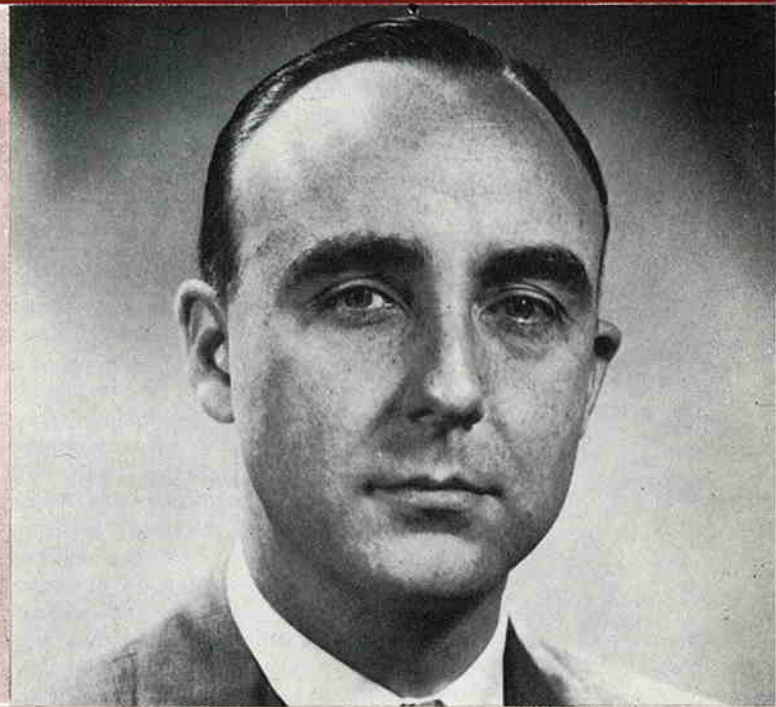


March, 1958
Vol. 6, No. 7

The PULSE *of* LONG ISLAND



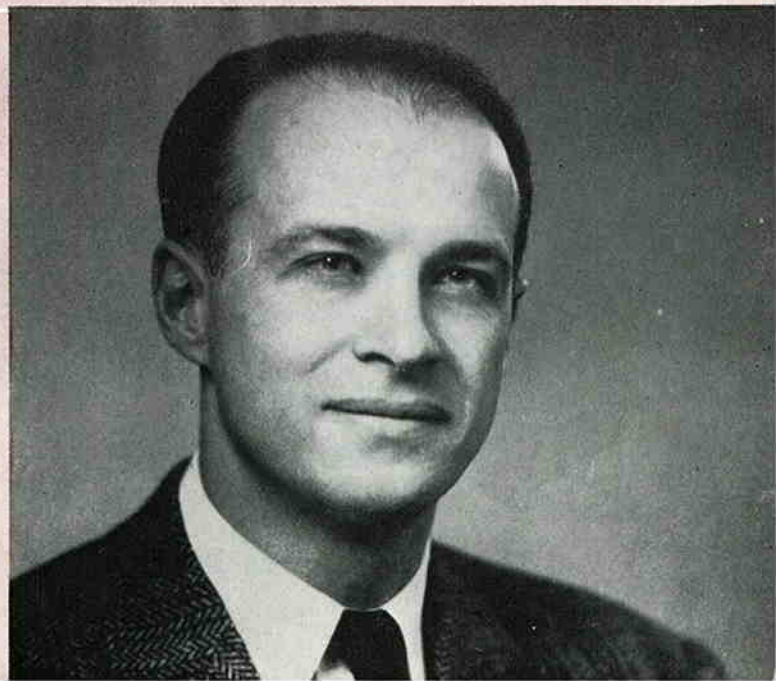
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L. I. FELLOWS



W





Antenna Patterns and Progress

The requirements of present day aircraft are such that the present techniques of aircraft antenna pattern measurements are obsolete for a good number of cases. The coverage requirements are the same as in the past, omnidirectional in azimuth with some reduced coverage in the vertical plane, however, the operating frequency has increased by a factor of 10 or more in the past few years.

The normal procedure for measuring aircraft patterns is to build a scale model of the aircraft and the antenna, and then measure the patterns at a scale frequency corresponding to the full-scale frequency multiplied by the scaling factor.

To illustrate this problem let us assume that we are faced with mounting an X-band (10,000 Mc) omnidirectional antenna on a B-52 aircraft (maximum dimensions 200 feet). Using a 1/10 scale model (20 feet) we now need a scale frequency of 100,000 Mc. To further increase the problem we need a range of about 80,000 feet in order to satisfy the requirements of phase distortion in our patterns. These three conditions, model size, frequency and range, introduce a third problem, namely, the transmitter power required, or receiver sensitivity. For crystal-video operation (normal procedure at present) we would need 1,000,000 watts to drive our pattern recorder. It is obvious that superheterodyne receivers will have to be used. Receivers at 100,000 Mc are not shelf items (yet), and also 100,000 Mc, 10 watt tubes are not shelf items.

Increasing our model size is one way of reducing the severity of the frequency and power

problems while increasing the problem of range, and model support and rotation.

These problems will not be solved by technical breakthroughs, but rather by a series of compromises and revaluation of measurement procedures. For example, the range required for antenna pattern measurements is based upon large aperture antennas, and the entire aircraft probably should not be considered the aperture. However, the amount of reduction in range which would be permissible is not readily apparent and will have to be determined by experiment. It might also be possible to use visible light techniques for pattern measurements in conjunction with partial model radiation patterns.

Some of these problems are being investigated; however, much more work is required before this type of antenna measurement can be considered standard.

In the new space age we may encounter the problem of designing radiating systems for space vehicles and rockets. The radiation pattern of a simple antenna on a sphere hardly needs measurement since it can be accurately calculated. However, when we consider a telemetering link to a rocket we may encounter frequencies and dimensions that are difficult to model. We are particularly horrified at the idea of modeling the space platforms of the science fiction writers with their toroidal contours with outriggers, tanks and miscellaneous what-nots tacked on at every possible angle. Let us hope that no one wants omnidirectional antennas on space platforms.



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Advertisement

FELLOW AWARDS PARTY

George Gorelick

On Sunday Afternoon, March 23, 1958, at 4:30 P.M., the Long Island Section of the Institute of Radio Engineers will hold its annual Fellow Awards presentations with a cocktail party at the Garden City Hotel. Up until a few years ago, all Fellow Award presentations were made at the annual IRE convention in New York City. Since then, the growing electronics industry on Long Island decided to honor the Long Islanders and those from foreign countries who have achieved the rank of Fellow in the IRE, with an annual presentation and cocktail party which is held in their honor. The Long Island Section seems to hold the unique distinction of being the only section which honors the newly-appointed Fellows with such formal ceremonies.

