Chapter News

MINNEAPOLIS/ST.PAUL CHAPTER certainly eats well. Shown at a recent SID meeting are (l. to r.) Marjorie Jameson, Bob Schultz, and Emmy White. And many thanks to Vern Born, Central Division Director, for another good picture.

NEW ENGLAND CHAPTER. On April 14 enjoyed a discussion and demonstration by Dr. Moe S. Wasserman, Advanced Components Laboratory, GTE Laboratories, Waltham, MA. The subject of Dr. Wasserman's presentation was "Integrated Circuit Layout with the Calma GDSII Graphics System".

The Calma GDSII system is one of the new interactive graphics systems designed for the layout of integrated circuits. The minicomputer-controlled facility uses a multicolor raster display with an extensive set of editing commands. A 32-bit database provides sufficient resolution for the generation of any conceivable circuit that may be produced by modern methods of VLSI integration.

The main features of the GDSII editing system were described with emphasis placed on VLSI design. The system in use at GTE Laboratories was demonstrated by Dr. Wasserman, whose current projects involve modeling of VSLI circuits and devices. Thomas Whelan, New England regional manager for Calma Corp., was present to assist in answering questions about the equipment. Thanks to Gordon R. Spender, Chapter Secretary, for his detailed report on this meeting.

LOS ANGELES CHAPTER on May 28 had the pleasure of a timely discussion by Ken Miller, Photo Research, Burbank, on the topic "Color — What It Is and How You Measure It." The difference between emitted color and reflected color was described as well as the significance of the term "discrimination index." Miller also provided a demonstration of the Pritchard 1980B and PR700 scanning spectroradionmeters. As Gordon Kramer, Program Chairman, pointed out, this was an unusually useful meeting for those involved is the design or evaluation of information display systems in color.

SAN DIEGO CHAPTER on April 21 was entertained by Dr. Monte Marshall, Associate Professor of Geology, San Diego State University, discussing "Geological & Optical Measurements at Mount St. Helens". In addition to aerial photographs, the volcanic activity at Mt. St. Helens was monitored by U.S. Geological Survey geologists using laser ranging devices and infrared scanners. During the few weeks preceding the violent eruption of 18 May, the laser rangers showed the north flank of the volcano to be bulging outward at 1.5-2.5 m/day. This bulge, which was also an area of increasingly large thermal infrared anomalies, was apparently due to the inflation of the volcano by the upward movement of magma. The oversteepening of the north flank led to a large landslide, which in turn released the confining pressure on the watery magma — which then flashed into steam ash.

MID-ATLANTIC CHAPTER on May 9 was enlightened by a presentation entitled "The Effect of Pulse Width and Pulse Shape on CRT Raster — Dot Spot Luminance Distribution" by Fred Oess, Director of Research & Development, Clinton Electronics Corporation, Rockford, IL. According to Bill McLaughlin, Chapter Treasurer, this was an. To clarify the often misunderstood relationship between the resolution and highlight luminance parameters of the written CRT line and its resultant effect on spatial luminance distribution of the spot in raster-dot displays under variable pulse shape and pulse width condition was the main purpose of this presentation. An analytical approach was discussed. As a practical example, drive functions of CRT highlight luminances and resolution were used to analyze the effect of a triangular pulse on the displayed spot luminance distribution.

INFORMATION DISPLAY
JUNE 1981
SOCIETY FOR INFORMATION DISPLAY
654 NORTH SEPULVEDA BOULEVARD
LOS ANGELES, CALIFORNIA 90049

Non-Profit Organization
U.S. Postage Paid
Permit No. 29744
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Information Display

ALAN SOBEL

The Official Journal of the Society For Information Display

JUNE 1981

Four SID members from Tektronix, Inc., Beaverton, OR, shown here are John Bowne, Dick Preiss, Carlo Infante, and Tom Woody with the first two products in their company's new 4110 series graphics terminals. The 4112 on the left is a raster-scan terminal with zoom and pan and 4096 x 4096 addressable points. The console model 4114 is a DVST terminal with optional color refresh. According to the manufacturer, these two new graphics terminals provide enhanced communications and increased local intelligence.

