The 1994 TAGA Annual Technical Conference in Baltimore was tremendous success, and work is underway on the 1994 TAGA Proceedings from that meeting with a projected mailing date of September 1994.

The Co-Chairs of our next Annual Technical Conference slated for Orlando, Florida, are John Favat, Jr., Publisher American Printer, and K. J. Moran, Vice President-Sales & Marketing, Coast Publishing, Inc. They are already diligently at work to organize another exciting conference which will be held April 2-5, 1995, at the Sheraton Plaza Hotel at the Florida Mall.

TAGA Technical Vice President Richard Holub is already in the process of organizing another excellent technical program for TAGA'95 Orlando. Abstracts of original, unpublished work on any aspect of publishing and printing are welcome. Topics of interest include:

- inks, toners (dry and liquid) and other kinds of colorants and their interactions with papers and presses,
- direct-to-plate, direct to press and non-impact technologies as well as conventional lithography,
- standards and architectures for color and data exchange and processing as well as page description,
- paperless publishing and video media (CD, computer to cassette, etc.) presented from a technological perspective accessible to printers who would like to diversify their means of delivering information,
- workflow (storage media, databases and their management, networking and data compression),
- process control in both prepress and production environments,
- screening, image structure and image quality.

The foregoing list is not meant to restrict anyone’s imagination. We would like to place renewed emphasis on presenting technologies and R&D results with their application in mind. Presentations should be understandable by a general audience, especially those using publishing technologies. As always, commercial presentations are inappropriate.

Areas of interest for tutorials include printing on demand, non-impact technologies, HiFi printing (stochastic screens and/or enhanced colorants), color management, image database management, aspects of electronic publishing (such as multimedia authoring and distribution) and intelligence and decision support systems.

If you have a topic of interest that you would like to present, please submit a title, a brief abstract, and your contact information to Richard Holub care of the TAGA Office, 68 Lomb Memorial Drive, Rochester, NY 14623-5608; 716/475-7470; Fax 716/475-2250. Deadline for submitting is September 15, 1994. Please call, fax or write us at the TAGA Office and let us know your wishes.
en years ago I wrote an editorial for the RIT T&EE Center Newsletter that was published in issue No. 5 Vol. 12, August 1984. It was titled "Technical Innovation Develops Gradually". Now, ten years later, it appears that the rate is less gradual but more orderly. In 1984 I wrote: "A lot of graphic arts advertising and reporting implies that technical innovation is a kind of hurricane that every so often comes out of nowhere to uproot every piece of equipment, every system of production, and every convention of any kind in our shops. This notion excites people and flattens those responsible for (or claiming responsibility for) an innovation. It also, in virtually every case, belies the facts.

“For the past 50 years I’ve observed the evolution of graphic arts technology. I believe that I’ve learned some fundamental truths about technological change. And the first of these is that, relatively speaking, technology develops gradually.

“Most of today’s so-called "new" technology has been spawned for years. People think it’s new when they first encounter it because they haven’t been following the research and development behind it. If they had, they would know that any industrial innovation, major or minor, has to go through a long series of synergistic developments before it goes public." I cited three examples. The first was phototypesetting which was introduced in 1948. After 20 years of continual developments it was flourishing while 75% of the type set in the USA was still cast metal. In 1970 phototypesetting exploded with the introduction of the video display terminal (VDT) and optical character recognition (OCR). By 1990 cast metal phototypesetting was practically obsolete.

The second example was the control of color printing on the press using the hues of overprint inks instead of solid ink densities. Frank Preucil proposed maintaining overprint hues for color control on the press in seminars he began teaching in 1958 at LTF (now GATF). He published information on the effects of dot gain on the hues of overprint inks in 1964. In 1976 John G. Gaston III (now with Weyerhaeuser) proposed in his master’s degree thesis at RIT the same concept of controlling color on press using the hues of overprint inks in preference to variations in solid ink densities. The concept of using dot gain and overprint hues to control color on press exploded in the early 1980’s as a result of tests sponsored by GCA/PIA and reported at SPECTRUM conferences annually in Phoenix, AZ.