In the past, a great number of people have attended these ceremonies. At last year's event, over 1600 people were in attendance. Formal invitations will be mailed to all IRE members in the Long Island Section, to representatives of the Long Island electronics industry, and to IRE members residing in the areas adjacent to Long Island. The entire cost of the affair is borne by Long Island industries.

At this year's ceremonies, four newly elected Long Island Fellows will be honored. They are Drs. Nathan Marcuvitz, Michael DiToro, Henry Jasik, and Mr. Benjamin Tyson. They will be tendered their awards for outstanding work in the fields of microwaves, electroacoustics, antennas, and radar and color television, respectively.

In addition, four newly elected foreign Fellows will be similarly honored at the gathering. They are Messrs. Helio Costa of Rio De Janiro, Brazil, J. A. Smale of Essex, England, F. H. Wells and A. F. Wilkins, both of Bucks, England. They will be honored for distinguished work in the fields of aeronautical radio, telecommunications, pulse techniques, and short wave direction finding.

The main speaker at this event will be the incoming president of the IRE for 1958, Mr. Donald Fink. Others invited to speak include Mr. Carl-Erik Granqvist of Sweden, who is the incoming Vice-President for 1958, and Mr. John T. Henderson who is the past-President for 1957. Dr. Eugene Fubini, chairman of the section, will make the introductions. All the Past Presidents of the IRE since 1950 are expected to be present, as well as all Fellows now residing in and around the Long Island area.

DR. MICHAEL DI TORO

Dr. Michael J. DiToro (F '58), who will receive the rank of Fellow for his work in the field of electroacoustics, received his Bachelor, Master, and Doctor of Electrical Engineering degrees from the Polytechnic Institute of Brooklyn. At the present time, he is director of engineering at the Polytechnic Research and Development Co. Inc., of Brooklyn, New York. In the past, Dr. DiToro has been instrumental in the development of electroacoustical transducers, telemetering, delay lines, speech compression, noise reduction, submarine detection, and long-range radio communications systems. He has presented over 30 papers and holds more than 40 patents. For a time, he was Associate Director of Brooklyn Poly's Microwave Research Institute. Dr. DiToro is Adjunct Professor at the Graduate School of Electrical Engineering at the Polytechnic Institute of Brooklyn. He also holds the rank of Fellow in the Acoustical Society of America. He is a member of the Professional Group on Information Theory of the IRE.

MR. BENJAMIN TYSON

Mr. Benjamin F. Tyson (F '58), who will receive the rank of Fellow for his work in the fields of radar and color television, was born on November 18, 1913, in Chatham, New Jersey. He received the degree of Mechanical Engineer from Stevens Institute of Technology in 1935 and the Master of Science degree in 1937. He worked on television problems for many years with the Hazeltine Corporation and at present is Engineering Manager for Sylvania Electric Products, Inc. of Bayside, New York. He has participated in various committees for the IRE, including Video Techniques, Tellers and Awards. Mr. Tyson received a Certificate of Commendation from the U. S. Navy, Bureau of Ships in 1947.

Dr. NATHAN MARCUVITZ

Dr. Nathan Marcuvitz (F '58), who will receive the rank of Fellow for his work in the field of microwaves, was born in Brooklyn, New York on December 29, 1913. He received his Bachelor of Electrical Engineering degree from the Polytechnic Institute of Brooklyn in 1935. From 1935 to 1936 he was a research fellow at the Polytechnic Institute. Between 1936 and 1940, he was associated with the RCA Manufacturing Co., where he worked on high-transconductance vacuum tubes, iconoscopes, and orthicons. In 1940, he received his Master of Electrical Engineering degree from Brooklyn Poly, and also returned to that school on a research fellowship. During World War II, Dr. Marcuvitz did waveguide research at the MIT Radiation Labs. In 1946, he returned to Brooklyn Poly, where he is now a Professor of Electrical Engineering. In 1947, he was awarded the Doctor of Electrical Engineering Degree from Brooklyn Poly. Dr. Marcuvitz is also the Director of the Microwave Research Institute of Brooklyn Poly.

DR. HENRY JASIK

Dr. Henry Jasik (F '58), who will receive the rank of Fellow for his work in the field of microwave antennas, was born in New York City on March 12, 1919. He received his Bachelor of Science degree from the Newark College of Engineering in 1938. Dr. Jasik worked with the Navy Department from 1938 to 1939 and with the Civil Aeronautics Administration from 1939 to 1944. From 1944 to 1946, he was an officer in the United States Navy, where he worked on the development of airborne radar and communications antennas at the Naval Research Laboratories. From 1946 to 1949, he was associated with Andrew Alford, Consulting Engineers as senior project engineer and as vice-president of the Alford Manufacturing Company. From 1949 to 1952, he was employed by the Airborne Instruments Laboratory where he was associated with the Special Devices Section and the Antenna Section as an assistant supervising engineer. Since 1952, Dr. Jasik has been engaged as an independent consultant. In 1955, he organized Jasik Laboratories. He is currently working on antenna problems associated with the radio astronomy field.

RANDOM PULSES

NORM POTTER

John N. Dyer, Vice President of Airborne Instruments Laboratory (AIL), Mineola, N. Y., announced the promotion of **Joseph W. Kearney** to the position of Head of AIL's newly formed Reconnaissance Department.

Joseph W. Kearney joined Airborne Instruments Laboratory in 1946. Much of his work with the Laboratory has been devoted to the development of airborne intercept receivers for the processing of radar data. This has involved the design of exceedingly compact units utilizing advanced techniques of miniaturization with high reliability.

Joe has been very active in the IRE Section activities. Last year he was chairman of the PGMTT Chapter and this year has served as chairman of the Student Affairs Committee.

Dr. D. Lawrence Jaffe (SM '46), President of Polorad Electronics, has just been awarded a patent on a new GCA (Garage, Car Approach) that promises to prevent garage doors and car fenders from becoming too intimately acquainted. Confronted with the common problem of shrinking garage doorways and ever wider car bodies, Dr. Jaffe used his car radio with an extra antenna in the front center of the car and two transmitters, one on each side of the garage.

When the car is in line for a perfect entrance into the garage the driver hears no noise, but if he (or she!) is too far to the left or right the car radio picks up an appropriate signal, thus warning the driver that fender paint is in danger of being shed.

