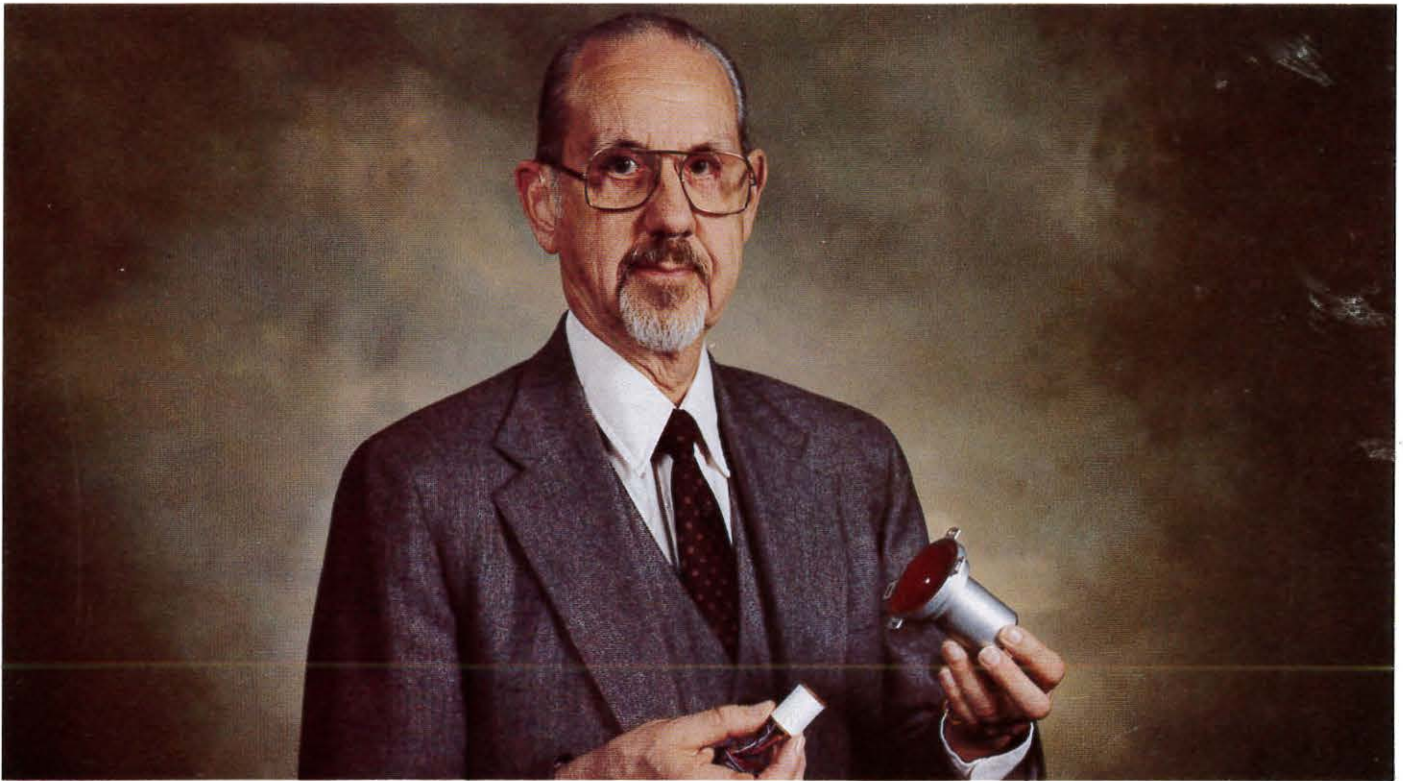


Information Display

The Official Journal of the Society For Information Display

APRIL, 1982



Shown here is SID Member Dr. Henry O. Marcy, board chairman of Syntronic Instruments, Inc., with one of the CRT magnetic components made by his company. The following paragraphs by Henry Marcy are an introduction to his feature article reviewing progress in these components. Our thanks not only to the author but also to Don Scholz, president of Scholz, Moody Advertising, and to Paul Bezazian, Burton Browne Advertising, for assists in providing this interesting discussion and the accompanying illustrations appearing on pages 3 to 6 of this issue.

Cathode ray tube applications are increasing in diversity and sophistication to answer the need for a better man-machine interface. Recent monochrome and color graphic displays for aircraft cockpits, for computer readouts, and for recording have challenged the ingenuity of CRT magnetics design engineers.

Deflection yokes continue to improve to meet these more sophisticated requirements. A comparison of the yoke parameters of 15 years ago with those of today show the steady improvement in spot growth, rapid settling, and geometrical symmetry. Color yokes in particular, with very tight convergence specifications, typify the demand for more flexibility in the design and more precision in the control of both front and rear magnetic fringe fields.

Focus coils have been developed with the ability to handle large dynamic changes in flux without the lag characteristic of earlier designs. The re-emergence of permanent magnet focus devices has resulted from the improvement in ceramic magnetic materials.

Finally, there is an increasing use of low power stigmators and alignment magnets to correct imperfections in CRT guns.

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 new National Office Manager, Bettye Burdett, for Information Display, 654 North Sepulveda Blvd., Los Angeles, CA 90049. Next deadline for material from you is May 10 for the June issue. If you miss that, try for the September/October issue. **NOTE:** We also welcome feature articles on interesting projects.

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CRT Magnetic Components — A Review of Progress

Dr. Henry O. Marcy, Chairman of the Board
Syntronic Instruments, Addison, IL

This discussion covers recent developments in magnetic components for modern CRTs.

Deflection Yokes

Let us first look at deflection yokes. Of the many yoke parameters that are of concern to the display designer, there are three that affect the quality of a display. These are: (1) spot growth; (2) rapid settling of the electron beam; and (3) geometrical precision.

Yoke Spot Growth

Let us consider first spot growth due to astigmatism. Simple analysis reveals three basic causes of astigmatism. These are as follows:

- a) Non-uniformity of magnetic field;
- b) Effect of electron beam convergence; and
- c) Misalignment of the incident electron beam relative to the yoke.

For deflection angles greater than 20 degrees, the most important factor is control of transverse field uniformity throughout the entire path of the electron beam, including front and rear magnetic fringe fields. The fringe fields become increasingly more important as the yoke field length is reduced to allow greater deflection angles. A useful relationship for appraising the spot growth due to non-uniformity of transverse field is:

Spot Growth = $K_1 L \Theta^2 \left(\frac{d \text{ beam}}{D \text{ Yoke}} \right)^2 + K_2 L \Theta^2 \Phi$

L = Distance Center of Deflection to Screen
 Θ = Deflection Half Angle
 d beam = Diameter of Electron Beam at Yoke
 D yoke = Inside Diameter of Yoke
 Φ = Convergence Angle of Beam

Figure 1.

For most applications the effect of beam convergence angle Φ is of minor importance and the second term can be dropped.

The relationship above assumes no offset or tilt of the incident electron beam relative to the magnetic fringe fields of the yoke. Adequate alignment is accomplished by the use of micropositioners for the yoke or by means of beam prealignment magnets. Such alignment is especially critical for color convergence with shadow mask CRTs and a requisite for good geometry in any display.

Since the objective of low spot growth is best accomplished by compensating one cause for spot growth with another, only a study of the complete yoke

is of practical value. Empirical studies using models constructed with different core configurations have been the preferred approach. Recently, improved computer techniques offer a viable alternative. Preliminary evaluation of innovative yoke configurations using an empirical approach is still faster and more economical. The cathode ray tube itself is a marvelous analogue instrument for the critical measurement of spot growth with deflection. Sophisticated "pepper pot" CRTs with special gun designs greatly improve the empirical approach.

Pepperpot Image On Screen

(Upper Left Corner)

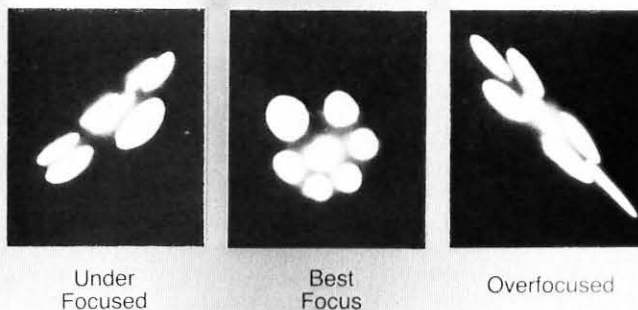


Figure 2. Pepper pot

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(The Print Shop)	
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Pepperpot CRT

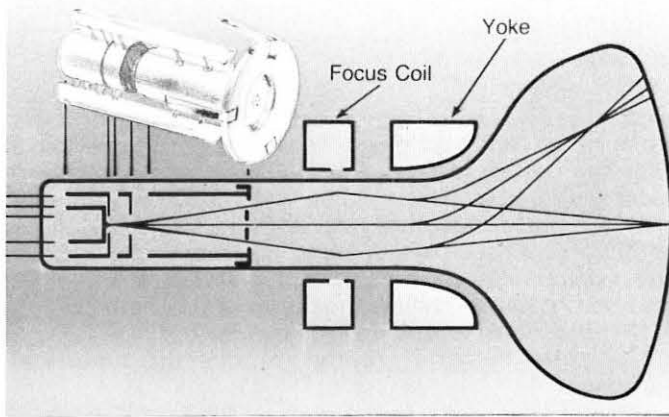
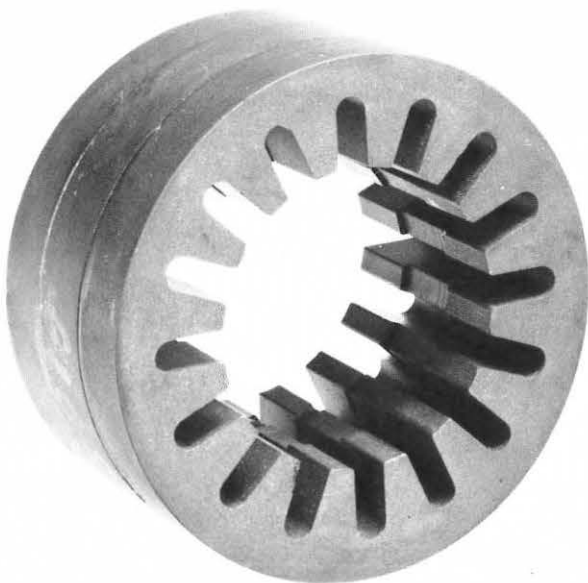


Figure 3. Pepper Pot.