Further details on these terminals are provided in the article on page 3.

FRONT COVER MATERIAL WELCOMED: Every month **Information Display** usually features one or more active members of SID and the products with which they are most closely associated. Please send a glossy print and appropriate captions so that you, too, can be on our front cover. Send your material to Ted Lucas, Editor, P.O. Box 852, Cedar Glen, CA 92321, or to our National Office Manager, June Friend, for Information Display, 654 North Sepulveda Blvd., Los Angeles, CA 90049. Next deadline for material from you is August 10 for the September/October issue. If you miss that, try for the November issue, NOTE: We also welcome feature articles on interesting projects.

This new Tektronix 4114 computer display terminal is described by the maker as combining the high information density of a 19-inch direct view storage tube with powerful local intelligence, local refresh, and fast transmission and redraw.

New Intelligent Graphics Terminals Give Added Speed and Power

Tektronix has recently introduced its 4110 series of computer display terminals, described by the manufacturer as powerful new graphics tools for the scientific and engineering communities. The new terminals are compatible with the firm's 4010 series products, and are said to provide increased line speed and throughput.

The 4110 series consists of three terminals: the 4114, a 19-inch high-resolution direct-view storage-tube model with refresh and fast local redraw capabilities; the 4114 option 31, offering color-enhanced refresh for enhanced contrast; and the 4112, a moderate-resolution 15-inch raster-scan model featuring 4096 X 4096 addressable points. Despite the different display technologies of the 4114 and 4112, host software written for one terminal can be used on the other with no modification.

Compatibility among the terminals starts at the component level. These terminals are based on an identical 16-bit microprocessor, a common bus structure, and identical mass data storage. Graphics and communication commands are identical. The standard ROM/RAM circuit card for each terminal includes firmware and 32K bytes of RAM. Memory is expandable up to 1M byte of ROM/RAM. Permanent data-storage capacity of up to 512K bytes per disk is available with the optional integrated flexible-disk drives (dual disks are available on the 4114 only).

The new terminals also share a common set of options. Tektronix plotters, hard copy units, and printers are supported by the 4110 series, and an RS-232C interface allows easy hookup of a variety of peripheral devices.

Users not wanting to write their own host software can rely on the Tektronix PLOT 10 interactive graphics library for support. Those already using Tektronix 4010 series terminals will find that existing 4010 series application programs will run on 4110 series terminals. Modifications are needed only to implement the advanced features of the new terminals. Commonality within the 4110 series terminals and between the 4010 series and 4110 series lets users transfer skills learned on one 4010 or 4110 terminal to another with minimal relearning and little reinvestment of time or technology, according to the manufacturer.

The reaction time of the overall system is enhanced by the very high communication speeds of the 4110 Series. The 4114 can operate at up to 19,200 baud for sustained alphanumerics and simple moves and draws, while the 4112 can operate at 9600 baud in sustained alphanumeric and graphic mode. The optional block and half-duplex modes allow the terminals to communicate with almost any host computer without software modification.

Reduced Host Dependence

"Some of our current graphics customers have reached the point at which the time and cost of communications with the host computer are the greatest obstacles to productivity," says Mike Kondrat, Terminals Marketing Manager for Tektronix. "To help overcome those obstacles, Tektronix has equipped the 4114 and 4112 with advanced throughput features. The most notable is that called locally retained picture segments. With it, a group of MOVE and DRAW commands can be defined and then stored, recalled, and manipulated locally, significantly reducing dependency on the host. Thus an engineer or an architect, for example, can manipulate commonly used graphic elements without having the host send all MOVE and DRAW commands each time the element, or segment, is repeated.

