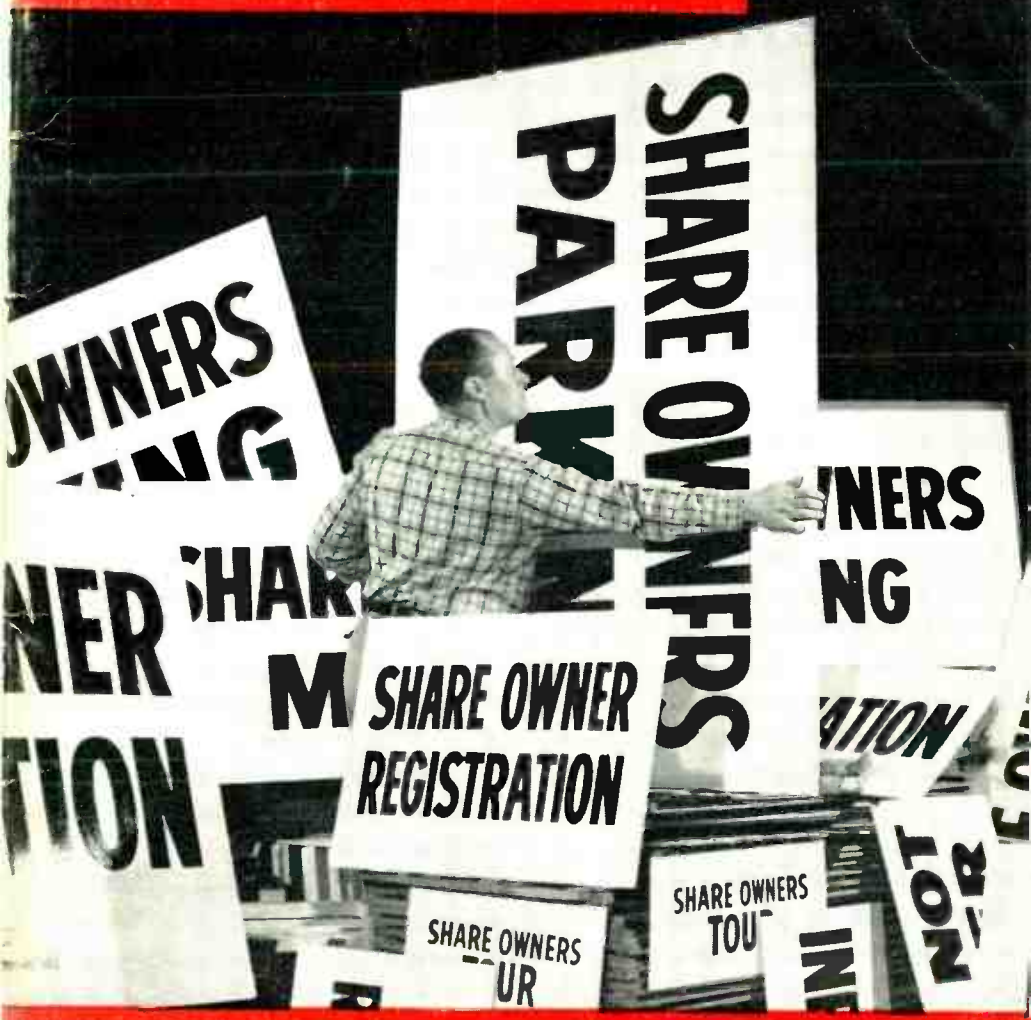
THE MONOGRAM

APR. 1956



AT THE ANNUAL MEETING, ALL SIGNS POINT TO PROGRESS

LETTERS

One for the Blue Book

Editor:

A G-E Diary has saved a man's life.

While dynamiting gravel in a West Texas pit, an employee of one of our good apparatus customers ran afoul of one charge of dynamite. A blast of gravel smashed him from the waist up, ripped his shirt and a large quantity of skin, shattered his shatter-proof glasses, and sent him to the hospital for several weeks.

A G-E diary, carried in his shirt pocket, just over his heart, was hit by one large rock that went through the front cover, through all the pages, and just dented the back cover. As far as the victim is concerned, the diary saved his life.

FRANK L. THOMAS
A&SP—Dallas

A Private Opinion

Editor:

Referring to the Soldier of the Month article about Private William C. Cole which appeared in the March 1956 *Monogram* [p. 20], I assume that Mr. Cole is merely fulfilling his two-year obligation and does not intend to make the United States Army his permanent career.

I certainly hope that the Armed Services take advantage of the technical abilities of people like Mr. Cole. However, it seems that in keeping with his profession, a rank of at least Second Lieutenant would be much more appropriate.

Along with General Electric's scouting of campuses every year for more and more engineers, doesn't it seem logical to institute a program which will enable draft-eligible young men to remain with the General Electric Company and continue to do technical work, instead of spending two years in some less important capacity in the Army.

T. L. HANSON
L&CE—Erie

Private Cole is assigned as an engineering assistant at Aberdeen Proving Grounds.—Ed.

The object of the MONOGRAM is to keep its readers better informed on General Electric activities and policies so that they may more effectively represent the Company in its relations with the public.

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Lawrence W. O'Brien, Editor

The General Electric Monogram is an intra-company magazine published for office employees of the Company and its affiliates. Circulation is restricted to General Electric personnel. It is published monthly at New York and printed in the U.S.A. by the Maqua Company. Permission for reprinting articles should be obtained from Public and Employee Relations Services, General Electric Company, 570 Lexington Avenue, New York 22, New York.

VOL. 5 NO. 4

THE GENERAL ELECTRIC
MONOGRAM

APRIL 15, 1956

ANNUAL MEETING

With Customary Efficiency

At press time this month, the *Monogram* found Schenectady alive with preparations for the annual Share Owners' Meeting. Between 3500 and 4000 persons were expected to attend the April 17 gathering, setting another world's record for share owner attendance at an annual meeting.

Year after year (this is G.E.'s 64th Annual Meeting), the smoothness of the big day's many events astounds the gathered share owners. Behind that efficiency and smooth operation lie months of planning and weeks of intensive activity.

Proxies are mailed out and those returned (some 250,000) must be handled and tabulated. Exhibits (this year including the smallest TV set and the largest mock-up model of a direct-current motor) must be planned, procured, and put in place.

Signs of every size and shape (see cover) must be ready to direct visitors who come from nearly every state in the U.S. and from foreign countries as well.

The preparations are exact in detail and varied in content. They include everything from the supervision of frying thousands of pounds of chicken to arranging tours of facilities which have never before been opened to the public.

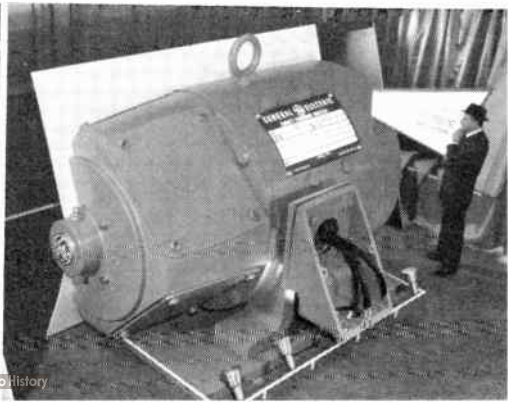
Plus a Surprise

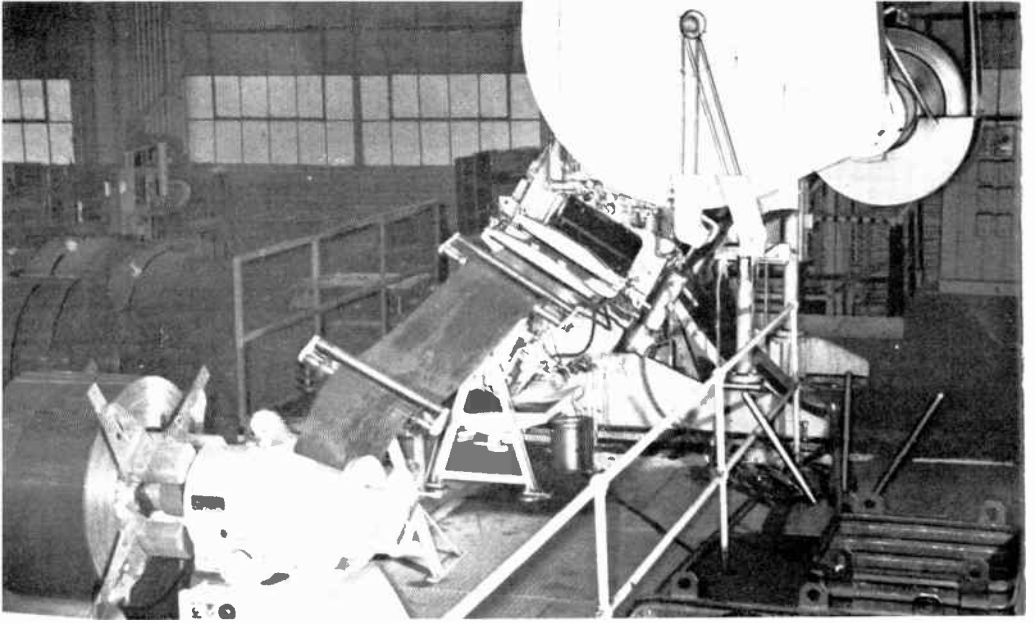
The big surprise for G-E share owners at this year's Annual Meeting: the unveiling of "the most modern electric motor plant in the world." On the following two pages are some of the first released photos taken in the new 87 million plant of the Medium Induction Motor Department.

