

**NORTHERN
NJ
SECTION**



The Newsletter

The Magazine of the Northern New Jersey Section of the IRE

Volume 8

JUNE, 1962

Number 10



JUNE SECTION MEETING

SECTION FIELD TRIP TO VISIT NEW IBM RESEARCH CENTER FOR COMPUTER SCIENCE

FOR RESERVATION CALL:
W. L. GLOMB
ITT LABORATORIES
NUTLEY, N. J.

Wednesday, June 13
FREE TRANSPORTATION

BUS SCHEDULE:
LEAVES: 10:30 A.M.
RETURNS: 6:30 P.M.

20MC COUNTER MEASURES FREQUENCY, PERIOD, MULTIPLE PERIOD AVERAGE, FREQUENCY RATIO

Hewlett-Packard's Model 5243L 20-Megacycle Electronic Counter is an easy-to-read instrument completely solid-state for compactness and ruggedness. A series of plug-in converters can extend its frequency range, adapt it for time interval measurement, permit other valuable functions.

The Counter's 8-digit readout is on a new Nixie indicator that's narrower and much easier to read. Four-line BCD output is provided at rear connectors for recorder or control device use. Continuous display changes only if measurement changes and storage feature making this possible also makes possible a higher sampling rate.

Complete control of Model 5243L from remote location is possible through a rear panel connection. Voltages are low level, permitting control by solid-state circuits.

This Counter is equipped with its own time base, a crystal oscillator whose stability is measured in parts in 10^6 per week. For extremely critical applications a 1-megacycle signal from a primary frequency standard can be substituted for increased accuracy.

Your RMC Field Engineer has full specs...so for a demo and application ideas, dial him now!

NEW RECTANGULAR NIXIE® TUBE FROM BURROUGHS ECD

Burroughs Corp. Electronic Components Div. has added a new rectangular NIXIE tube to its Nixie Indicator Tube line. The new tube—pictured at right—permits miniaturization of digital equipment utilizing in-line readout.

These rectangularly-shaped tubes can be stacked side by side utilizing minimum panel space with no sacrifice of readability. Width of these rectangular Nixies is more than 20% less than cylindrical types. Character sizes, though, are identical.

In addition, internal structural changes have reduced this Tube's depth almost 25%. This advance gives equipment designers greater use of behind panel space.

Burroughs achieved this new design by perfecting completely new fabrication methods and miniaturizing the individual tube parts.

Broad application for the rectangular Nixie is assured since it facilitates equipment miniaturization and permits greater design flexibility including use of smaller drive circuits. Naturally this new unit has those characteristics which have made Nixie Indicator Tubes the most widely accepted readout device in electronics: longest life, lowest cost, greatest readability, smallest size! Call your RMC Field Engineer re these new Burroughs Nixies now!

NEW INSTRUMENTS



MODEL 5243L 20MC COUNTER



BURROUGHS RECTANGULAR NIXIE

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EDITORIAL NOTES

ARRIVEDERCI

Softly the Arabs folded their tents and silently faded into the shifting sands lighted by the purple rays of the sun as it slowly disappeared into the night. As it is with the Arabs so with the editorial staff, the executive committee and all members of the Section. Summer is here and all professional activities stop. Before wishing everyone a happy vacation there are a few ideas we would like you think about while in your air-conditioned office, on the beach at Atlantic City or up in that cabin in the woods.

Item I — Section Participation

The elected officers of our Section promise to bring new life and vitality into our Section activities. Mr. Parks, Chairman of the Section, will not be idle during July and August but will be welding together one of the best executive committees for Section activities. But all of the best laid plans are worthless unless the membership participates in all of the activities. So during your vacation take a pencil and paper with you and drop Mr. Parks a line in care of the Newsletter adding your name to the list of members who want to become active in IRE affairs.

Item II — Merger

If the vote is for merger the problems of reorganization will be many. The Section will need the support and help of each and every member. Remember — what can you do for the Section? — not what can the Section do for you.

Item III — Engineers and Scientists Building

This has been mentioned many times in the editorial column but if something is repeated often enough something will be done about it. As the new Newark builds why can't property be set aside for an "Engineers and Scientists Building." Maybe plans for such a building could be included in the building expansion program at Newark College of Engineering or Rutgers "The State University." This Engineers and Scientists building could include a dining room, library, club room, auditorium and offices for each of the technical and scientific societies in the Northern New Jersey area.

Item IV — July and August

Have a happy and safe vacation.

Edward J. Byrum

OUR-COVER

Native field stone from upper Westchester and curving floor-to-ceiling windows are the dominant architectural features at IBM's new Thomas J. Watson Research Center, the main entrance of which is shown here. The building, designed by Eero Saarinen, provides a panoramic view of the surrounding countryside from corridors on all three levels. The Research Center, in suburban Westchester County 40 miles north of New York City, is the world's largest for computer science. It was formally dedicated during the company's Annual Stockholders Meeting April 25th.



The

Newsletter

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of the Institute of Radio Engineers

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THE NEWSLETTER

P.O. Box 226 - Glen Ridge, N. J.

Telephone: Pilgrim 4-0453

SECTION OFFICERS:

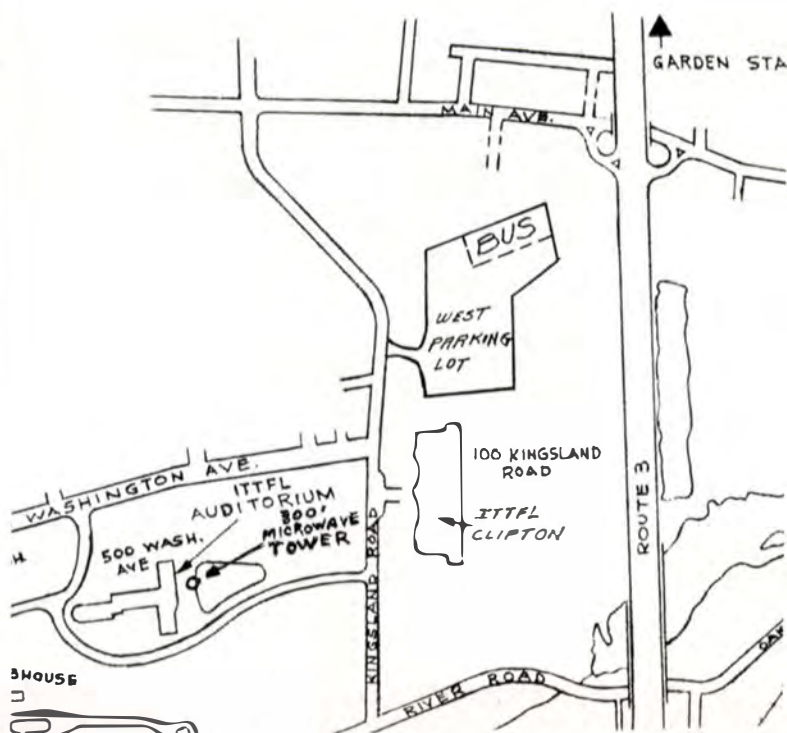
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1961-1962 Meeting Schedule