Dr. Jaffe reports that his device is a wonderful preserver of family peace but that his company (to whom the patent has been assigned) has no plans to put the device into immediate production.

Dr. Vincent R. Learned (F '55), Director of Research and Development, Electronic Tube Division for Sperry Gyroscope, recently announced test results of a new, extremely rugged electronic oscillator which is being used in test flights of long range missiles.

The component was a key part in a supersonic missile deliberately exploded on a flight from Cape Canaveral. Dr. Learned and his associates later computed, after the dredged up oscillator had been returned to Sperry, that it still operated within .01% after withstanding shocks of more than 100 G's in the explosion and a free fall of 1½ miles into the ocean.

Dr. Learned, who lives in Garden City, received his B.S. in E.E. from U. of Cal. in '38 and was awarded his Ph.D. from Stanford in '43. He has been granted six patents and has two still pending.

A new book on "Transistor Electronics" has been published by McGraw Hill co-authored by Valley Stream L. I. section members **Arthur L. Rossoff** and **David DeWitt**. Art is Assistant Chief Engineer of the Engineering Products Division of Radio Receptor Co., Inc. Dave, formerly of Radio Receptor is now with IBM.

The book which shows the reader how to employ the usual transistor electronics approximations in practice, with prototype examples, has received favorable reviews.

Paul G. Holcombe (A '52), an Engineer in Airborne Instruments Laboratory's Department of Radar and Navigation, recently had a technical article published in **Aviation Age** discussing the best way of linking remote radar equipment to an indicator display. Paul discussed a new microwave link which is planned to bridge the gap between the airport radar installation and the airport controller. Holcombe, who makes his home in Wantagh, has been with AIL since 1951. He received his B.S. in E.E. from Newark College of Engineering and his M.E.E. from Brooklyn Poly in 1954.

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SPECIALISTS IN COMPONENTS

MEETING NOTICES

FELLOW AWARDS MEETING

Sunday, March 23, 1958, at 4:30 P.M.
Garden City Hotel
Garden City

• • •

PGCP

Thursday, March 6, 1958, at 7:30 P.M.
"PRINTED CIRCUIT CONNECTORS"

B. A. Jackson, G. E. Omholt, H. E. Ruchlmann
Engineering Societies Building
29 W. 39th St., New York

• • •

PGPT

Thursday, March 13, 1958, at 7:30 P.M.
"PRODUCTION TECHNIQUES FOR ETCHED WIRING"

Edward J. Lorenz
Burroughs Corp. Sales Meeting Room
219 Fourth Ave., New York

• • •

PGI

Tuesday, March 18, 1958 at 8:00 P.M.
"NEW CONCEPT IN COCKPIT INSTRUMENTATION"

William Vetter
Mineola Memorial Library
Marcellus Road and Jackson Ave., Mineola

LONG ISLAND SCIENCE COLLEGE

The shortage of qualified scientists and engineers in this country constitutes a very real and immediate crisis. According to many authorities this can only be overcome by increasing educational facilities in these fields.

A study completed by the Regents in December of 1956 pointed out that by the most conservative estimate there will be a shortage of engineering educational facilities in New York after 1960 even if all of the existing

engineering schools in the State are able to carry out their present plans for expansion.

As a result of this study the State University Trustees proposed a complete science center on Long Island including a college for preparing teachers of science and mathematics in high schools and a science and engineering college. The science center will include a graduate program leading to the Master of Science degree.

State University College on Long Island is presently temporarily located at Planting Fields, near Oyster

Bay, on an estate donated by the late William R. Coe. The expected enrollment for next fall will be about seventy-five students.

The permanent campus, with an initial capacity of 2500 students, is now being developed at Stony Brook on a 340 acre estate donated by Ward Melville. This campus should be in operation by the fall of 1959.

There will be no tuition charge for residents of New York State. Special fees will not exceed \$100 per year. Accreditation has been granted by the Middle States Association of Colleges and Secondary Schools.

EDITOR'S NOTES

March is the month of the National IRE Convention at the Coliseum and the Waldorf-Astoria in New York City. We encourage you to attend as many sessions as possible in addition to viewing the exhibits in the Coliseum. However, this may be the time to take a second look at the rapid increase in growth experienced by this affair over the past years. Growth and bigness are, in themselves, not harmful. They only become so when allowed to go on uncontrolled without regard to usefulness. The IRE Convention now seems to have reached the point of oversaturation, with too many technical sessions (many held at the same time) and too many exhibits to be useful to the engineer. The problem seems to lie directly on the shoulders to the National IRE Executive Board. I'm sure that they view the situation with as much alarm as some of you. So, why not drop them a line or write to us with your suggestions. We'll forward any suggestions on to the National group.

One of our Section members, who lives in Queens, has made a suggestion which seems to have some merit. He wonders why all the Section Meetings have to be held in Garden City. His suggestion is that some of the meetings be held in Queens, to allow the many Queens members to attend without as much traveling as is now required. His suggestion is definitely worth considering, and if any of you have any other suggestions or if you agree with him, please drop a note to the editor at his home at 19 York Avenue or at the P. O. box in Mineola.

We have had much favorable reaction to the "How to be a Project Leader" article in the January PULSE. If any one has any ideas for other humorous or semi-humorous articles of this type, please contact the editor.

The Program Committee has done an excellent job this season, in setting up meetings which are of general interest to large groups of the membership. If you have any suggestions as to future topics which you would like to have as Section meetings, please let the editor know, and he will forward your suggestions to the Program Committee. It is not easy to continue to come up with ideas for interesting meetings, and we think that the membership can be of help in this matter.

PULSE PUZZLER

The Chief Electronics Mate on a Pacific steamer fell overboard on a recent voyage. Unfortunately he was not missed. Our friend scanned the horizon for land and spied a distant atoll. Divesting himself of all clothes for the long swim, he struck out. Arriving safe but tired he found nothing but sand and a bottle of fresh

drinking water. Thinking he would not be picked up for at least two days he decided to drink half one day and the rest the next. His problem was to decide when he had drunk half since he had nothing for measuring and the bottle was an odd shape with no symmetry whatever. How did he find when he had drunk half?