Employing both these design techniques, variation and control of the fringe field by shaping the core material has made possible a considerable improvement over the last few years. (See Figure 4). Today, improved convergence in shadow mask color CRTs is entirely analogous to improved spot growth in monochrome CRTs and the same techniques apply.

Another property closely related to spot growth of great recent interest is the reduction of the amount of dynamic focus required for a given glass configuration. The naive assumption that the curvature of focus field is about the center of deflection proves entirely false. The actual curvature of this field is considerably greater. Although affected by the shape of the forward magnetic fringe field, efforts to improve this property of yokes has met with only moderate success. Recent yokes require about three-quarters the dynamic focus voltage range of earlier yokes.



Old Style Core

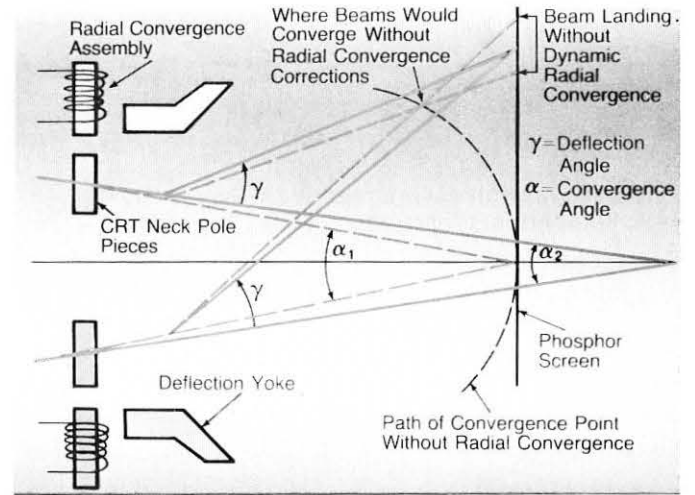
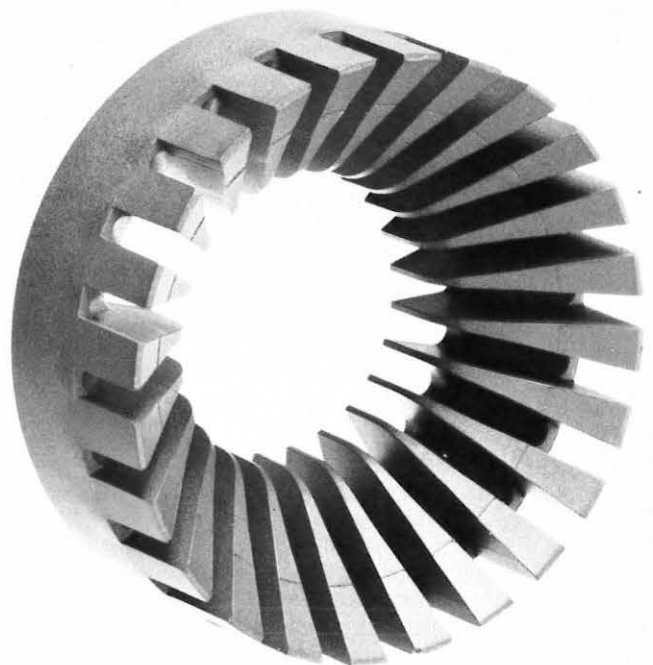


Figure 5. Radial Convergence

Yoke Settling

Rapid settling, together with very low residual magnetism, is an absolute requirement of the stroke-written display popular today in avionics, computer terminals, and typesetting machines. Improvement in available ferrite core materials has reduced the residual magnetism of yokes to quite acceptable limits, often better than 0.01% as compared with typical earlier yokes where 0.1% was the rule. Rapid settling on the other hand is accomplished with higher quality ferrite cores and by shielding the stray fields of the yoke from its surrounding environment. It is now common to provide complete ferrite shielding. This has resulted in yoke settling times to as little as 0.05% in 2 to 3 microseconds.



New Style Core

Figure 4.

Yoke Geometry

Present day display geometrical accuracy requires greater precision in the construction of both CRT and yoke, together with excellent alignment. The trend of the display industry is toward CRT, yoke, and shield assemblies. Alignment of these components can employ compensation for a combination of CRT and yoke errors to make the whole superior to the parts. Better manufacturing techniques have improved the yoke itself, but credit for improved geometrical performance today must be given to the use of assembly techniques where yoke, CRT, and shield are potted together.

Finally, many other parameters are part of the yoke design problem. Comparisons in the accompanying chart will show some of the trends. (See Figure 7.)

Contrary to popular belief, the efficiency of deflection yokes has not improved if we define efficiency as the energy required to change the magnetic field by a given amount within a volume determined by the glass configuration of a particular CRT. This energy is $LI^2/2$ joules and the deflection resulting is related again to the CRT geometry and the anode potential. With this definition, yokes built in the 1950's were already 95% efficient. The apparent improvement has resulted from improved CRT neck contours.

Focus Components

Electromagnetic focus devices have the advantage of a larger lens diameter resulting in much lower spherical aberration compared with electrostatic focus CRT guns. The disadvantage is a high energy requirement. With the development of better ceramic magnetic materials,

Ferrite Shielded Yoke

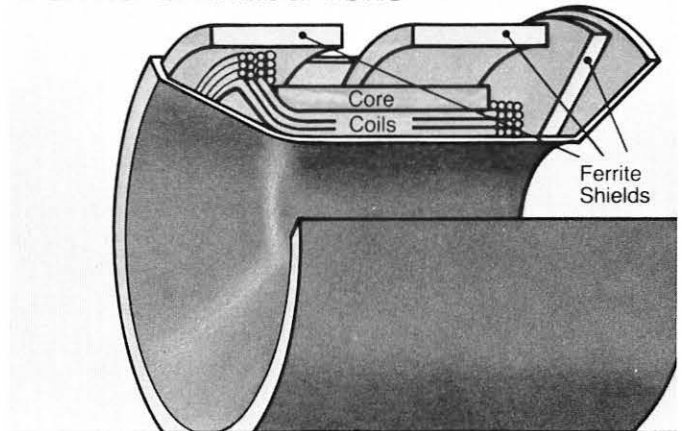


Figure 6. Ferrite Shielded Yoke

permanent magnet devices are now practical from both quality and cost considerations.

High energy dynamic focus coils with rapid settling have been needed for penetration phosphor CRT devices. The newer designs refocus the beam rapidly as the anode potential is changed to alter color or persistence.

Stigmators are becoming a useful adjunct to CRTs especially since low power permanent magnet types are now available.

Matched with the improvement in deflection drive transistors, modern day magnetics make possible better CRT displays for tomorrow.

Trends	1965	1981
Spot Growth K_1 Figure 1	1.8×10^{-4}	0.8×10^{-4}
Residual Without Compensation	0.1%	0.02%
Settling to 0.1% No External Metal or Shields	50 μ sec	2 μ sec
Orthogonality	0.5 Degrees	0.25 Degrees
Efficiency	$\approx 95\%$	$\approx 95\%$
Resonant Frequency Improvement due to lower inductances practical with better transistors	3 MHz	7 MHz

Figure 7.

Dynamic Focus Coil

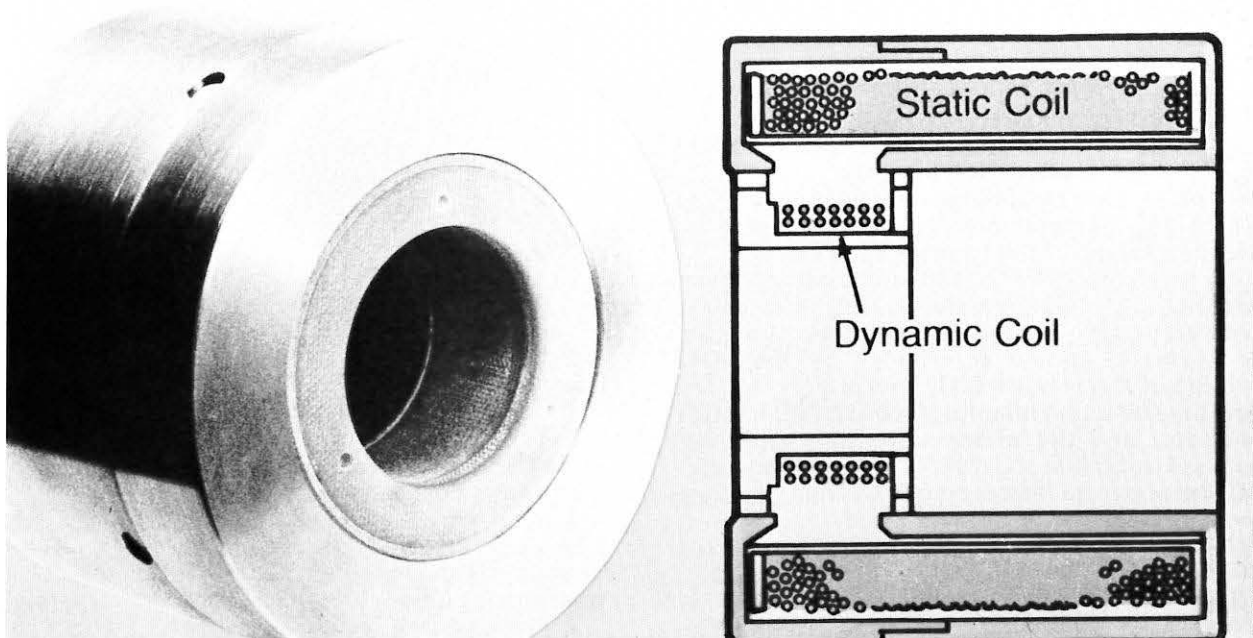


Figure 8. Dynamic Coil

Acknowledgements

The author wishes to express his appreciation to Eugene Jenzen and Fred Klingelhofer, vital members of the team at Syntronic, for their contributions.