Section Meetings	Exec. Comm. Meetings
June—Field Trip	June 27, 1962



FIELD TRIP BUS MAP. SEE PAGE 5 FOR DETAILS.

CHAIRMAN'S CORNER

ALANSON W. PARKES



Your newly elected officers and the members of the Executive Committee are currently preparing programs for nine technical sessions and one field trip, and for the fall and the spring lecture series for the 1962-63 season.

We sponsor Professional Groups, PGCS, PGEWS, and PGMTT and these groups are planning additional technical meetings and field trips. The NNJ Section is also a co-sponsor with other nearby sections of ten Professional Groups. Each of these has its separate technical sessions to which NNJ Section members are invited.

"The Newsletter," published by our NNJ Section will continue to keep members informed of all sponsored and co-sponsored Professional Group meetings as well as of the Section meetings. We suggest you look over the calendar page that appears each month, to spot meetings of special interest.

The Institute of Radio Engineers is now the largest professional society in the world, with close to 100,000 members. The NNJ Section, with its nearly 4,500 members, is the fourth largest of 112 sections. Approximately 11,000 members belong to Sections outside of the U. S. A.

The wide divergence of primary interest of IRE members is the reason for the growth of the Professional Groups now numbering some 29 fields of special interest. In order to serve its members, each IRE section sponsors as many Professional Groups as the interests of the particular community warrant. The NNJ Section will be pleased to sponsor additional professional groups in any of the 29 fields. To form a new "PG" an interested member must obtain signatures from a total of 10 prospective members and present this list in person for approval at a meeting of the executive committee.

There is much work in devising and carrying out a useful technical program for the Section and for the several Professional Groups. May we suggest that you write or telephone us if you are interested in assisting in the section activities whether it be editorial work on "The Newsletter," any of the PG activities, or the program or facilities committee activities. This will be a fine way to get started in the professional activities of IRE.

Your newly elected officers will do their best to serve you during the coming year by providing the best available speakers over as interesting a range of technical subjects as its program committees can devise.

The next meeting of the Executive Committee will be at 7:30 p.m. on Wednesday, May 23, 1962 in the Verona Public Library. Communications should be addressed to individual officers or to The Executive Committee and mailed to Northern New Jersey Section, P.O. Box 226, Glen Ridge, N. J., c/o Mr. Kenneth A. Harris, business manager for "The Newsletter". His telephone number is Pilgrim 4-0453.

16 MILESTONES IN INSTRUMENTATION



SELF-JAMMING RADAR SET

Accidentally developed by a now-defunct R & D organization, and subsequently perfected for export to Iron Curtain countries, this unusually self-sufficient radar system is now available for delivery to domestic enemies as well.

You may choose freely from a broad selection of antennas, since none is actually required—the absence of a TR tube in the transmission line insures that the first pulse from the transmitter will wipe out the receiver, after which an internal generator takes over the function of furnishing an infinite variety of believable targets to the PPI scope at the console.

The Master Oscillator radiates enough interference to prevent tracking any target long enough to report it, thus placing the entire onus on the operator. A standard military instruction manual is provided, to guarantee his misinterpretation of operational results.

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SECTION FIELD TRIP TO VISIT NEW IBM RESEARCH CENTER FOR COMPUTER SCIENCE

Sweeping Departure in Laboratory Planning

By BRIAN EDEN

In the midst of 240 rural acres in Westchester County, 40 miles from downtown Manhattan, a fairly sizable group of IBM scientists and technicians are at work studying a variety of increasingly sophisticated concepts in computer science. These researchers are at the center of what IBM calls a national and international clearing house for new thinking in computer technology and applications.

The site is the new Thomas J. Watson Research Center in Yorktown Heights, N. Y. IBM's largest research installation, where the NNJ Section 1962 Field Trip is scheduled for Wednesday, June 13 (see boxed insert of trip agenda). The trip to this facility will have two distinct features, one technical and the other architectural.

Technically speaking, the IBM Research Center represents one of the major sources of computer science disciplines that will guide the industry in the years ahead — in particular, the findings of this research group will be applied to industrial practice at 22 IBM development laboratories here and abroad.

From an architectural viewpoint, the IBM Research Center represents an entirely new approach to research laboratory planning for comfort and pleasant working conditions. Designed by the noted architect, Eero Saarinen, the Center has combined the large number of offices and laboratories within a striking pattern that offers privacy, short communication lines, great flexibility, amenity, and visual appeal.

COMPUTER SCIENCE RESEARCH

Section members attending this year's field trip will witness IBM's research efforts in six broad fields of exploration.

General Science — investigation into magnetism, low temperature and semiconductor phenomena. Last year, scientists in this area made a significant contribution to space communication research with the development of two new optical devices (masers). These hold out the possibility of using light for the transmission of information.

Solid State Science — probing the mysteries of solid materials which might find application in computers. This group has developed a method of growing computer components, atom by atom, by

controlling deposits of metallic vapors on "seed" crystals.

Experimental Systems — studying new systems for the machine translation of languages, for information retrieval and for control of chemical and other industrial processes.

June Field Trip Details IBM Thomas J. Watson Research Center Yorktown Heights, New York Wednesday, June 13

10:30 A.M. Bus will leave ITT Federal Laboratories from the West Parking Lot of the 100 Kingsland Road location (see detailed map). Visitors may park their cars in this lot for the day. The bus will stop for lunch en route to Yorktown Heights.