The third example was Half-tone Gravure which dominated developments shown at DRUPA 82. A similar process had been used in the 1930’s for producing ads for different magazines printed by letterpress, lithography, and gravure. A Half-tone Gravure process was patented in 1962 by Frank Sportelli, a New York engraver, and used in France by Jean Chevalier. The process did not become popular until it was adapted to an electromechanical engraver (Helioskizograph). The 1980’s witnessed the development, refinement, and use of device dependent color electronic prepress systems (CEPS) after Scitex introduced the Response 300 system in 1979. Device independent desktop publishing using off the shelf components made its debut as the plain paper typesetter in 1985 with the almost simultaneous introduction of the Macintosh computer, Aldus Page Maker software, Adobe PostScript page description language, raster image processing (RIP), and the Apple laser printer. By 1988 the plain paper typesetter became the imagesetter as raster image processing could record graphics as well as text. Then in rapid succession the imagesetter which was designed to handle one or two pages became an imposer which could compose 4 or 8 pages in impositions for plates and ultimately the plate-setter was born which produced plates directly without the need for intermediate films. All these developments have culminated into the birth of digital printing embodying computer-to-plates, computer-to-print, computer-to-print, and on-demand printing. This succession of synergistic technologies makes it appear as though the various processes came together out of thin air, when actually they followed an orderly progression.

Another example of apparent exploding technology is stochastic (FM) screening. Agfa CrystalRester and LineType-Hell Diamond Screen systems appeared simultaneously apparently out of nowhere at Seybold-Boston, March 1993. In a little over a year over two dozen FM screening systems were on the market. Were the Agfa and LineType-Hell systems spontaneous as they appeared to be? Actually not. Both screening systems have roots in studies started in 1975 by Professor Karl Schefer at the printing research institute in Darmstadt, Germany. Even this work was preceded by studies at Delaware University by Dr. Jan Allebach (now at Purdue University). It has taken a long time to put all the FM screening pieces together.

So how can we keep up with all the new technologies that are emerging and/or merging as computer capabilities can accommodate them? The last paragraph in my 1984 editorial is still a good answer to this question.

“Keep your ear to the ground, but learn not to jump at every stray rumble. Read sources like my and Mike Bruno’s newsletters and the Dunn, Seybold and other monthly reports. Attend the TAGA Annual Technical Conferences and read the annual proceedings of conferences not attended. All these can help you identify the germinal concepts and the significant continuities in research. And remember that theoretical discoveries may sometimes come in dramatic flashes, but technology has to evolve. Look at how long it took the graphic arts industry to find uses for the laser and holography. In industry, no idea, however novel, is of value until it can be efficiently applied — and that always takes time.”

Amen.
The President’s Message

TAGA President Patrice Mangin, PAPRICAN

By the time you read this message, summer and most TAGA members’ vacations will be practically over. As we are entering a new TAGA era in Europe, I am keeping informed on the ways, facts, and habits of France. You might have heard about a new law that the French government voted on and approved. The (a)TENuous “Aliquot” law, from the name of French minister Mr. Toubon. In essence, the idea of the law was to promote the use of French in France, in all aspects of life and events, including conferences. Well, information taken, the law will not, in any point, affect TAGA conference in Paris - we will be able, and allowed with the blessings of the French government, to use English as our “international” language, even in Paris. Well, of course, it is not true English but “international-scientific-English,” in other words: US-English, British English, French English, Scandinavian-English, Japanese-English, Canadian English, etc. Nonetheless and preceding any law, the TAGA Board had already approved the Paris conference budget which includes simultaneous translation of papers into both French and German. As usual, all papers will be presented in English. Europe beheld... As a foreunner of the Paris event, students of the pulp, paper, and printing engineer school (EFP) located in Grenoble - a few hours by train from Paris - had initiated a TAGA conference, scheduled to be held September 16-20, 1995, at the International Association of Research Institutes (JFRA) in Grenoble, France. Last fall, the Student Chapter (see article, including the one in Vienna, Austria, this is TAGA’s second chapter in Europe. I had the opportunity to meet with Professor Bernard Finares, EFP, Grenoble, in Montreal, who informed me that his students are eager to provide any kind of help to the Paris conference. It is an appealing message to our Scandinavian, German, Italian, and other friends in Europe. Any news from Finland?

On the home front, it is time to keep a promise I made in my last message... to provide the TAGA 1993-94 fiscal year end operating budget figures to all TAGA members, but, especially to the members who could not attend the Baltimore conference. As you can see (see table below), contrary to most governments, TAGA is in a healthy financial situation which is necessary to accomplish TAGA’s mission. As TAGA is a not-for-profit association, the end of year benefits will be re-allocated, mostly to the Education Committee, an important part of our mandate - and to improve office operations and effectiveness. These figures do require some explanations: First, due to outstanding corporate sponsor support of the Annual Technical Conference, we can keep conference registration fees low and - as if the conference is as well attended as the Baltimore conference was - create funds for the operation of the association. For this budget, the income is mainly from the Minneapolis conference which was a record year (which has now been topped by the Baltimore conference). Secondly, a healthy association should cover the staff expenses solely through membership dues. However, even with the recent dues increase, we would run short without the corporate membership support. In essence, although we are steadfastly doing well, we cannot be lulled into complacency... we must constantly strive to grow our membership... not merely for financial reasons, as finances are a means to an end... but to spread the good word and guarantee ourselves that we can keep on working for our industry.