Among its features: automatic machinery capable of machining, assembling, and

QUARTER MILLION PROXIES

GIANT D-C MOTOR EXHIBIT





ROLLS OF SILICONE SHEET STEEL ARE FED INTO LARGE AUTOMATIC PUNCH PRESS.

testing G-E Tri-Clad 55 R induction motors, *with only two major hand operations involved in the entire cycle.*

O. F. Vea, general manager of the Medium Induction Motor Department, says that "despite this reduction in major hand operations, we are now employing more personnel than ever before." He attributes this gain in employment to the department's new ability to keep pace and expand with an expanding market. The demand for motors is expected to increase at least 75 per cent between now and 1965.

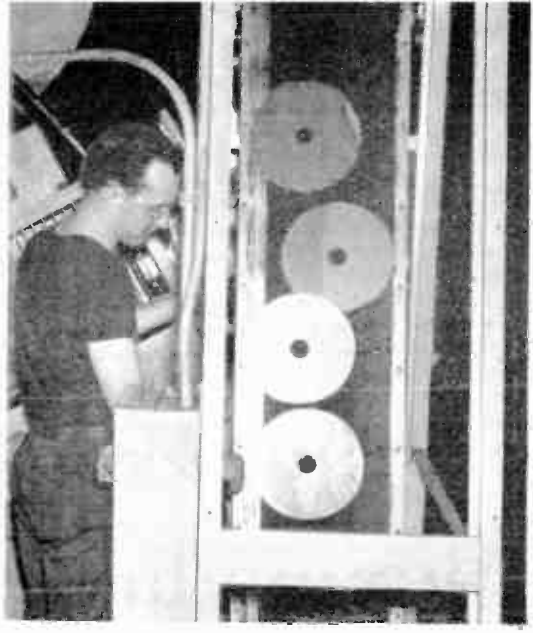
Mr. Vea points out that the extensive use of modern machinery and methods in this plant is "another step in the elevation of the American working man from laborer to technician."

Punching operations are fully automatic, including the feeding of sheet steel into the presses, the punching, conveying of the punchings from one press to another by means of magnetized belts, and the automatic removal of metal scrap. Methods such as this have cut production time on standard induction motors from two weeks to three eight-hour shifts.

About 100 standard models and many "special" motors are made in this facility.

Actually, the new plant is three factories under one roof. The building contains two production lines for standard motors $7\frac{1}{2}$ to 30 horsepower, and another line for the production of "special" motors. This "special" line draws its standard components from the other two lines which flank it, thus expediting its production of "specials" which still remain, basically, hand-produced motors.

These Tri-Clad motors have a widespread use, ranging from drives for pumps in oil fields to fan drives in steel mills. It is estimated that approximately 80 per cent of the motors in use in American industry today are induction motors in the category of G-E Tri-Clad motors.



PUNCHINGS travel on magnetized conveyor belt in the Medium Induction Motor Department's new highly mechanized $7 million plant at Schenectady.

MOTOR END SHIELDS are machined and drilled by automatic machines at multiple stations, then are moved to assembly area by conveyors.

ALL MOTORS ARE TESTED automatically on rotating test tables at end of standard production lines.

G.E. CREDIT CORPORATION

A Record Year

A record volume of $146,963,000 was reached in 1955 for G-E sales financed by General Electric Credit Corporation. This was a 47 per cent increase over 1954 figures. Delinquency ratios were down.

Earnings of the wholly owned subsidiary of General Electric Company were up 23 per cent over 1954, reaching $6,569,000.

GECC provides time sales financing for individual purchasers and inventory financing for dealers. It thus aids in the distribution of such G-E products as appliances, television receivers, air conditioners, x-ray units, and other electrical equipment for farm, commercial, and industrial use.

President George F. Mosher of GECC pointed out that the increase in consumer credit is in line with G.E.'s growth in the consumer goods market and with national growth in population, disposable income, and number of middle-income families.

ELECTRONICS

Radar Jammers

Production quantities of advanced airborne electronic countermeasures equipment (radar jammers) are now being delivered to the U.S. Air Force by the Light Military Electronic Equipment Department in Utica, N. Y. The units "blind" radar by sending out a radio signal which confuses the radar echo returned from an aircraft.

It is estimated that about 150 heavy U.S. bombers stationed in England during the war were saved by countermeasures from the effects of radar-directed enemy anti-aircraft fire.

EMPLOYEE BENEFITS

Emergency Aid Plan

Plans for a new employee benefit program have been announced, to provide eligible employees up to $500 in loans or outright grants to help meet serious financial emergencies.

The proposed Emergency Aid Plan would call for no employee contributions and there would be no interest charges on loans up to $300. On larger loans, moderate interest would be charged on the amount over $300. The outright grants, which naturally would carry no interest, could be in cash or in kind, depending on the particular circumstances of the person seeking emergency aid.

To be eligible, employees would have to have a year or more of service with G.E. and be participating in an insurance plan for employees. Most pensioners would be eligible for the outright grants alone.

"The new aid plan can be of immense help to eligible people in serious financial straits because of a household fire, death in the family, serious illness, or other costly misfortune," said Lemuel R. Boulware, Public and Employee Relations vice president, who announced plans for the Emergency Aid Plan.

It is hoped that the plan will replace some 26 Relief and Loan plans that have been available for years at the Company's older locations. Unlike the proposed plan, these existing plans call for contributions by employees as well as by the Company.

At G-E locations where they now exist, the plans would have to be dissolved by vote of present members of the local plans before the new Emergency Aid Plan could be made available. Mr. Boulware said he hopes this can be achieved by June 30, so the new plan can take effect July 1.

G.E. ENTERS COMMERCIAL JET ENGINE FIELD: WILL POWER THE NEW CONVAIR.

AIRCRAFT GAS TURBINE

Fastest Jet Airliner

America's fastest jet airliner will be powered by General Electric. Four new CJ-805's —commercial version of G.E.'s recently announced J79—will give the new plane a cruising speed of more than 600 mph. Typical time schedules: San Francisco to Chicago, 3 hours and 36 minutes; Chicago to New York, 1 hour and 36 minutes; Cleveland to Philadelphia, 57 minutes.

Convair will build the plane—a medium-range transport to be known as the Convair "Skylark 600." It will carry 80 passengers to their destinations up to 50 per cent faster than any other medium-range airliner now being planned. It was estimated that the "Skylark" would be ready for delivery to airlines by early 1960.

Described as "the most advanced engine available for commercial applications," the CJ-805 will produce more thrust per pound of engine weight than any other engine in its power class.

In announcing G.E.'s entrance into the commercial jet engine field, J. S. Parker, general manager of the Aircraft Gas Turbine Division, said: "Since building America's first jet engine in 1941, we have produced more than 31,000 jet engines for the military services which have accumulated over 5,500,000 miles of operational use daily. The demonstrated performance and outstanding reliability of G-E jet engines have encouraged us to enter the commercial jet engine field."