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1. E.W. Bull: "Elimination of Astigmatism from a CRT Display". Proc. IEE, Vol. III, No. 7, July 1964.
2. E. Ritz: "Recent Advances in Electron Beam Deflection". Adv. Electron. Electron Phys. 49, 299 (1979); (Review).

PM Stigmator

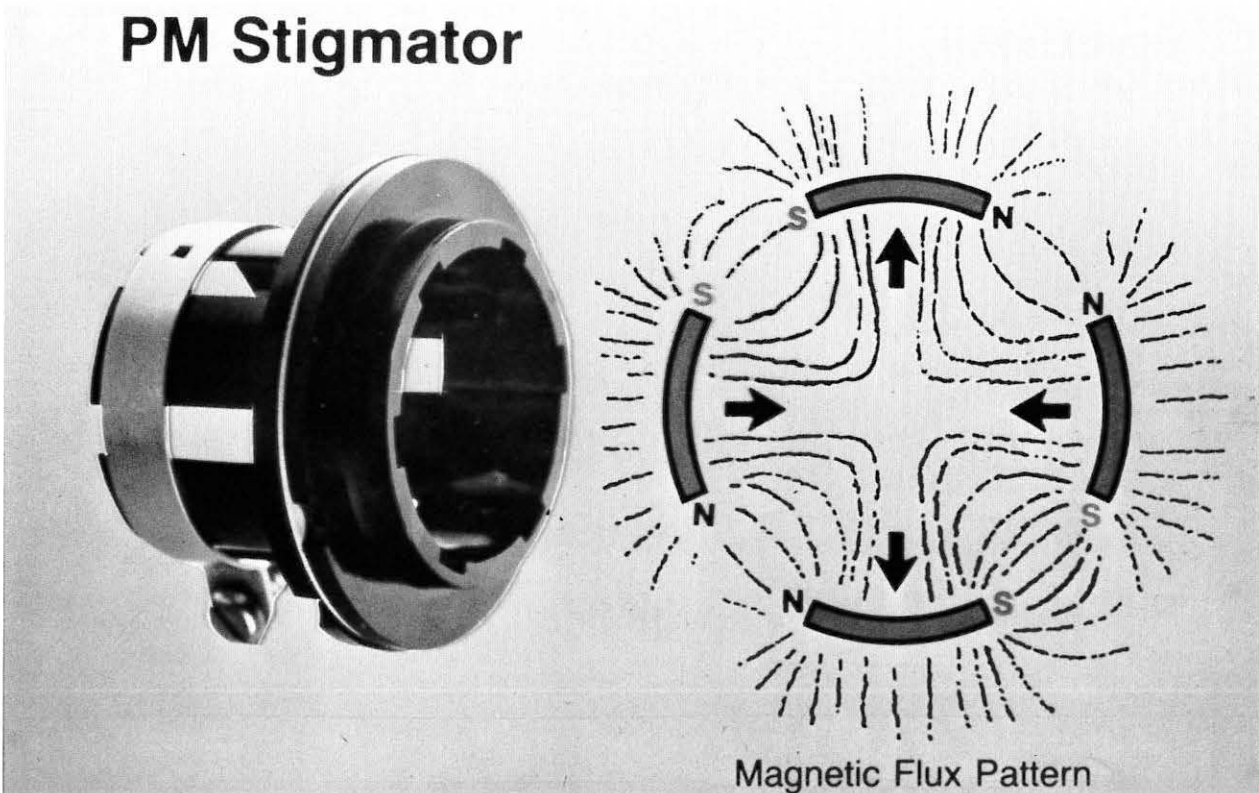


Figure 9. Stigmator



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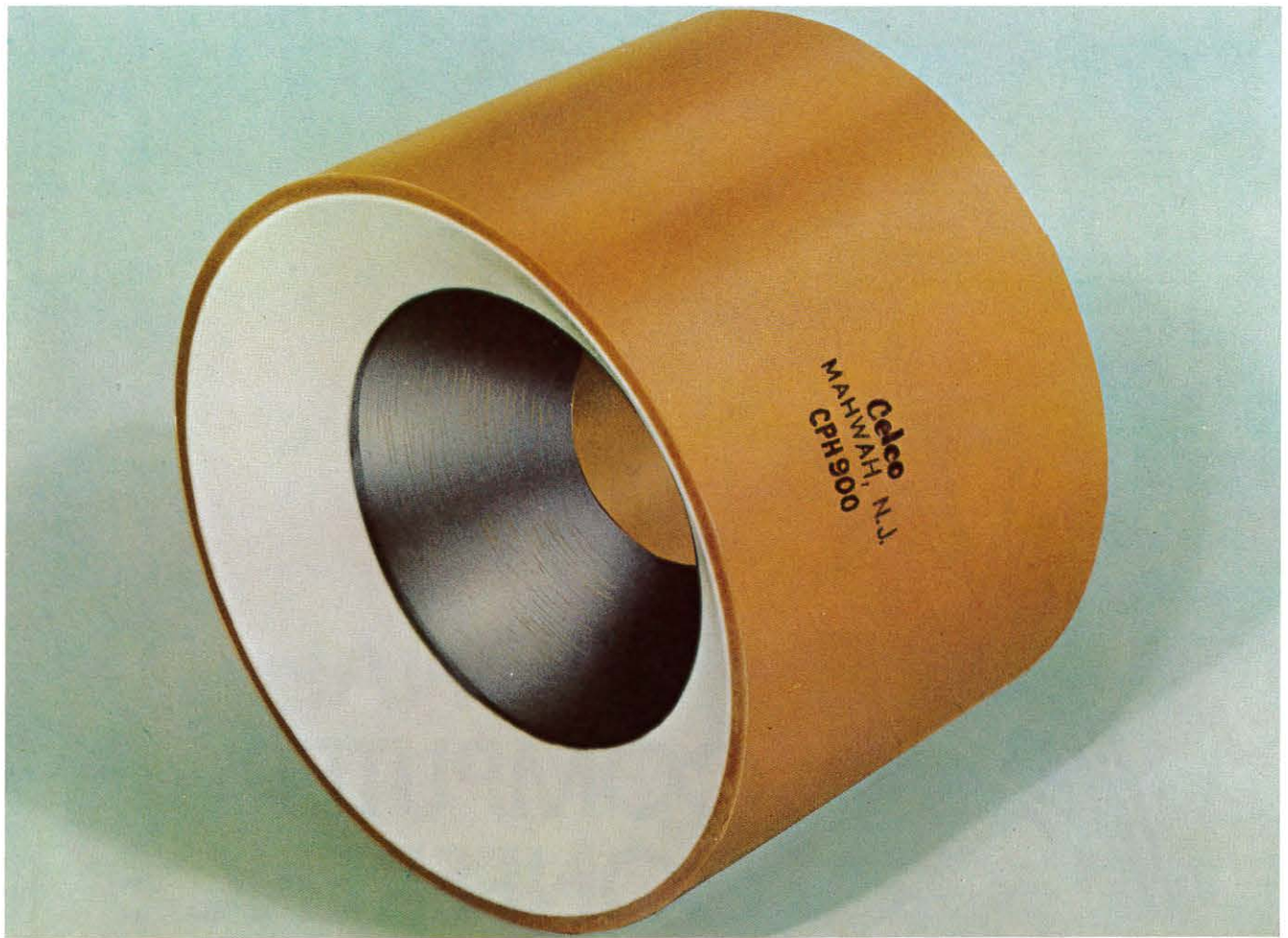


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1982 INTERNATIONAL DISPLAY RESEARCH CONFERENCE TO BE HELD OCTOBER 19-21, 1982 — CHERRY HILL, NEW JERSEY

Every two years since 1970, leading contributors to display research have met at the Biennial Display Research Conference for an intensive exchange of ideas. This tradition has now evolved into an annual international event, begun last year as Eurodisplay 81 in Munich and planned for Japan in 1983. The 1982 International Display Research Conference will be held on October 19—21, 1982 at the Cherry Hill Inn, Cherry Hill, New Jersey (about 20 minutes from Philadelphia, PA). This conference is presented by the IEEE Electron Devices Society, the Society for Information Display, and the Advisory Group on Electron Devices.

The program will cover all of the disciplines relevant to advances in electronic display materials, processes, circuits, and devices. Previously unpublished papers describing significant new results of interest to active workers in the field are solicited. Among the areas of interest are: light emitting and nonemissive technologies for direct-view and projection displays, addressing technology, device reliability, display characterization, and the new phenomena and concepts.

The Conference will feature a series of invited papers by distinguished workers in fields of current display interest including:

Keynote Address

● "Future Trends and Mutual Impact of VLSI and Display Technologies", F.H. Dill, Manager of Display Technology, IBM Corporation, Yorktown Heights, New York.

State-of-Art Reviews of Recent Developments

● "Dye-Type Liquid Crystal Displays: Their Status and Problems," T. Ishibashi, M. Satoh, K. Toriyama, and K. Suzuki, Mobara Works, Hitachi Ltd., Chiba, Japan.

● "Promise and Challenge of Thin-Film Silicon Approaches to Active Matrices," A.I. Lakatos, Xerox Corporation, Webster, New York.

● "The Application of Psychophysics to Display Evaluation," C.R. Carlson, RCA Laboratories, Princeton, New Jersey.

● "Technologies for High Resolution Color Displays," W.F. Goede, Northrop Electronics Division, Hawthorne, California.