Two-dimensional transforms also decrease host dependency. Translation, rotation, and scaling can be performed locally. The user can thus move a segment to the desired screen location, position it as needed, and put it in the proper size without using the host.

DVST and Raster Technology

Because they are based on two different technologies, the DVST 4114 and raster 4112 are said to meet a wide range of expanding user needs. The 19-inch 4114 offers storage-tube resolution for use where high-density line graphics and text are required, as in many engineering and scientific applications where fine line quality is desired. The 15-inch 4112 is better suited for use where selective erase or shaded area fills are needed.

With the direct-view storage tube, resolution is very high because the target, the phosphor-coated backplate of the storage CRT, is essentially continuous. Theoretically,

any point on such a tube can be addressed by the electron beam, and resolution is limited by the spot size of the writing beam. With a raster CRT, image quality is limited by the scanning action of the beam, which can address only discrete spots or stripes.

Despite these fundamental technological differences, Tektronix engineers have refined each technology so that the performance of two terminals is similar. The limits of DVST and raster technology have been extended, making available great flexibility in graphics according to the manufacturer.

DVST terminals have been normally used where deletions occur infrequently or where the display is changed infrequently. In the past when it was necessary to modify a stored image even slightly, the whole screen had to be erased and then redrawn to incorporate the change. Such erasures and the necessary redrawing could take several seconds, depending on the baud rate of the system.

Several features of the 4114 expand DVST capability, thereby increasing the user's interactivity with the system.

When modifications to the display are necessary, the fast repaint feature lets users quickly up-date the screen. For example, an integrated-circuit mask containing some 26,000 short vectors stored in RAM can be erased and redrawn on the screen in less than one-half second. The 4114 combines refresh technology with storage, meaning that the stored image can be added to, moved, or modified without erasing the screen. Normally this refreshed information is painted in the same green as the stored information. The 4114 Option 31 offers color-enhanced refresh in which the refreshed portion of the image is displayed in orange-red for high contrast. Picture elements subject to transformation remain clearly visible in high-density mapping, CAD/CAM, and other applications subject to much interactivity.

A byproduct of the 4114's refresh capability is the user-definable refreshed dialogue area. This feature assures that transactions between the terminal and the host remain clear of the graphics workspace, preventing needless erasures. The size and position of this area can be defined by the user anywhere on screen at any time with the thumbwheel control. This feature is also standard with the 4112.

Both the 4114 and 4112 employ an addressable matrix of 4,096 points by 4,096 points. Consequently the 4112 is able to address much more detail than one would expect with raster graphics. The 4112 has a 640 x 480 point viewable matrix, but although the screen is smaller than the addressable matrix, the user still has access to the detail on the addressable matrix. A local zoom and pan function lets the user scan the internal display and magnify any selected portion up to the entire 15-inch screen size for detailed study and manipulation.

Another extension of raster technology is the use of up to 16 viewports on the screen simultaneously. This lets designers, for example, display many graphs at once to compare results, with independent zoom and pan for each viewport.

In addition, local optional multiple-bit-plane capability lets users address up to three display surfaces or overlays. If these three surfaces are addressed jointly, up to eight shades of gray can be created. This gray-scale effect can be used to shade closed figures in the display, or the fitures can be shaded by user-definable patterns. The raster graphics of the 4112 open up new areas of line drawing and graphic shading.

This Tektronix 4112 computer display terminal is a monochrome raster display device combining graphics with powerful local intelligence to provide users with high interactivity and low host overhead, the maker states. The 4112 is part of a new series of intelligent graphics terminals designed to meet the evolving graphics needs of the engineering and scientific user.

GREETINGS TO NEW SID MEMBERS!

Each month you'll find a roster of new SID Members, listed by Chapters with the Chapters in alphabetical order. If your name — or a friend's — should have been listed and was inadvertently omitted, please let June Friend or your Editor know immediately. We'll make amends in the next issue. See the front cover for your choice of addresses to which to send vital data.