Any members having questions regarding these figures, call Patrice Mangin at PAPRICAN, 514-630-4100.

TAGA/IARIGAI Paris ’95
September 16-20, 1995

The TAGA/IARIGAI International Technical Conference, TAGA’s first European conference, is slated to be held September 16-20, 1995, at the Paris Hilton Hotel, in Paris, France. Last fall, the TAGA Board of Directors and the Council of the International Association of Research Institutes of the Graphic Arts Industry agreed to hold this joint meeting in Europe. The Local Chairman for the conference is former TAGA Board Member Henry Fournier. Local Committee members include Caroline Aubry, Caractere magazine; Christophe Barre, Sogatec; Prof. Gerard Baudin, EPFG; Dominique Brieux, Bayard Presse; Jean Chevalier; Jacques Fumeau; and Philippe Geoffroy, Banque de France.

TAGA Technical Papers Vice President Richard Holub (Consultant) and TAGA Executive Vice President Dick Fischer (SM) along with IARIGAI Chairman Boris Fuchs (IFRA) are planning an excellent technical program in which on the morning of the first day, a joint general session will be held for both TAGA and IARIGAI attendees. Following lunch, the two groups will break into parallel sessions which will be open to all attendees. Sessions are being planned in such a way that similar topics will be staggered, so that attendees in specific tracks can choose to hear papers from both conferences if they so desire. Social events will include all attendees.

This arrangement will bring industry people and researchers together creating a unique synergy between the two groups. One conference fee will allow admission to both group’s sessions.

TAGA and IARIGAI will publish separate conference proceedings for their respective memberships. All TAGA members in good standing will receive copies of the 1995 Annual Technical Conference proceedings from the Orlando meeting as well as a copy of the 1995 TAGA International Technical Conference proceedings from the Paris meeting.

Be sure to plan ahead to attend this exciting technical conference which promises to be a milestone in the history of TAGA in its endeavor to provide a global forum for the sharing of technical and scientific information in the interest of advancing the graphic arts industry.

TAGA Budget Report FY 93-94

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**TAGA Total Investment Assets:**

| Money Funds & Funds in Transit | $75,838 |
| Bonds (FMV)                    | 89,963  |
| Stocks (FMV)                   | 151,390 |
| Total                          | 86,009  |
| Total Investment Expenses      | 225,249 |

Fiscal Year: FY 93-94

*Any members having questions regarding these figures, call Patrice Mangin at PAPRICAN, 514-630-4100.*
Meet Your Board

Interview with Richard Holub,
TAGA Vice President Technical Papers

Richard Holub

The business is so new that I have not decided on a name. Although I will be doing consulting during the formative stage, I envision, longer term, developing products. Therefore, the development of a business plan will be the key activity of the coming months. Likely areas of focus in initial planning are control of color on press and electronic book distribution. In order to reduce my costs of living (specifically, cost of housing) and for personal familial reasons, I am relocating to Brighton, NY, which is near Rochester. I should be installed there by September.

Why did you join TAGA? In 1985, I left academics to work on industrial applications of color vision and joined Eikonix. In those days, Eikonix was actively involved in TAGA. The importance of TAGA as a forum for R&D in the Graphic Arts rapidly became apparent to me and I have continued my association. I think TAGA is unique in bringing together scientists and engineers, craftspeople and businesspeople at publishing organizations who apply them. I also value the fact that TAGA is open to all aspects of publishing and that information is shared in a friendly atmosphere.

How does TAGA help you do your job? Continuing with some of the themes of my answer to the last question, I consider TAGA to be my most valuable network and the TAGA Proceedings to be the best single source of technical information on various aspects of printing and publishing.

Other than through TAGA, how do you stay up to date? I belong to other trade and professional organizations such as the Institute for Electrical and Electronics Engineering, and the Society for Imaging Science and Technology among others. I follow journals published by these organizations as well as a variety of trade publications.