The deadline for abstracts is May 24, 1982. The paper should be suitable for a 20-minute presentation, and authors must submit both a 35-word abstract and a two-to-five-page draft summary. Since papers will be selected on the basis of the draft summary, this must include a concise statement of what new and significant results have been obtained. These results should be contrasted with key previous publications which must be referenced. Illustrations such as hand drawings, sketches, and photographs should be included where applicable. Authors of accepted papers are encouraged to provide demonstrations at the conference.

The 35-word abstract, suitable for publication in an Advance Program, should be typed on a separate sheet, and should include title of talk, author's name, affiliation, complete address, and telephone number. The draft summary must include the author's name, affiliation,

complete address and telephone number on the first page, with the author's name and abbreviated paper title on each subsequent page. Authors of accepted papers must submit a camera-ready complete paper by September 1, 1982 for publication in a Proceedings to be distributed at the Conference.

In addition, authors are encouraged to submit their papers for formal refereed publication in a special joint publication of the IEEE Transactions on Electron Devices and the Proceedings of the Society for Information Display.

A few post-deadline papers (for 10-minute presentation) reflecting important new projects will be considered if 100-word abstracts and one-to-two page summaries with any pertinent illustrations are received by September 18, 1982.

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(continued on page 10)

SID '82 HIGHLIGHTS

(see program on pages 12-13)

Topics covered in 20 daytime sessions listed on pp. 12-13.

Global distribution of speakers: U.S., England, China, France, Switzerland, Netherlands, Finland, Japan, and Germany.

Number of authors/coauthors/panelists: More than 300 serving as authors/coauthors and more than 30 panelists.

Subject areas of 3 evening panels: Visual Displays and Fatigue-Discomfort; Direct Viewing versus Projection; Plasma versus Electroluminescence.

Keynote Speaker: Francis Ford Coppola, world-famous director of *The Godfather* and *Apocalypse Now*, founder of the first studio featuring use of electronic cinematography techniques.

Luncheon Speaker: Phillip S. Mittleman, president and chairman of the board of Mathematical Applications Group, Inc., creator of a CAD/CAM technology that creates 3-dimensional mathematical models of complex solid shapes, enabling designers and engineers to calculate physical properties of the models and generate realistic, shaded pictures of what are, in reality, non-existent objects.

Evening Event: Visit to the Scripps Institute of Oceanography and Aquarium to see a dramatic presentation of ocean sensing and imagery from satellites, and the spectacular sea life of the California waters.

Profiles of Session Chairmen: L. Tannas, Manager, Advanced Display Systems, Aerojet ElectroSystems, Azusa, CA; J. Markin, President, Lucitron, Inc., Northbrook, IL; T. Riley, Associate Principal Engineer, Harris

Corp., Melbourne, FL; A. Lakatos, Manager/Thin-Film Devices, Xerox Webster Research Center, Webster, NY; I.M. Wilson, Manager/Product Engineering, Zenith Radio - Rauland Div., Melrose Park, IL; R.C. Durbeck, Manager/I-O Technology, IBM, San Jose, CA; P. Van Loan, Manager/R-D, Hewlett-Packard, Corvallis, OR; W.P. Bleha, Project Manager, Hughes Aircraft, Carlsbad, CA; T.C. Lim, Rockwell International, Thousand Oaks, CA; S.R. Black, Manager/Display Systems, Evans-Sutherland, Salt Lake City, UT; H.L. Funk, Senior Engineer, IBM, White Plains, NY; P.D.T. Ngo, Project Leader/Flat Panel Display, Bell Laboratories, Holmdel, NJ; D.C. Hansen, Specialist Engineer/Systems Research, Boeing Commercial Airplane Co., Seattle, WA; T.L. Credelle, Head/Advanced Display Systems Research, RCA Laboratories, Princeton, NJ; A. Silzars, Director/Solid-State Group, Tektronix, Inc., Beaverton, OR; J.A. Mays, Staff Scientist, Systems Res. Labs., Inc. Dayton, OH; J.N. Price, Project Manager, Naval Ocean Systems Center, San Diego, CA.

Seminar Topics: Matrix Addressed LCDs, Electroluminescent Devices, AC and DC Plasma Displays, Drive Considerations for AC Thin-Film Displays, Electroluminescent and AC Plasma Displays, The Human Visual System, Display Subsystems Design, Human Factors for Color CRT Displays, Visual Parameters for Color CRTs, Weapons Systems Simulation.

Digests: All registrants will receive copies of a 300-page illustrated DIGEST of TECHNICAL PAPERS.

Additional copies for Members . . . \$30.00/Non-members . . . \$40.00. Symposium Registration Fee. Members: \$55.00/Conference; 65.00/At Conference; Nonmembers: \$70.00/\$80.00. Seminar Registration Fee: 1 day \$80.00, 2 days \$125.00. Lunch \$15.00. Special Event \$15.00. Combination rates will also apply.

Chapter News

(continued from page 28)

MID-ATLANTIC CHAPTER's Peter Hahn, Treasurer, heeded your editor's plea for news of technical meetings and responded brilliantly. At the January 12 meeting, the featured speakers were Dr. Joseph Shay of Bell Laboratories and Robert Giglia of American Cyanamid, discussing advances in electronics displays. Dr. Shay discussed the desirable properties of iridium oxide as a passive display medium. It is exceptionally stable and has a fast intrinsic response above -20°C . A prototype seven-segment display was described. Robert Giglia discussed performance improvements in WO_3 electrochromic displays and how the problem of WO_3 film degradation with sulphuric acid electrolyte was overcome by employing polymeric proton conductors. Utilizing a novel carbon paper counter-electrode, the new electrolytes foster simple construction and long switching life. Device design and performance were discussed. These speakers were introduced by Dr. Gottfried Haache, American Cyanamid.

On February 16, a large audience of SID members and guests heard Peter Seats, president of Thomas Electronics, discuss "Large Screen Electronic Displays - Past, Present, and Future." The evolution of projection television systems over the past 30 years was presented and included light valve devices, color wheel techniques, and other unusual designs. This review was followed by a system characterization of recently developed large screen systems requiring high-power techniques. Unique applications of graphics, flight simulation, planetarium and stadium displays were discussed, such as Digistar Planetarium, LCD projection, and heat-sinkable CRT designs.

On March 9, Dr. Fang — Chen Luo, Xerox Webster

Research Center, described "Applications of Thin-Film Transistors in Flat Panel Displays." In flat panel displays, where matrix display elements must be addressed, connections may be reduced and multiplexing enhanced by use of thin-film transistor (TFT) technology, a promising solution. TFTs are formed at the intersection of the vertical and horizontal bus lines, acting as an ON-OFF switch. The TFT matrix circuit was analyzed and requirements of the device characteristics described. Typically, TFTs are fabricated on glass substrates, by evaporation through aperture masks or by photolithographic etching. Commonly used processes were reviewed. TFT displays have been demonstrated and working displays obtained. Their performance was discussed by Dr. Luo.

Call For Papers . . . (continued from page 9)

Overseas Members

- S. Andoh, Fujitsu Laboratories, 1-2-28 Goshō-Dori, Hyogo-ku, Kobe, Japan
- M. Hareng, Thomson CSF Laboratoire Central des Recherches, Domaine de Corbeville B.P. 10, 91401 Orsay, France
- C. Hilsom, Royal Signals and Radar Establishment, Great Malvern, Worcestershire, WP143 PS, England
- T. Ishibashi, Mobara Works, Hitachi Ltd., 3,300, Hayano, Mobara, Chiba, 297, Japan
- M.F. Schiekkel, A.E.G.-Telefunken S7, Söflingerstr. 100, 7900 Ulm, West Germany
- T. Suntola, Lohja Corporation, Electronics Division, Ahertajantie 3, SF-02100, ESPOO 10, Finland
- T. Wada, Sharp Corporation, 2613-1 Ichinomoto-cho, Tenri, Nara, Japan

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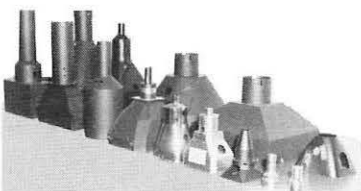
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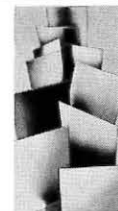
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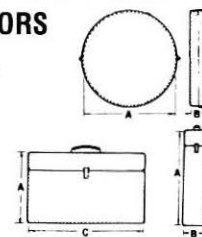
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SID 82 AT THE TOWN AND COUNTRY HOTEL, SAN DIEGO, CA

SUN. MAY 9	TIMETABLE	NORTH FOYER	TOWN AND COUNTRY	SAN DIEGO/ GOLDEN WEST	SAN DIEGO	GOLDEN WEST	CALIFORNIA	PRESIDIO	SUNRISE/ SUNSET	COUNCIL/ CHAMBER/ CABINET	FORUM/ SENATE/ COMMITTEE
	4:00 P.M. 9:00 P.M.	SID 82 Registration									
MONDAY MAY 10	8:00 A.M. 8:30 A.M.	Seminar Registration									
	8:30 A.M. 5:15 P.M.				Seminar I-IV						
	5:00 P.M. 9:00 P.M.	SID 82 Registration									
TUESDAY, MAY 11	8:00 A.M. 4:00 P.M.	SID 82 Registration									
	10:00 A.M. 5:30 P.M.		Exhibits								
	10:00 A.M. 5:30 P.M.			SESSION I SID BUSINESS MEETING							
	9:30 A.M. 10:15 A.M.			SESSION II FORMAL OPENING							
	10:15 A.M. 11:00 A.M.			SESSION III KEYNOTE ADDRESS							
	11:00 A.M. 12:00 Noon				SESSION IV Powder EL Devices	SESSION V Worldwide Electronic Display Markets	SESSION VI Visual Display Terminals				
	12:05 P.M. :40 P.M. (LUNCH)										
	2:00 P.M. 5:00 P.M.				SESSION VII Thin Film Transistor Arrays	SESSION VIII Color CRTs	SESSION IX Optical Storage Technologies				
	5:15 P.M. 6:15 P.M.								Author Interviews		
	6:00 P.M. 7:30 P.M.		Social Hour								
	8:00 P.M.					INFORMATION DISCUSSION SESSIONS E-1 Fatigue & Discomfort Associated with Visual Display Units E-2 Plasma vs Electro-luminescence E-3 Large Screen Display — Direct View vs. Projection				Rump Sessions	