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Ext. 2409

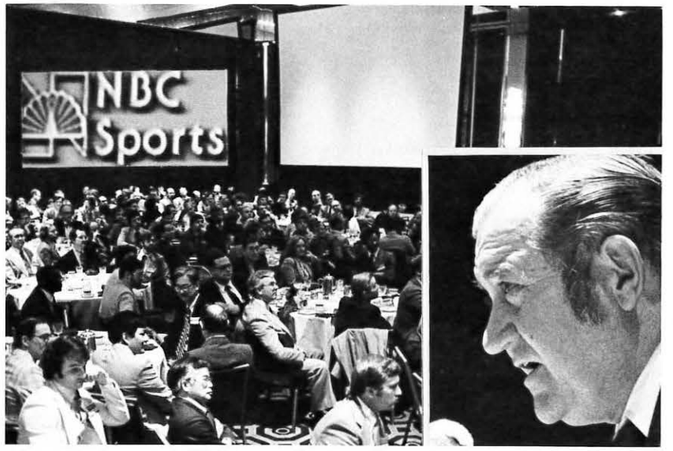
At the SID 1981 International Symposium and Exhibition in New York City

Luncheon Head Table (l. to r.): P. Pleshko-Northeast SID Director; W. Goede—SID82 Program Chairman; G. Carroll—SID Vice President; Ifay Chang-SID Treasurer/SID82 Chairman; J.A. van Raalte—SID Secretary/Chairman-Symposium Advisory Committee; H. Coyle—Luncheon Speaker; P. Heyman—SID 81 Chairman.

Luncheon Head Table (l. to r.): T. DuPuis—SID President; A. Lakatos—SID82 Program Chairman; R. Clark—Keynote Speaker; B. Lechner—Past President SID; A. Kmetz—Seminar Coordinator; I. Reingold—SID Honors/Awards Chairman; K. Miyaji—Asian Committee Advisor.

Irving Reingold, presenting SID Fellow Awards to F. Kahn, E. Schlam, and A. Sobel (l. to r.).

Philip Heyman with 1980 Best Paper Award Winners from Finland (l. to r.): T. Suntola, J. Antson, S. Lindors, A. Pakkala.



Harry Coyle, noted NBC sports director of sports, who during his luncheon address presented an exciting account of the key role information display plays in the TV programming of such major events as the World Series and the Rose Bowl game.

Jan Rajchman receiving the 1981 Frances Rice Darne Memorial Award from Irving Reingold for his pioneering contributions to information display, especially for flat panels.

Views of exhibit hall during SID81 at the Grand Hyatt Hotel in New York City.

SID CALENDAR

JULY TO SEPTEMBER 1981

1981		
July	1	Proceedings, Volume 22, No. 3, 1981, Mailed
	20	Quarterly Chapter Rebates Mailed
September	16-18	Eurodisplay 81 — The First European Display Research Conference, Munich, Germany

OTHER EVENTS

1981		
June	14-18	National Computer Graphics Association Conferenece, Baltimore, MD
	17-19	International Conference on Optical Radiation Measurements of Fluorescent and Retroflective Materials, Minneapolis, MN
	18	20th Annual ACM Symposium (NBS and ACM), College Park, MD
	22-26	1st International Congress on Advances in Non-Impact Printing Technologies, Venice, Italy
	24-26	Computer Industry Trade Expo, Atlantic City, NJ
June July	29-30 1	ACM IEEE Design Automation Conference, Nashville, TN.
August	17-22	5th International Congress of Cybernetics and Systems, Mexico City
	24-28	SPIE Annual International Technical Symnposium & Exhibit, San Diego, CA
	26-29	National Small Computer Show, New York, NY
November	1-4	DPMA's 30th International Conference & Business Exposition, San Francisco, CA

1982		
January	18-20	Pacific Telecommunications Conference, Honolulu, HI

Shutter Camera System Achieves Exposure Times Down To 10 NS

An ultra high speed shutter camera system that observes and records high speed phenomena without stroboscopic illumination has been introduced by Hamamatsu Systems, Inc., Waltham, MA.