ATOMIC ENERGY

New 10,000-kw Reactor

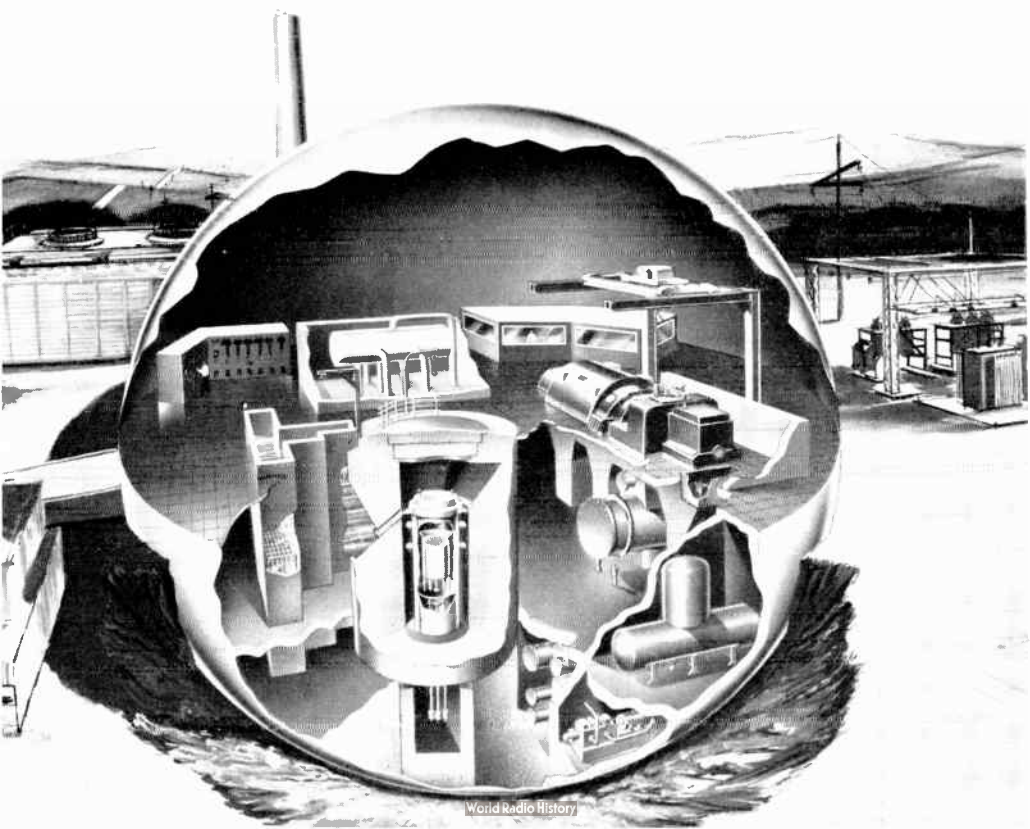
Delegates at the American Power Conference in Chicago on March 23 were the first to hear details about the latest atomic power plant which General Electric engineers have designed.

Utility companies here and abroad have expressed a need for a reactor adaptable for small nuclear power plants—in the 10,000-kw to 50,000-kw range. The new plant is the Company's answer to the demand in the lower end of that range.

The 10,000-kw single-cycle boiling water reactor can be encased in a sphere. Auxiliary equipment is located adjacent to it. The unit will produce power at an estimated cost of 15 to 20 mills per kilowatt hour, which is said to be in the range of the cost of producing conventional power in many foreign countries.

A reactor prototype similar in some respects to the new design will be built by General Electric at its recently announced atomic laboratory project in the Livermore–Pleasanton area of California (*Monogram*, March 1956, p. 8).

G-E DESIGN FOR A SMALL (10,000-KW) ATOMIC POWER PLANT



Reactor for Spain

The Spanish government has selected General Electric Company as the manufacturer to provide Spain's first atomic reactor. G.E.'s Atomic Power Equipment Department will not only build and supervise installation of the unit, but it will coordinate plans for a building to house the facility, will conduct the start-up operation, and will train reactor operators.

Other than the Swiss reactor installed as part of the U.S. exhibit at the 1955 Geneva Atoms-for-Peace Conference, the Spanish reactor will be the first U.S.-manufactured research reactor to be supplied in Europe. It will play a significant part in the atoms-for-peace program.

The unit, to be located near Madrid, will be a standard G-E 3000-kw reactor. Known as a "swimming pool" reactor, it has a core submerged in a pool of ordinary water which cools the unit, shields radiation, and slows neutrons to a desired energy range. The facility will be used for research in the fields of agriculture and medicine, as well as for training personnel to operate both research and power reactors.

IGE is handling the negotiations with the Spanish Nuclear Energy Commission.

SPECIAL DEFENSE PROJECTS

Forum on Missiles

Since May, 1955, when G.E. formed the Special Defense Projects Department, little could be said about its functions. Security regulations forbade any description of its work beyond an acknowledgement that it was engaged in research and development of advanced systems using guided missiles.

This month with full security approval, the department sponsored an open meeting in New York. It was attended by more than 300 scientists and engineers (out of some 500 who sought tickets) from educational and industrial fields. In open forum, the group discussed unclassified technical problems common to all pioneers in guided missile research—problems involved in setting up laboratory conditions which approximate outer atmosphere flight.

Engineering Manager R. W. McFall served as moderator, and speakers included Dr. Y. A. Yoler, Dr. J. W. Bond, Jr., and A. W. Robinson—all of the SDPD staff.

Additional forums are being planned for Buffalo, Boston, and Washington, D. C.

TREASURY SERVICES

Debenture Offering

John D. Lockton, Treasurer of General Electric Company, has announced that the Company is planning long-term financing through an issue of $300,000,000 of debentures. A registration statement will be filed in due course with the Securities and Exchange Commission.

The public offering, scheduled for later in the spring, will rank among the largest debenture offerings by an industrial company. The issue, details of which have not been settled, will be underwritten by a nationwide group of investment firms headed jointly by Morgan Stanley & Co. and Goldman, Sachs & Co. The proceeds from the issue will be used in part towards financing the Company's program of capital expenditures and in part for working capital and retirement of bank loans.

It is expected that in addition to long-term financing, the Company will continue to require seasonal short-term borrowing from time to time.

TELEVISION RECEIVERS

The Dawning of an Era

General Electric did more than expand its line of portable television receivers this month. It heralded a whole new concept in television viewing in this country.

By adding a new 9-inch and a new 17-inch series to its family of TV portables, G.E. is expressing its confidence in a new era of TV entertainment in which "personal" portables—"one for every member of the family"—will dominate the television receiver market.

Television Receiver Department spokesmen have good reasons for that confidence. G.E. was first in the field with its famous 14-inch, 32-pound portable. Sales Manager J. F. Effinger reports that set to be "the

NOW THE 9-INCH AND 17-INCH MODELS JOIN G.E.'S FAST-SELLING 14-INCH PORTABLE.

GENERAL ELECTRIC'S NINE-INCH SET WILL USE A NEWLY DEVELOPED PICTURE TUBE.

most successful development in the history of the receiver industry." Its record of 250,000 sets sold in less than one year surpasses the record of any other model put out by anyone in the industry.

Moreover, the department cites the parallel of radio to support its views on the era of "personal" TV. The oversized family radio in the living room has given way to smaller and smaller sets. Now, technical advancements make it possible to have a radio for every room in the house and (transistorized) for some pockets as well.

Similar progress is at work in the television field. Compared with a 1946 TV set, a 1956 G-E portable is 65 per cent lighter, has one-third fewer tubes, requires half the power, costs far less, and delivers finer performance.

G.E.'s new 9-inch portable weighs 13 pounds and is expected to be available late this summer to retail at less than $100. The new 17-inch portable weighs 32 pounds and will be available almost immediately at an expected retail price of under $150.

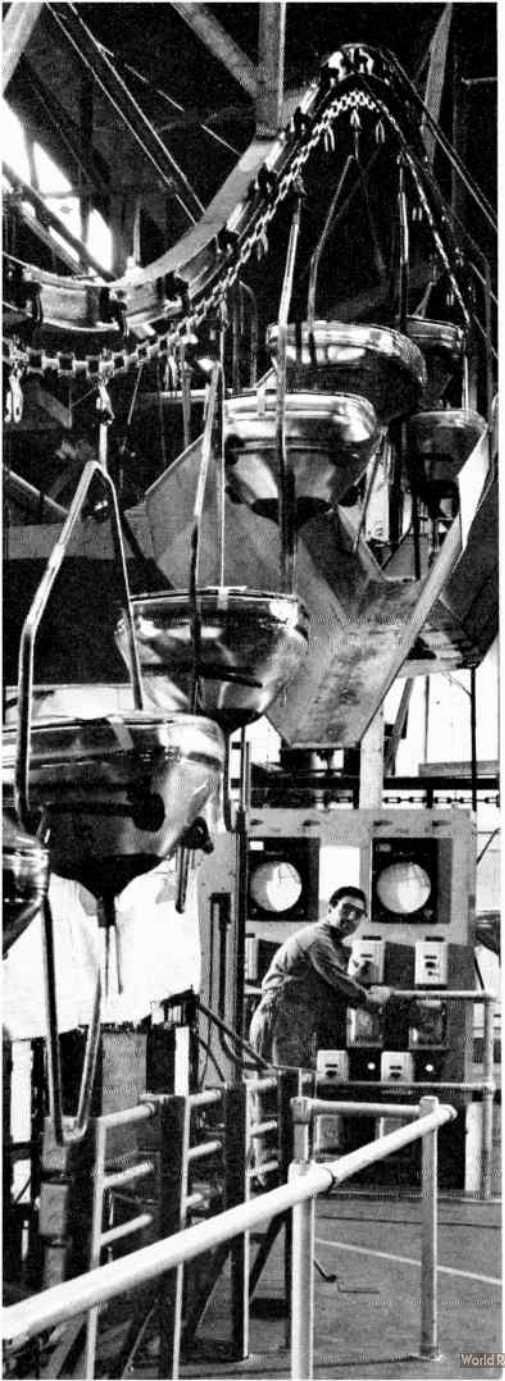
The 9-inch Tube

The picture tube used in the new 9-inch portable represents more than a year's development work by General Electric's Tube Department.