(SOLUTION ON PAGE 13)

SECTION OFFICERS

Chairman	-	-	Dr. Eugene G. Fubini, AIL
Vice-Chairman	-	-	Thomas C. Hana, Hazeltine
Secretary	-	-	E. King Stodola, Reeves
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Jr. Past Chairman:	-	-	David Dettinger, Wheeler Labs.
Sr. Past Chairman:	-	-	Paul G. Hansel, Servo Corp.
Regional Director	-	-	Frank A. Polkinghorn, Bell Labs.
Historian	-	-	Charles Dean, Hazeltine

PULSE of LONG ISLAND

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 Layout Editor... Tony Paolantonio
 Photographer Horace Pote
 Feature Editors: Len King, Murray Novick, Irene O'Connor, Doris Major, Norm Potter.
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 Editorial Consultants: Tom Hana, Jim Canning, Stuart Casper.

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NOMINATIONS FOR LONG ISLAND SECTION OFFICERS

The Nominating Committee, headed by ex-Chairman Dave Dettinger, have presented the nominations for Section Officers of the Long Island Section for 1958-1959. Those nominated are as follows:

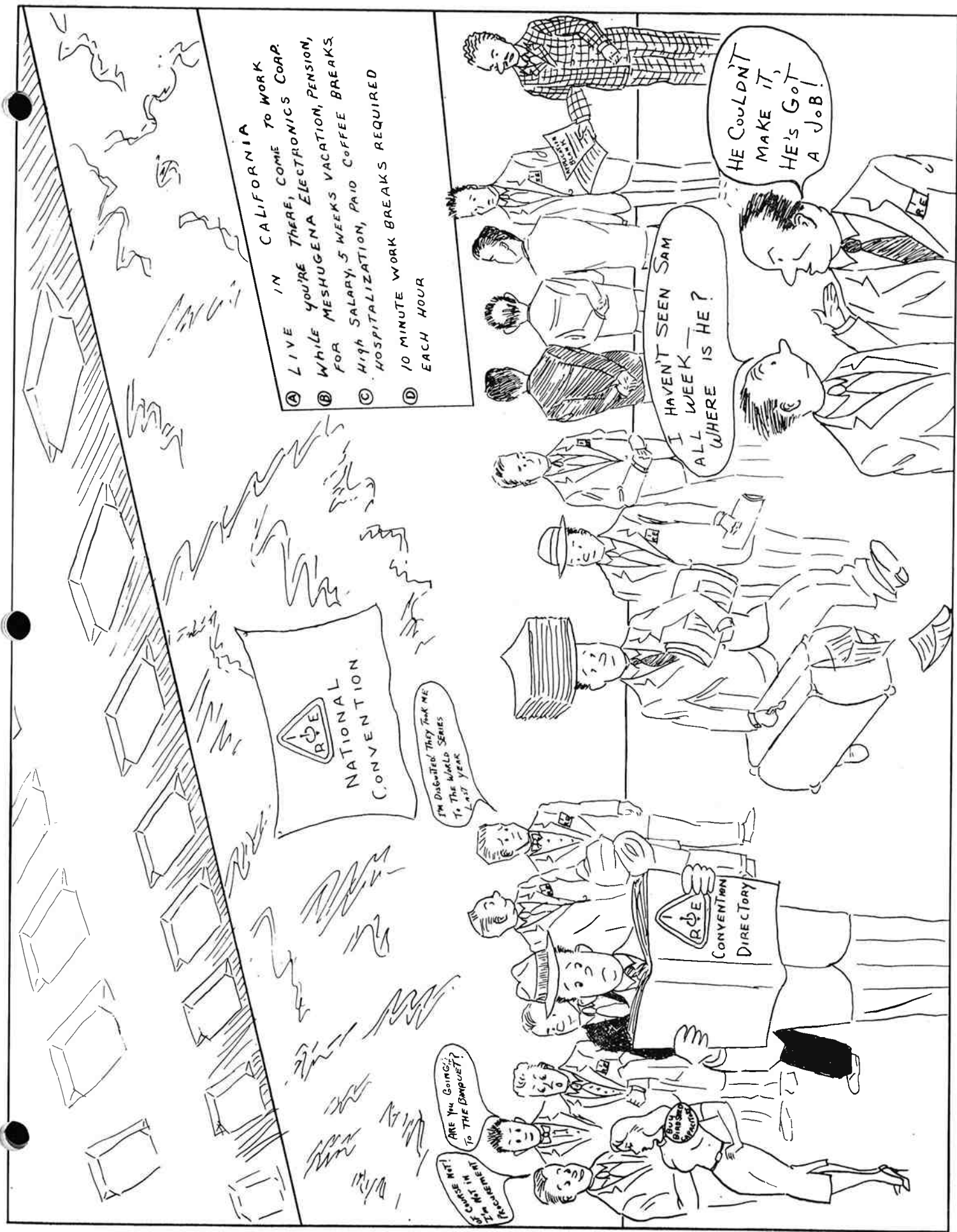
Chairman:
 Dr. Reinhard K. Hellmann, Hazeltine

Vice-Chairman:
 Mr. Albert Corwin, Teletronics

Secretary:
 Mr. Richard C. Price, Sperry

Treasurer:
 Mr. J. Gregg Stephenson, AIL

The elections will be held on April 15, 1958 after the scheduled section meeting. At that time, any other nominations will be accepted from the floor. Watch next month's PULSE for articles on the nominees.



IN CALIFORNIA

- A LIVE THERE, COME TO WORK
- B WHILE YOU'RE THERE, ELECTRONICS CORP. FOR MESHUGENA VACATION, PENSION, HIGH SALARY, 5 WEEKS VACATION, BREAKS
- C HOSPITALIZATION, PAID COFFEE BREAKS
- D 10 MINUTE WORK BREAKS REQUIRED EACH HOUR



NATIONAL CONVENTION

I'M DISGUSTED THEY TALK ME TO THE WORLD SERIES LAST YEAR

ARE YOU GOING TO THE BANQUET?

OF COURSE NOT! I'M NOT IN THE BANQUET!

CONVENTION DIRECTORY

BUY BANQUET TICKETS

I HAVEN'T SEEN SAM ALL WEEK—WHERE IS HE?

HE COULDN'T MAKE IT, HE'S GOT A JOB!

TWO FIELD TRIPS PLANNED FOR SECTION

PLEASE READ CAREFULLY

This year the Long Island Section will hold two field trips. One will be held in place of a May Section Meeting. The other will be the regular June field trip.

