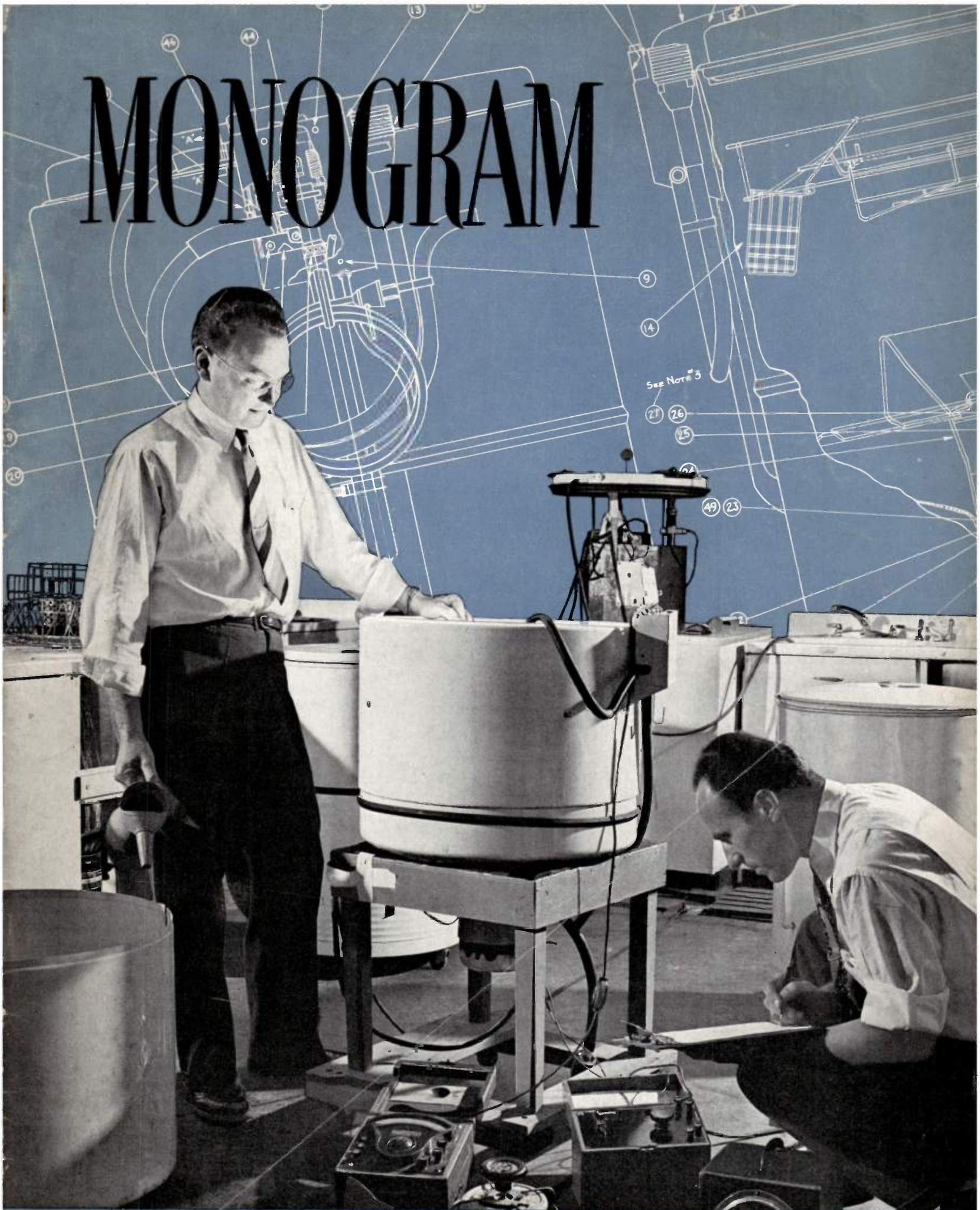
MONOGRAM



NOVEMBER-DECEMBER 1949

Roll-around Dishwasher, Page 6

Need more speed at breakfast time?

An appliance with an old, frayed cord can break up a fast breakfast routine. But an appliance with the new General Electric Preen-X cord is equipped to keep up your breakfast speed, day after day.

It will pay you to look for this new, braidless cord on the heating appliances you buy. Its smooth insulation resists fraying, won't kink. It permits a thorough cleaning job on appliances—such as waffle irons, toasters, coffee makers—because it's made to resist moisture and oils.

When you buy heating appliances, remember to look for the Preen-X cord—you'll recognize its smooth, braidless, fray-proof finish. Or, be on the lookout for the red-and-white Preen-X tag. This new idea in heater-cord sets is a product of the General Electric Construction Materials Department, Bridgeport 2, Connecticut.

GENERAL ELECTRIC

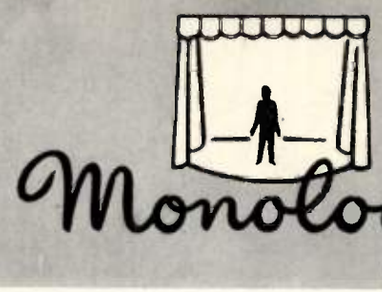
MONOGRAM

VOL. 26 No. 6

ON THE COVER: *In the testing laboratory at Bridgeport, H. C. Sway and R. F. Black make engineering changes on an early model of the new portable dishwasher (George Burns photo).*

BARRINGTON S. HAVENS, Editor

The General Electric MONOGRAM is an intracompany magazine published for all office employees of the Company and its affiliates. Circulation is restricted to General Electric personnel. It is distributed without charge to those on its circulation list. The object of the MONOGRAM is to circulate news of the Company and its people. It does not state policies, preferences, opinions, or recommendations for the Company. It is published bimonthly at Schenectady, New York, by the General Electric Company and printed in the U.S.A. by The Maqua Company.



WILSON BIOGRAPHER: We have received a number of inquiries about Kent Sagendorph, who wrote the biography of President Charles E. Wilson which appeared in the last issue of the MONOGRAM. Evidently there has been much speculation about him and his background and whether or not he is a General Electric employee.

Well, he's not a G-E employee. He's a New York writer, a regular contributor to newspapers and magazines and the author of several books. He's a native of Jackson, Michigan, and an alumnus of the University of Michigan.

GLIDER YARN: The little story about Rene Comte and his gliding which also appeared in our last issue evoked the following anecdote from a reader:

One Sunday Rene and Dick Ball, another gliding enthusiast, took off for an afternoon's soaring in Dick's glider. It was a very good day for gliding, and they finally wound up in a pasture near Bennington, Vermont. They divided the work of returning the glider: Dick hitchhiked back to Schenectady for the car and trailer, and Rene disassembled the glider. Rene made short order of the disassembly; he stacked the parts and lay down beside them for a sunbath. But he didn't get much rest, because people kept stopping their cars on the nearby highway and running over to administer first aid.

TIRELESS ALARM: H. M. Brehm, a customer and good friend in New London, Wisconsin, writes in to tell us the following alarm-clock anecdote:

Our teen-age high-school daughter has an electric alarm clock up in her room of which she is very proud. This morning she had an early engagement, and we heard her leave the house some time before 7 o'clock. Returning home after 4 o'clock, she cried excitedly: "Oh, mother! I forgot to shut off the alarm this morning, and it's been running ever since 7:30 this morning. Do you think I hurt it?" But of course she had not. It's a G-E electric alarm clock, and it had apparently chirped away cheerfully for some nine hours without batting an eyelash or getting hot under the collar.

COW RADIOS: To Mr. Brehm we are also indebted for the following:

We've had an old G-E table-model radio for a good many years, and it finally became time to do something about it, so we bought a new one. Upon delivery of the new one, I asked the man if the old radio had any final cash value. "Does it still play the main stations?" Yes, it did. "O.K. I'll give you $4 for it. Sell 'em for $5 as cow radios—you know, for out in the barns early mornings. Farmer gets the early markets and says bossy likes the music, too; stands still better in fly time."