What do you do in your spare time? I might ask in turn what qualifies as spare time. When I’m not working, I’m with my kids and family. I try to stay physically fit. My wife, Rebecca, and I both have a great interest in music, which is, increasingly, shared with our children. Abby at 10.5 years is making strides as a violinist and Isaac, 7, has started on the cello. Although I haven’t played an instrument in years, my wife is a pianist, and soon I will be treated to trials at home. Other interests include things like hiking, travel and exploration and things like digital video and home computing.

Why did you run for the TAGA Board? Over the years, I’ve come to identify with TAGA, and eagerly accepted the opportunity to serve TAGA in a larger capacity.

What do you feel has been your most significant contribution as a TAGA Board member? I have served on the Board only a little more than a year and have recently escalated my involvement to that as papers chair. I hope that in six months, I will have played a key role in an Annual Technical Conference that is worthy of the TAGA tradition, especially the recent tradition. And I hope it doesn’t stop at that. Through the three conferences that will occur during my term and through cooperation with the office of membership, I hope to bring new participants to TAGA, both from new vendor/supplier organizations and from the productive segment of the industry.

Why would you recommend that your peers join TAGA? What I have been pitching to peers/colleagues at companies in Silicon Valley and the Bay Area over the last six months is that TAGA is unique in bringing vendors and practitioners together. I feel that this enables a special kind of networking; at E&D meetings I just don’t find a comparable opportunity to interact with technically-savvy users. Incidentally, I’ve been talking to TAGA to printers and litho clubs in the Bay Area, not just the Adobes, HP’s, Xeroxes, etc.

How do you envision TAGA in the future? Printing, as we know it, and paper are not going away, at least not soon. Per capita consumption of paper continues to show healthy growth. Nonetheless, the ways we use paper and communicate are changing dramatically. I believe that TAGA should evolve into an association concerned with visual communications, with publishing in the broadest sense. In such a role, I think TAGA could help printers transition their business to include electronic media for creation, production and distribution. In other words, if TAGA continues to play the role that it has and gets even better at it, it will help the industry evolve so that the businesses we know today will still be profitable tomorrow.

How do you feel about TAGA going more international through membership and conferences? I think TAGA has no choice but to grow. Domestic growth is important; international growth is essential. I intend to lend my best efforts to the joint TAGA/IAI-IARI-GAI conference in ’95.
A Sad Farewell...

Dusty has been recognized and honored for his accomplishments by his peers. In 1987, he was a recipient of the prestigious TAGA Honors Award. He was a fellow of the Society for Imaging Science and Technology, and of the Institute of Printing (England). He was active in TAGA, GATF, and the International Association of Color. He also contributed numerous technical papers to the publications of these associations. He presented six papers at TAGA Annual Technical Conferences from 1954 to 1962 and received nine patents for inventions at Xerox.

Richard S. Fisch Receives ANSI’s George S. Wham Leadership Medal

Richard S. Fisch, a Division Scientist in the Printing and Publishing Systems Division of the 3M Company, was named this year’s recipient of the American National Standards Institute’s George S. Wham Leadership Medal. The Institute presented Mr. Fisch with the award at its Annual Board of Directors Awards Banquet on the evening of March 3, 1994, at the ANA Westin Hotel in Washington, DC.

The George S. Wham Leadership Medal honors individuals who exhibit leadership and visionary qualities in commitment and support of the voluntary standards system overall or in a specific area of standardization.

Mr. Fisch has been involved in the development of consensus standards for more than two decades, specifically within the image technology industry. At 3M, his duties have included research and quality control of Electrocolor, the first contone non-silver color print system; color science liaison to Ferrania, Italy; Supervisor, Amateur Color Products; Manager, Color Physics; and Senior Scientist for Unconventional Products. He is also a member of the 3M Company’s Carlton Society, the highest technical achievement award given by that company.

Mr. Fisch has been instrumental in organizing an international committee, ISO/TC 130, on Graphic Technology. He has served on numerous ANSI committees concerning photography and was asked by the chair of ANSI’s Image Technology Standards Board (ITSB) to join ITSB as the Society of Imaging Science and Technology representative.

Mr. Fisch has been a member of TAGA since 1984. He has served on the TAGA Board as Director, Technical Vice President, and is currently Executive Vice President. He was a recipient of the prestigious TAGA Honors Award in 1993. He is a Fellow of both the Institute of Printing and the Royal Photographic Society of Imaging Science and Technology. In addition, he currently serves as a TAGA Inter-Society Color Council Representative and is Editor-in-Chief of the TAGA Journal.
he force that initially brought the graphic arts into standards was the desire on the part of users to be able to exchange work between the early CEPS systems marketed by different vendors. The initial DDES group, formed under the sponsorship of Tom Dunn in 1985, went on to become ANSI Committee IT8. Although the real need was for complete pages, the group settled for the various working files that made up the elements of a job.