SATURDAY, MAY 17, 1958 — Brookhaven National Laboratory

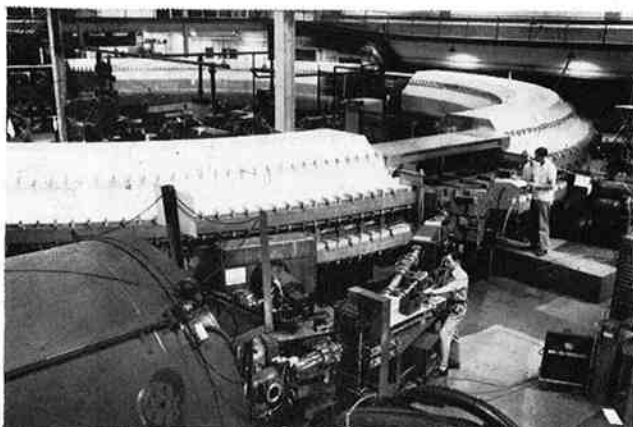
SATURDAY, JUNE 14, 1958 — Press Wireless

The instructions on how to attend either or both field trips are included here and are very complicated, so please read this article very carefully.

1. Because of the nature of the installations to be visited, both trips will be **LIMITED TO IRE MEMBERS ONLY**. Sorry, no families, children, or guests.
2. Each trip is further **LIMITED TO A MAXIMUM OF 180 PEOPLE**. Reservations will be on a first-come, first-served basis.
3. Those who are too late to get in the Brookhaven Quota will have first choice at Press Wireless.
4. Those who wish to attend the Brookhaven trip **MUST ENCLOSE A \$2.00 CHECK TO COVER LUNCHEON COSTS**. If you are not in time to go on this trip, your check will be returned.
5. **If you are interested in either, or both trips, fill in the attached post card. Put your own name and address on the front of the lower portion of the card. Place both portions of the card in an envelope (with the \$2.00 check if you want to go to Brookhaven) and mail to:**

**Ray Johnson
C/O Teletronics Lab Inc.
54 Kinkel St.
Westbury, L.I., New York**

As soon as the rosters for the trips are completed, the return postcard will be sent out advising you of the arrangements. Excess checks will be returned to those who request the Brookhaven trip but are too late in sending in their post cards.

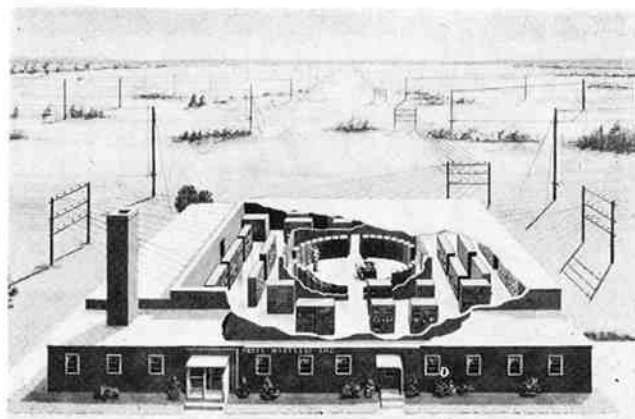


BROOKHAVEN NATIONAL LABORATORY SAT., MAY 17, 1958

The first field trip, to be held on Saturday, May 17, 1958 will be to the Brookhaven National Laboratory at Upton, Long Island. The group will cover the nuclear reactor, the Cosmotron, the construction of the new 30 bev alternating gradient synchrotron and the construction of a new specialized computer.

For most of the membership, at least 1 1/4 hours of driving time should be allowed. Plans should be made to be at the gate by 10:30 A.M. The map on the facing page shows how to reach the lab. It will take about 30 minutes from the time you arrive at the gate to park and register. Either gate may be used. The guards will direct you to the registration place. The tour starts at 11:00 A.M. sharp and ends at about 3:00 P.M. There will be a break for lunch, which will be served at a cost of \$2.00 (Payable in Advance by check as noted above).

The April and May issues of the PULSE will carry more information on the trip in particular and Brookhaven Labs in general.



PRESS WIRELESS SATURDAY, JUNE 14, 1958

The second field trip, to be held on Saturday, June 14, 1958 will be to the transmitting and receiving stations of Press Wireless. The transmitting station is at Centereach, L. I. and the receiving station is at Baldwin, L. I. Half of the group will start at Centereach and half will start at Baldwin. Both halves of the group start at their respective places at 11:00 A.M. sharp. There will be a two-hour lunch break to permit the groups to change stations (traveling time 1 1/4 hours) and to eat lunch en route.

The groups will see transmitters for voice and telegraph ranging from 2kw to 60kw, diversity receivers, and monitoring and control equipment. Both stations have extensive antenna "farms." Average driving time to Centereach for most of our membership is about 1 hour. Plan to arrive by 10:40 A.M. to provide time for parking.

The April, May, and June issues of the PULSE will carry more information on the trip in particular and Press Wireless in general.

SPOTLIGHT ON INDUSTRY...

Arma Division

Frank Virgadamo

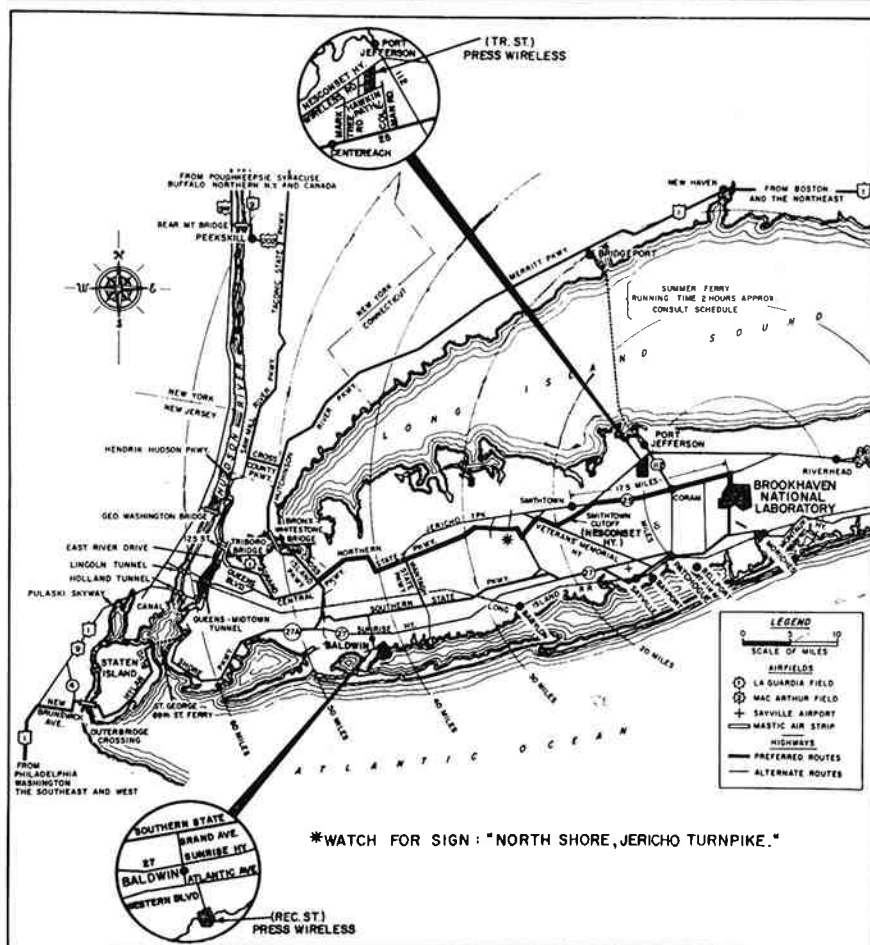
From the day of its founding on January 30, 1918 by Arthur P. Davis and David M. Mahood, the Arma Engineering Company, as it was first called, has been closely associated with the manufacture of military equipment. The first product—a high intensity searchlight; the first customer—the Navy. Immediately recognizing the need for diversification of products, the company undertook work on a gyroscopic compass. This product was at once so successful that it soon became the larger part of the company's business activities. And once involved in the field of electronic control, further product diversification came as naturally as a cat's hunting of mice.

