? Specifically, is the advertising community prepared to supply digital ad material? When they do, they will experience, as we have, better quality and they will reduce their front-end costs in the preparation of their clients' pages.

Back in September of 1994, *Scientific American* magazine conducted its first Computer-to-Plate test with their printer, R.R. Donnelley & Sons Company, and with the October issue, *Scientific American* went live with the production of a Computer-to-Plate web offset press run of 175,000 high-quality signatures.

We have made a full commitment to the use of Computer-to-Plate technology. Our continuous program, in full partnership with our printers, is possible through the cooperative efforts of all parties concerned. We are anxious to have the ad agencies join us as we put ink on paper using CTP technology.

The results of live performance confirm our belief that the printing and publishing industry is indeed ready to take this on. We have been utilizing the technology regularly since 1995, at high print-order volumes, with a magazine that is dominated by challenging four-color editorial and advertising.

This is not to suggest that all the problems have been solved. But it's time to get on with the process of making this technology work. Only by using it will we be able to fine-tune the operations. While portions of CTP technology have been around for about half a dozen years, it is only in the past few years that this achievement has come into full bloom, and publishers of high-quality, large and small print order magazines can embrace this technology with absolute success.

THE AUTHOR

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Production Management Education

continued from page 6

previously involved in the production process.

THE AUTHOR

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PRODUCTIONQUIZ

Test your knowledge of the graphic arts, magazine production and manufacturing technology.

1) Historically, "Dragons Blood" was used by: A) vampires to discourage cave intruders; B) Gutenberg to formulate his inks; C) photoengraving shops in the etching of copper plates; D) the scribes to color manuscript pages.

2) "Xylographic" has to do with: A) earlier xeroxing methods; B) printing on a parchment-type paper; C) printing from woodblocks; D) music.

3) The terms "live matter," "shingling," "bleed allowance" and "head-to-foot" are: A) medical terms used by scientific publications; B) important if you print by the gravure method; C) related to ad and edit page positioning; D) part of the color separation process.

4) If your magazine had a print order of seven million copies you would probably print by: A) web offset; B) gravure; C) letterpress; D) a combination of sheet and web offset.

5) The Munsell system refers to: A) binding magazines; B) color notation; C) press register systems; D) viewing press sheets on a light table.

6) Joseph Neipce discovered the principle of: A) photoengraving; B) the Colotype process; C) the blueprint process.

7) Aldus Manutius was: A) a designer of computer software; B) a Venice printer to the Holy See; C) credited with the invention of modern papermaking equipment; D) in partnership with William Caslon.

8) In 1972 Telnet was introduced which made it simpler to connect to a remote computer. A) True; B) False

9) In 1995 the Internet handled more mail than the 177 billion pieces that went through the U.S. Postal Service. A) True; B) False

10) ISDN transmission uses existing copper telephone lines that already are in place in your home and office. A) True; B) False

Answers to the questions appear on page 8.

&tcetera ADDITIONAL ODDS & ENDS

THEY DIDN'T CALL IT PREFLIGHTING

Just an incredibly short 15 to 20 years ago art was prepared for magazine reproduction by pasting up type proofs and certain illustrations using rubber cement to mount these elements on a board to be photographed by the photoengraver's camera.

THE COPPER ENGRAVING

A film was produced and used to etch a copper engraving. Ink-on-paper proofs were made for the client and eventually the plate was sent off to the printer. The printer inspected the plate and corrected deficiencies. Other operations were conducted (such as the insertion of dead metal) before press time to ensure a quality result and to avoid lost time on press if an undetected error resulted in press down time. Shutting down a press was, and continues to be, a costly means of correcting errors that should have been found earlier in the process. Prior inspection of printing materials took place by all those involved in the process.

THE INSPECTION REPORT

While the introduction of the basic rotary web offset press took place during the early months of 1960, the process really took off some 20 years later. Between 1978 and 1980, letterpress was truly a dead manufacturing process for publication printing. Faced with a new printing process and workflow, the industry needed a new set of specifications and guidelines. A formal inspection and evaluation report appeared back in 1975 when industry leaders recognized the need for uniform standards. The Specifications for Web Offset Publications was published by SWOP. Film inspection was to be the responsibility of ad agencies, the prepress service suppliers, and the publishers and their printers for recording film and proof evaluations.

FROM LETTERPRESS TO OFFSET

The printing process changed as we moved from letterpress to offset but not the need—better to say, the *requirement*—to inspect and evaluate incoming ad and editorial material. They didn't call it preflighting then, but the process of checking proofs and checking the then new medium (film) for the offset process was just as important as it was earlier with letterpress materials. Today we call it preflighting—i.e., the checking of digital files before press time to ensure all the elements of the page are there in accordance with the supplied proof. A revised version of the Standard Inspection Report for Supplied Advertising Material appears in its latest form and addresses digital data in the new, 8th edition, of the SWOP booklet.

AND NOW AN EXERCISE IN FAITH?

With the recognition that we are entering still another production workflow, and as we embrace (albeit sometimes not so enthusiastically) the digital production process and use of electronic ad and edit files for web offset magazine reproduction, the same rigorous inspection process must prevail. It's everyone's responsibility. The electronic mechanical has replaced the paste up. And very soon, film will be less important as major magazine titles image offset printing plates directly from digital data. But while we are no longer shootering letterpress plates, and sharpening offset films, we must adopt and effectively use new methods of inspecting and evaluating printing material before we go to press if we are to ensure a quality reproduction for our publications and our clients, the advertisers and their agencies. Preflight those digital files. Do it in your office, at your prepress service provider or at the printer—but do it!

piGame Answers (from page 2)

piGame ClueWord – BIND

Answers to pi words:

a) Stitch c) Saddle

b) Insert d) Labels

Quiz Answers (from page 7)

Give yourself 10 points for each correct answer.

1) C 6) A

2) C 7) B

3) C 8) A

4) B 9) A

5) B 10) A

Quote: "Printing, that new adventure and art." —*Johann Gutenberg*

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