1:00 P.M. Arrival
Welcome and brief discussion of the Research Center. Dr. Arthur L. Samuel, Director of Research, *Communications* — "IBM Research, Its Role in IBM and Its Activities."

1:45 P.M. Brief Technical Presentations
Language Translation — Description of the Language-Translating System IBM has developed jointly with the U.S. Air Force. This project which produces a very readable English translation of Russian text is part of a major study concerning the processing of natural rather than mathematical languages.
Magnetic Thin Films — Description of IBM's recently announced development of a magnetic thin film memory device.
Paper and Ink Research — Description of IBM's research activities directed at reducing the production of paper to a scientific process by the application of a digital computer.

2:45 P.M. Coffee

3:15 P.M. Tour of the Research Center which will include visits to the laboratories concerned with the Language Translation System, the Process Control Paper Making, Cryogenics, and Magnetics.

4:15 P.M. Departure

6:30 P.M. Arrive ITT Federal Laboratories

Experimental Machines — development of advanced concepts for super-speed computers out of newly evolving techniques.

Engineering Science — research into voice and printed character recognition by machine, and studies of the properties of paper and ink to meet the demands of advanced computers.

Mathematical Sciences — investigation into new logical approaches to computer design and computer problems to improve both the machines and the ability to use them.

RESEARCH AT THE RITZ

After much original thinking and study of conventional engineering laboratories, architect Eero Saarinen concluded that an entirely new approach to laboratory planning was in order. His studies revealed that labs and offices today depend on air conditioning and fluorescent lighting for their air and light—not on windows. He also found from his study of conventional labs that in most of them window shades were drawn and engineers were sitting with their backs to the windows. Thus from these facts came the new approach to laboratory planning now in use at the IBM Research Center.

The Thomas J. Watson Research Center is a three-story-high building about 1,000 feet long and 146 feet wide. Its long facades are almost all glass. Behind these glass walls are not offices and laboratories but wide corridors that run the full length of the building. Between these long corridors there are shorter ones that cut across the depth of the building — and each of these shorter corridors serves offices on one side, laboratories on the other. Both offices and labs are artificially lighted and ventilated.

To make the building long enough so no one would be very far from an outside glass wall, Saarinen also had to make the building exceedingly long. Thus, to avoid the horror of 1,000-foot-long corridors, he curved the entire building with the result that no stretch of the peripheral corridor ever looks more than 80 to 100 feet long. As an extra touch, a Japanese garden of gravel and planting islands was added at the south side of the Center for the added comfort of employees.

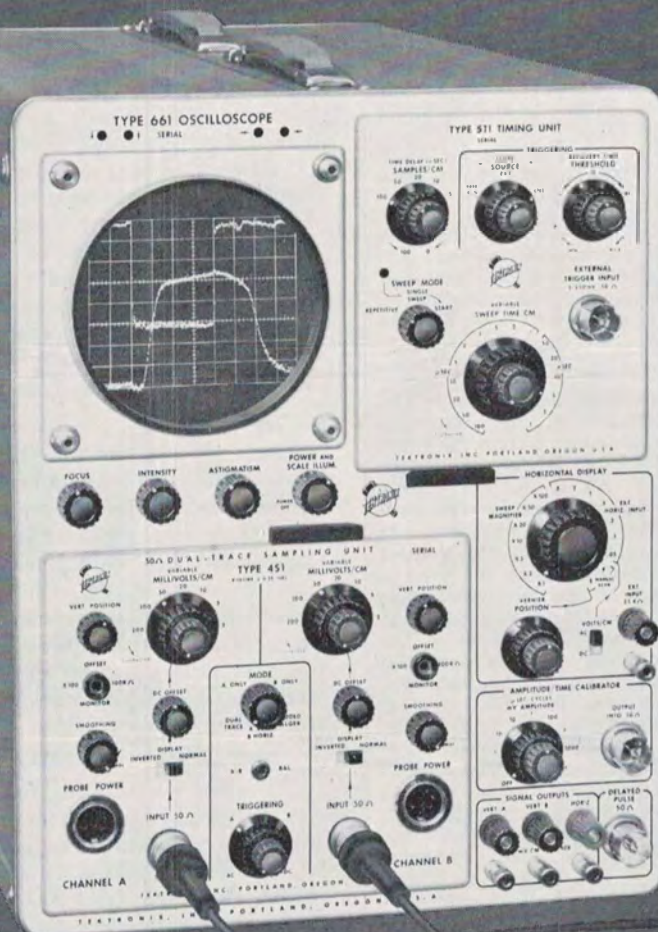
(See Page 3 For Map)



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with this NEW
Tektronix
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Oscilloscope



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Here's what you can do:

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- ... Measure pulse risetimes with 0.35 nanosecond response in both channels. Time-measurement range extends to 1 millisecond.
- ... Display repetitive signals on 16 calibrated equivalent sweep rates from 1 nsec/cm to 100 μ sec/cm, accurate within 3%. Magnifier provides sweep expansion from 2 to 100 times... time per dot remains the same for digital readout.
- ... Change the probes' signal source without affecting the dot transient response.
- ... Reduce time jitter and amplitude noise, if needed, on the more sensitive vertical ranges and faster sweep rates by means of a smoothing control.
- ... Measure millivolt signals in the presence of a substantial dc component by means of a dc-offset voltage monitorable at the front panel.
- ... Calibrate with amplitude signals available from the front panel. Calibrate with timing signals traceable to National Bureau of Standards.
- ... Show lissajous patterns in addition to single and dual-trace displays and signals added algebraically.
- ... Drive X-Y plotters or similar readout accessories.
- ... Drive external equipment, with fast delayed-pulse output.
- ... Add plug-in units as they come along.

Here's how you do it:

- 1 Plug in the power cord and signal source,
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In one compact laboratory oscilloscope you have a complete pulse sampling system with risetime of 0.35 nanosecond. Using the 50 Ω inputs, or the Tektronix passive probe or cathode-follower probe designed for use with the instrument, you can meet most of the general-purpose-measurement demands in repetitive-signal applications.