The resultant expansion necessitated a move of operations in 1924 from Manhattan to the Bush Terminal buildings in Brooklyn. The move provided sufficient elbow room to permit development work resulting in a considerably better dead reckoning tracer than those in use.

In the militarily quiet years up to 1938, much of the Arma Engineering Company's work was concerned with the problems entailed in the elimination of human intermediaries in the chain of ranging, sighting and firing of naval guns. With little fanfare, the company successfully developed de-

vices which picked up necessary information from the instruments supplying range, elevation and relative bearing data, and carried this data to analogue computers which made the necessary calculations and finally deposited the gun control information in the form of dial readings in the gun turrets. The turret gunners were then supposed to aim and fire the guns as indicated by the dial readings. Turret gunners and dial readings being what they were (and are), the next step, in the interests of greater accuracy, necessarily had to be the automatic aiming and firing of the guns by electrical control. The Arma units worked so very well that the company is still in the same business—but the customer now is the Air Force; and

(Continued on Page 10)



MINIATURE TRANSISTOR TRANSFORMERS from stock!



MIL CASE (M-AG)

Hermetic. Ceramic compression terminals 1"x1"x1 3/8"H. Wt. 2 3/8 oz. MIL-T-27a Grade 4, class R.



HERMETIC (M-H)

High compression glass terminals. Drawn hermetic case 1 1/8" slot mtg. 1 1/16" dia. x 1 1/16"H. Wt. 1 1/4 oz. Baked grey enamel.



MOLDED (M-M)

Epoxy cast. Resists environmental extremes. for plug-in printed circuits. .040 pins. 1/8" x 1 3/32" x 7/8"H. Wt. 1 1/4 oz.



POTTED (M-A)

Aluminum case. Lug terminal board, 1 1/16" mtg. with 2-56 screws, 7/8" dia. x 1 1/16"H. Wt. 1 1/4 oz.



PLUG-IN (M-P)

Octal plug base. Sealed plastic housing 1 3/32" dia. x 1 1/32"H. Wt. 2 oz.

OPEN FRAME TAB MTG (M-FPB)

Miniature size. Resin impregnation, 4" color coded vinyl leads, 1 3/16" x 1 1/4" x 2 7/32"H. Wt. 1 1/8 oz.



OPEN FRAME (VM-F)

Veri-miniature size. Resin impregnation, 4" color coded leads for dip soldering. 3/16" x 1/2" x 1 1/16"H. Wt. .16 oz.

OPEN FRAME (UM-F)

Ultra-miniature size. Resin impregnation, 4" color coded leads for dip soldering. 3/16" x 1/32" x 3/8"H. Wt. .08 oz.



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Electronics Center — AL 5-4600

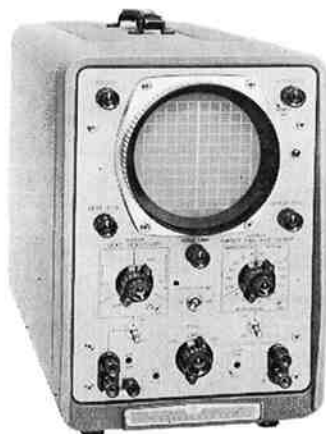
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ALL-NEW -hp- SCOPE



The recently announced -hp- 120A is Hewlett-Packard's answer to a long-felt need for a medium-priced high-quality oscilloscope. This instrument is crammed with big price features, yet is available for only \$435.00.

Big feature number one, exclusive with -hp-, is an improved automatic triggering circuit. Normally, no adjustments are necessary over the range. Yet, when traces suitable for photography are required, automatic triggering and base line can be easily cut out.

Feature number two is the tremendous range of sweep speeds—from 1 microsecond/cm to 0.5 second/cm. A "times-5" sweep expansion and a vernier give continuous control of sweep speed. Additional items are the calibrated 200 kc. X and Y amplifiers, fed by regulated power supplies. A transistorized, regulated X amplifier filament supply is another -hp- "plus" feature.

Why not check with your RMC field engineer for complete details as well as a convenient demonstration of this versatile performer?

THE VA-87 KLYSTRONS



For high power at microwave frequencies, Varian Klystrons are the logical choice to provide outstanding reliability and long life. A complete line of Varian microwave high-power tubes is available to cover practically all radar, communications, test and instrumentation requirements.

The VA-87B and C are typical of the high performance tubes available from Varian. The VA-87 Series are high gain, 2 MW peak, amplifier Klystrons, designed particularly for adaptation to high power coherent S-band pulse radar systems, as well as to be an r.f. power source for linear accelerators. These are highly reliable tubes, capable of covering a wide frequency range without critical adjustments.

For the complete story on these or other Varian products, the RMC field engineer serving you will be glad to fill you in. Just call either of our offices.

ARMA . . .

(Continued from Page 9)

the unit is known as the MD-9 fire control system for the tail gun turret of the B-52 bomber. Tail gunners in the B-52 sit up forward in relative comfort and decide only whether the approaching target is friendly or not.

During World War II, more than a fair share of Army-Navy "E" awards were made to Arma for its production records and development work in the fields of navigation and gun-fire control. The Navy, in particular, made several additional individual awards in appreciation of Arma's work on a gyroscopic compass used in submarines.