Most significant aspect lies in use of one-piece funnel and face plate assembly made with high-speed glass blowing machines similar to those used in making glass jars.

J. M. Lang, department general manager, reports that the tube has several other design innovations which could lead to radical changes in the manufacture of tubes in other sizes.

The Tube Department indicates that



General Electric sees a great future for both black-and-white and color television picture tubes. Replacement needs and the portable-for-every-room trend are strong factors in the black-and-white picture tube market. Listed below are some estimated industry-wide figures.

BLACK-AND-WHITE PICTURE TUBES

Year	Total Production	New Sets	Replacements
1954	12,300,000	65%	35%
1955	14,000,000	60%	40%
1956	13,430,000	55%	45%
1957	13,720,000	50%	50%
1958	12,700,000	45%	55%
1959	11,750,000	40%	60%
1960	10,400,000	32%	68%
1965	5,700,000	38%	62%

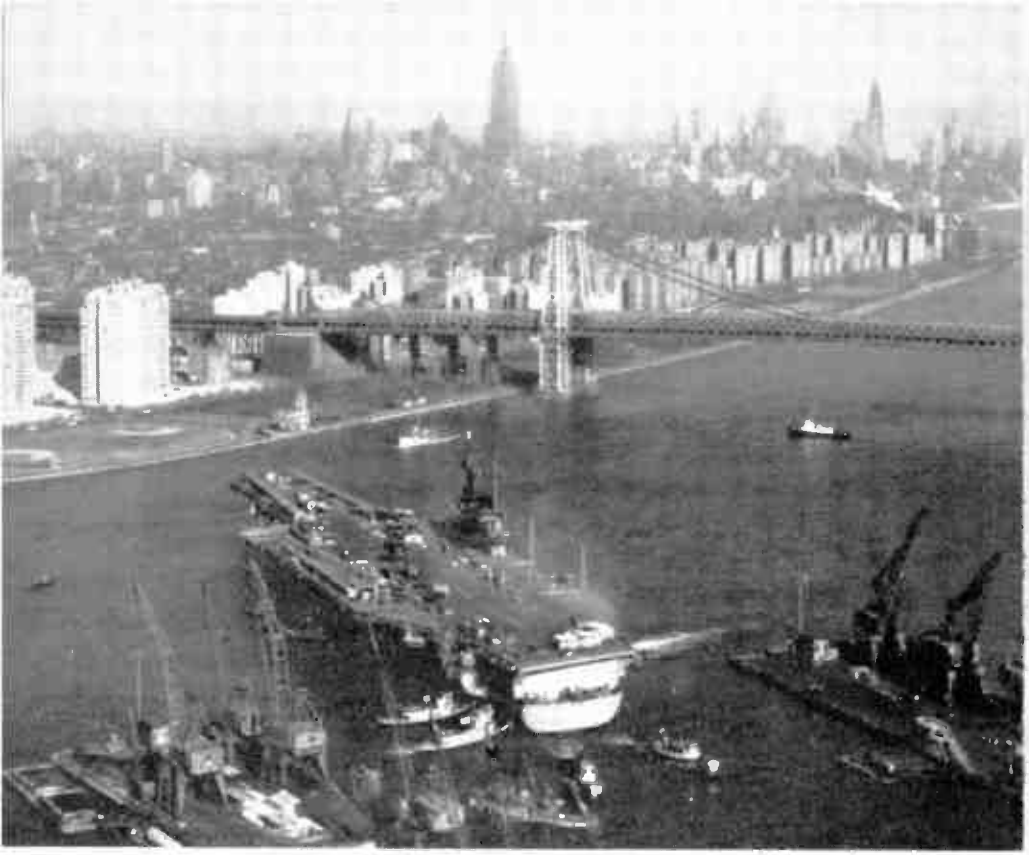
COLOR PICTURE TUBES

Year	Total Production	New Sets	Replacements
1956	255,000	99⅔%	⅓ of 1%
1957	780,000	99½%	½ of 1%
1958	2,350,000	96%	4%
1959	4,445,000	92%	8%
1960	6,650,000	88%	12%
1965	14,600,000	67%	33%

There are now 37,000,000 television sets in American homes.

G-E tube-making progress, illustrated in photos on these two pages, involves improvements not only in picture tubes themselves, but also in the processes for making them and in plant cleanliness, orderliness, and other job-satisfaction factors for people who make tubes. Most General Electric picture tubes are made in plants at Syracuse and Buffalo. Photos shown on these pages were taken in the Syracuse plant, where two and a half miles of conveyors effect safe, efficient, push-button movement of the fragile products on plastic-coated hangers.

AUTOMATICALLY —tubes move through ovens (above). Phosphor and lacquer are dispensed and then dried —all in a single automatic operation (below).



A NEW RECORD IN POWER; A NEW ORDER FOR MORE

POWER FOR SHIPS

Saratoga Commissioned

In New York, commissioning day for the United States Navy's newest aircraft carrier was observed on April 14. Within the massive hull of the USS *Saratoga* were the most powerful and efficient turbines ever put into a Navy vessel—turbines built by General Electric (*Monogram*, Aug. 1954, p. 6).

In Lynn, Mass., almost simultaneously with the *Saratoga* commissioning, the Medium Steam Turbine, Generator and Gear Department had an announcement. The Navy had awarded it another $5 million contract to build the same kind of propulsion equipment which it had provided for the *Saratoga*.

This will bring to six the number of *Forrestal*-class carriers in the U.S. Navy. Five of these six will be doing their job of protecting American security with the help of power, speed, and cruising range given them by General Electric propulsion and gear equipment.

REAPPRAISAL OF ADVANCED MANAGEMENT COURSE UPON COMPLETION OF COURSE I

INTERVIEW with Harold F. Smiddy, Vice President—Management Consultation Services, and Marc A. deFerranti, Manager—Manager Development Consulting Service.

Participants in the first Advanced Management Course were graduated on March 30 from the General Electric Management Research and Development Institute at Crotonville, New York. The 69 men who took part in this thirteen-week Course are now back at their desks.—Ed.

Q. Mr. Smiddy, what was the main objective of Advanced Management Course I?

A. The main objective of all these Advanced Management Courses is to prepare men to meet the challenges of tomorrow in such a manner as to make General Electric, in Mr. Cordiner's words, "the best-managed Company." The emphasis is increasingly on that word "tomorrow." The Advanced Course explores the General Electric Company of the future, the G.E. of 1960 and 1965, so as to anticipate the opportunities and challenges ahead. It is truly an *Advanced* Course.

Q. Mr. deFerranti, do you think this main objective was met by Advanced Management Course I?

A. Yes, to a great extent, thanks to the attitude of partnership by the participants. The members in Course I, of course, had little advance opportunity for formal study of Company philosophy. None had attended a local Professional Business Management Course before coming. It was necessary to start from scratch to a greater degree than will be true later.

Q. Mr. deFerranti, could you relate the accomplishments of the first Course to any specific areas?

A. Yes. The Advanced Management Course has four aims to accomplish its objectives. First, to equip a Manager to do his work easier, faster, and more effectively. How well Advanced Management Course I succeeded in this will not be known for some time. Second, to help Managers lift their sights from their own daily work to see the Company as a whole, in its social and political as well as its economic environment. I believe Course I did this reasonably well. Third and fourth, to give participants a thorough understanding of the managerial objectives, principles, and organizational philosophy of the Company, and to prepare them to be effective multipliers of the new knowledge so acquired. The participants say they *did* gain understanding in these areas.

Q. Mr. deFerranti, you mentioned the decentralized Professional Business Management Courses in a previous answer. What part do they play in the over-all Manager Development picture? How are they related to the Advanced Management Course?

DISCUSSION GROUP IN ONE OF SIX SMALL CONFERENCE ROOMS

A. A two-week Briefing Course is given here at Crotonville for men selected to activate local Professional Business Management Courses. Each, in turn, goes home and organizes a twenty-week Professional Business Management Course, with one formal half-day session each week. While some text material is common with that of the Advanced Management Course, there is repetition only in the broad principles covered. The two Courses complement each other: the Professional Business Management Course is more concerned in its details with practical Managerial activities of today, whereas the Advanced Management Course deals more with managerial problems of the future.

Q. Mr. Smiddy, when will the Advanced Management Course get to the point where it becomes the "truly advanced course" you mentioned?

A. Well, as background, we will have had 13 Briefing Courses here by the end of 1956. There are already 54 Professional Business Management Courses running in 37 departments, and such Courses will have been completed by some 200 groups of men by the end of 1956. So, you see, by next year over 4000 participants will have studied the Company's philosophy of Organization and Managing under the guidance of approximately 200 chairmen, and will be using it to refine their work as Managers or as Individual Contributors.

Starting in 1957, the Professional Business Management Course will normally be itself a foundation of the knowledge which participants bring to the Advanced Management Course at Crotonville. Hence, successive Advanced Courses here will be able to explore deeper into the future.