Type 661 Oscilloscope (without plug-ins) \$1150

Type 451 50 Ω Dual-Trace Sampling Unit \$1430

Type 511 Timing Unit \$ 750

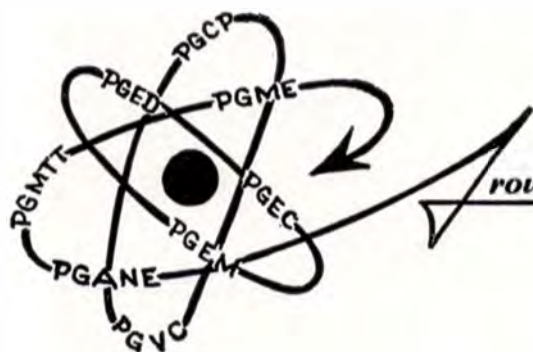
Probes:

Type P6026 Passive Probe \$ 140

Type P6032 Cathode-Follower Probe . . \$ 160

U.S. Sales Prices, f.o.b. Beaverton, Oregon

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Round the PG Circuit

By GUNTHER "GUS" KARGER



Medical Electronics

The Metropolitan Chapter of the PG on Bio-Medical Electronics invites you to hear Dr. Peter Halberg discuss the "ORGANIZATION OF AN ELECTRO-RETINOGRAPHY SERVICE".

The organization of an electroretinography service within a medical school setting will be discussed.

After a short historical review of the ERG, its principles and problems, the instrumentation and technical data will be demonstrated. Clinical and research aspects of ERG will be reviewed. The role of ERG as an electro-physiological and pharmacological research tool will be examined. Problematic areas of photostimulation, amplification and recording of the electroretinogram will be emphasized.

Tour of Bendix

The local PG Chapter on Aerospace and Navigational Electronics (PGANE) invites its members and guests to visit the Bendix Corporation facilities at Teterboro. See PG Calendar for meeting details.

Advanced Speed Reading Techniques

The PG on Engineering Management will gather on June 6 to hear a representative of the Reading Dynamics Institute present a lecture, movie and demonstration on the "Advanced Speed Reading Techniques as an Aid to Engineering Management".

Persons desiring to attend the pre-meeting dinner are requested to reserve with:

Jim McLinden
Sperry Gyroscope Co.
Great Neck, New York
LR 4-1576

Special Message by the PG Coordinator

This page closes the Professional Group calendar for this season. The Newsletter has, through these pages, made a supreme effort to bring you notices of all PG meetings sponsored by the New York Metropolitan Sections. However, this has been difficult since a few chapters do not wish publicity through this medium. Your editor makes this assumption since he has not been able to obtain meeting information despite a supreme effort. The reason given by these Chapters is that postcards are sent to PG members. May it please these delinquent Chapters that the NNJ Section has about 4,500 members, all of whom have a right to receive meeting notices.

Let us make PGEC (Electronic Computers) an example since this Chapter is the prime offender. It has about 500 members in the NNJ Section area. Since this Chapter sends postcards to this membership, it feels it satisfies all meeting notice requirements. What happens to the other 4,000 members who do not get the notice? The meeting may well be interesting to many persons who do not belong to PGEC and thus receive no notice.

It is written in the IRE MANUAL that a PG Chapter meeting is "A MEETING OF THE SECTION SPONSORED BY THE CHAPTER", and shall be publicized to the entire Section membership through a medium that reaches that entire body. The NEWSLETTER's primary purpose is to provide meeting notices and it is the responsibility of each Chapter to arrange meetings in such a manner that publicity reaches the EDITOR in time for publication.

Your PG Coordinator has been reappointed to serve another year and he promises to enforce this rule: If any chapter has not publicized most of its meetings through the NEWSLETTER by the end of the 1962-63 season, it may be required to show cause why the NNJ

SECTION should continue to give financial support to that Chapter.

If this notice will stir up comments it will have accomplished its purpose because active support by the grass roots is badly needed. Kindly direct your comments to:

G. KARGER
Microwave Service Int.
Denville, N. J.
OA 7-7400

PG CALENDAR OF EVENTS

**PGBME
JUNE 5
8:00 PM**

**MEDICAL
ELECTRONICS**
Rockefeller Institute
Welch Hall
67th Street &
York Avenue
New York, New York
**PRE-MEETING
DINNER**
Sutton Restaurant
1063 First Avenue
New York, New York

**PGEM
JUNE 6
8:00 PM**

**ADVANCED SPEED
READING
TECHNIQUES**
Brass Rail Restaurant
521 Fifth Avenue
New York, New York

**PRE-MEETING
DINNER
6:00 PM**

Brass Rail Restaurant
521 Fifth Avenue
New York, New York

**PGANE
JUNE 14
8:00 PM**

TOUR OF BENDIX
The Bendix Corporation
Eclipse Pioneer
Division
Teterboro, New Jersey
The Flight Deck
Restaurant
Route 46
Teterboro Airport

**PRE-MEETING
DINNER
6:30 PM**

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Positions also available in Cambridge, Ohio, Camden, New Jersey, Tucson, Arizona.

For a confidential interview in New York, send resumes to:
Mr. Kenneth R. Ryman, RCA Surface Communications Labs,
Dept. 14 75 Varick Street, New York, N. Y.



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PGES

SECOND ANNUAL DINNER MEETING

Date: June 14, 1962

Time: 7:00 P.M.

Place: Town & Country Room
Hotel Suburban
141 So. Harrison St.
E. Orange, N. J.

Speaker:

Dr. Emil J. Piel

Tab: \$4.00

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SPECIFICATIONS

Voltage Range	0-10 V rms; Peak-to-Peak, or dc
Frequency	1 kc
Accuracy (with cal. chart)	± 0.25%
Setting Resolution	Approaches 0.01% above 10 mV
AC Output Impedance	2-20 ohms depending on range setting
DC Output Impedance	0-4000 ohms depending on dial setting

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Input: 105-125 VAC, 60 cps
 Regulation (Combined Line and Load): 0.05% or 5 mv, whichever is greater..
 Ripple: 1 mv RMS max.
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 Size: $6\frac{1}{2}$ "H x $8\frac{1}{2}$ "W x $10\frac{1}{8}$ "D. (Hardware available for side-by-side mounting of two units in 19" rack).
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 HY-Z1-32-2.5 229.
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Hyperion Industries, Inc.	Weldmatic, Div. of Unitek Corp.
Lavoie Laboratories, Inc.	WEIwS Incorporated



ALANSON W. PARKES, *Chairman*

A. W. Parkes is president of Ballantine Laboratories, Boonton, New Jersey. He was born in Sandwich, Massachusetts and is a graduate of Clark University (AB in Chemistry and Physics), and of Lafayette College (MA) and of Harvard University (M.A. in Physics, specializing in electronics).