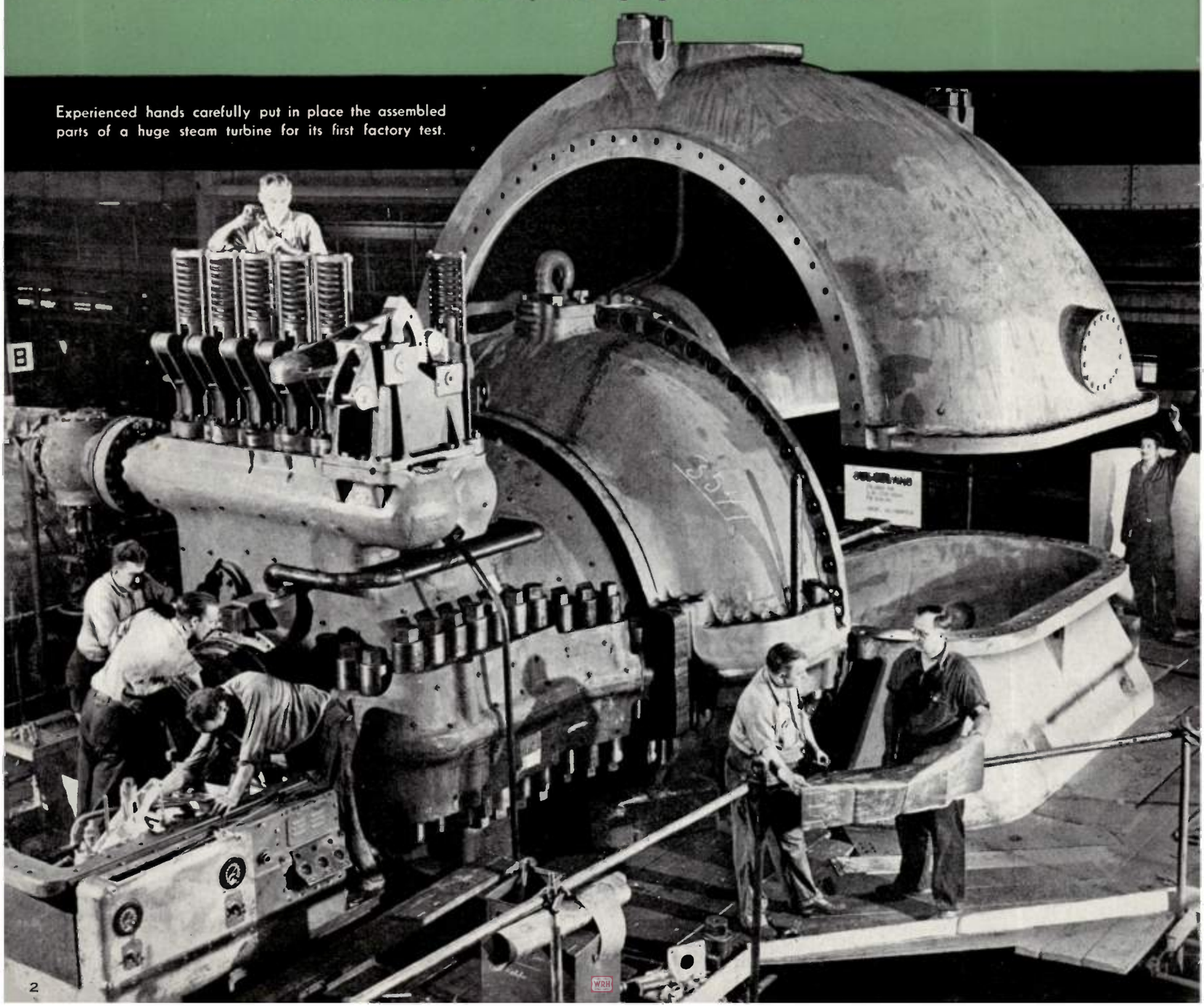
CAB RADIO: Speaking of radio, we've just heard of a taxicab operator in Paulsboro, New Jersey, who uses two-way radio to good advantage in his business. He wasn't getting enough business by waiting in line with a dozen other cabs for calls on one public phone, so he contacted the General Electric district radio representative and arranged for the installation of a two-way radio system in his home and cab.

Now the phone calls come directly to his wife at home, who relays them to him in his radio-equipped cab. He reports back to her after each trip; if she has no other calls, he gets in line with the other cabs to await his turn on the public phone. His wife doesn't let it interfere with her housework; she just turns up the volume so she can hear her husband's messages. Their two-way radio system makes it possible for them to exchange messages over a distance of 25 miles.

THE WORLD'S LARGEST

turbine shop

The nation relies on General Electric turbine-generators for half of its electric power, and the Company has built a mammoth new factory to keep up with the demand



Experienced hands carefully put in place the assembled parts of a huge steam turbine for its first factory test.

Dwarfing the buildings beside it, the turbine plant has a million square feet of floor space, covers 21 acres in the Schenectady Works.

IMAGINE a machine as big as a house and as precise as a 17-jewel watch; as dynamic as a tornado and as soft-spoken as the drone of a bee. Such is a turbine-generator, one of man's most efficient creations. It is the biggest source of electric power in America, and in terms of human labor and natural resources, it is the most economical.

For years General Electric has supplied two-thirds of all the steam turbines in the United States. The demand for power has constantly increased. To keep in step with this demand, the Company in late 1946 began building a new turbine plant at the Schenectady Works. The structure was completed early this year, at a cost of 30 million dollars—the largest turbine factory in the world. Its vast expanse of steel and concrete spreads over 20 acres of land.

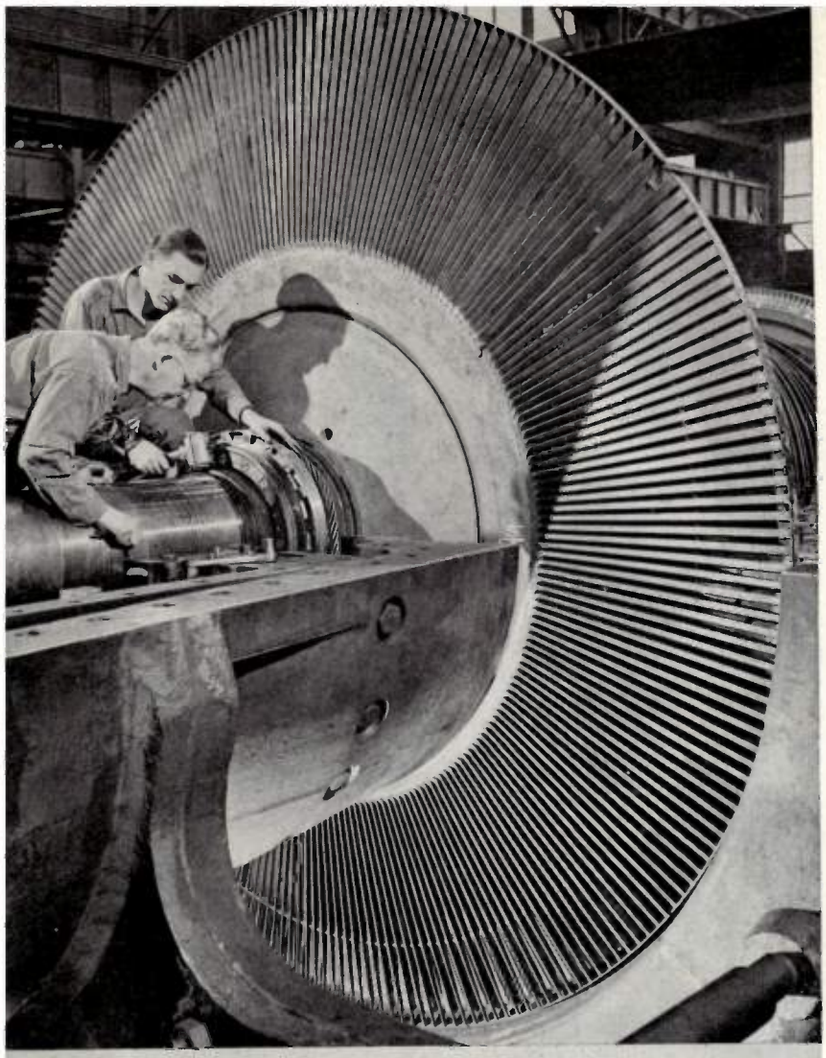
Because of its size it has many unusual structural features. For instance, it took 13,300 tons of steel underground to support the building and the cranes, some of which are capable of lifting a large freight locomotive. The building is a quarter of a mile long and an eighth of a mile wide. At the front is a four-story, air-conditioned office building; its stainless steel outer walls make it unique in the architectural field.

Here under one roof, when the move from the old quarters is completed soon, will be thousands of machine tools ranging from small hand grinders to enormous boring mills—all the facilities necessary to turn huge chunks of raw metal into sleek machines of unmatched power and efficiency.