Q. Mr. deFerranti, the participants of Advanced Management Course I are, after all, mature individuals with quite a bit of Managerial experience already behind them. What is the "teaching" approach under such circumstances?

A. Our approach is that it is more a matter of these men coming here to *learn* for themselves, rather than to be taught. Manager Development Consulting Service has gathered concepts together and organized them into the Company's general philosophy and approach for Manager Development. In the Advanced Management Course, learning is then a joint process. Speakers and consultants present problems and ideas which are openly discussed by everyone. We *all* learn here, including the "teachers." A great deal of research is still ahead of us in Manager Education. We plan to continue study of the whole process of "adult learning" for we know that there are many more fields to be explored.

Q. Mr. Smiddy, does the Company suffer seriously when 69 Managers are away from their normal work for 13 consecutive weeks?

A. On balance, G.E. profits rather than suffers from this. Company goals, as built up from budget plans of the decentralized businesses, indicate about double the present sales volume by 1963 or 1965. Lack of enough competent, qualified Managers would be a serious impediment to such progress. The Advanced Management Course offers one help to meet such needs. The fact that the 69 participants of Advanced Management Course I were able to leave their desks for 13 weeks without serious repercussions shows, I think, that they did have men in their own management teams who were sufficiently developed to assume greater responsibility and did so splendidly when this opportunity was made available to them. Part of a Manager's job is systematically to establish a Climate in which other men can and will develop themselves. What the Company needs is more such men who are even more highly developed.

Q. Mr. Smiddy, do you feel that 13 weeks is the right duration?

A. Yes. Thirteen weeks is a relatively short time in which to explore fully the area of the diversified over-all organization of General Electric and the Company philosophy of the Work of a Professional

IN RESIDENCE HALL: TYPICAL STUDY ROOM AND DINING ROOM

Manager. To cover this ground in 13 weeks, the participants simply have to leave their regular jobs at home and concentrate on the Course. They need to come here free of their everyday problems, to be able to look at the challenge of their future work in proper perspective; and to project themselves into that future with a free mind.

Q. Mr. deFerranti, are there any major changes for Advanced Management Course II which is now in session?

A. No. We are, naturally, refining and improving daily plans, questions for discussion, and reporting techniques, as well as the class discussion techniques. Changes will certainly be made in the future Courses as a result of further manager development and adult education research, and of actual experience as we go along.

An Evaluation by Two Participants in Advanced Management Course I

C. R. PLUM, Acting Monoger—Engineering; Aircroft Accessory Turbine Dept.; West Lynn, Moss.

PLUM

". . . I feel that Advanced Management Course I was the first opportunity that I had in my career with the Company to actively pursue with others the principles of management . . . The most important thing that I got out of the Course was a confirmation of some of the principles of leadership . . . I had felt [these principles] were desirable, but I did not feel too sure that they were accepted as being relatively certain of bearing fruitful results. . . . All of us who participated in the first Course had a real feeling that the atmosphere was conducive to learning impartially about this business of management. There was not any feeling of being indoctrinated with a particular pitch that was biased or slanted away from universally applicable principles . . . Each participant could make up his own mind . . . Advanced Management Course I was absolutely a success . . ."

J. E. WELDY, Monoger—Morketing; Carboloy Deportment; Detroit, Michigon.

". . . I think that Advanced Management Course I was extremely worth while . . . We got new knowledge, we were stimulated, and we got a better perspective of what we are all trying to do together in the General Electric Company. Most particularly, we got a new appreciation of the fine qualities and capabilities of the men who are in the Company—the officers, the men who spoke to us, and the participants themselves . . . I personally received confirmation that many of the things which I was actually doing were founded on good management principles and secondly, I received a feeling of confidence . . . based upon new knowledge and stimulation to more study — all of which gives you a better perspective to approach the actual work of managing a business. I am most enthusiastic about the Advanced Management Course and was all of the time I was there."

WELDY

MANAGEMENT CONSULTATION

Course II Under Way

Participants in Advanced Management Course 1956—II (April 3 to June 29) are:

Accounting Services: L. B. Van Dyck.

Air Conditioning: R. P. Allison.

Aircraft Gas Turbine: S. E. Crites, H. W. Paige.

Apparatus Sales: F. T. Eakin, C. M. Ferguson, R. A. Hammond, A. J. Moore, A. M. Wainwright.

Appliance & Television Receiver: A. Lindenmeyer, J. H. Miller, P. A. Wassmansdorf.

Atomic Products: R. H. Beaton, C. R. DeReamer, W. M. Mathis.

Canadian General Electric Co., Ltd.: T. J. Carey, J. E. Girven, R. M. Jennings, E. H. Lindsay.

Chemical & Metallurgical: J. A. Beals, K. R. Beardslee, J. L. Galt, E. A. Kern.

Component Products: J. J. Horan, A. Martin.

Construction Materials: J. G. Hocking, K. E. Sutton.

Electronics: W. R. Burrows, Jr., D. L. Henning, L. T. Rader, D. C. Scott, J. F. Simons, H. M. Sullivan.

Engineering Services: C. B. Fontaine, D. H. Hanson, C. F. Savage.

General Electric Credit Corporation: J. R. Harvey, W. J. Plunket.

General Electric Supply Company: G. B. Colesworthy, V. S. Cooper, R. A. McWhinney, C. W. Webster.

Hotpoint Company: J. F. Rosprim, C. A. Rystogi.

Housewares & Radio Receiver: L. A. Davis, J. O. DeVries.

Industrial Power Components: C. A. Bangert, R. M. Hensler.

International General Electric Company: R. V. Azúa (Mexico), R. C. Fallon (Brazil), C. W. Graham.

Lamp: H. F. DeLong, R. L. Johnson, W. W. Nims.

Locomotive & Car Equipment: G. W. Wilson.

Management Consultation Services: F. D. Crowther, F. M. Oglee.

Manufacturing Services: L. D. Miles, A. B. Wellborn.

Marketing Services: E. J. Klock.

Measurements & Industrial Products: B. B. Gravitt, W. F. Greenwood, E. E. Parker.

Motor & Generator: J. T. Farrell, A. C. Stevens, P. S. Stough.

Public & Employee Relations Services: M. L. Galusha, F. N. Neal, W. P. Parsons, E. J. Ritter.

Switchgear & Control: R. C. Crawford, H. W. Poole.

Transformer: M. W. Johnson, C. T. Kastner.

Treasury Services: L. W. Mosher.

Turbine: W. J. Campbell, A. Howard, E. R. Oeschger.

MEDIUM STEAM TURBINE

$23 Million Expansion

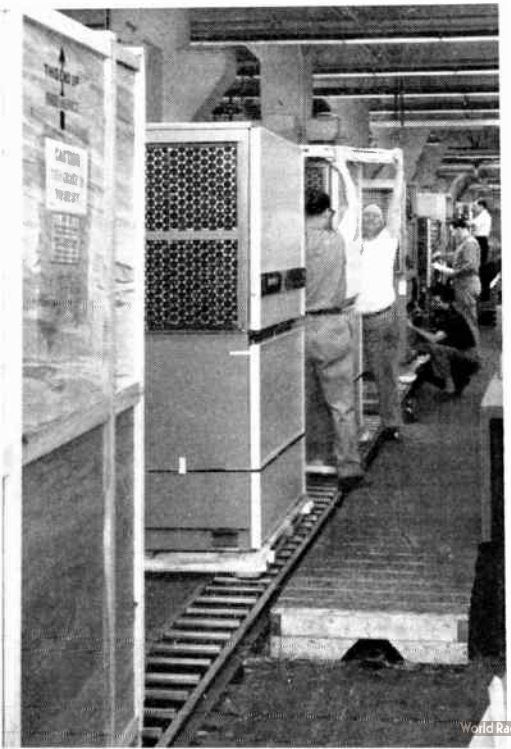
Plant expansion costing $23 million has been announced for the Medium Steam Turbine, Generator and Gear Department at Lynn, Mass.

An upward estimation of growth trends in the steam power generation field and increased demand for marine propulsion and aircraft gearing equipment make necessary the enlarged facilities.

The expansion will take place over the next five years and will involve a five-story addition to the department's present office building; 59,000 square feet of additional manufacturing area for heavy machining of turbine and generator parts and for the assembly, testing, and shipping of large generators; and extensive remodeling of existing buildings to ready them for new operations.

It now appears that the department's volume of business during the next ten years will be even greater than that predicted just two years ago.

EXECUTIVE VICE PRESIDENT Roy W. Johnson presents Weathertron Pioneer plaque to Department General Manager Henry M. Brundage. Reginald H. Jones, center, is the new general manager of G.E.'s Air Conditioning Division.
Below: part of the Weathertron production line.



WEATHERTRON

Doubling Every Year

The heat pump industry, which has sold 9000 heat pumps to date, will install 10,000 units in 1956 alone.

The industry has doubled in size every year. G.E., the leader in the field, has more than doubled its sales each year.