Mr. Parkes was with Aircraft Radio Corporation from 1930-1959 in an engineering and sales capacity. He was vice president, field engineering and sales, from 1949-1959. He is a Senior Member of the IRE and has held all offices of the NNJ Sub Section. He is a member of the Board of Trustees of Clark University since 1958, member of the Board of Directors, Ballantine Laboratories since 1954, member of the Board of Education, Boonton, New Jersey, 1960-63 term. He is a Fellow and Board member of the Radio Club of America and is a member of two special committees Radio Technical Committee for Aeronautics.

During World War I Mr. Parkes served in the United States Navy, and was one of the few to observe the famous Billy Mitchell bombing of captured German naval craft in the summer of 1921.

At the present time Mr. Parkes is residing in Boonton, New Jersey.

*Meet your Secretary and
 Treasurer next issue.*

KAHANT ASSOCIATES

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CHARLES VADERSON, *Vice-Chairman*

Charles Vadersen holds the B.S. and M.S. degrees in E.E. from New York University, and has been active in Communications Engineering for over 25 years. He started his professional life at Bell Telephone Laboratories, where he was involved in Transmission Research and Systems Development. During this time he contributed to the development of the VOCODER frequency compression and speech secrecy systems, automatic gain control devices, and acoustical instrumentation.

In succeeding years, he was Chief Engineer of several companies manufacturing communication products. In this capacity he directed the development and design of such products as hearing aids, recording devices, multiplex transmission equipment, telephone switching systems and electro-mechanical components.

In 1957 Mr. Vadersen joined IT&T, serving first at the Nutley Laboratories on the Vice President's technical staff, and later as Associate Director of the Digital System Laboratory. His work there was in digital data recording and processing, and large scale communication systems. He is currently at the Communication Systems division of IT&T, in Paramus, N. J., where he reports to the Vice President as Project Manager of a large R & D contract with the Defense Communications Agency. This work is directed towards the development of digital computer methods for the design, management and operation of global communication networks.

Chuck Vadersen has been working with the Northern N. J. Section of the IRE since 1957, serving as editor of the Newsletter, P. G. Coordinator, Treasurer, Lecture Series business manager, and now as Vice-Chairman.

NORTHERN NJ SECTION

MAY						
S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
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27	28	29	30	31		

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JUNE 1962

JULY						
S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				



SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
					1	2
3	4	5 PGBME MEDICAL ELECTRONICS WELCH HALL N.Y.C. 8 p.m.	6 PGEM ADVANCED SPEED READING BRASS RAIL REST. N.Y.C. 8 p.m.	7	8	9
10 Whitsunday	11	12	13 NNJS FIELD TRIP ALL MEMBERS IBM RESEARCH CTR. LEAVE FROM ITT AT 10:30 a.m.	14 PGANE TOUR OF BENDIX TETERBORO, N. J.—8:00 P.M. PGEWS SECOND ANNUAL DINNER 7:00 P.M.	15 2nd Tax Due	16
17 Father's Day	18	19	20	21 Summer Begins	22	23
24	25	26	27 EXECUTIVE COMM. MEETING VERONA LIB. 7:30 p.m.	28	29	30
	JULY 14th DEADLINE FOR MATERIAL TO APPEAR IN SEPTEMBER ISSUE					

Now from Panoramic...a low-cost high performance spectrum analyzer 10mc to 43kmc with all these features:



PANORAMIC MODEL SPA-10 SPECTRUM ANALYZER

- ▶ Single tuning head includes coaxial and waveguide input mixers, plus noise-free non-contacting klystron cavity shorts.
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- ▶ Selectivity adjustable 1-80 kc.
- ▶ Calibrated dispersion marker with modulation provision to measure narrow band dispersions accurately.
- ▶ Bright, easily read 5" CRT display with calibrated linear, 40 db log and power amplitude scales.
- ▶ Single knob tuning control with illuminated slide rule scale, accurate within 1%.
- ▶ Crystal controlled $\pm 0.01\%$ markers (OPTIONAL) check signal frequency calibrations over entire SPA-10 range.
- ▶ Adjustable smoothing filter simplifies noise analysis.



The low cost Model SPA-10 provides sensitive broadband spectrum analysis up through Ka band in a single compact unit. Wide dispersion range to 80 mc, internal calibration and self-checking facilities, and adjustable I-F filter bandwidth for optimized selectivity, are just a few of the characteristics which recommend this carefully designed and packaged analyzer. Non-professional lab and production personnel readily master the easy-to-use SPA-10. Tuning is accomplished with a single low-backlash control which is calibrated within 1% on an illuminated slide rule scale. Excellent shielding permits accurate analysis close to high-power signal sources.

The multi-purpose broadband Model SPA-10 complements Panoramic's unmatched array of widely accepted, exceptionally reliable RF and microwave spectrum analyzers. Many SPA-10 modular design elements are derived from the highly regarded, ultra-sensitive Panoramic Analyzer Model SPA-4a.

Model SPA-10 provides quantitative visual analysis of pulsed signals measuring power points, band occupancy, pulse width, etc. Also for AM, FM, and random signals; distortion, stability and attenuation measurements; and RFI and ECM monitoring.

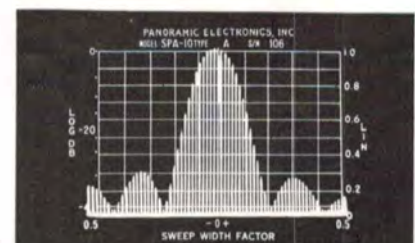
Write, wire or phone today for comprehensive technical bulletin on Model SPA-10, as well as • Model SPA-4a, 10 mc-44 kmc with one head • low cost Model SPA-1, 10 mc-4 kmc with 3 interchangeable heads.