SID 82 AT THE TOWN AND COUNTRY HOTEL, SAN DIEGO, CA

	TIMETABLE	NORTH FOYER	TOWN AND COUNTRY	SAN DIEGO/ GOLDEN WEST	SAN DIEGO	GOLDEN WEST	CALIFORNIA	PRESIDIO	SUNRISE/ SUNSET	COUNCIL/ CHAMBER/ CABINET	FORUM/ SENATE/ COMMITTEE
WEDNESDAY, MAY 1	8:00 A.M. 4:00 P.M.	SID 82 Registration									
	9:00 A.M. 5:00 P.M.		Exhibits								
	9:00 A.M. 11:45 A.M.				SESSION X Non-Emissive Displays	SESSION XI Large Screen Projection Displays	SESSION XII Thin Film EL Displays				
	12:00 Noon 1:50 P.M. (LUNCH)							Lunch — Invited Talk			
	2:15 P.M. 5:00 P.M.				SESSION XIII Displays for Visual Simulators	SESSION XIV Ink Jet Printing Technology	SESSION XV Plasma Display Technology				
	5:15 P.M. 6:15 P.M.								Author Interviews		
	5:30 P.M.	Scripps Oceanic Visit									
	8:00 P.M.									Rump Sessions	
	THURSDAY, MAY 13	8:00 A.M. 11:00 A.M.	SID 82 Registration								
9:00 A.M. 12:00 Noon			Exhibits								
9:00 A.M. 12:00 Noon					SESSION XVI Liquid Crystal Technology	SESSION XVII Human Factors in Display Designs	SESSION XVIII Flat Cathodo- luminescent Displays			SESSION XIX Hard Copy	
12:00 Noon 1:00 P.M.											
12:00 Noon 1:40 P.M. (LUNCH)											
2:00 P.M. 5:00 P.M.						SESSION XX LCDs for Large Info. Display	SESSION XXI Drive Circuits for Plasma and EL Panels			SESSION XXII CRTs and CRT Devices	SESSION XXIII Display Systems and Image Processing
5:15 P.M. 6:15 P.M.									Author Interviews		
FRI. MAY 14	8:00 A.M. 8:30 A.M.	Seminar Registration									
	8:30 A.M. 5:15 P.M.						Seminar V-IX				



Domain Computer System with High Resolution Graphics Upgraded for Easier Cursor Positioning and Sharper Images

Two new hardware enhancements to the DOMAIN (Distributed Operating Multi-Access Interactive Network) computer system have been introduced by Apollo Computer Inc., Chelmsford, MA.

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Apollo's DOMAIN features a 32-bit computing architecture based on a local area network of single-user work stations or nodes. Running up to 15 programs, each up to 9 Mbytes, simultaneously, every node incorporates high resolution, monochromatic graphics capability with 1 Mbit of independent display memory. Transparent access to resources is provided via a network-wide demand-paged virtual memory operating system at a 12 Mbit/sec data rate.

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SID CALENDAR

APRIL to OCTOBER 1982

1982		
April	1	Proceedings, Volume 23, No. 1, 1982, Mailed
	12	National Ballot Return Deadline
	20	Quarterly Chapter Rebates Mailed
	21	Inter-Society Color Council Symposium, Charlotte, NC (see p. 23)
May	9	Executive Committee Meeting
	10	National Board Meeting, San Diego, CA.
	10-14	SID 1982 International Symposium, Town and Country Hotel, San Diego, CA.
July	1	Proceedings, Volume 23, No. 2, 1982, Mailed
	20	Quarterly Chapter Rebates Mailed
October	19-21	1982 International Display Research Conference, Cherry Hills, NJ

OTHER EVENTS

1982		
April	4-5	Office Systems Research Conference, San Francisco
	5-7	Office Automation Conference, San Francisco
	18-20	Inter-Society Color Council, Annual Meeting, Charlotte, NC
	22-25	New York Computer Show & Office Equipment Exposition, Nassau Coliseum, Uniondale, Long Island, NY
	27-29	INFO/Manufacturing, Chicago
June	2-4	ACM/SIGMOD International Conference on Management of Data, Orlando FL
	7-10	National Computer Conference, Houston, TX
July	17	ACM/NBS Symposium: "Computing and Government", Gaithersburg, MD
	19-22	2nd International Conference on CAD/CAM, Manchester, England
	26-30	SIGGRAPH '82, John B. Hynes Veterans Auditorium, Boston
September	21-23	Electro-Optics/Laser Conference '82, Boston
	21-25	International Business Equipment Exhibition, Jakarta, Indonesia

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 Bettye Burdett 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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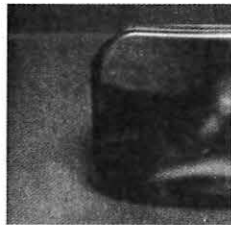
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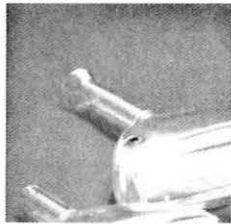
Military & Instrumentation CRT Bulbs



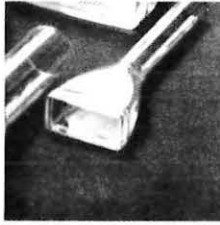
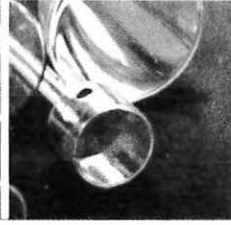
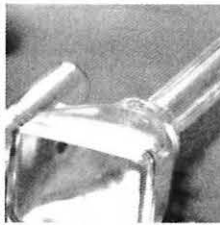
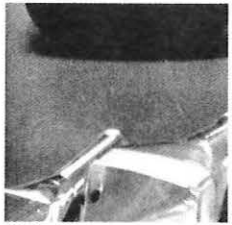
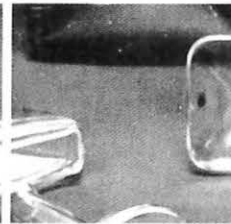
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MEMORY=NOT CLEARED
ROOM=151 MORE JOBS

PROJECT STATUS

TITLE=WIDGET-ONE ANNOUNCE PLAN
FILE=WIDGET DATA
DRIVE=2
CHANGED=NO
SIZE=9 JOBS

LOAD A PROJECT FROM DISK INTO MEMORY
LOAD MODIFY CLEAR DELETE INIT
SAVE PRINT DRIVE WRITEDISK QUIT

```

The VisiSchedule™ program automatically loads details from the previous use of the program. The user can re-load a project schedule already set up, or create one from scratch. Current date, person preparing report, current status of last project worked on can be checked. This new software was developed by VisiCorp, San Jose, CA.

```

PROJECT DESCRIPTION

TITLE=WIDGET-ONE ANNOUNCE PLAN
LEADER=C S CHAPMAN
TIME=WEEKS
START=1/18/82 MON JAN 18
CURRENCY=$
MANPOWER=$
COST=K$
CRITICAL=YES
REVISION=1

TIME UNITS, EITHER DAYS OR WEEKS
TITLE LEADER TIME START CURRENCY
MANPOWER COST CRITICAL REV QUIT

```

The Modify Menu allows the user to create or change the overall description of the project. Such items as title of project, leader, currency, cost levels and revision number can all be changed. Modify is where the user sets up manpower, skills, costs, holidays and the work week. The moving cursor anticipates the next entry so that keyboarding time is reduced.

```

PROJECT SCHEDULE
JOB DESCRIPTION
1 PURCHASE PIP
2 DIG 1ST PART
3 PURCHASE FIT
4 LAY 1ST PART
5 DIG 2ND PART
6 FILL 1ST PART
7 LAY 2ND PART
8 FILL 2ND PART
9 REPAVE STREET
10 REPAIR SIDEWALK
11 PROJECT COMP

```

This displays the work schedule itself. The user may scroll in all four directions to view the entire project. Simple menu commands add, delete or rearrange jobs. As each job is entered, it is displayed on screen. Once jobs are entered, manpower peaks may be auto leveled, costs and manpower levels are displayed or the project schedule adjusted in many ways.

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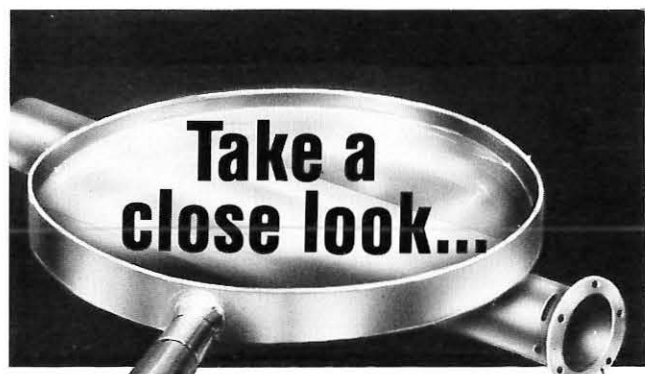
PROJECT DESCR
WIDGET-ONE A
REVISION 2, 1/18

DESCRIPTION DATA FIELDS
NAME OF PROJECT = WIDGET-ONE ANNOUNC
LEADER OF PROJECT = CC CHAPPMANN
TIME SCALE = WEEKS
START DATE = 1/18/82
DIRECT COST UNITS = K$
MANPOWER COST UNITS = $
FIND CRITICAL PATH = YES

SKILL CATEGORIES
1 KILL CATEGORY = COPYWRITER
2 KILL CATEGORY = PHOTOGRAPHER
3 KILL CATEGORY = DESIGNER
4 KILL CATEGORY = ILLUSTRATOR
5 KILL CATEGORY = TRAINER
6 KILL CATEGORY = TYPESETTER

```

The VisiSchedule program prints a wide range of useful reports, including summary of the entire project, critical path, project milestones, manpower and cost estimates, job descriptions, tabular reports and sorted reports. The reports stay current because you can complete jobs, slip the project or make any changes to show what is really happening.