Today, we are back where we started. The key issue in graphic arts electronic data exchange is the need for standards to support the digital distribution of advertising for publications (DDAP). We still do not have the ability to exchange complete pages, in an editable format, using an open standard.

Where are we and what has been done?
The DDES group and the IT8 Committee created the standards needed to exchange pictures (CT) and line work (LW) on magnetic tape. They went on to develop magnetic tape standards for other data types and a SCSI-based CEPS to DDCP interface. These were carried forward to ISO/TC130 and have also become ISO Standards. These standards work but unfortunately their implementation has been spotty and the solutions offered have not always been efficient - nine track magnetic tape is becoming obsolete.

More recently, the same data file formats initially used for tape have been incorporated in the IT8.8 TIFF/IT format (Tag Image File Format for Image Technology). This allows these data file formats to be media independent. However, this does not address the issue of flexible assembly of image elements into the complete job. Many standards committees and working groups have struggled with the issues involved in complete pages. The fundamental problem has always been that there is no commonality between the way vendors bring the elements of a page together.

At the present time the standards committees are looking at four different approaches to define page data within the traditional raster file CEPS environment.

In the new revision of the IT8.4 (CEPS to DDCP) standard a completed page can be proofed by sending a combination of CT, LW, and HC (high resolution contour data) files where each data set covers exactly the same page area. These files are accompanied by a proof-specific job description file to provide the relationship between files. This works but is neither efficient nor flexible for open exchange of files outside of color proofing.

The work done by several of the CEPS manufacturers in the IFEN project (InterCompany File Exchange Network) provided an adaptation of TIFF files known as Final Page or FP. This has not been universally accepted and currently is an ineffective annex in the IT8.8 TIFF/IT Standard (and in the ISO version of TIFF/IT in preparation). As will be noted later, the FP approach offers a real potential for exchange of raster files.

Work done by the Professional Publishers Interchange Specification Committee led to a standard identified as IT8.1/1 - Publishing Interchange Language (PIL). It employs an opaque imaging model similar to PostScript and allows the layout of pages using existing content file types. Its origin is in a test environment as well as the lack of transparent overlay capability seems to have limited the interest in PIL. Although it has completed ANSI review some time ago, the members of the task group have not completed the necessary edits for final publication.

Some work has also been done on a standard called IT8.9/2 - Page document layout specification (often referred to as PIM or page imaging model). The task group that worked on the draft of this standard was attempting to develop a PostScript like encoding that would allow individual page elements to be defined in a variety of data formats and located with respect to each other in a page format. The addition of transparency, color trap, and other graphic arts features was considered essential. Activity with respect to PIM is not progressing largely due to a lack of interested, knowledgeable technical participants whose companies are willing to fund the necessary development work. Before this work will progress any further the commitment is needed from both the users and vendors to accomplish the necessary technical development.

New desktop tools
The world is changing, however, and new tools are available. PostScript is seen by some as an answer. The reality is that the desktop world has not moved any farther toward open exchange than has the traditional CEPS world. While PostScript allows a high degree of independence between the image setting device and the software used for creation, a PostScript file cannot be easily edited once it has been created. There are also issues of predictability with respect to the speed and quality of the rendering of the PostScript files when these are moved between different output devices. PostScript does allow an encapsulated PostScript file to be included in another PostScript file so that work done one place can be picked up and used "as is" in another.

More often, the intermediate files used by proprietary packages are transmitted along with the final PostScript pages. When edits are required the proprietary intermediate file is used, with the same brand of software that created it, and a new PostScript file is prepared. This has been visible only because the cost of these software packages is low enough that it is possible for most organizations to have one of each version of the most popular packages. It sort of works but it certainly is neither open nor standard.

Work is also being done by various vendors of desktop software to develop more open formats such as the Page Description Format (PDF) used for Adobe Acrobat. Unfortunately these formats - even when publicly available - are "owned" by a single vendor with often a take-it-or-leave-it approach to input from other participants.