The Hamamatsu C-1088 ultra high speed shutter camera features a gated proximity-focused microchannel-plate image intensifier (MCP), fiber-optically coupled to a low-lag vidicon to produce sharp images with exposure times adjustable from 100 down to 10 ns. To assure image quality a separate gating electrode in the MCP allows rapid electron image shuttering with clean edges, the maker states.

Said to be ideal for computerized image acquisition and analysis, the Hamamatsu C-1088 camera is offered with spectral responses of S1, S220, or S25. System design is claimed to insure superior background rejection, high sensitivity, and low distortion, according to the manufacturer. Typical applications include destructive materials testing, and plasma pattern analysis.

Call For Nominations Of Candidates For The 1981 SID Honors and Awards

The SID Honors and Awards Committee is soliciting your help in nominating qualified candidates for Fellow, for the Frances Rice Darne Memorial Award, and for Special Recognition Awards. General qualifications based on the SID Bylaw requirements for honors and awards are given below.

(1) FELLOW

The grade of Fellow is one of unusual professional distinction conferred by the Board of Directors, acting on the recommendation of the Honors and Awards Committee, upon a *SID member* of outstanding qualifications and experience as a scientist or engineer in the field of Information Display. The candidate shall have made a widely recognized and significant contribution to the advancement of the field. The nomination must be supported and signed by at least five members in good standing.

(2) FRANCES RICE DARNE MEMORIAL AWARD

The Frances Rice Darne Memorial Award is awarded periodically, but not more than once each year, to a *Society member* for an outstanding technical achievement (as opposed to teaching, publication, or service) in, or contribution to, the display field. The award is made by the Board of Directors acting on the recommendation of the Honors and Awards Committee.

(3) SPECIAL RECOGNITION AWARDS

Special citation awards are given to members of the technical and scientific community, not necessarily SID members, for distinguished and valued contributions to the Information Display field. These awards may be made for contributions in one or more of the following categories:

a. Outstanding technical accomplishments.
b. Outstanding contributions to the literature.
c. Outstanding service to the Society.

Nominations should comply with the 1982 Guidelines for SID Honors and Awards Nominations, and they should be submitted to the Honors and Awards Committee Chairman at any time during the year, but no later than June 30, 1981.

1982 Guidelines For SID Honors And Awards Nominations

Nominations for SID Honors and Awards should be concise, but they *must* include the following information, preferably in the order given below.

(1) Name, Present Occupation, Business and Home Address, and SID Membership Grade (Member or Fellow) of Nominee.

(2) Award being recommended: (a) Fellow*, (b) Francis Rice Darne Memorial Award, (c) Special Recongition. *Fellow nominations must be supported and signed by at least five SID members.

(3) Proposed Citation — this should not exceed thirty words.

(4) Name, Address, Telephone Number, and SID Membership Grade of Nominator.

(5) Education and Professional History of Candidate-Include college and/or university degrees, positions and responsibilities of each professional employment.

(6) Professional Awards and Other Professional Society Affiliations and Grades of Membership.

(7) Specific statement by the nominator concerning the most significant achievement or achievements or outstanding technical leadership which qualifies the candidate for the award. This is the most important consideration for the awards committee, and it should be specific (citing references when necessary) and concise.

(8) Supportive material: Cite specific evidence such as patents, publications, SID activities, other technical and/or professional society activities, evidence of outstanding leadership, etc. *Please be specific and concise.* Cite material that directly supports the citation and statement in (7) above. Limit the evidence to the most important patents, publications, or service — do not generalize.

(9) References: Fellow nomination *must* be supported by the references indicated in (2) above. Supportive letters of reference will strengthen the nomination for any award.