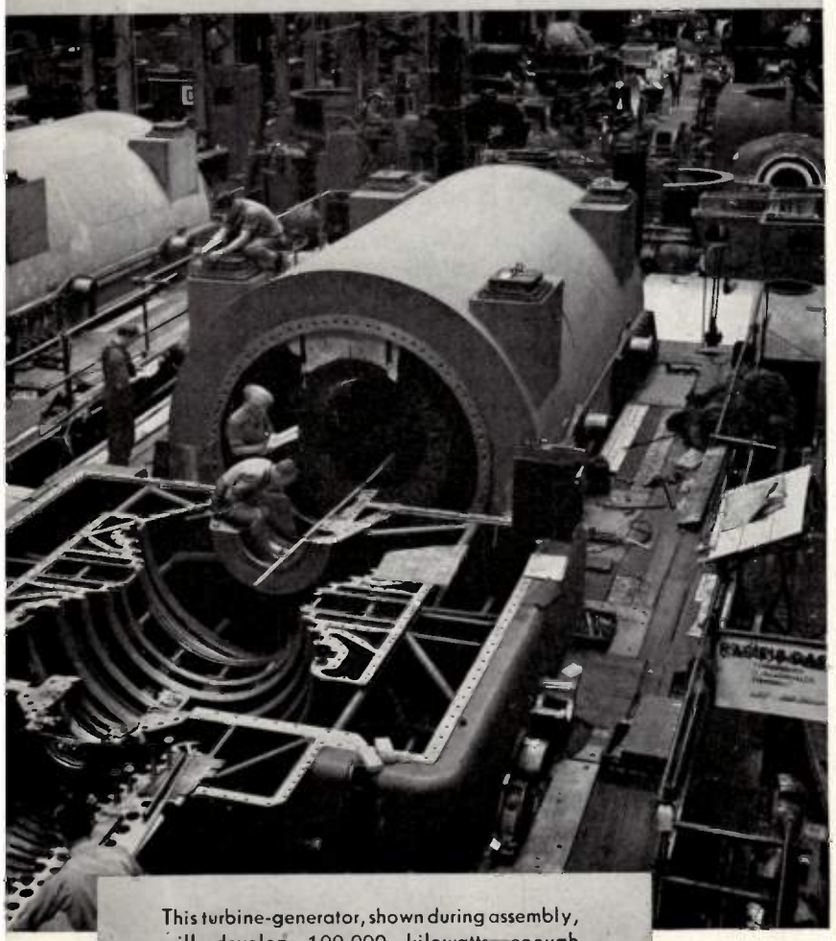
The plant is running at full capacity, with close to 5000 people on the job. Each month a sufficient quantity of turbine-generators is produced to supply power and light for a city the size of Cleveland. These turbines range in size from 20,000 to 200,000 kilowatts.

Behind G-E turbines are some of the best engineers in the business. G. B. Warren (in light suit) is Divisions' manager.

The tiniest flaws imbedded deep in metal castings will be detected by the searching eye of this million-volt x ray.



Steam whirling these finlike buckets at speed faster than sound turns the 60-ton turbine rotor at 1800 rpm. The shaft in turn drives the generator.



This turbine-generator, shown during assembly, will develop 100,000 kilowatts—enough electricity to light a city of 300,000 people.

TURBINE SHOP *continued*

In operation, a turbine behaves like a windmill. Coal, oil, or gas is burned to turn water into steam. This steam builds up pressure and is directed against a series of buckets, converting heat energy into mechanical energy. A rotating shaft connects the turbine with the generator, and the generator completes the transition from fuel to electric power. This power then travels over the transmission wires to run our factories and farms, light our cities, and make our homes the most comfortable places on earth.

Turbine-making is fine instrument-making on a mammoth scale, representing standards more critical than those used in fine watchmaking. Thousands of parts are made to measurements as small as 1/1000 of an inch. The hum of the turbine in operation belies the tumultuous activity going on inside its polished casings. Steam hot enough to ignite wood roars through the bucket wheels at bullet speed. In a fraction of a second the steam is stripped of its heat and energy and turns to a tepid vapor.

Half Century of Progress

A half century of development, of engineering brains, and manufacturing skill have made G-E turbine-generators marvelously efficient. Because of the turbine's fuel consumption, high efficiency is a must. A big one burns 40 tons of coal an hour—or 24 carloads a day. However, each pound of coal is generating enough electricity to keep a reading lamp burning all night long.

The modern turbine-generator owes much of its efficiency to the work of a succession of General Electric men. The history of the G-E turbine began in 1896 when a young man named Charles Curtis brought his plans for a steam turbine to General Electric. The first Curtis turbine was built in the Schenectady Works. Another young engineer, Bill Emmet, teamed with Curtis to redesign and improve it. In 1901 the Company squared its shoulders and tackled the assignment of delivering to the Commonwealth Edison Co. of Chicago, within two years, a 5000-kilowatt turbine for its Fiske Station.

Old-timers remember well the trials and tribulations that beset that venture. Finally, with parts of the machine scattered all over the shop and with Chicago clamoring for a factory test, a smart young foreman named Billy Madigan—a name now familiar in turbine history—was rushed in to save the day. He did—the turbine was installed in March, 1903, three days ahead of schedule.

If there were those who doubted that steam turbines were here to stay, the Chicago machine gave them a different viewpoint. In comparison with the reciprocating engines it replaced, it required only one-tenth of the space, weighed only one-eighth as much, and cost but one-third.

Turbine Leaders

Since then the story of the turbine has been one of constant improvements, and of the accomplishments of General Electric men who followed in the footsteps of W. L. R. Emmet—men like Junggren, Smith, Savage, and Warren. In the years between 1903 and 1907 Oscar Junggren obtained no less than 49 patents. The first outfit for magnetic examination of wheel forgings to detect surface cracks was installed in the Schenectady factory. Next, x-ray equipment became a regular shop tool to detect cavities hidden beneath the surface of castings.

The late M. A. Savage won wide recognition for his work on generator design. By 1932 he had designed the two most powerful generators in the world, for the Hudson Avenue Plant of the Brooklyn Edison Co. They were double the capacity of any

This is one of the nine factory bays in the new turbine plant. The wall at the farther end is nearly a quarter of a mile from the camera.

electric machine then in service. In 1938 he won the Lamme Gold Medal for the success of the hydrogen-cooled turbine-generator.

Arthur R. Smith, managing engineer for 17 years, was responsible for many major advancements in design and efficiency of steam turbines for land and marine use.

Glenn B. Warren, present manager of the Turbine Divisions, was directly responsible for the design of large steam turbines for public utilities from 1931 till 1947. It was he who played the leading part in developing a new type of high-speed turbine for propulsion of the main fighting ships of the U.S. Navy.

It was due to the wisdom and foresight of the General Electric turbine management and engineers that the Company, during the slow 30's, built ten big turbines although there were no buyers for them in sight. These men foresaw an increased demand for power and didn't want to be caught unprepared. As it turned out, it was war that brought these machines into service. They gave American industry the additional electric power it needed so desperately to keep the machinery humming and the lights burning in steel mills and shipyards, and in the great automotive and aircraft factories from coast to coast.

Even in an atomic age, the turbine will doubtless continue to be our main source of electric power. No other machine has yet been invented that will operate so continuously, so reliably, and with so little care.

Turbines are built with fine-instrument precision. Tool gages are constantly checked against master gages, kept in air-conditioned room.

The Housewife HELPED TOO

IN DESIGNING GENERAL ELECTRIC'S NEW PORTABLE DISHWASHER

What does the housewife think of the dishwasher? C. A. Brewer, head of Marketing Services, and Dorothy Cornish, in charge of Consumer Tests, find the answer in these stacks of reports.

Special Photography by George Burns

DISHWASHING is probably the commonest form of kitchen drudgery known to woman. After ten years of marriage the average housewife has spent the equivalent of 175 days over a hot dishpan, washing some 300,000 dirty dishes. Yet even with these distasteful facts brought to her attention, she has been apathetic towards an electric dishwasher. Unlike other appliances, it seems, a dishwasher must actually be used by the housewife before she appreciates its time- and labor-saving value. But once she has used one, she just won't part with it.

No one knows this better than the men in Bridgeport who make and sell dishwashers. An automatic dishwasher, however—requiring, as it does, special plumbing arrangements—can't be installed in a home on trial.

The only way to lick this sales problem lay in making a dishwasher which, like a vacuum cleaner, could be brought to a home and left there for a week or so on approval. That's just what General Electric has done.