The immediate post-war period was a time of continued research and development of military products. In 1949, Arma, which in 1938 had become the Arma Corporation, merged with the American Bosch Corporation to become a wholly-owned subsidiary of that organization. In 1954, the two formed a single corporate enterprise and became known as the American Bosch Arma Corporation. The Arma Corporation retained its identity as the Arma Division of the merged corporation.

There were other changes. In December, 1952, Arma took over its present plant at Roosevelt Field. Previously, it had been operating in a number of hangers at the Field while the new building was in construction. The operations at Bush Terminal were gradually curtailed. In 1954 all operations at Bush Terminal were entirely discontinued.

At present, the Arma Division is definitely not resting on past accomplishments. Over and beyond the production of the MD-9 tail defense system, considerable effort is being expended on the development of an inertial guidance system for an ICBM—the Air Force's "Titan." Expressive of the company's dynamic and progressive outlook is the establishment of a "Spatial Laboratory" in conjunction with its test and development program on the inertial guidance system. And it is somehow oddly appropriate that a Spatial Laboratory should be located near the spot from which Lindberg took off to fly the Atlantic.

CORRECTION

In the last issue we misquoted Bernie Salzberg. We should have stated that he recommended that the name of **non-linear reactance amplifier** or simply **reactance amplifier** be used for microwave amplifiers of the MAVAR type.

rmc

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PRINTED CIRCUIT CONNECTORS AT MARCH PGCP

Printed circuit connectors, key elements in the reliability and application of printed circuits, will be discussed by an industry panel at the March 6th meeting of the Metropolitan New York Area Chapter of the Professional Group on Component Parts of the Institute of Radio Engineers. The panel will be composed of B. A. Jackson of U. S. Components, Inc., G. E. Omholt of Amphenol Electronics Corporation, and H. E. Ruehlemann of Elco Corporation.

The meeting, scheduled for 7:30 P.M., will be held in Room 502 of the Engineering Societies Building 29 West 39th Street, New York, and will be moderated by Jack Trinkau of Sperry Gyroscope Company, chairman of the local PGCP Chapter.

PGCP NOMINATIONS

The Metropolitan New York Area Chapter, Professional Group on Component Parts, is currently accepting nominations for Chapter Officers Positions to be filled include Chairman, Vice-Chairman, and Secretary. Nominations should be sent to the Chairman of the Chapter Nominating Committee, on or before April 15, 1958. The Chairman of the Committee is:

Mr. R. Maloney
Mail Station 1A36
Sperry Gyroscope Company
Great Neck, New York

No individual should be nominated without his prior consent.

COMPUTERS AT NY SECTION

Dr. Herbert R. J. Grosch of the Data Processing Division of the IBM Corporation has been announced as the guest speaker at the March meeting of the New York Section of The Institute of Radio Engineers. Dr. Grosch will discuss the application of large- and medium-scale computers to work in scientific research.

The meeting will take place on Wednesday, March 5, 1958, at 7:30 p.m. in the Engineering Societies Auditorium, 29 West 39th Street, New York City. It was arranged and will be co-sponsored by the New York Metropolitan Chapter of the IRE Professional Group on Electronic Computers.

March, 1958

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Whispers to Wives

by **IRENE O'CONNOR** and **DORIS MAJOR**

"CQ, CQ, come in, CQ."

"Sounds like he's reading the alphabet soup again."

The first quotation is one of the most popular expressions of the "ham," or licensed operator of an amateur radio station.

A peculiar language comes from the "ham shack"—his radio room. Hams not only turn the alphabet inside out, but they rearrange the dictionary as well.

For those to whom the second quotation might belong, a glossary of some popular amateur radio terms is presented below.

1. **AMATEUR RADIO STATION:** A small, profitless (he says non-profit) broadcasting station operated as a hobby by electronics enthusiasts.
2. **TRANSMITTER:** The signal sender-outer. It broadcasts his alphabetical jargon.
3. **RECEIVER:** A more complex version of your table radio. He listens to other hams with it.
4. **ANTENNA ARRAY:** An oversized television antenna from which he broadcasts.
5. **LOG:** A diary of his "on-the air" activities.
6. **BUG:** Not an insect nor an equipment failure, but just a peculiar-looking telegraph key.
7. **CRYSTAL:** Although we consider this to be dining ware, he has a different object in mind. It determines the spot on the radio dial where he can be heard.
8. **QRM:** FCC approved way of stating his opinion of static.
9. **CQ:** When you hear him repeat this, you know he's looking for any other ham to talk with.
10. **DX:** Successful long distance communication. You'll hear this term often when he brags to other hams.

We hope this glossary will help you join the conversation when your husband discusses amateur radio.

55 Sessions Scheduled For IRE National Convention

A comprehensive 55-session program, involving some 280 papers ranging over 27 fields of radio-electronics, has been set for the 1958 IRE National Convention March 24-27 in New York City. Thirty-three sessions will be held at the Waldorf-Astoria Hotel and 22 at the New York Coliseum. A record-breaking attendance of 55,000 engineer and scientists from 40 countries is expected.

Space Scientist In Garden City

One of the men at the side of Dr. Von Braun when the Explorer I was launched was a physician, Colonel Paul A. Campbell, who is Special Assistant for Medical Research to the Commanding General of the Air Force.

"Human Considerations in Space Flight" will be the topic of a talk by Col. Campbell at a meeting of the N. Y. Section of the American Astronautical Society to be held at the Stewart Avenue School in Garden City on Thursday evening, March 6th at 8:15 P.M. The talk is open to the public.

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PGAC HEARS TALK AT FIRST MEETING

Dr. John G. Truxal, Head Department of Electrical Engineering at the Brooklyn Polytechnic Institute, will be guest speaker at the Tuesday, March 11, 1957 meeting of the IRE Long Island Chapter of the Professional Group on Automatic Controls.

Professor Truxal will discuss the field of Adaptive Control Systems. Adaptive Control Systems are computer controlled systems in which the characteristics of the process to be controlled are measured continuously or intermittently and appropriate controller characteristics determined on the basis of these measurements and of selected performance criteria for the system. Realization of the controller or generation of the actuating signal are implemented, in general, by a special purpose computer. Such systems are useful when process characteristics are not known com-

pletely or when the process dynamics change with time or ambient conditions.

A 1944 graduate of Dartmouth College, Professor Truxal received his Doctor of Science degree from M.I.T. Dr. Truxal has taught at M.I.T. and Purdue University before coming to Brooklyn Polytechnic Institute in 1954.

Dr. Truxal is author of "Automatic Feedback Control Systems Synthesis," McGraw-Hill, 1955 and is editor of "Control Engineers Handbook" to be published by McGraw-Hill in March, 1958.