On the distributor level, the Weathertron Department's growth is indicated by the fact that its largest distributor in 1952 installed only 22 heat pumps; in 1956, at least 28 distributors will install 100 or more units. (A Nashville, Tennessee, distributor recently placed a single order for 240 Weathertrons.)

The fact that G.E. is really the pioneer in the business is borne out by the fact that most major manufacturers have been biding their time, waiting until G.E. has developed the market. Westinghouse is reported to be pushing its heat pumps more aggressively, and there are indications that during 1956 such giants as Carrier and Frigidaire will enter the business.

From a handful of utilities in the original Weathertron marketing area who promoted the heat pump in 1951 and 1952, utility backing has grown until more than 100 utilities are today actively pushing heat pump sales.

Following are three Weathertron distributor field reports received this month:

GENERAL EQUIPMENT CO., Raleigh, N. C.:— First cost of a Weathertron installation now compares favorably with an installation of comparable quality using electricity for cooling and a fluid fuel for heating. Under some circumstances, Weathertron can be installed for less than a comparable conventional system. Year-round operating costs in this territory vary with local power

rates and may be anything from a little less to 25 per cent more than operating costs for oil heating plus electric summer air conditioning. The somewhat higher operating costs do not appear to be much of an obstacle in this territory as most people here use electricity for cooking and water heating, and are educated to its advantages, such as safety, cleanliness, and convenience. Weathertron is the one device needed to provide a truly all-electric home. I believe that within the next five to ten years, heat pumps will completely dominate the air-conditioning market in this area. Weathertron is the most exciting thing that has happened to this business in 20 years."—*B. F. Carter, vice president.*

B. H. McLAIN RADIO & APPLIANCE CORP., Nashville, Tenn. —"Public interest in Weathertron has mounted phenomenally in the past 12 months. They are being purchased not for novelty but for proven practicality. Complete automatism and the all-electric feature are important sales factors. Surprisingly high percentage of sales goes to allergy victims. Sales show definite influence of testimony from earlier satisfied users. Several cases of entire city blocks of Weathertron homes. Simplification of service and increased reliability of units have increased sales potential. First cost ranges from 20 to 30 per cent over conventional systems, but operating cost is definitely less than that of conventional equipment. Enthusiasm and hard work are only limitations on future sales."

BAIRD FOREST CORP., Cleveland, O.—"Operating costs are competing with oil-consuming furnace and only slightly higher than natural gas. From an introduction of three units in 1954, it is anticipated that several hundred will be in use by 1956. Great interest has been shown by speculative builders. The commercial and industrial markets are next."—*W. J. Baird.*

WEATHERTRON'S FIRST FOUR YEARS

The presenting of awards this month to Weathertron Pioneers marks completion of a four-year "growing-up" period during which the department:

1–Increased personnel from 15 persons to 331 persons.

2–Reduced Weathertron's price from $28.40 per 1000 BTU's of heating at the distribution level to $17.00 per 1000 BTU's—a 40 per cent reduction.

3–Replaced the one-year warranty with a five-year warranty—a first in the heating industry.

4–Increased its distributors from 20 to 66. There are now more than 600 active dealers. (All but one of the original distributors are still with the department.)

5–Saw multiple installations grow in size and frequency. As many as 89 have been installed in one project. There are five home-building developments that use Weathertrons in all of their homes.

6–Introduced in 1955 a model that opened up a large new geographical area of Weathertron customers.

7–Expanded distribution from a strictly southern area to reach as far north as Hartford, Conn.; Detroit, Chicago, and Boise, Idaho.

STEAM TURBINE-GENERATORS

1957 Will Set a Record

The Large Steam Turbine-Generator Department reports record-breaking orders for delivery as far ahead as 1959.

Department General Manager W. E. Saupe said the backlog of orders totals more than 19 million kilowatts capacity. The schedule:

1956—Shipment of 17 units will total 5.2 million kw capacity.

1957—A department record will be set: 71 powermakers totaling 8 million kw capacity will be built.

1958—Orders totaling 5 million kw capacity are already on hand for the first four months.

At Schenectady, final factory tests have begun on the world's first commercial supercritical pressure steam turbine-generator. It will be installed at Ohio Power Company's Philo Station near Zanesville. The new Philo unit will operate at an initial steam pressure of 4500 psig, compared with 2400 psig which is the highest used in turbines now in service. The higher steam pressure makes possible greater efficiency.

The first equipment to be used in assembling three turbine-generator units in what will be Spain's largest power station was shipped from New York early this month. When in full operation later this year, the equipment will give Cartagena and Valencia 1.1 billion kw-hrs annually.

The highest rated steam turbine-generator ever exported from the U.S. is being sent to Japan. The 125,000-kw generating unit will be the most powerful in the Far East. When the unit's 185-ton stator was shipped recently, it constituted the heaviest peacetime shipment of a single item from the port of New York.

N.Y. PORT'S HEAVIEST PEACETIME SHIPMENT

LAMP DIVISION

New Lab at Nela

An Advanced Lamp Development laboratory will be built by the Lamp Division at Nela Park at a cost estimated between $4 million and $5 million. D. L. Millham, Lamp Division vice president, has announced. Construction will begin this summer on the facility which is expected to be completed before the end of 1957.

C. L. Olson, manager of the Advanced Lamp Development Laboratory, said: "The work of the laboratory is to undertake fundamental and applied research and advanced engineering to improve old methods and discover new methods for producing light. It is also to investigate the effects of artificial illumination on human beings, animals and plants and to explore new fields of light application."

LAMP DIVISION

Fluorescent Development

A new fluorescent lamp with double the light output of present tubes of equal length was announced April 12 by the Lamp Division.

There is a series of lengthwise dents or grooves along one side of the new eight-foot-long fluorescent tube. The new lamp has been named "Power-Groove."

The greater light output results from an increase in area of the lighted tube surface, the higher wattage at which the new tube can be operated, and the more effective use of energy within the tube.

The development breaks through a stubborn barrier which has restricted the amount of light obtainable from fluorescent sources, according to Vernet C. Kauffman, manager of engineering for the Large Lamp Department. It achieves its huge gain in light output with no loss in efficiency, or units of light produced per watt consumed.

"This is a major achievement in fluorescent lamp design, the greatest in a series since the fluorescent lamp was developed by General Electric in 1938," Kauffman said. By doubling the light output of fluorescent lamps, G.E. has achieved a greater gain in light per foot than had been achieved by all similar improvements combined since fluorescent lamps were introduced 18 years ago. The Power-Groove produces five times as much light per foot as the original fluorescent lamp.

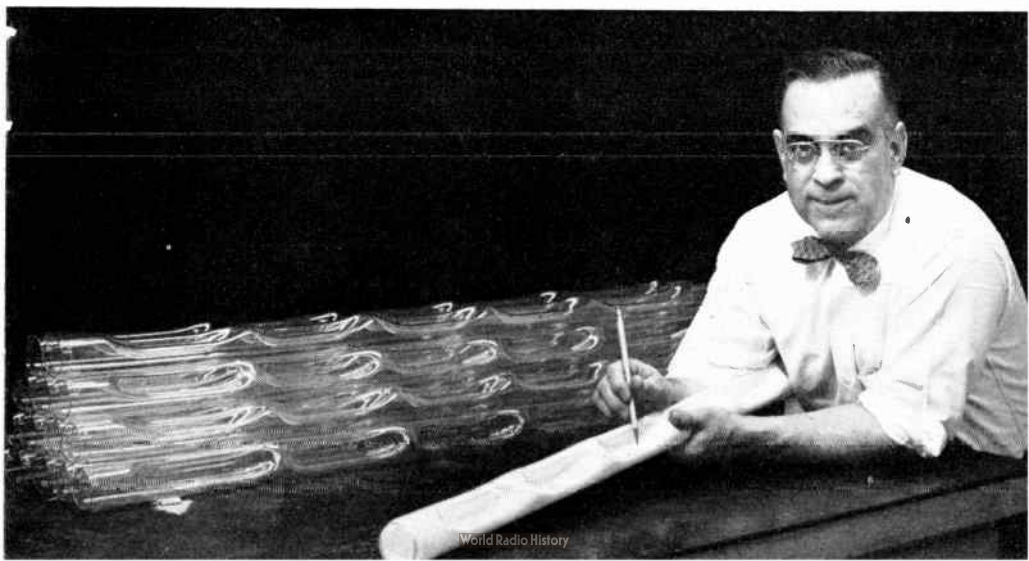
The new development was spearheaded by Eugene Lemmers, lamp engineer.

It cannot be used for replacements in existing fixtures.

The lamp is two and one-eighth inches in diameter and is rated at about 200 watts.

Sample quantities of the lamp will be available in June to manufacturers of fixtures and other auxiliary equipment. An adequate supply of the lamps is expected late this year and should be seeing service in lighting installations by early 1957.