A new portable dishwasher is now on the market; it's selling the idea of electrical dishwashing in a way that was not possible with the automatic dishwasher. The fact that it can be easily moved around like a piece of furniture offers possibilities other than trial usage—for people who rent, for people who move to a summer camp or a winter apart-

ment, for people who might even want to take it along to Grandma's for Thanksgiving dinner. It can be kept in a corner and wheeled to the sink when you want to use it. Then all you do is connect the hose to the hot water faucet (the drain hose drains in the sink), and plug the cord into an electric outlet. You wash and rinse the dishes with one simple control: raise the cover, and they dry by themselves. The price (not yet nationally established) will probably be around $170.

In introducing the new machine, the Appliance & Merchandise Department tried out a novel merchandising plan. The whole complicated operation of launching a new product—from its design stages to its final sale to the customer—was carried through by the close teamwork of all the different groups involved in the job. Designers and engineers, commercial, market research and advertising people, all joined forces to lay out a closely co-ordinated program. So well has the plan worked, that the usual headaches and missteps associated with marketing a new product have been virtually eliminated.

The enterprise got its start when the commercial men said to the engineers: "Build us a portable electric dishwasher that will require no special plumbing fixtures, that will connect to any kind of faucet, that will perform as well as the automatic dishwasher but will sell at a lower price—and it mustn't let a drop of water spill on the floor." It sounded like a hard nut to crack, but the engineers were used to that.

The idea grew into blueprint form, then into a handmade sample, and finally into a model streamlined by the appearance design division, ready to be submitted to the product committee for the green light.

Teamwork

Then the plans clarified. Manufacturing, market research and advertising people moved into the picture. It was decided to introduce the new dishwasher in one community at a time rather than on a country-wide basis. The factory would produce the machines as they were needed.

The advertising and sales promotion plan was extraordinary. A complete timetable was set up for each community, carefully synchronized with production and merchandising schedules.

Then came the period of testing—and more testing. Not just factory and laboratory tests, but actual usage in the

The new dishwasher takes form on paper. C. J. Enderle (left), division manager, explains requirements to engineer Gay Wotring (right). A. N. BecVar, appearance design director, studies its eye-appeal.

A new model is delivered to one of 145 Bridgeport homes where it was given a six-months' usage test before being put on the market. Housewives agreed to make out weekly reports on its performance.

The advertising campaign is planned months in advance. Here John Porter, P. H. Lahr and G. E. Drollinger go over a barrage of promotion with advertising manager George Park (right).

home by the most important person in the whole operation: the potential customer, the housewife herself.

Three models were made by hand, placed in three homes, and tried out before the production model was made.

The Real Test

Based on six months' usage, changes were made and 145 factory-built machines were produced. Then the marketing service division chose 145 homes where the dishwashers would be tried out. These homes represented a cross section of American families—people of high and low income, people who lived in elaborate homes or war housing projects, people with several children or none at all.

Each housewife was asked to use the dishwasher for six months and make out a weekly report on its mechanical behavior. These weekly reports were analyzed, and a comprehensive monthly report was sent to all interested groups—commercial, engineering, design, and manufacturing.

At the end of five months a General Electric representative called on each of the 145 women to find out the answer to the key question: what did she think of the dishwasher—would she want one or wouldn't she?

Their comments were a handsome reward for all the planning, designing, testing, changing, and testing again: "It saves so much time . . ." "It's more sanitary . . ." "It's a great hot-water saver . . ." "My hands look so much better . . ." And there was the small boy who chimed in with a remark like an inspired ad man's: "We like it because Mom has more time to play with us."

One woman said: "I'll tell you exactly what I think of it providing you won't take it away from me."

Another housewife greeted the interviewer with: "They came and got the portable dishwasher this morning—but come back and see my new G-E automatic!" For that was an unexpected result of the home test—the portable was also boosting the sale of the automatic machine.

Success

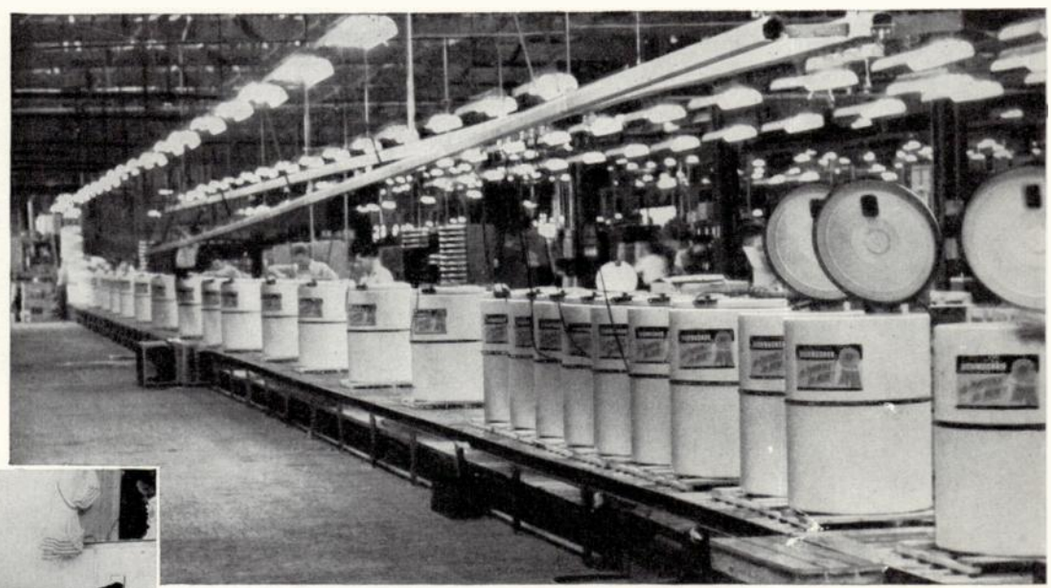
These women, without benefit of sales promotion, were thoroughly sold on electric dishwashing. They had learned its advantages by actual experience.

With 145 women using a home appliance under various conditions every day for six months, any "bugs" will certainly come to light. Thus, any improvements that could be made from a design or engineering standpoint would be taken care of. As a result, the dishwasher in its final form was just what the housewife ordered.

Now that it was as mechanically perfect as possible, production started in earnest in the factory in Scranton, Pa.

At last the long period of testing was over, both for the new dishwasher and for the merchandising plan behind it. Sales and merchandising managers from Bridgeport began traveling from one city to another, holding meetings with distributors, making formal stage presentations to dealers, and training service personnel.

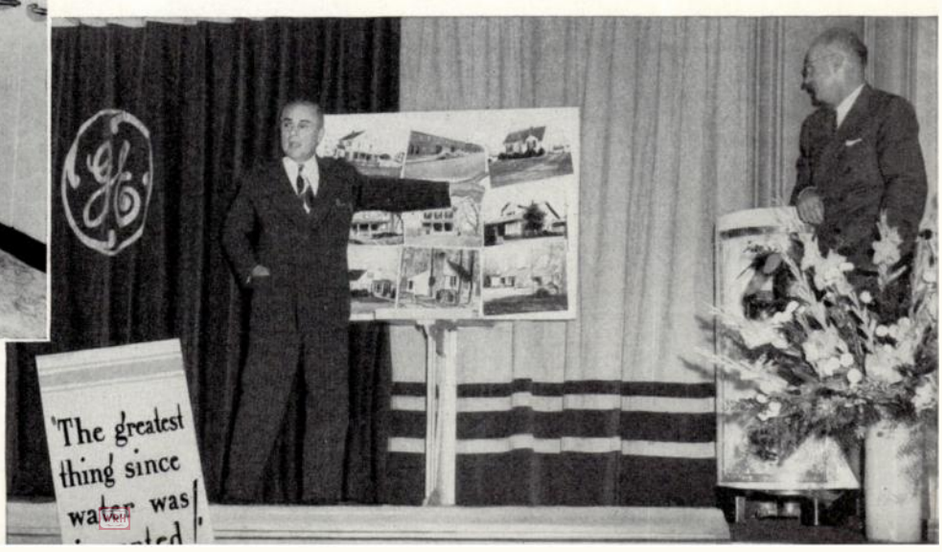
By the time this article appears, the portable dishwasher will have been introduced to all parts of the country. And a lot of women will have learned what it means to be emancipated from the dishpan.



After months of testing, large-scale production begins in the factory in Scranton. The final design of the appliance represents what the housewife herself wants in an electric dishwasher.