CHECK THESE SPECIFICATION HIGHLIGHTS

Frequency Range 10mc to 43kmc, in 8 bands.
Tuning Control Accuracy 1% or ± 1 mc, whichever is larger.
Dispersion (Sweep Width) 200kc to 80mc. (200kc to 5mc for 10mc-100mc frequency range.)
Selectivity Adjustable I-F bandwidth, 1kc to 80kc.
Input Attenuators 100 db range for signals up to 12.1kmc. (Ext. waveguide attenuators available for 12-43kmc range.)
I-F Attenuator 0-41 db in 1 db steps. Accuracy: 0.05 db/db.
Sweep Repetition Rate Adjustable, 1 to 60 cps.
Amplitude Scales (Switch selected) Calibrated: Linear, 40 db Log, Power (square law).
Frequency Markers Dispersion marker to ± 40 mc. Marker Modulation; Ext source, 10kc-10mc, generates additional markers. (Spacing determined by ext. generator frequency.)
Crystal controlled markers, 0.1% accuracy, at interval of 1, 10 and 100 mc (optional).
Dimensions Cabinet, 20" h x 17 1/2" w x 19 1/2" d. (For 19" width rack mounting, specify the SPA-10/R with slide tray)

FREQUENCY	SENSITIVITY*
10 - 640 mc	- 95 to - 105 dbm
0.56 - 1.4 kmc	- 87 to - 97 dbm
1.0 - 2.24 kmc	- 79 to - 89 dbm
2.0 - 3.04 kmc	- 71 to - 81 dbm
2.9 - 6.0 kmc	- 90 to - 100 dbm
6.0 - 12.2 kmc	- 80 to - 95 dbm
12.1 - 24.4 kmc	- 70 to - 85 dbm
21.3 - 43.0 kmc	- 40 dbm nominal

*2:1 deflection ratio-CW signal; noise; 50 ohm Input



Spectrum of pulsed microwave signal. Synchronization of sweep rate by PRF permits stationary display. Amplitude scale, linear.



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Size and Style of Type

wf Wrong font (size or style of type)
Repeat stop mark for each additional identical error in same line

lc Lower Case Letter
Set in LOWER CASE or LOWER CASE

lc Capital Letter
SET IN capitals

caps Lower Case with Initial Caps *u/c*
SET IN small capitals

caps + lc SMALL CAPITALS WITH INITIAL CAPS

sm. caps Set in roman (or regular) type

caps + s.c. Set in italic (or oblique) type

rom. Set in lightface type

ital Set in boldface type

L.F. Bold italic

bf Superior letter or figure^b

bf ital Inferior letter or figure₂

A marginal correction of lower case matter should NOT be written in CAPITALS

Position

center Move to right *ragged* Ragged margin

Move to left

Put in center of line or page *etc*

Lower (letters or words)

Elevate (letters or words)

fl L or // Straighten line (horizontally)

tr # Align type (vertically) *tr* Square up justify — flush right and left

tr Transposes pace (transfer)

tr Transpose enclosed in ring matter

tr Transposes (order letters of or words)

run over Rearrange words of order numbers in

run back Run over to next line. (A two-letter division should be avoided)

Run back to preceding line. (This division is incorrect)

reset A syllable or short word standing alone on a line is called a "widow"; it should be eliminated

Spacing

solid Means "not leaded" (Pron. "ledded")

leaded Additional space between lines

lead Insert lead between lines

or ld Take out lead or *tr lead*

or Close up entirely; take out space

Close up partly; leave some space

or Less space between words

or eq # Equalize space between words

thin # Thin space where indicated *hair #*

l/s LETTER-SPACE

Insert space (or more space)

space out More space between words

en quad ½-em (nut) space or indentation

or Em quad (mutton) space or indentation

or Insert number of em quadrats shown

Insertion and Deletion

OUT Insert matter omitted; refer to copy (Mark copy Out, see proof, galley 0)

see copy Insert marginal additions

the/l Dele—take out (delete) (Orig. b)

or Delete and close up

or Let it stand—(all matter above dots)

Diacritical Marks; Signs; Symbols

u Diaeresis or umlaut

e Accent acute *e* Accent grave

a Circumflex accent or "doghouse"

c Cedilla or French c

n Tilde (Spanish); til (Portuguese)

use lig Use ligature (affix—ffi) Logotype—Qu

Virgule; separatrix; solidus; stop mark; shill mark

Asterisk *

Asterism ** Leaders

Ellipsis . . . or * * * or

Order of symbols: * † ‡ § || ¶ # ; then double

Paragraphing

¶ Begin a paragraph

no ¶ No paragraph

run in Run in or run on

2 ¶ Indent the number of em quads shown

flush ¶ No paragraph indentation

hang in Hanging indentation. This style should have all lines after the first marked for the desired indentation

Punctuation

o Period or "full point."

Periods and commas ALWAYS go inside quotes

or Comma *or* Colon

; Semicolon

or Apostrophe or 'single quote' *"pos"*

or Quotation marks "quotes"

? Question mark or "query"

! Exclamation point or "bangl"

or Hyphen *en* or *en* En dash

or One-em dash *two* Two-em dash

(/) Parentheses (parens; curves; fingernails)

[/] Brackets (crotchets) Brace

Miscellaneous

e/ Correct latter or word marked

e/s k/d or x Replace broken or imperfect type

o Reverse (upside-down type or cut)

1 or 1 Push down space or lead that prints

SP Spell out (20 gr.) (Also used conversely)

G? Question of grammar

F? Question of fact

24 aa: or ? Query to author *24?*

24 Ed Query to editor *24 Ed*

A ring around a marginal correction indicates that it is not the typesetter's error. All queries should be ringed

OK w/c OK "with corrections" Correct and print; no revised proof wanted

or OK o/c or "as corrected"

End Mark-off or break start new line

End of copy: # or 30 or End

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P G C S

Come All Ye Faithful

It is generally agreed that the anticipated merger of the IRE and AIEE will strengthen our Professional Groups. The consolidated IEEE is expected to become ultimately a confederation of Professional Technical Groups, stemming from the present Professional Group of the IRE and Technical Groups of the AIEE. Each PTG will be in effect a small technical society uniting engineers interested in a specific scientific or technical field. This is of particular importance to younger engineers who thus can become members of a group in which they may know nearly all members, or at least all in their area, instead of remaining an anonymous member of the existing very large engineering institutes.