Send the complete nomination—including all the above material—to the Honors and Awards Chairman by June 30, 1981.

I. Reingold, Chairman
SID Honors and Awards Committee
USA Electronics Technology
& Devices Laboratory, ERADCOM
DELET-B
For—Monmouth, NJ 07703
Phone: 201-544-5740

NOTE: SID Awards through 1980 are listed on page 85 of your SID Directory for 1980. Winners in 1981 are shown on page 10 of this issue of **Information Display.**

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MuShield tape preserver cases prevent degradation of magnetic tapes from proximity to magnetic or electrical fields. Standard or custom sizes.

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3. High Permeability Shielding
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COILS .002", .005", .010" thicknesses. 5½", 7", 15" widths. Minimum order 2'.
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Contains assortment of materials for making experimental magnetic shields, and a shielding characteristics chart.

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New Windowing Word Processor

An advanced split-screen display capability called windowing is now available for the first time on a word processor according to James R. Folts, vice president of marketing, Syntrex Incorporated, Piscataway, NJ. Windowing allows users to display multiple documents simultaneously, compare information, add footnotes, receive helpful prompts, even copy information from one document to another to create a new letter, memo, report, or proposal.

Using the feature, information in separate "windows" can be smoothly and independently scrolled up or down —the same way paper documents would be compared —letting the user look at the remaining portions of any documents displayed.

All or part of one document can be electronically copied into other documents appearing on the screen. And, any displayed documents can be separately reviewed, edited, or printed — or an entirely new document can be created by merging information from two or more documents.

Newly-created documents can be edited, filed in the Syntrex Aquarius electronic filing system, or printed on a standard electronic typewriter that Aquarius uses as both keyboard and printer. Up to 14 Aquarius workstations can be connected to the Syntrex Gemini electronic filing cabinet, which provides up to 60,000 pages of instantly accessible office information.

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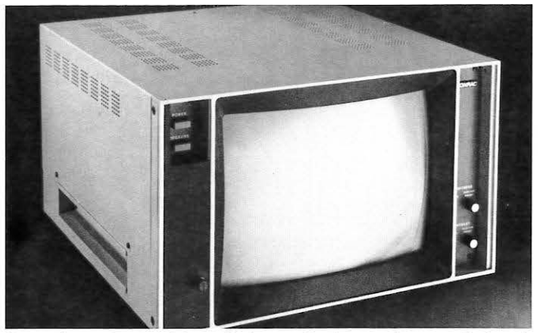
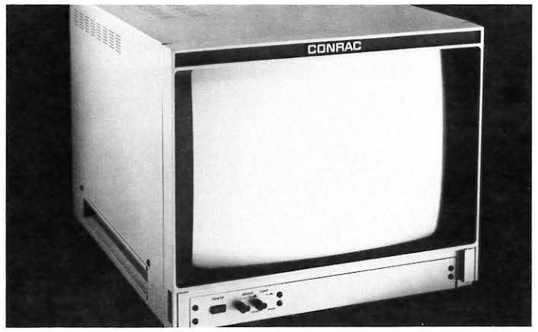


Conrac's new 7000 Series color image display monitors are designed for computer data/graphics applications. This model has the 13-inch screen.



Conrac's new 2400 Series high-resolution raster scan monochrome display.

Ifay Chang Organizes Display Technology Review

A distinguished series of papers on advances in graphic displays was presented at IEEE/Electro81 held at the Sheraton Centre Hotel, New York, April 7-9. Organizer and chairman of the two sessions entitled "Display Technology Review - Part I and Part II" was SID Treasurer Dr. Ifay F. Chang, IBM T. J. Watson Research Center, Yorktown Heights, NY 10598.

Papers presented during the first session:

"Electroluminescent Displays," M.I. Abdalla, GTE Laboratories, Inc.