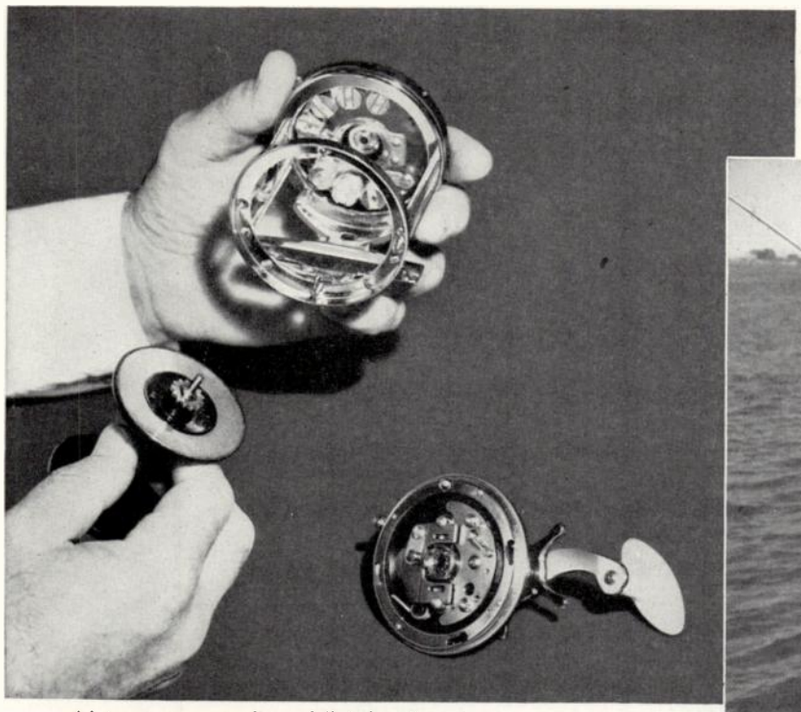
Mrs. Samuel Payne, Bridgeport housewife, learns from experience the time- and labor-saving value of a dishwasher. Like most of the women who tested it, she decided to buy it.

The new appliance is introduced with a flourish to dealers and distributors. Here Merchandise Manager A. J. Brock (left) and Sales Manager R. B. Beale stage a presentation in Hartford.



FISHERMAN'S LUCK

It's better since Bob Ransom thought of putting G-E alnico magnets in a fishing reel



Alnico magnets in the reel (left hand) and a copper disk in the spool (right hand) are the working parts of the magnetically braked reel. The ends are made of G-E plastics.

Bob Ransom heaves his line into the waters of Long Island Sound. His magnetic reel prevents backlash without thumbing, and it doesn't cut down casting distance.

EVERY fisherman knows that "backlash" cannot adequately be described in the impassive words of Webster's Unabridged: "A snarl in that part of a fishing line which is wound on the drum of the reel." When a powerful cast sends the reel unwinding faster than the line, what happens? The line is jerked, the lure is lost, the reel is tangled, the big one gets away—and the fisherman suffers an agony of frustration.

That's backlash, a problem that no one had ever really licked till Bob Ransom put General Electric alnico magnets in a fishing reel. (Mechanically-braked reels are but partially effective, and "thumbing" the reel to prevent backlash—which is an art comparable to keeping the slice out of a golf shot—is only for experts.)

Ransom, manager of the New Haven Apparatus Sales Office, has been a zealous fisherman since his boyhood days, when he used to cast for trout in the streams near Sandusky, Ohio. But it was many years later that he found a way of bringing added joy to his favorite sport.

After studying a small G-E relay, he reasoned that the principle of induction, discovered by Faraday in 1831, could be applied to a fishing reel. Then the braking effect would increase in direct proportion to the speed of the spool. Double the reel speed, double the braking effect. No backlash.

The theory was so simple it was surprising no one had thought of it before. Perhaps no one else had had just the proper combination of engineer-machinist-fisherman in him, backed up with ingenuity and much patience. For it took Ransom many months of puttering in his home workshop before the reel was completed to his satisfaction. In the final design eight of the powerful little magnets were attached to a movable plate at one end of the reel. At the end of the spool a copper disk cut through the adjustable magnetic field produced by the magnets and this simple brake held back the spool in direct relation to its speed.

The reel worked too well to go unsung for long. It was patented and is now on the market in two types: a salt-water reel using eight magnets, and a smaller, fresh-water type with three magnets. They are made respectively by the Ocean City Manufacturing Company of Philadelphia and the Horton Manufacturing Company of Bristol, Conn. Their trade names are: the Ocean City "250" Inductor Reel and the Bristol Electromagnetic bait-casting reel. Our Chemical Department supplies the magnets, and in the salt water reel, furnishes all major molded parts of a special, high-strength textolite.

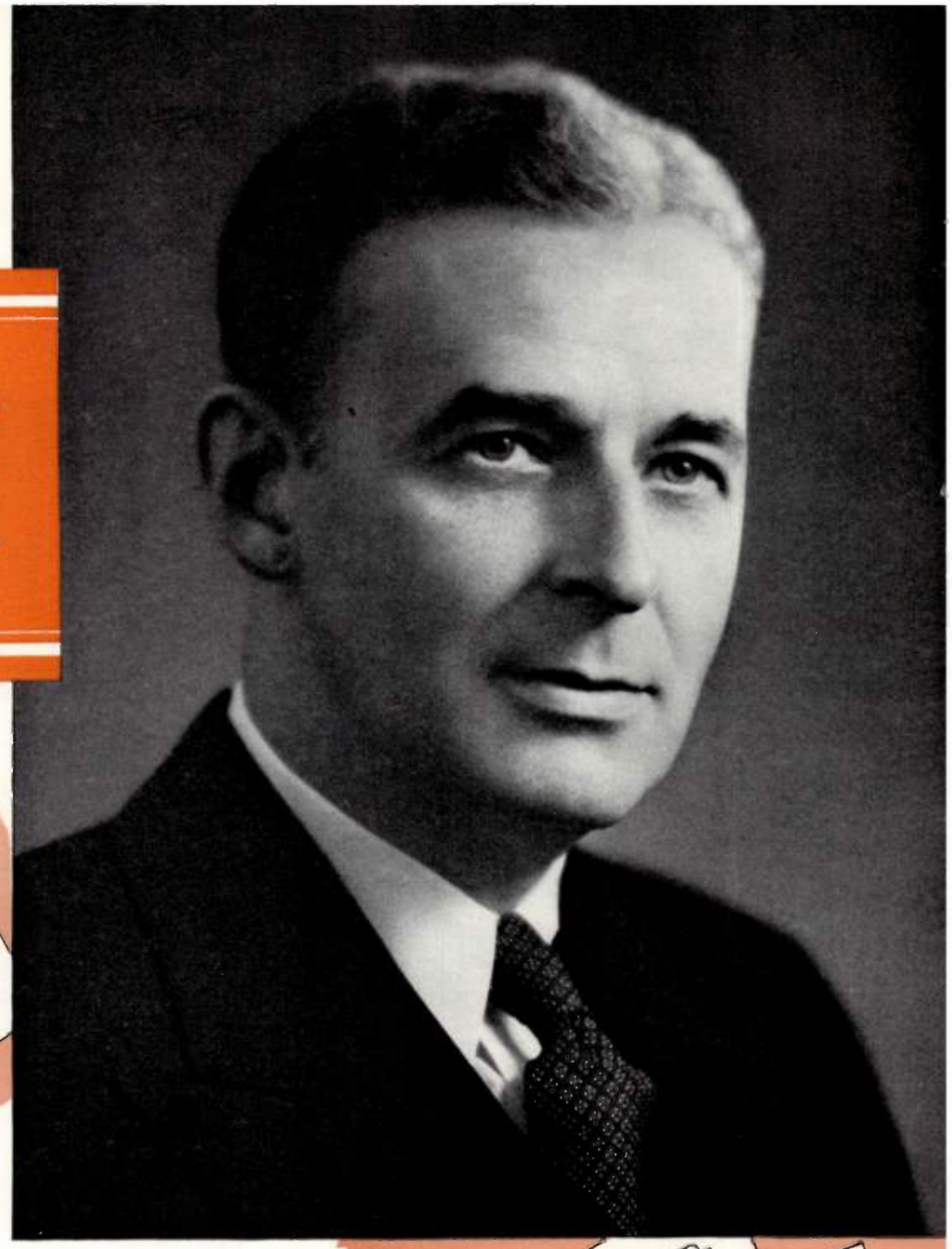
One of the best things about this reel, says Ransom, is that in spite of its scientific accuracy it doesn't remove the sportsmanship from fishing. You still have to know how to cast. If your casting technique is poor, Faraday and alnico magnets notwithstanding, you can get a backlash. But the agony is gone, for it will be a superficial one instead of the oldtime "bird's-nest."