So where does that leave the exchange of page data and DDAP?
The work of the DDAP Association in developing requirements for data exchange has indicated that editability is a requirement. There are various levels identified that run from the addition of response numbers and page headers/footers to the possibility of complete content revision. Clearly, until there is some technical innovation, complete editability in an open exchange standard cannot exist. Rather than waiting, CGATS/SG6 (the subcommittee responsible for these standards) is defining two options for non-
editable exchange as intermediate solutions. These are expected to be carried forward to become ANSI standards in the near future.

The first will use the FP option (derived from the IFEN activity) as defined by the IT8.8 standard and supplemented by a more restrictive set of tag options being defined by ISO/TC130 and called TIFF/IT-PI. This compliance level only allows one choice for such options as dot range, image orientation, interleave, etc. The FP details currently identified as informative in IT8.8 will be made normative in the new standard. It is expected that most vendors currently capable of providing IFEN compatible solutions or participating in the Kodak Print Photo CD multi-vendor program (which also uses the TIFF/IT-PI option) will be willing to make this file exchange option available on existing systems. If the receiving system is capable of providing editing of raster files then these files can have material added as appropriate using traditional tools.

The second proposal makes use of encapsulated PostScript data files and provides the constraints that will enable consistent transfer of completed material to PostScript compatible receiving systems. For example one proposal requires that all resources including fonts and dictionaries must be included with the file. In the font area, the task required is to define ways that are acceptable both legally and technically. External file references (IFD) will make use of CT files in the TIFF/IT-PI format. It is assumed that once this approach becomes accepted, capability will be enabled that will allow overlaid text (such as response numbers, etc.) to be added in PostScript.

Two small steps

Admittedly these are not earth shaking developments. However, they will allow exchange (but not full editing) of completed ads and pages within an open standard. Will vendors implement, or will users make use of these capabilities? The FP TIFF/IT-PI solution needs some additional software to transform files to the TIFF/IT-PI conditions and to generate the FP file that ties everything together. Solutions can be provided by the vendors or third parties. The PostScript solution can be implemented by users without anything new - once clear legal paths are defined to include all fonts and other resources needed for output.

TAGA/VDD Meeting at Drupa May 12, 1995

It is not too early to begin thinking about pairing with TAGA/VDD for Drupa 1995. As was done during the last DRUPA in 1990, TAGA plans again to hold a joint technical program with members of the VDD, the organization of German printing engineers.

The technical program will be at 3:00 p.m. on May 12, 1995, with opening remarks by Dipl.-Ing. Sybille Geisinger, Chairwoman of VDD, Frankfurt, Germany, and Prof. Dr.-Ing. Patrice J. Mangin, TAGA President, Rochester, NY, USA. Technical presentations will include Joint Research in the Graphic Arts by Prof. Dr.-Ing. Helmut Klopman of Forschungsgesellschaft Druckmaschinen e.V., Frankfurt; Printing in the Digital World by Mike Bruno, TAGA Executive Director, Consultant, Sarasota, FL, USA: The Printing Industry's Future Prospects and Challenges According to the Novelties Shown at DRUPA 1990 by Prof. Dr.-Ing. Christoph Haus, Technical University, Darmstadt; Computer-to-Plate, Computer-to-Press & Digital Pressers After 20 Years: Where is the Industry Headed? by S. Thomas Dunn, Ph.D., & Patruz M. Dunn, M.A. (DTI).

On the evening of May 12, TAGA/VDD members are invited by the Lord Mayor of Düsseldorf for a lovely dinner reception at the Düsseldorf City Hall. More details on this exciting event will be included in the next TAGA Newsletter (Fall Issue).
**1994 TAGA Technology Patrons**

**Membership Level Criteria: Contributions with total value of $5,000 or more in goods/services/cash to TAGA in 1993:**

- 3M Company
- American Ink Maker
- American Printer
- Sun Chemical Corp.
- Raymond J. Prince

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**Membership Level Criteria: Annual member dues of $1,000**

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- Agfa Corporation
- Anitec Image Corp.
- Baldwin Technology Corp.
- DuPont Printing & Publishing
- Eastman Kodak Company
- Escher-Grad
- Flint Ink Corp.
- Fuji Photo Film USA
- Gretag Systems
- Graphics Microsystems, Inc.
- Hallmark Cards, Inc.
- Heidelberg Harris, Inc.
- Hoechst PPNA
- INX, Inc.
- Linotype-Hell AG
- Polychrome Corp.
- Raymond J. Prince
- Rockwell Graphic Systems Div.
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- Sun Chemical Corp.
- SuperMac Technology
- Toray America
- Western Lithotech
- Weyerhaeuser Corp.

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**Technical Association of the Graphic Arts**

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Rochester, NY 14623-5604

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