Take a close look...

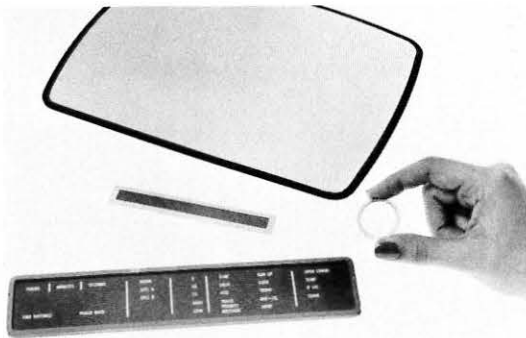
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EMI Shielding Windows Cut Glare and Improve Contrast

Transparent EMI/RFI shielding windows for use with all types of optoelectronic, CRT, incandescent and analog displays have been introduced by Panelgraphic Corporation, West Caldwell, NJ.

The window substrates are clear, neutral gray or colored to match the spectral output of the display, thus providing contrast enhancement. The front surface of the acrylic or polycarbonate windows is anti-glare treated and imparts steel wool abrasion and chemical resistance.

Front surface printed graphics as well as opaque rear surface background masks are optional.

EMI/RFI shielding is provided by a layer of transparent gold, vacuum deposited on the rear surface of the window. The gold film is protected from finger marking by a transparent overcoat. All windows are produced with peripheral silver bus bar to accept EMI gasketing.



Up to eight Intellec development systems (two are shown) can be connected to the new, Ethernet-based network development system (NDS-II). On it, they may share a large common data base and expensive, high-speed peripherals, such as disk drives and printers. Programmers can also communicate with one another using electronic mail facilities. At left, the network resource manager oversees all work station activity. The Intellec systems are made by Intel Corporation, Santa Clara, CA.

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New Graphic Workstation Automates Tech Manual Preparation and Revision

GWP Corp., Cambridge, MA, recently announced its new PROGRAMATE 2000™ Workstation for the rapid, cost-effective preparation and up-dating of technical manuals involving electronic schematics and other two-dimensional line diagrams. According to the manufacturer, the system's ability to edit, store and print both graphics and text, interspersed at will, ideally suits it to handle schematics in technical, operating and service manuals. Its many advantages over conventional methods of producing technical manuals include the following:

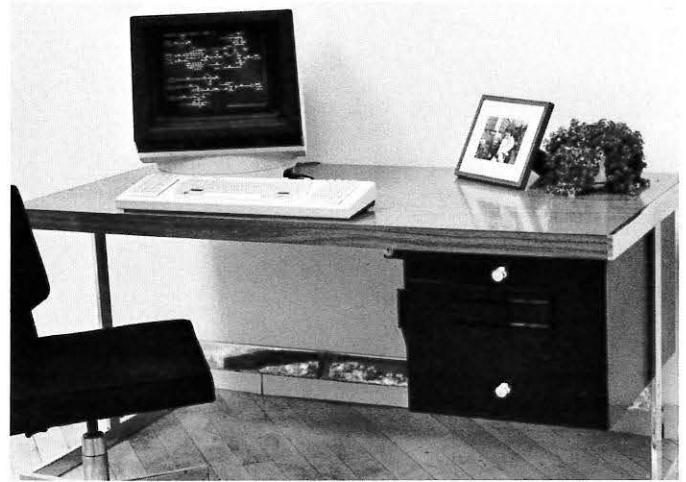
High quality hard copy of manuals, incorporating graphics and text, is available immediately.

Eliminates need for typesetting, drafting, and all cut-and-paste operations.

Replaces template drawn symbols with uniform computer-generated symbols inserted with a single keystroke.

Computer-stored manuals are ready for immediate retrieval and up-date with the same single keystroke ease of editing.

By eliminating the drafting department from the technical publications preparation process, and in turn eliminating cut-and-paste operations, the PROGRAMATE 2000™ slashes both labor costs and turnaround times, leading to a rapid payback and much more timely documentation, GWP claims.



Designed for ease of use, even an inexperienced operator can begin to produce finished diagrams in just a few hours according to GWP Corp. Schematic symbols appear right on the keycaps, eliminating the need to commit complicated commands to memory and enabling support personnel to produce finished diagrams from hand-sketches prepared by an engineer.

The complete turnkey system including 15", 132 column by 40 line video display; dual eight-inch floppy disk drive; 124-button totally reprogrammable keyboard; high speed printer for both high quality graphics and text, and software.

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Cobar, Inc. now offers 15-inch DEC VT100/132 emulation in its Model 3132 priced at \$1,595 with OEM discounts available.

Cobar Introduces Large Screen Terminal with VT100/VT132 Emulation

Its new terminal is designed to provide easy reading in both 80 or 132 column formats according to Cobar, Inc., Anaheim, CA. The new model 3132 video display

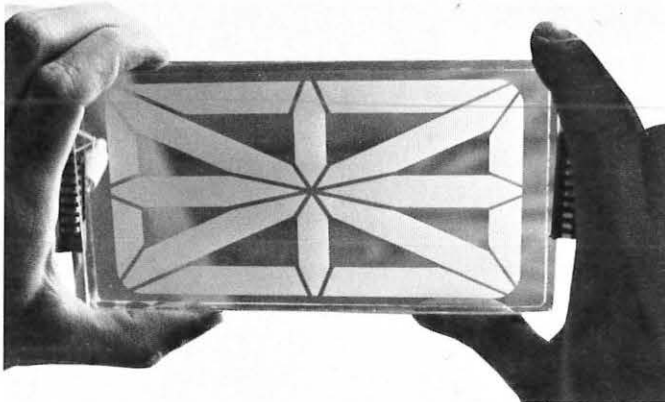
terminal features a high resolution, non-glare 15-inch screen and is plug-compatible with Digital Equipment Corp.'s VT100, VT131 and VT132.

High performance editing capabilities for line and character insertion or deletion are said to be standard on the Cobar 3132, as are a DEC-compatible printer port, detachable keyboard, and 256-character receive buffer.

"While offered as a DEC VT132 emulator, the Cobar 3132 terminal's microprocessor design can be easily modified to run on virtually any computer system," says John Chapman, president of Cobar. "We can adapt the terminal to any specifications required by the OEM or user, and have already developed a number of interfaces for other CPUs."

The terminal has 18 programmable function keys with storage of 99 characters which may be shared among the keys in any way. A screen-displayed set-up prompt legend allows users to select desired operating parameters. Reverse video, blinking and underlining capabilities are standard features. Batch transmission includes line, partial or full screen. RS232C communications with selectable baud rates from 50 to 19,200 with full duplex and selectable local echo are provided.

In addition, audible keyboard signals, screen save, and protected data fields are standard. Self-test diagnostics are provided and the terminal requires no periodic maintenance. Weight is 35 lbs. Cobar also provides a one-year warranty on every terminal. *



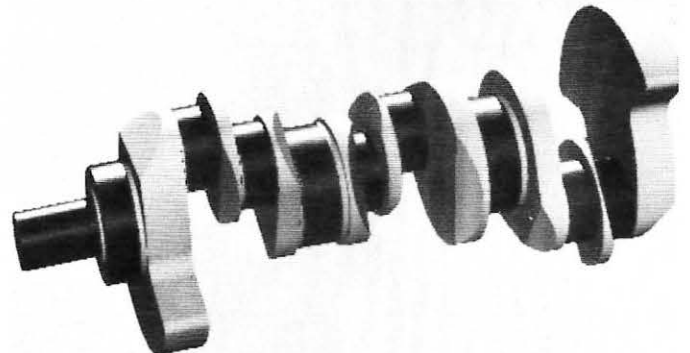
Large Low Power Liquid Crystal Display

UCE, Inc., Norwalk, CT, a new 16-segment, 4-inch high alphanumeric dynamic scattering LCD. Designed for easy installation with snap-on connectors, this large LCD is said to feature very wide viewing angle, low power, and readability to 200 feet. The display is normally clear with opaque segments; backlighting will vary color based on filter used. Also available with TNFE type fluid for high readability in ambient light with no backlighting required.

Applications include scoreboards, passenger terminal sign, time/temperature indicators and many indoor applications requiring large characters and low power.



Lanier Business Products, Inc. Atlanta, GA, recently announced Telestaff™, its home-site or satellite transcription system. The Telestaff allows transcription to be done in the home, in another office, or in any location where there is a telephone.



A GMSOLID graphics representation of a crankshaft design. Engineering evaluations that tell the weight and whether or not the crankshaft is balanced can be computed directly with GMSOLID, developed as a CAD/CAM program by General Motors.



Color is Coming!

For high performance CRT displays

Yes. Right here in America we are working hard on developing deflection yokes for industrial/commercial and military color CRT display applications where quality and performance are more important than mass production.

Color displays are many times more complex than monochromatic displays because of the critical interface between CRT, yoke and circuitry. And quality displays are too demanding for conventional color TV type yokes.