This is the first in a series of articles telling how G-E employees hit upon unusual ways of their own to use the products of their Company. The MONOGRAM *wants to hear of other cases; if you know of any, please advise the editor, at Schenectady.*

OFFICIALS OF THE GENERAL ELECTRIC FAMILY

H. M. Turner

HEAD MAN AT C. G. E.



H. M. TURNER, president of the Canadian General Electric Company, Ltd., is a mechanical engineer by education—but he never worked at it. He got his start in business through accounting, a calling which he undertook with no previous preparation and little enthusiasm. No one was more surprised than Turner himself over the fact that he did so well at it.

His boyhood training may have had something to do with it. For he was brought up on a New England farm, and like all farm boys who have to do their share of the work, he learned to tackle any kind of job—and get it done.

He was born Harold Melvin Turner in Hanover, Massachusetts, on October 23, 1896—but he spent but one year in that place. The next year his parents took him to the family farm in neighboring Norwell, where he was to spend his boyhood.

His father, George Turner, a native of Norwell, was a carpenter and builder, descendent of a line of Turners which started in this country in 1640. The farm was an ancestral affair, and it was run as a farm, in spite of the fact that later generations of Turners were all carpenters or shipbuilders. Thus it was that young Turner never saw his father with a farm tool in his hand. All the farm work was done by hired help—and young Harold.

For the hired men worked on the farm during the summer months only. In the winter responsibility for the chores devolved on Harold. From the time he was five he took over more and more of these duties, milking the small herd of cows, and later on breaking in oxen to the yoke.

Turner looks back with considerable pleasure on the memories of those early days. It was, he says, the happiest boyhood that anybody could have, in spite of the work and hardships. He liked to watch the men who ran his father's sawmill; once in a while he would help out stacking lumber and on other odd jobs.

In addition to his home chores, he worked for the neighboring farmers. Thus he was kept pretty busy. But he always managed to find time for fishing

and hunting. And, like all farm kids, he was always raising pigeons or rabbits or other animals to enter in contests.

His school wasn't a one-room affair; it had two rooms. He spent four years in one room and four in the other. He attended high school in Rockland, about five miles away. Already he was thinking about college: he had learned he could get into college without entrance examinations if he maintained high enough grades in specified high schools, and Rockland High was one of these.

(When he looks back on it today, Turner is a little uncertain about why it was he made that early decision to go to college. Neither of his parents had had the benefit of a college education, and his two sisters went through normal school and became teachers. But itinerant preachers at the local Universalist church often had Sunday dinner with the Turners, and these visitors all seemed to be Tufts men. Probably this had its influence on the youngster, for Tufts became the college of his choice.)

Young Turner was always busy at something. On Sundays, for example, he took turns with others in tending the church fires, ringing the bell, and pumping the organ. He chuckles when he thinks of those organ-pumping days. He and the other boys liked to play tricks on the organist, a woman who was rather curt with the youngsters, and one of their favorite pranks was to jiggle the pump handle in such a manner as to make the music tremble. They took good care to do this at a time when the organist was playing her most effective passages.

When Harold got old enough to handle a hammer and a saw, his father taught him carpentry. Thus he spent most of his older boyhood helping his father in the building business.

Early Schooling

He entered high school in 1911. He had had an extra year of grade school, and this made things pretty easy for him during the first year of high school. As a matter of fact, because of his grade-school training in high-school subjects, he established something of a reputation as a shark—a reputation which preceded him into and helped him through his later high-school grades.

He finished high school in 1915, but it wasn't until 1917 that he entered Tufts. During the intervening period he worked. He had to earn some money to finance his education.

For most of the two-year period between high school and college, Turner worked with a Rockland shoe manufacturer. He served this man in many capacities, but none of them involved making shoes.

He entered Tufts in 1917, and true to his resolve he majored in mechanical engineering. But, when he received his B.S. degree in 1921, he hadn't the slightest idea of what he was going to do to earn his living.

It was a depression period, and there weren't many jobs available. But he received encouragement and help from one of his fraternity brothers, George E. Eveleth (now a vice president of the International General Electric Co.). Eveleth had finished college a year ahead of Turner and was a student in General Electric's Business Training Course at Schenectady. He arranged an interview for Turner with the late I. D. LeFevre. LeFevre couldn't understand why a mechanical engineer was interested in accounting, but he hired him, nevertheless. Turner went to work the following Monday (February 6, 1922).

For four years he went through the usual B.T.C. assignments and received a pretty thorough training in accounting. Meanwhile, in October, 1923, he had married. His wife was the former Esther Joel, a Wellesley girl whom he had met during his college days. They set up housekeeping on DeCamp Avenue in Schenectady, and their home became a gathering place for many of Turner's B.T.C. cronies. The Turners were very popular, and they usually had plenty of company.

Start at Toronto

Among their occasional guests was John G. Farrar who, although not contemporary with Turner, had taken quite a liking for the young man; now and then he would drop in for Sunday breakfast. When, in 1926, Farrar went to Toronto to reorganize the accounting system of the Canadian General Electric Company, which had just come into the General Electric family, Turner went along to help. He did so well on this assignment that he hadn't been back in Schenectady for but a few months before D. C. Durland, then president of C.G.E., asked for his return on special assignments in reorganization work. So Turner returned to Toronto in the fall of 1926. A year later he changed over to the C.G.E. payroll and became manager of the accounting department. He was made comptroller in 1936 and was elected a vice president in 1941. When Durland, who had become chairman of the board, relinquished his duties as president in 1946, Turner was elected president to succeed him.

As top executive of Canadian General Electric, Turner is responsible for the destinies of an electrical business almost as old in Canada as the parent Company is in the United States. C.G.E. history goes back to 1888, when a prominent Toronto businessman, Frederic Nicholls, organized a syndicate for electrical development in Canada. Canadian General Electric was organized in 1892, the same year that Edison General Electric combined with Thomson-Houston in the United States to

form General Electric. C.G.E. obtained the manufacturing and selling rights for General Electric products in Canada. The business prospered and grew rapidly.

But conditions changed after World War I. General Electric in the United States had for some years been negotiating with a view of obtaining control of the Canadian company; because of the rapid changes in the industry and the limitations under which C.G.E. could obtain the technical assistance it needed, the company's directors recommended that General Electric be permitted to obtain voting control. As a result, in 1923 General Electric purchased approximately 90 per cent of the common stock; C.G.E. has been a General Electric affiliate ever since.

Variety of Products

Like International General Electric, the Canadian company is in the paradoxical position of handling a much greater variety of products than its parent company. But, unlike I.G.E., C.G.E. not only sells but manufactures virtually the entire line of G.E. and its U.S. affiliates—and more, too.* For example, it makes both General Electric and Hotpoint ranges; C.G.E. sells the G-E line, and R.C.A. distributes Hotpoint. Canadian General Electric also makes and sells electric teakettles and electric floor polishers—products not in the General Electric United States line at all. And through an affiliate, C.G.E. also makes and sells in Canada the majority of the mechanical products of the Allis Chalmers Manufacturing Company of Milwaukee.

Canadian General Electric not only handles the complete G-E line, it also performs other functions which, in the States, are performed by General Electric affiliates. For example, it does its own distributing, dealing directly with dealers and handling the products of other manufacturers, as G.E. Supply Corp. does.

The organization setup of the Canadian company is more or less like that of General Electric before the decentralization of recent years. While the various lines and industries are represented in Toronto, the district managers in the field have responsibility for all product sales, including lamps.

Physically, the company consists of the head office at Toronto, plus twelve factories and 30 sales offices, with warehouses attached to 25 of the sales offices. Total manufacturing floor space is over 3,000,000 square feet (approximately double the 1939 floor space). Total number of employees last summer was a little over 12,000 (compared to about 4400 in 1939).

In one respect the Canadian company faces a quite different set of conditions from those in the United States. Whereas in the United States electrification is pretty well advanced, Canada still has many large, undeveloped areas both with respect to electrification and natural resources. A large part of the rural population lives in areas without electricity, and the people in those areas are eager for its benefits. That field of endeavor is thus still a flourishing one. In the industrial field, the natural resources of Canada are only just beginning to be tapped.

But such lusty pioneering has its own special problems. Electric products—and electricity itself—must be distributed over a very wide expanse of territory, in undeveloped sections, with comparatively few people per square mile. In spite of such difficulties, the use of electricity in Canada has doubled every ten years since 1919, when records first became available. As a nation, Canada enjoys a standard of living among the highest in the world—and one of the chief reasons is its low-cost electric power. There are those who claim that Canada makes the greatest per capita use of electricity of the world's nations.