Scheduled to start at 7:30 P.M. the meeting will be held in the Mineola Library on Mineola Blvd. in Mineola, New York.

PUZZLE ANSWER

He marked the water line with his thumb and inverted the bottle until the water inverted matched the normal water line.

PGPT MEETING ON ETCHED WIRING

Edward J. Lorenz of IBM, Poughkeepsie, N. Y., will address the members of the N.Y.-L.I. Chapter of the PGPT on March 13, 1958 on "Production Techniques for Etched Wiring."

The meeting will be held at the Burroughs Corporation Sales Meeting Room on the third floor of 219 Fourth Avenue, Manhattan at 7:30 P.M.

The lecture will cover techniques used in artwork, card production and card assembly. Cut-film, taped layouts and step and repeat processes employed in producing artwork will be described. The use of a punched template to assure more accurate registration between punching tools and artwork will also be discussed.

The lecturer will also present descriptions of basic assembly machines and their requirements, component handling problems and the necessity of baking and dip soldering of cards and the effects of these treatments.

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IRE APPOINTS OFFICERS FOR 1958

The IRE Board of Directors, at its January meeting, appointed six members to the Board for 1958.

Reappointed as Treasurer of the IRE was W. R. G. Baker, Vice President for Research of Syracuse University, Syracuse, N.Y. and former Vice President of Electronics, General Electric Company. Haraden Pratt was appointed to his sixteenth term as IRE Secretary. John D. Ryder, Dean of Engineering, Michigan State University, East Lansing, Michigan was appointed Editor of the IRE to succeed Donald G. Fink, Director of Research of the Philco Corp.

CORRECTION

In an article in Random Pulses on Mr. Leonard H. King in the January 1958 issue of **PULSE** it was stated that he had worked for Avion. We wish to indicate that this is an error.

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NEW CONCEPTS IN COCKPIT INSTRUMENTATION

The Long Island Chapter of the Professional Group on Instrumentation will present a somewhat different type of topic when Mr. William Vetter, of the Republic Aviation Corporation, talks on the subject of, "A New Concept in Cockpit Instrumentation" at its third meeting of the year. This meeting will be held on Tuesday, March 18, 1958, at the Mineola Memorial Public Library at 8 p.m.

Aircraft performance has increased tremendously over the past decade with a yearly average increase in airspeed of 165 miles per hour. Instrument performance has also increased but at a slower pace. But there is a limit to the amount of information that a pilot can assimilate with present instrumentation.

A bold new approach is necessary to replace the present ambiguous and redundant collection of individual panel instruments. Such an approach is the "whole panel concept" wherein instruments are revised, grouped and integrated such that an unusual reading will immediately draw the attention of the pilot. Herein is not only the problem of providing improved or new instrumentation but also the need to adapt this instrumentation to the extreme demands of the modern pilot. This will be the theme of Mr. Vetter's talk.

Mr. Vetter is well qualified to present such a topic. His formal education consisted of an AB Degree in Engineering Science and Applied Physics from Harvard College in 1948. His service with the Air Force for three years gave him the first hand knowledge of aircraft necessary for designing cockpit instrumentation. His professional experience has been with Hazeltine Electronics Corporation where he was concerned with the design of radars, radar test equipments and radio altimeters, for a period of eight years; and with the Republic Aviation Corporation as Senior Group Engineer in charge of the Electronic System Analysis Group for the last two years. In this latter assignment, he has been responsible for navigational cockpit instrumentation, radar identification and counter-measure equipments, to name only a few.

A pre-meeting dinner will be held at McGinnis' Restaurant on Jericho Turnpike in Mineola at 6 p.m. Members and guests are invited to participate.

THIRD of a series on . . .

PUBLIC RELATIONS AND THE ENGINEER

By T. E. Garrigan

What the man in the street thinks of when he hears the word "engineer" is important because the mental image the public associates with a group has a powerful influence on the social and economic standing of the group and its members. These factors, in turn, affect the attitudes of group members, the motivation of young people to enter the group and the provisions made by public education to prepare them.

Our engineers and scientist form a group that is vital to this nation's future; this has been dramatically demonstrated on Cape Canaveral and acknowledged at the highest levels in Washington. The past two articles in this series have discussed what the individual engineer and the IRE can do to improve the professional stature of the engineer and the image he presents to the public. Logically, the next area for consideration is that of engineering management.

The aim of continued national growth and prosperity is certainly compatible with corporate goals, while at the company level, engineers working in an optimum psychological environment will provide the intense interest, the technological breakthroughs, and the everyday quality so vital to company survival in today's market.

The fact that a single company may employ a great number of engineers makes it especially important that engineering management recognize the vital role it plays in determining the climate for the future of engineering in America. In general, management must guard itself against the policy of treating engineers as just another personnel group. Certainly the same management that goes to the expense and trouble of providing controlled production and storage environments for special products should apply the same thinking to the psychological environment in which it places its engineers.

Engineering management can support the professional stature of its engineers by: 1) acknowledging the vital nature of the engineers' work and making personnel policies consistent with this knowledge, and 2) using the publicity outlets of the company to continuously inform the general public of this conviction. In addition to the broad aspects of personnel administration, helping engineers prepare manuscripts for publication, recognizing individual accomplishments in internal publications, and actively encouraging participation in professional and civic

organizations are important items in the first category. The second category refers to the use of the company public relations department to publicize the accomplishments of its engineers, demonstrating to the public and to the engineer the value that the company places on its engineers' work. Company PR activities should be geared to promote, at every opportunity, the prestige of its engineers both as a group and as individuals.

Upon reading the above suggestions, many engineering managers may feel that such provisions are already made for their engineers. A survey conducted in 47 companies, recently reported in "Electronic Industries" magazine, indicated that in the actual operating situation the engineer did not know of or could

not use the nebulous and slow-moving channels that were provided for manuscript preparation and release. A high percentage of the engineers who had published papers felt that publication of any kind was actually discouraged and in many cases hindered by the company. It was the consensus of the engineers sampled that the companies were not providing sufficient recognition either internally or externally. Though this condition does not exist in every company it does merit thought and investigation on the part of management.

In the same spirit that engineers were urged to recognize their responsibility to the local and national community, so too, is management urged to survey its policies with regard to its engineers who, for the most part, are too busy technically to forcefully dispute imprudent administrative policies.

Recognize the true value of the individual engineer to your company, make your decisions in this light, let the engineer and the public know you appreciate his value and you will have contributed to the future of your country as well as to the good management of your company.



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