"State of the Art of Electrochromic and Electrochemichromic Displays," I.F. Chang, IBM T.J. Watson Research Center.

"Liquid Crystal Displays," Allan R. Kmetz, Bell Laboratories.

"'itron' Vacuum Fluorescent Display," Keiji Aoyagi, Noritake Electronics, Inc.

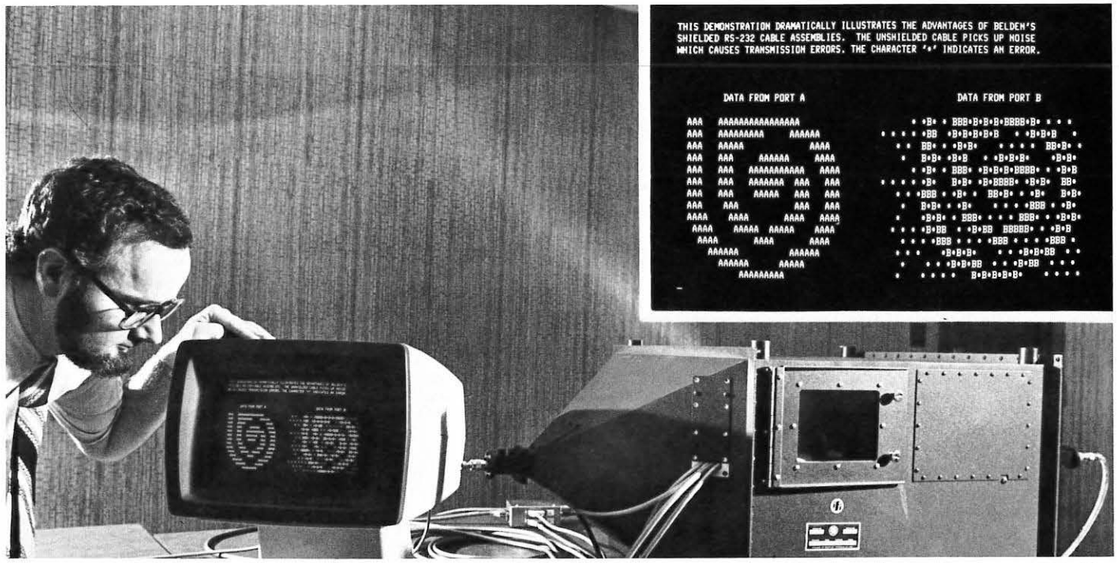
During the second session, the following papers were presented:

"CRT Displays," A. Martin, Thomson-CSF, Electron Tube Division.

"Plasma Displays," Thomas C. Maloney, Burroughs Corporation.

"Large Screen, Flat Panel Television: A New Approach," Thomas L. Credelle, RCA Laboratories.

Additional Information may be obtained from Ifay Chang.



TWIN IMAGES on CRT compare the effects of electrical "noise" on the quality of data transmitted between computer system components via shielded and unshielded interface cables. As demonstrated by John Kincaid, engineer at Belden Corp.'s Technical Research Center, Geneva, Ill., the interference susceptibility test proves the superiority of shielded interface cables in resisting error-producing interference.

In the demonstration, shielded and unshielded versions of RS-232C interface cables, manufactured by Belden's Interconnect Systems Operation, Gastonia, N.C., are placed within a special test cell and simultaneously exposed to high-voltage surges. The surges simulate electrical noise, which degrades the signals transmitted by non-shielded interface assemblies.

To illustrate the concept more dramatically, the images shown in the photo inset were generated under exaggerated noise conditions. Nevertheless, the image on the left, representing data carried by the shielded RS-232C, is clear; the distorted image on the right shows how noise affects the unshielded RS-232C. Errors in the right-hand image appear as asterisks. Under more common conditions, the error rate shown at the right would be considerably less; however, "The presence of a single error is one too many for reliable data transmission," says Clyde J. Schultz, general manager of Belden/ISO.