Civic Activities

Turner is so busy at his job as C.G.E. president that he has little time for hobbies or other activities; he doesn't play golf or bridge or collect anything. His principal outside interest (other than his home) is civic affairs, in which he has always been very active. He is a past president of the Toronto Board of Trade and a director of the Canadian Chamber of Commerce. He is a vice chairman of the Toronto General Hospital, vice chairman of the Ontario Research Foundation, member of the Ontario Research Commission, director of the Bank of Commerce, and he is or has been a member or officer in many other similar enterprises. The fact that he has become something of a national figure in the dominion is a good indication of the success of his public relations program. Turner takes pride in the fact that, in a recent survey of public attitudes toward large Canadian corporations, his company stood in the most favorable position.

Natural Advantages

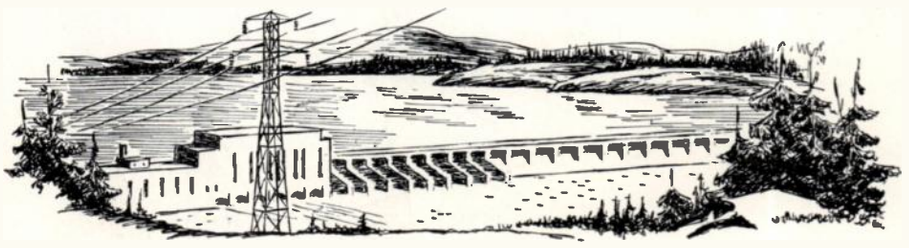
In his own case, the job of selling himself to customers and the general public comes easily, and he has certain definite natural advantages. His ability, leadership, and tact are coupled with a youthful charm of manner and a sudden, infectious smile. He never gets excited over problems, but rides so easily and gracefully through crises that an observer might mistakenly think he was treating things rather casually. He inspires confidence quickly.

He has a very keen sense of humor which delights in harmless twists or practical jokes. Once while driving his car through the winter ruts in Schenectady during his B.T.C. days, he turned suddenly to his companion in the front seat, pulled the steering wheel lose from the steering column, handed it to his friend, and said: "Here, take this." It was a moment before his horrified friend realized that the car couldn't get out of the deep ice ruts and that actual steering wasn't necessary.

On another more recent occasion, during the wartime meat rationing, he started negotiating a business deal with another member of the G-E family in New York by placing a large roast of beef on the table between them. Whenever his associate conceded a point in Turner's favor, Turner moved the beef a little nearer to his companion; when the going got rough for Turner, the meat was moved back a little.

The Turners live in Forest Hill Village, a suburb of Toronto. They have three children: a boy of 21, in college; a girl of 16 in high school; and another girl, 10, in grade school. He likes to do the usual chores around the house, such as gardening and general tinkering.

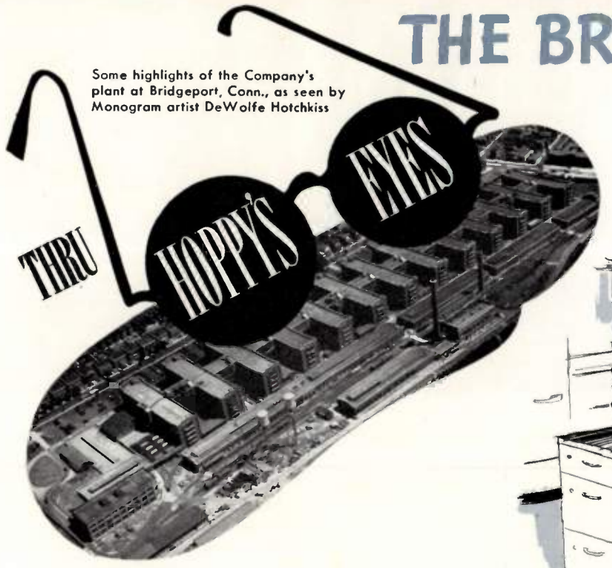
His nickname is Hal, and by that name he's known not only to his friends but also to hundreds of his employees.



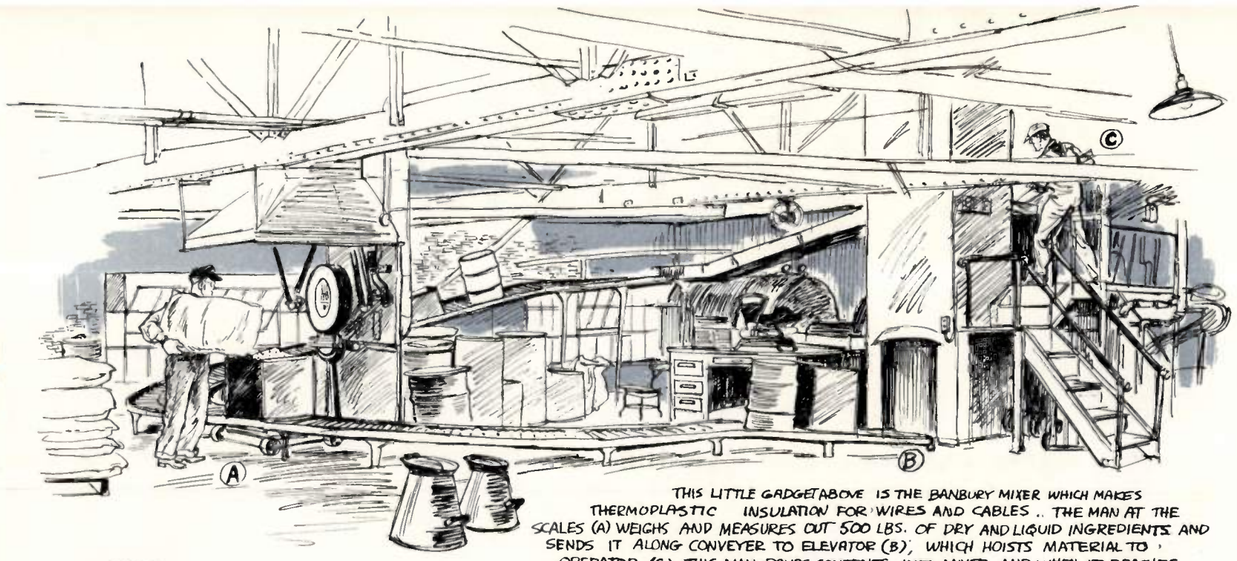
** Two notable exceptions: electric clocks and steam turbines—but about 97 per cent of Canadian electricity is produced by water power.*

THE BRIDGEPORT WORKS

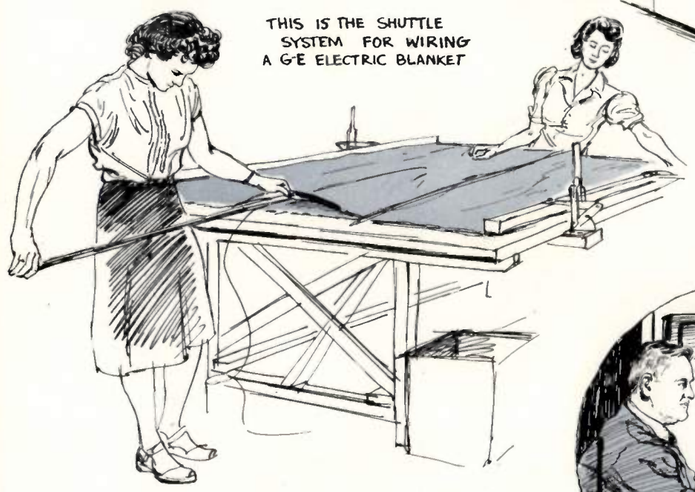
Some highlights of the Company's plant at Bridgeport, Conn., as seen by Monogram artist DeWolfe Hotchkiss