The history of practically all specialized societies in this country, whether in science, engineering, medicine or law, shows growth from small, often fairly insignificant, beginnings to large organizations of considerable prestige. Concurrently with growth there occurs a change from rather informal practices to more rigid rules for membership and procedures. The national IRE Prof. Group on Communication Systems after eight years is already well along in this evolutionary process and the merger of IRE and AIEE will accelerate its progress.

(Continued Next Page)

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The Northern New Jersey Chapter of the PGCS, now a year old, is still in the initial stages. There is every reason to anticipate that the large number of communication engineers in the area, from both IRE and AIEE, will make the Chapter an important local technical group of the future. As NNJ-IRE-PGCS or PTGCS increases in size, scope and importance, the number of its meetings will increase and they will become a forum for disclosing important advances in the art. The members will thus receive better and better services as well as the indirect benefits of participating in the activities of an outstanding society.

Now is the time for men, particularly young men, to become active in this organization. They have a unique opportunity to be leaders of a growing society. The rewards of such activity are professional recognition, warm friendships and a sense of accomplishment.

Qualified engineers who would like to serve on our committees should get in touch with:

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Paramus, New Jersey
HU 9-7400

or
GUNTHER KARGER
Microwave Services
Denville, N. J.
OA 7-7400

The aims of the Chapter are to encourage presentation and publication of good technical papers in our field of interest and to promote fellowship among engineers working in that field in Northern New Jersey. The field of interest as defined in the constitution of the PGCS "shall be confined to communication systems and related subjects in radio and wire communication, such as practiced by common-carrier, industrial, and governmental agencies in point-to-point, marine, land mobile, aeronautical, and astronautical services and includes the transmission of information in any form between humans and/or machines as well as both theoretical and practical features that contribute to or utilize the techniques or products of this field."

Our schedule for the 1962-63 season calls for four or five meetings and one field trip. Tentative subjects are: electronic switching; data transmission; the new look in HF; U. S. commercial world wide communication systems; communication practices in foreign countries; and communication lessons from the human nerve system. In order to best serve the aims and interests of the Group, the Chapter officers welcome suggestions and comments from all members with respect to topics, types of meetings, meeting places and field trips.

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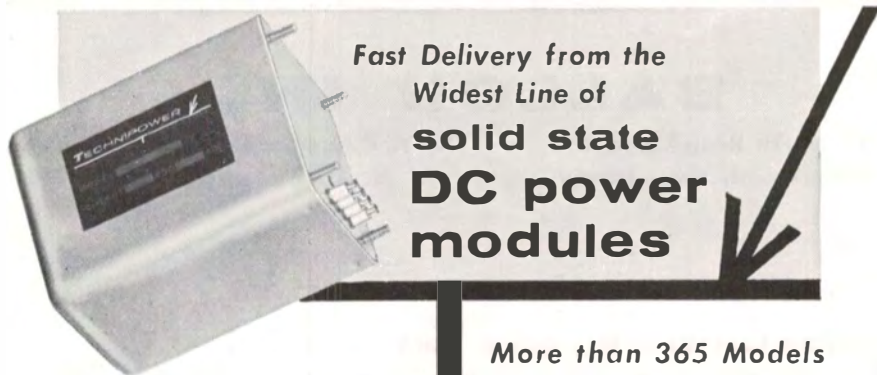


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LETTERS

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J. Roberts

Dear Sir:

Through the medium of your publication, I hereby register a formal claim to be the first enunciator of what should henceforth be known as "Colin's Law" of physics. The law is stated thus:

When you are in the bathroom, and take a tube or bottle or jar out of the medicine chest, and unscrew the cap and drop the cap accidentally from a height "h": The cap will fall first into the wash-basin, then rebound "n" times from walls, floor, fixtures and ceiling; but regardless of "h" and "n", and of the direction cosines and elastic coefficients of the rebounding surfaces, and of atmospheric conditions, Coriolis force and gravitational perturbations due to the inner planets; and regardless of your attempts to retrieve or deflect the cap: the cap will inevitably karplunk into the toilet bowl.*

The validity of the above-stated law has been confirmed, not only by a lifetime of personally-sponsored research, but by independent tests in the leading physics laboratories of the world.**

The cause of the phenomenon is not yet established, but I am conducting a government-sponsored research program *** to test an explanation put forth by a colleague of mine, a specialist in somewhat related fields, being Chairman of the NNJ Chapter of PGIF.**** That gentleman's hypothesis is that the phenomenon is caused by those microscopic agents first discovered by my distinguished predecessor in science, and known familiarly in the art as "Maxwell Demons".

Yours truly,
Robert I. Colin

* The lid of which, according to an axiom implicit to Colin's Law, will always, under the stated initial conditions, be in the non-retracted position.

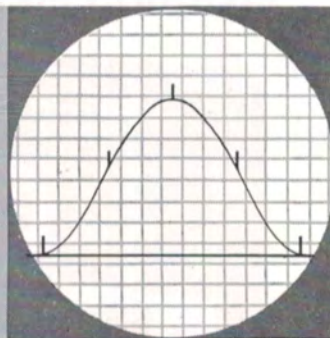
** Including the Bundes For Schung Sinstute fuer Reine und Unreine Physik an der Kgl. Universitaet Baden-Baden.

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**** IRE Professional Group on In-human Factors in Electronics.