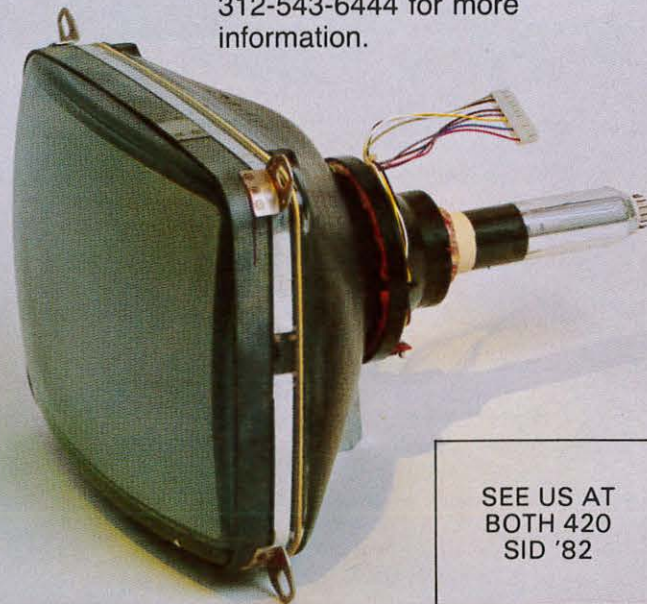
For several years Syntronic Instruments, Inc. has been working with major international manufacturers of full-color shadow mask tubes to develop high performance color yokes.

With a unique blend of teamwork between display designer, CRT designer and our experienced deflection yoke engineers we are meeting the challenge of high brightness, high resolution, high speed and pure, accurate, full color. Typical areas of

development are high speed graphic terminals, flight simulators and cockpit displays.

Syntronic is ready to team up with your display engineers to develop a high performance color yoke for your application.

Call Dave Brown at 312-543-6444 for more information.

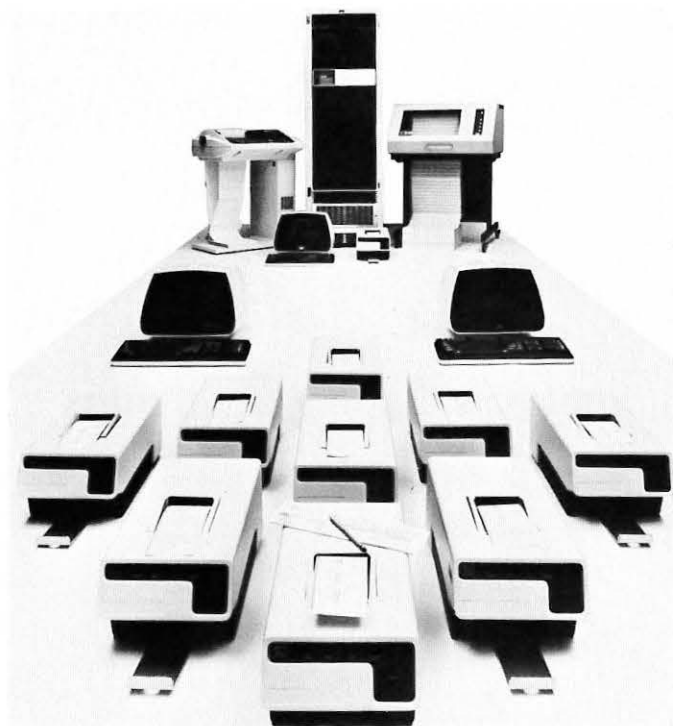


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DEMIS (DEpot Management Information System) — Man/machine-readable tab-cards and mark-sense card readers are the key to DEMIS system from Digital Datacom, Inc., Laguna Niguel, CA. The software/hardware package provides on-site development of the mark-sense job travelers and the system database. System can be tailored to the requirements of many different kinds of depot and manufacturing assembly and repair environments. System shown consists of CPU, software, 96 megabyte disk drive, magnetic tape, two printers, three video display terminals and 10 Digital Datacom card readers.

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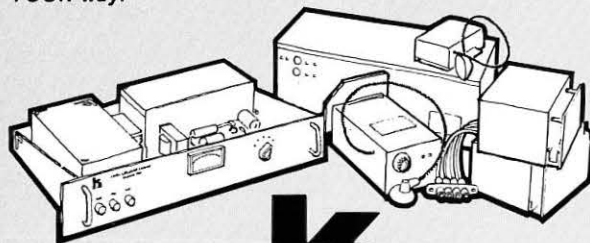
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New, Compact Digital Display with Single or Dual Set Point Control

The Controls Division of AMTEK, Inc., Feasterville, PA, has recently introduced the model 570 digital display to provide a precision display of a wide variety of outputs from pressure sensors, strain gauges and load cells. This digital meter is utilized in industries that require precise monitoring of process control, out-of-limit indication of pressure, and stress or vacuum, according to the maker.

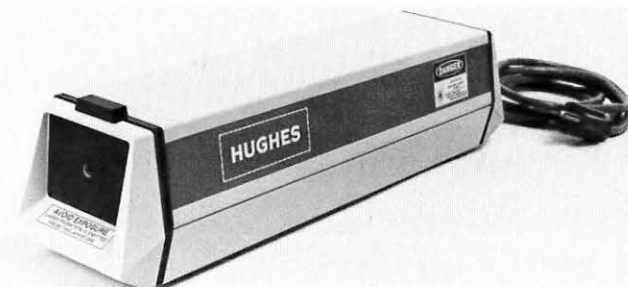
Using the 570's relay control option, process and alarm functions can be controlled at single or dual set points with multiple modes of operation: 2-zone control around a single set point, and 3-zone control with programmable hysteresis around dual set points.

With a frequency range of 47 to 63 Hz, the Model 570 has a standard input voltage of 115 VAC \pm 10% (100 or 230 VAC \pm 10% optional) and an output voltage of +5 VDC \pm 5% at 5 mA max.

The 14.2 mm high LED display with a range of -1999 to +1999 F.S., reads out directly in engineering units. Standard ranges are available in unit readings of: feet or meters of H₂O; percent of full scale; pounds, kilograms, or psi.



Made in Glenview, IL, by Zenith Data Systems, this new Z-90 microcomputer contains more diskette storage and more memory than the earlier Z-89 model. The Z-90 adds a double-density controller card and comes standard with 64K RAM.



New compact He-Ne Laser from Hughes Aircraft Company's Industrial Products Division, Carlsbad, CA, features laser head and power supply self-contained in a single housing. Designated the 3300 series, the new laser systems are available in six different power ratings, covering the 0.4 to 6 milliwatt output power range.

Announcing: The 1982 Computer Graphics Suppliers Directory

The 1982 computer graphics directory, covering suppliers of hardware, software, systems and services, is announced by Stanley Klein, directory publisher, Sudbury, MA, who is also publisher/editor of The Harvard Newsletter on Computer Graphics. The directory, with more than 100 pages, is aimed at computer graphics end users, systems integrators, and other persons having an interest in the field, according to SID Member Klein, who adds: "It contains virtually every significant computer graphics supplier in the U.S. and Canada . . . plus some!"

Organization of the directory and its format are intended to facilitate its use, Klein says. A main section lists vendors alphabetically, giving such information as the year founded, address, telephone number, chief executive officer, person to contact, sales, and employees. It also includes a brief description of that company's overall products and services as well as those in the CG field.

A second section, comprising a computer-processed cross-index, lists the vendors under specific categories by products and services, type of technology employed, or applications served. Some 3,500 individual cross-reference listings enable a user "to zero in on specific needs," Klein notes. CAD/CAM, business graphics, and image processing are among key application categories broken down further in the directory.

Other pages identify sponsors of computer graphic seminars, conferences, courses, and technology and market research reports. Finally, an executive summary analyzes the computer graphics field based on information garnered in the course of compiling the directory. For additional information, contact Stanley Klein, Publisher, Computer Graphics Directory, 730 Boston Post Rd. - P.O. Box 392, Sudbury, MA 01776, (617) 443-4671.



Shown is the first high resolution 26-inch television monitor introduced by ELECTOR Santa Clara, CA, U.S. distributor of BARCO computer video display products. According to Donald J. Power, ELECTOR vice president and general manager, "The new model, the CDCT 3 x 66 offers a color raster scan display for graphics use. It features a 0.37 millimeter pitch delta gun tube. The CDCT 3 x 66 is available in three horizontal rates up to 33kHz. Video bandwidth is 25 or 50 Mhz."

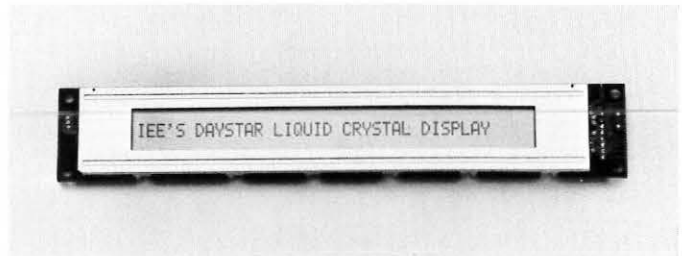
SID Now Participates in Inter-Society Color Council (ISCC)

Dr. Ifay Chang, SID National Treasurer, is Chairman of the SID delegation to the Inter-Society, Color Council, which now includes our Society for Information Display as an active participant. Quoting Dr. Chang:

"A symposium on colorimetry of self-luminous displays is our first jointly sponsored meeting. It will be held at the Sheraton Center Hotel, Charlotte, NC, on Wednesday, April 21.

"The Registration fee is \$40 including the cost of the luncheon. Pre-registration is required to insure your luncheon reservation. Contact Justin J. Rennilson, GAMMA Scientific Company, 3777 Ruffin Rd., San Diego, CA 92123. (714/279-8034).

"The purpose of this symposium is to establish cooperation and understanding of the measurement and problems of specifying color tolerances of self-luminous displays. The symposium will also establish lines of communication between specifying agencies, manufacturers, and users of color displays, and the respective technical committees of the CIE and working groups of the ISCC concerned with color and visual response."