LAMP ENGINEER LEMMERS AND THE "POWER-GROOVE" TUBE



APPLIANCE SERVICING

Training the Trainers

A new way to get factory knowledge and skills to major appliance servicemen has been instituted at Appliance Park. Service-training managers from G-E appliance distributor organizations throughout the nation are being brought to Louisville in groups to attend week-long Technical Training Seminars.

More than 100 service-training managers attended the first two Appliance Park sessions during March. Additional seminars are planned for October, with the possibility of an interim session in June.

The importance of customer relations is emphasized throughout the training programs. Each of the 1956 appliances is analyzed in detail and its function thoroughly studied. The distributor service-training managers who complete the course are expected to pass on their new knowledge and techniques to the servicemen in their areas.

Previously, the Appliance and Television Receiver Division sent out training teams to do the job on the distributor's home ground. The new plan has the advantage of bringing top product specialists from several areas together at the same time.

Product Service Manager J. H. Miller reports that the number of service calls is rising much more slowly than the sale of major appliances. But, he explains, there is bound to be some increase in service calls "simply because there are suddenly so many more appliances in the home. Furthermore, appliances are becoming more automatic and this calls for better-trained and better-equipped home servicemen. Our new plan is just another step in our constant program to improve service all over the country," he said.

NAVAL ORDNANCE

USS *John Paul Jones*

The new USS *John Paul Jones*, commissioned at Boston Navy Yard on April 5, is the only ship in the U.S. Navy with permission to fly two different American flags.

Besides the Stars and Stripes, the ship will fly our first national flag, the Grand Union, which was hoisted for the first time by the "father of the American Navy," John Paul Jones.

Protection for both flags is provided by G.E.'s Naval Ordnance Department, in the form of the G-E Mark 56 gun fire control system with associated equipment, including amplidyne power drives.

CONSTRUCTION

Gas Turbine Expansion

At Schenectady, $6.8 million will be spent "to prepare the Gas Turbine Department to meet future growth predicted for the gas turbine business." The recent large order for gas turbine locomotives for Union Pacific (*Monogram*, Dec. 1955, p. 10) and exciting new possibilities for use of gas turbine power plants for ships are among the promising factors.

The new expansion will provide facilities and machine tools for the new line of gas turbines and a headquarters office building for the department.

John P. Keller, department general manager, reports that over 108 G-E gas turbines have been installed or shipped for use by electric utilities and railroads and in other industrial and marine applications. With ratings ranging from 5000 to 21,800 kilowatts, these units have operated for a total of more than one million hours.

WHAT'S NEW

Hiring at Syracuse in March and April is expected to add 1000 new employees to that city's G-E ranks, now said to number about 10,500. TV production will absorb most of the new workers.

Ready for the Trend: The accent is on smaller TV sets (Page 8 this issue). And G.E.'s Tube Department is ready with a completely new line of TV receiving tubes. Using 25 per cent lower heater power, the new 450-milliampere tubes permit smaller cabinets, have fewer ventilation requirements, and ease other design problems in small receivers. The 600-milliampere tubes, also originated by G.E., will continue to be used in the larger television sets.

FOR IMPROVED TV BROADCASTING

Pleased with results of G-E House of Magic showings in Pakistan and India (*Monogram*, Jan. 1956, p. 8), the U.S. Department of Commerce requested that the show go on to the International Trade Fair at Osaka, Japan, where it is now being featured (until April 22), again under the joint auspices of International General Electric and the U.S. Government.

New to the industry is G.E.'s latest development in television broadcast equipment. Designed with color TV in mind, but performing equally well in black-and-white transmission, a new microwave relay system for the first time can combine outputs of separate aural and visual transmitters into a common antenna. Engineers testing the unit at Electronics Park say it performs excellently up to 20 miles, gives improved coverage and freedom from fade, and eliminates the need for long warmup periods before going on the air. Weighing less than 200 pounds, it can be used in remote or studio operation. The new equipment is the result of two years of development work.

Scholars Selected: Notice has gone to the 34 students who have been awarded graduate fellowships from the General Electric Educational and Charitable Fund. Nearly 450 sought the awards this year, compared with 237 applicants last year.

More Power to America awards announced at the Edison Electric Institute Conference in Chicago March 28 went to Cleveland Electric Illuminating Co. and Mississippi Power and Light Co. The two utilities have done outstanding work in encouraging the electrification of industry, part of MPA's long-range program (*Monogram*, Dec. 1955, p. 6).

WHAT'S NEW . . . Cont'd

New High-speed Printer: Hardly bigger than a shoebox, a special-purpose, high-speed printer, developed in the General Engineering Laboratory, can print more than 2500 lines a minute. The revolutionary electro-magnetic process is being used to print results of numerical calculations of fast analog computers. G-E engineers say the technique can be used for "facsimile" reproductions of pictures, line drawings, and lettered characters. The engineers add, however, they see no immediate threat to the modern teletype or printing press because the applications are so different. In photo below, Gayle Moon of the General Engineering Laboratory at Schenectady looks over the figures printed in "ink" composed of magnetized iron particles pressed into a wax-treated paper.

NEW, SPEEDY PRINTER

A New Field: The first production-size vacuum arc melting furnace ever built by General Electric will go to the Universal Cyclops Steel Corporation of Bridgeville, Pennsylvania. Manufactured by the Industrial Heating Department, the new melting furnace will be able to melt ingots weighing up to 3000 pounds and measuring up to 16 inches in diameter. It will be used to melt molybdenum and high-alloy steels.

Freedoms Foundation at Valley Forge (Pa.) this year again singled out the accomplishments of G-E people as "outstanding expressions, projects, and programs which build an understanding of the American Way of Life." George Washington Honor Medals for 1955 have gone to the Lamp Division magazine *Lampmaker* and its editor G. M. Keith; to G.E.'s More Power to America movie, *This Is Automation*; to WRGB-TV for its series on the Ground Observer Corps; and to Igor Blosfelds, statistical analyst at G.E.'s Locke Department, for his article on American citizenship published in *The Locke News*. Having been selected for awards in at least five of the Foundation's seven annual award programs, General Electric Company was one of the organizations to be awarded the Foundation's highest honor—the Distinguished Service Scroll.

"Who's Who in America" has cited General Electric Company for pioneering in "an important new method of giving which matches any employee's gift to his college or university up to $1000 annually." The big red reference book on influential Americans pointed out further that, added to scholarships, fellowships, and grants-in-aid, G.E.'s average total contribution to higher education during the biennium July 1953—June 1955 was approximately $1,500,000 a year.

Making news with its contracts for propulsion equipment to power massive gray fighting vessels (Page 12 this issue), the Medium Steam Turbine, Generator and Gear Department showed that it could do as well in powering graceful white luxury liners. The department will provide propulsion turbines and gears for two 300-passenger express liners to be built by the Grace Line. Electric power generating equipment aboard the $22 million vessels will also be G-E—coming from the Small Turbine and Supercharger Department at Fitchburg, Mass. Upon completion, the new luxury liners will be christened the SS *Santa Rosa* and SS *Santa Paula*.

Hendersonville Lights Up: Just one year after ground was broken for construction of the Outdoor Lighting Department's new home in Hendersonville, N. C., the first shipment of streetlighting luminaires left its production lines. When in full operation, the $8 million plant is expected to employ more than 700 persons on a three-shift basis.

A special recreation program for retired employees has been instituted at the Erie (Pa.) Plant. Twice a month, the General Electric Activities Association in Erie holds meetings at which the feature presentation may be a speaker, a film, or a session of games. "But," reports Bertram Miller, manager of Relations and Utilities, "the accent is always on having a really good time with old friends."

February was the month in which the Specialty Control Department at Waynesboro, Va., rang up its new record—well over $5 million in orders received. The department's previous high month was in January, 1954, when slightly less than $4 million in orders were booked. The new record is 32 per cent higher. D. O. Dice, department marketing manager, pointed out that the new business was built from hundreds of orders, not from a few large orders. Said Dice: "This record helps substantiate our faith in the excellent growth possibility of industrial electronic equipment and aircraft control equipment."

G-E THEATER SCHEDULE

Apr. 22—"The Lord's Dollar," with Ronald Reagan.
Apr. 29—"H. M. S. *Marlborough*," with Joseph Cotten.
May 6—"The Second Stranger." (casting incomplete).
May 13—"Clown," with Henry Fonda.
May 20—"The Slumming," with Geraldine Page.

H.M.S. *MARLBOROUGH*

PEOPLE

"In you we honor one of the great masters of physical Chemistry, which has been advanced through the more than 250 papers you have published. . . ." Thus read, in part, a hand-inscribed scroll sent by the Society of German Chemists to G.E.'s Dr. Irving Langmuir (retired), Nobel Prize-winning chemist. The occasion: his seventy-fifth birthday.