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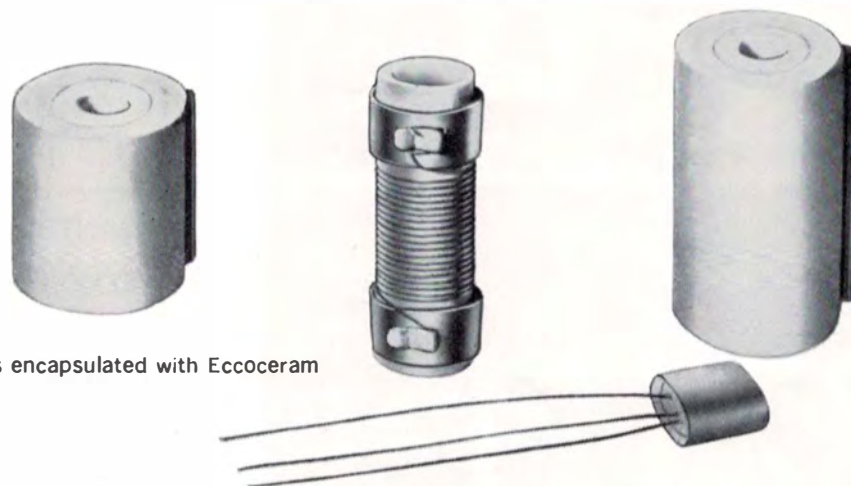
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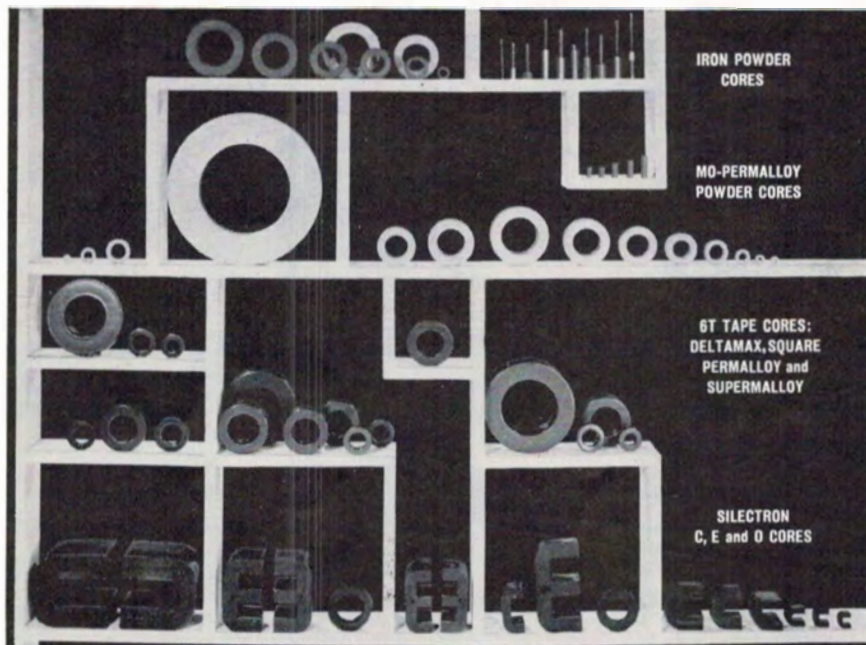
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	W5MT3AW	0-1 0-5	0-150 0-750	\$150
10-Amp Models	W10MT3A	0-2 0-10	—	\$110
	W10MT3W	—	0-300 0-1500	\$138



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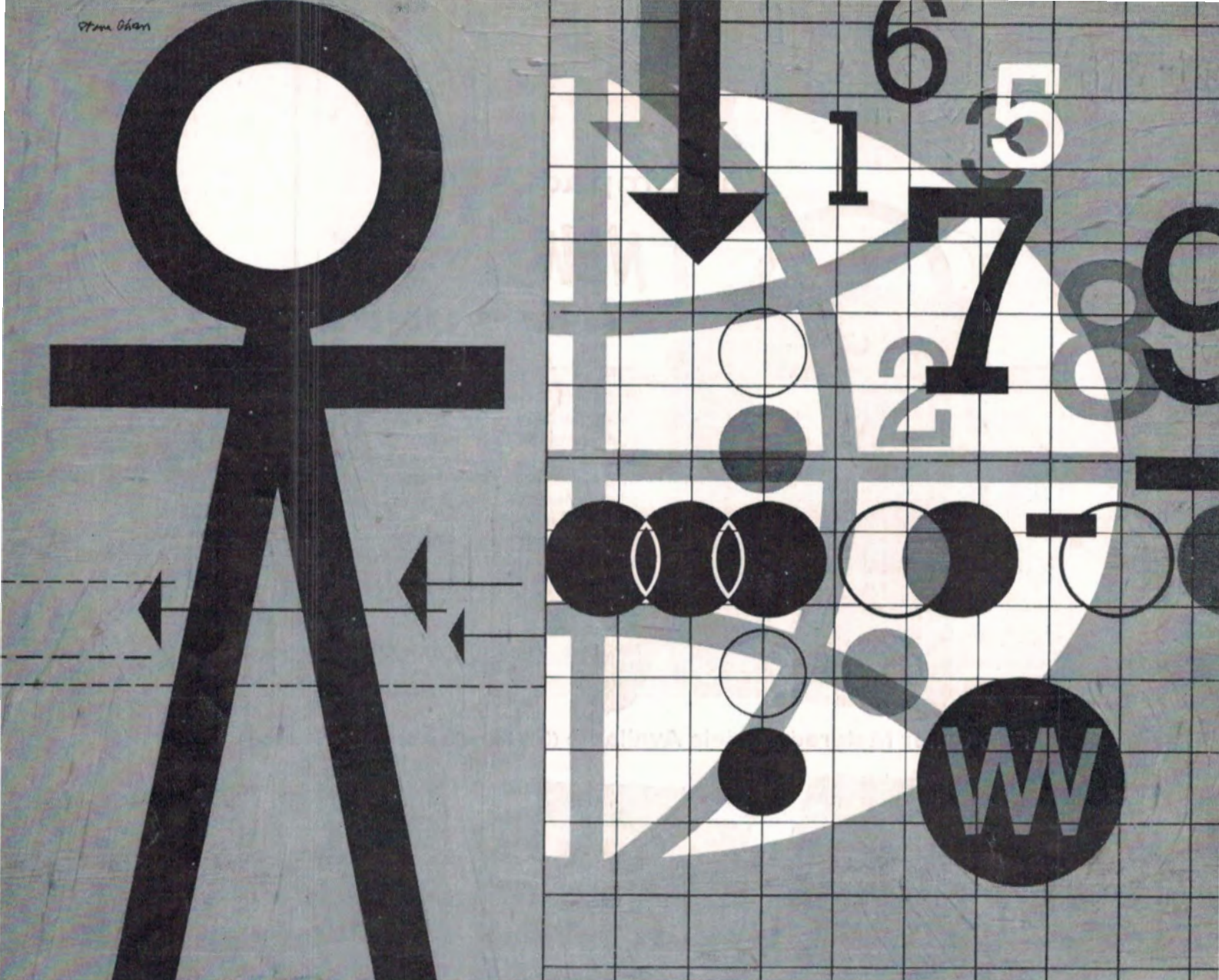
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