IEE Expands its Daystar™ Alphanumeric LCD Line with New Small Footprint Models

The Industrial Products Division of Industrial Electronic Engineers, Inc., (IEE), Van Nuys, CA, a leading manufacturer of displays in diverse technologies, has added two "small footprint" models to its growing Daystar line of alphanumeric LCD modules. Engineered for the user who requires a module which mounts in a minimum panel area, the two new models display 1 line of 40 characters in either a 5 x 7 dot matrix + cursor (model 3822-96-040) or a 5 x 10 dot matrix + cursor (model 3822-97-040). The 5 x 7 matrix model allows the display of the full 96-character font, while the 5 x 10 matrix also allows the display of true descenders on the lower case letters such as g or j. The modules, which consist of the display panel plus integrated drive electronics, can be used in a minimum logic configuration with refresh being handled by the host system, or they can be teamed with IEE's Daystar Controller I.C. (part number 44958-0) to provide an ASCII interface which includes on-board RAM, character generator ROM and all refresh timing signals. Power requirements are 10mW at $\pm 5VDC$.

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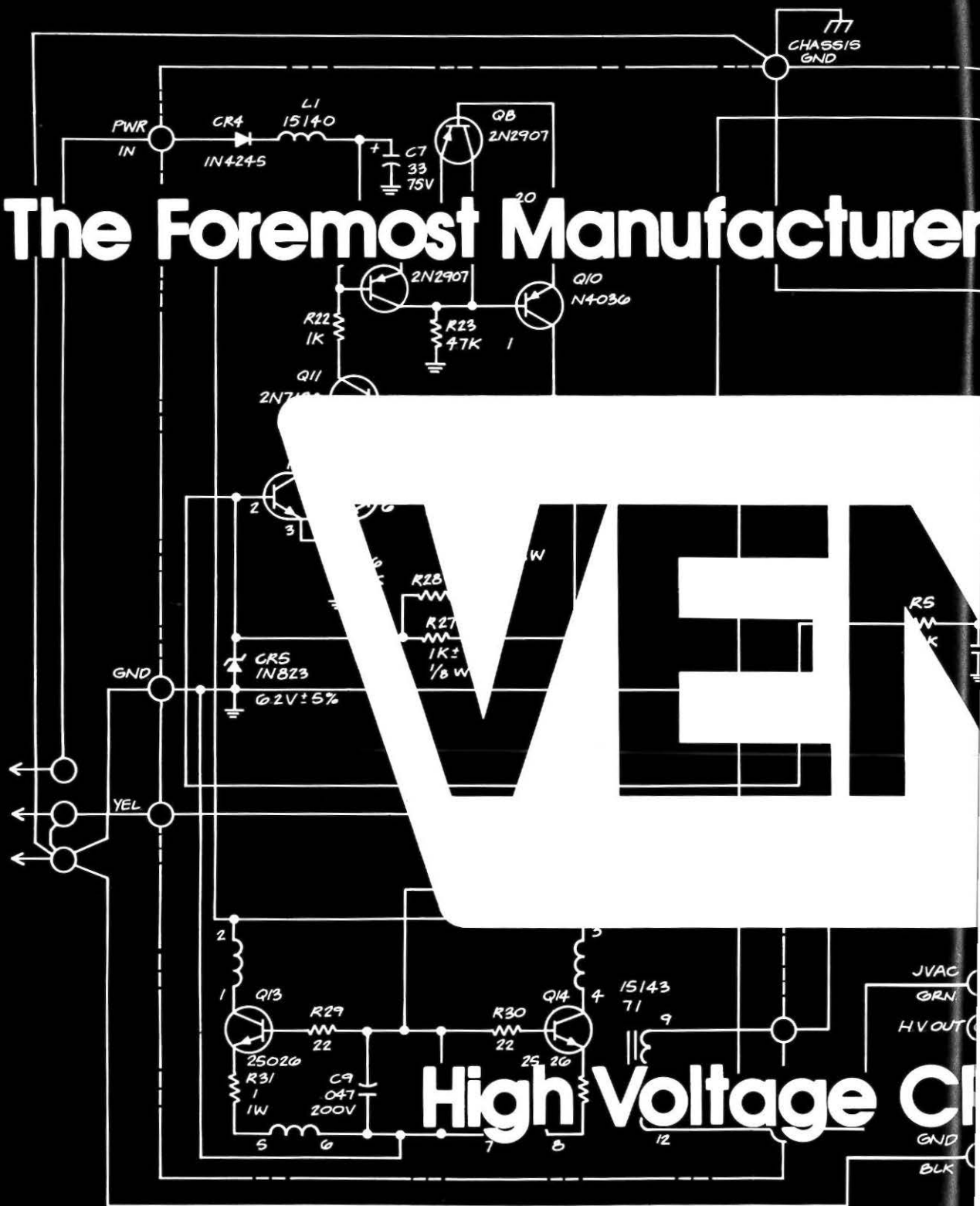
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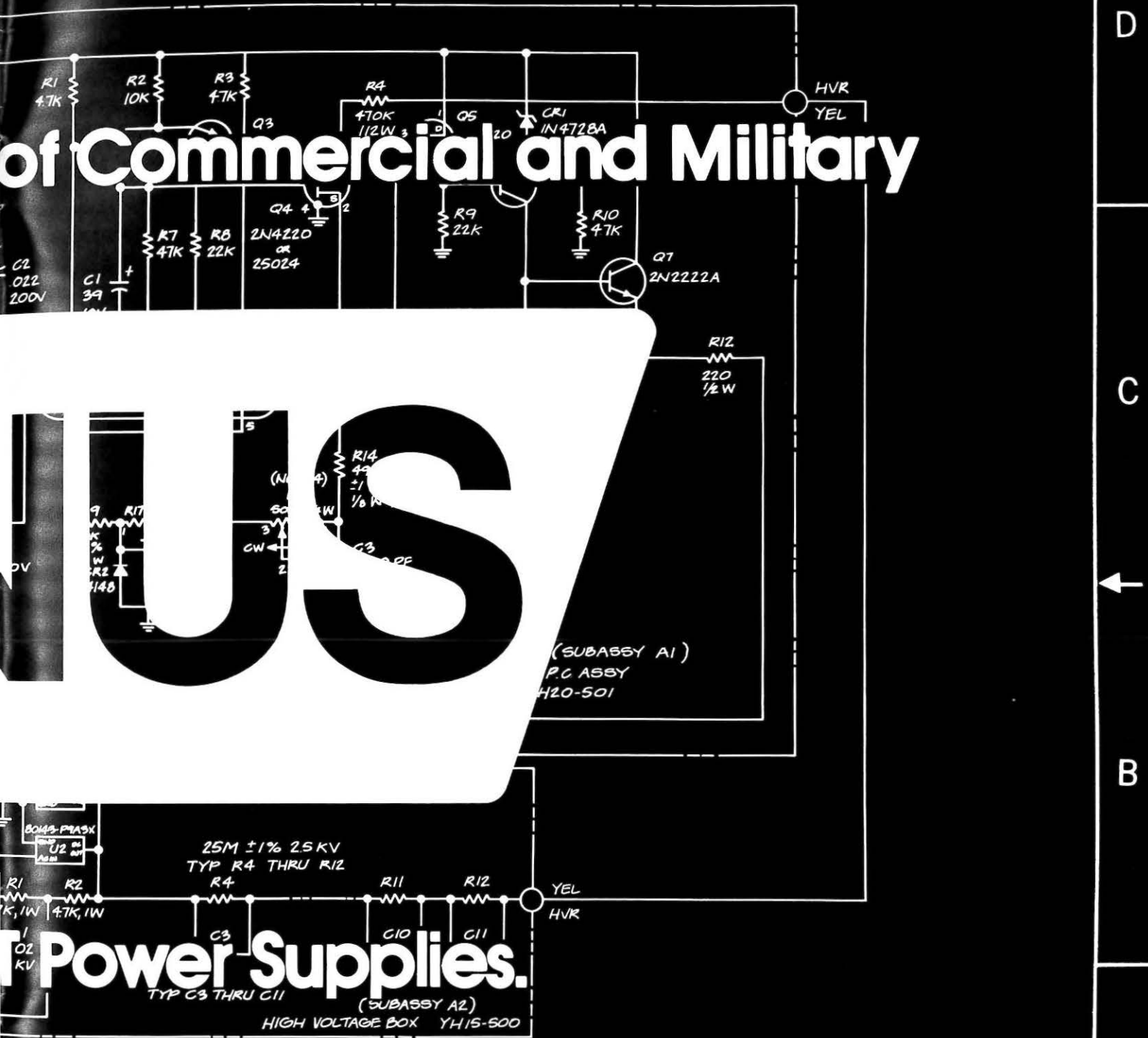
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Chapter News



Another picture taken at the SID Board of Directors Meeting in San Diego on January 22 shows (clockwise, starting with Bernie Lechner in the left foreground) R. Knepper, G. Kramer, L. Tannas,

P. Pleshko, H. Sherman, T. Lucas, T. Curran, R. Thoman, B. Kazan, D. Pinsky, G. Carroll, J. Friend, I. Chang, T. DuPuis, J.A. van Raalte.



MINNEAPOLIS/ST. PAUL CHAPTER at a recent meeting at Sago Images watched Peter Preksto, articulate young entrepreneur, as he demonstrated his Xerox 9600 electronic printer. Thanks to Vern Born, Central Area Director, for supplying this photograph.

LOS ANGELES CHAPTER, as reported by Kevin Kilcoyne, Program Chairman, continues to have exceptionally interesting technical meetings.

In February, the Chapter was treated to an impressive demonstration of both static and dynamic computer graphics. The demonstration was given jointly by Digital Equipment Corporation graphics and Megatek Inc., and featured high resolution (1024 x 1024 pixels) in the static mode and (512 x 512) in the dynamic mode. All graphics displays were in full color and had hard copy backup capability.

Then on March 24, Robert Gilene of NBC Television (KNBC) presented an interesting live demonstration on TELETEXT, a new mode of communication in which standard television receivers with some modifications will be able to receive and present a variety of alphanumeric, graphic, and other information. TELETEXT is a new information technology broadcast on the portion of the television signal known as the Vertical Blank Interval (VBI). Data is transmitted in digital form, received and displayed on home TV screens by means of a special decoder.

(See additional Chapter News on page 10.)

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