"Mr. Oscillograph" is the name often given to Carl H. Schermerhorn, who has just completed a half-million miles of travel over a period of 25 years as General Electric's best oscillograph salesman. He has seen sales of this Instrument Department product grow from about 15 a year to a current annual average of about 100. Used to record electrical phenomena visually, the instruments sell for about $5000 each. After an interview during which he recalled the days when Edison and Steinmetz were on the job for G.E., Schermerhorn recently packed his car with oscillograph equipment and started out on yet another 10,000-mile trip. "The only major city I haven't hit is Seattle," he said, as he headed the car toward the Pacific Northwest.

Major Achievement: George Herbster is 17, goes to a Warwick, R. I., high school, plays piano, is a talented singer, and made the track team this year. On April 3, George was at New York's Plaza Hotel as the main speaker for a New Products Seminar attended by some 300 of the nation's top business leaders. Sponsored by Hilton and Riggio, Inc., the seminar panel included the board chairman of Textron American, vice presidents of American Safety Razor and Revlon Products, the Governor of West Virginia, and other key executives. George is an executive himself—having been president of Brite-Lite Co., a highly successful Junior Achievement firm sponsored by General Electric's Wiring Device Department. His company's products include a single-pole mercury switch and a remote-control appliance switch. He'll be interrupting his executive functions soon, however—to go to college where he will study electrical engineering.

DR. IRVING LANGMUIR

GEORGE HERBSTER

AROUND THE COMPANY

Guest Lecturer: G-E President Ralph J. Cordiner has accepted the invitation of Columbia University's School of Business to be the McKinsey Foundation lecturer for 1956. On April 19 and 26 and on May 7, Mr. Cordiner will talk on "Managerial Philosophy for an Expanding Enterprise." His lectures will later be published in book form. G.E.'s president is the first to be invited to speak in the new McKinsey series to be held annually at Columbia.

Case Dismissed: The United Electrical Workers and John Nelson, the president of one of its locals, lost another round recently in their effort to have the courts set aside a General Electric policy providing for the discharge of admitted Communists and employees who plead the Fifth Amendment before Congressional committees investigating Communist activities.

The U.E. and Nelson were taking issue with a lower court ruling which had upheld General Electric's right to discharge employees under the challenged policy. The Appellate Court affirmed the finding of the lower court that the company policy had been issued "solely as a company matter and without any consultation or communication with any government representatives or other persons outside the company," and ruled that the other claims presented by U.E. and Nelson were not within the jurisdiction of the lower court.

"Better Business Climate" was the subject when more than 300 Louisville-area business officials and editors met recently in Monogram Hall at Appliance Park. The appeal was for new industry in Kentucky to spread the tax burden, to reduce unemployment, and to help support better education. Factors which could hamper business growth in any community were listed as including laws against business, outmoded city codes, confiscatory and discriminatory taxes, irresponsible union leadership, and unthinking policies of business leaders. George L. Brown, manager of Community Relations at Appliance Park, was the main speaker at the meeting which was hosted by G.E. and sponsored by the Kentucky Industrial Editors' Association in co-operation with the Louisville Chamber of Commerce. The meeting was hailed as "the biggest forward step yet made in bringing a Better Business Climate to Louisville."

LOUISVILLE LOOKS AHEAD

Treasurer John D. Lockton announced that General Electric Company borrowed $100 million from commercial banking sources to provide funds for its March 15 Federal income tax payment.

AROUND THE INDUSTRY

A Vote for O.T.C.: The proposed International Organization for Trade Cooperation recently received the endorsement of 58 top U.S. business executives, all of them trustees of the U.S. Council, International Chamber of Commerce. A bill that would make this country the first member of the body is now before Congress and has received President Eisenhower's recommendation. Said the group's statement: "Of the unifying forces within the free world, only the common love of liberty and independence has proved more important than the ties of international trade." Casting his vote for O.T.C. was one of the signers of the declaration Philip D. Reed, chairman of the board of General Electric Company.

Twofold Honor: G.E.'s General Purpose Control Department plant in Bloomington, Ill., has been cited as "one of the 10 most significant manufacturing plants completed in the U.S. during 1955." *Factory Management and Maintenance* magazine sponsored the competition in which a group of leading architects, regional development officials, and readers of the magazine chose the 10 most important plants from a field of some 600 contenders. In the same competition, the Bloomington plant was singled out for a special award for its electrical distribution system, which is said to offer "unusual reliability at moderate cost."

"The Tenant at 1010 Main" is the latest movie released in G.E.'s More Power to America series. This 32-minute color film is ideal for audiences of property owners, bankers, school boards, real estate and insurance people. It is an entertaining portrayal of a building manager who discovers that scrimping on electrical systems 20 years ago is losing him tenants today. All is well in the end, however, when his cost-consciousness persuades him to install a modern, high-voltage electrical system in a new commercial building he is planning. The film is available through Apparatus Sales Division's district offices.

ORGANIZATION

Atomic Products Division

George White has been named general manager of the Atomic Power Equipment Department.

Customer Relations (Distribution Group)

Edwin H. Howell has been elected a commercial vice president and has been assigned the Southwestern Region, with headquarters in Dallas, Texas.

EDWIN H. HOWELL

IT REPLACES A TUBE

PRODUCTS

Not a tube, not a transistor—it's a new G.E.—developed metallic rectifier which will soon be replacing a vacuum tube in TV sets. As a horizontal phase detector, it will keep the horizontal sweep frequency in line. The new Vac-u-Sel® rectifier is smaller, gives better performance, lasts many times longer, and costs about half as much as the tube it replaces. It is especially adapted for automatic assembly operations using printed circuits. In a very broad sense, vacuum tubes, metallic rectifiers, and transistors all belong to the same family. In some forms the vacuum tube is a simple rectifier. By adding control elements, it may be made to perform many complex functions in electronic circuits. A semi-conductor rectifier is a diode, or two-element device. By adding an additional control element, it becomes a transistor and will perform many of the functions of certain vacuum tubes.

DO IT YOURSELF

With G-E Products

General Electric stresses safety-mindedness on the job. Statistics prove G-E employees to be safety-minded at home as well. Hence the Wiring Device Department in Providence, R. I., believes G-E employees will be especially interested in the small, inexpensive product illustrated here.

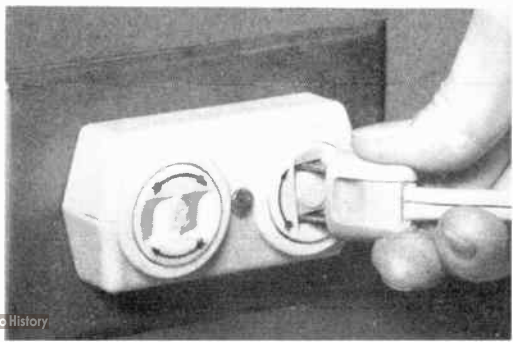
Designed for the home with small children, the G-E 1072-2 safety outlet adapter provides a safety snap-cap to keep electrical outlets covered when not in use. This prevents hairpins, inquisitive fingers, and other objects from being inserted.

No re-wiring is required. Simply remove the short mounting screw from the standard wall plate of the existing double outlet on your wall. Plug in the adapter, and tighten the long mounting screw provided.

To insert a lamp or appliance plug into a safety outlet, you merely insert the plug in the snap-cap, twist it clockwise, and then push to make electrical contact.

Available through employee stores and through regular retail channels, a double safety outlet adapter costs about 50 cents.

SAFETY OUTLET ADAPTER



EDITORIAL

A Set of Useful Definitions

Dr. C. Guy Suits, vice president and Director of Research, reported recently the completion of a very useful study aimed at providing definitions—functionally accurate and simple—for the terms *basic research*, *applied research*, and *development*.

The following paragraphs are excerpts from a statement by Dr. Suits, published in the Research Laboratory Bulletin:

"While the word *research* itself has acquired a very general application, the term *scientific research* is quite specific and connotes the employment of the scientific method. The latter involves, as basic steps, hypothesis, the reproducible experiment, and interpretation of results. In what follows we use the term *research* as an abbreviation for the more complete designation, *scientific research*.

"We distinguish three kinds of technical activity under the commonly named but uncommonly defined terms *basic research*, *applied research*, and *development*. The following definitions have undergone revision, simplification, elaboration, expansion, contraction, and alteration, as tests against more and more R & D [Research and Development] projects have revealed the weakness of proposed phraseology:

"BASIC RESEARCH. This is the pursuit of *new* scientific knowledge *in advance of need* for specific applications.

"APPLIED RESEARCH. Here we seek *new* scientific knowledge for *specific* applications.

"DEVELOPMENT. We consider that there are two significant aspects of this work. First, *existing* scientific knowledge is employed; second, this existing knowledge is applied to experimental demonstrations with *practical application* as an objective.

"There has never been a lack of definitions of these terms, but there has been a lack of common agreement on their interpretation. The definitions we have now adopted are by no means perfect, but they are sufficiently exact to permit us to apply them to the project work of the General Electric Research Laboratory without serious uncertainty. We even recommend them for general use."