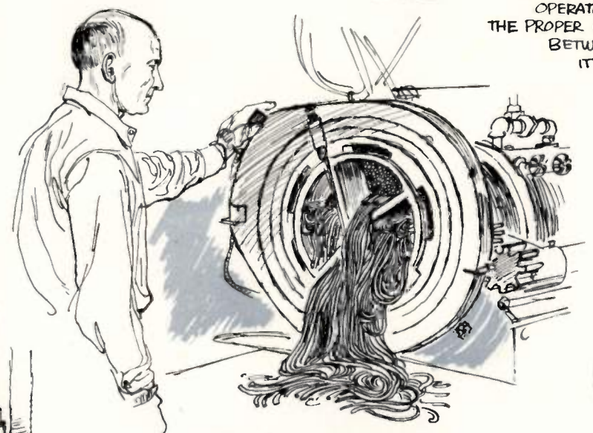
IN THE "SUPER-DELUXE" KITCHENS OF THE GENERAL ELECTRIC CONSUMER'S INSTITUTE, THE COMPANY'S APPLIANCES ARE GIVEN RIGID TESTS UNDER EXACT DUPLICATION OF HOME CONDITIONS, INSTRUCTIONS ON THE USE AND CARE OF THE VARIOUS APPLIANCES ARE CAREFULLY DEVELOPED, AND RECIPES ARE EVOLVED WHICH WILL PRODUCE THE SAME SPLENDID RESULTS IN ANY PART OF THE COUNTRY



THIS LITTLE GADGET ABOVE IS THE BANBURY MIXER WHICH MAKES THERMOPLASTIC INSULATION FOR WIRES AND CABLES. THE MAN AT THE SCALES (A) WEIGHS AND MEASURES OUT 500 LBS. OF DRY AND LIQUID INGREDIENTS AND SENDS IT ALONG CONVEYER TO ELEVATOR (B), WHICH HOISTS MATERIAL TO OPERATOR (C). THIS MAN POURS CONTENTS INTO MIXER AND WHEN IT REACHES THE PROPER CONSISTENCY IT IS DROPPED A FLOOR BELOW WHERE IT IS KNEADED BETWEEN TWO ROLLERS. OPERATORS CUT IT OFF IN STRIPS AND RACK IT WHEN THEY DECIDE IT IS READY.



THIS IS THE SHUTTLE SYSTEM FOR WIRING A G-E ELECTRIC BLANKET

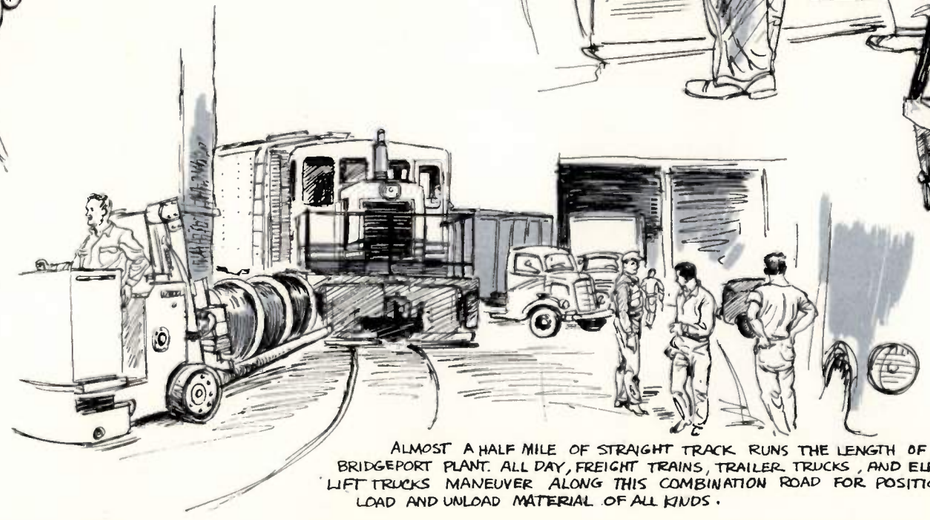


THE ABOVE "SPAGHETTI MACHINE" STRAINS ALL FOREIGN MATTER FROM RUBBER INSULATION COMPOUND. I SUPPOSE THIS INCLUDES THE MEATBALLS, TOO.

FANS ARE TESTED CAREFULLY FOR VIBRATION AND BALANCE BEFORE THEY LEAVE THE FACTORY

IN THE METALLURGY SECTION OF THE WORKS LAB, THIS YOUNG LADY, WITH THE HELP OF THE TENSILE TESTER, IS ABOUT TO STRETCH A STEEL ROD ONE INCH IN DIAMETER UNTIL IT BREAKS. WHEN IT DOES GO, THE RESULTING JAR IS SOMETHING LIKE A SMALL EARTHQUAKE

IN THE HOME LAUNDRY PLANT, THESE LADS WORK ON SKIRT ASSEMBLY. EVERY TUB GETS A SKIRT.

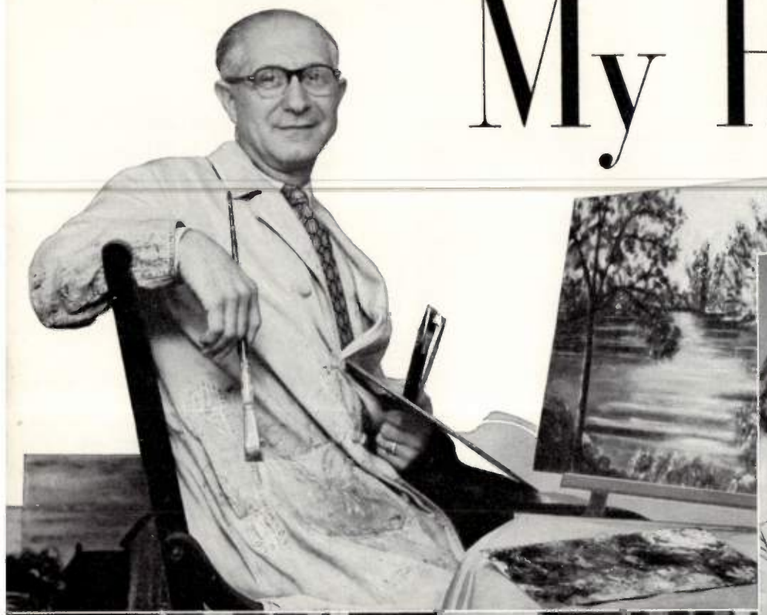


ALMOST A HALF MILE OF STRAIGHT TRACK RUNS THE LENGTH OF THE BRIDGEPORT PLANT. ALL DAY, FREIGHT TRAINS, TRAILER TRUCKS, AND ELECTRIC LIFT TRUCKS MANEUVER ALONG THIS COMBINATION ROAD FOR POSITION TO LOAD AND UNLOAD MATERIAL OF ALL KINDS.

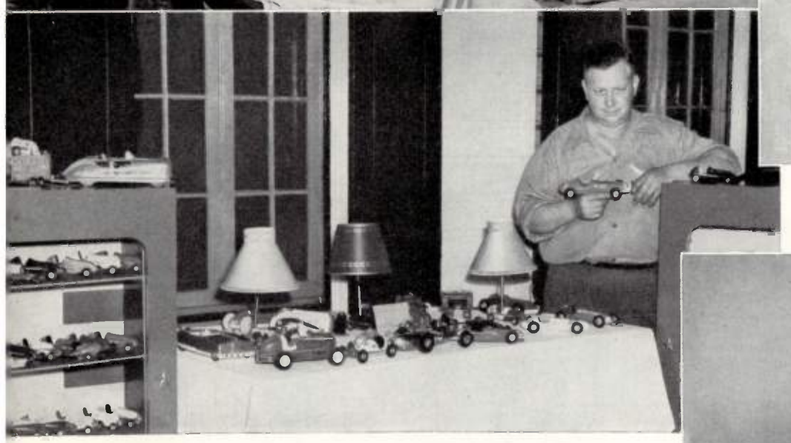
WRH

My Hobby Is

By MAXWELL FULDAUER

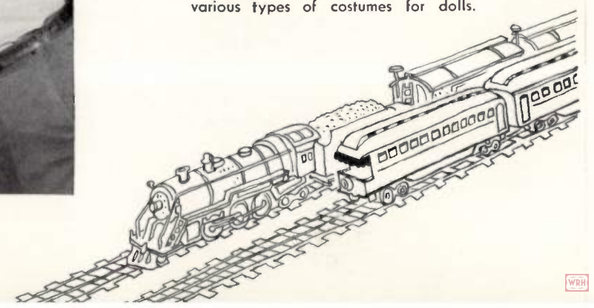


Thomas J. Wood, Jr. of the Engineering Division exhibited a gun collection. With him is Mrs. Wood, employed by the Company in the Lighting Institute.



Above, miniature autos of the racer type were displayed by Edward F. Bauman of the Cleveland Bulb Works. Below, Joseph M. Hlebak of the Glass Machine Works showed a miniature stage coach he carved.

Herbert Gilbride of the Euclid Lamp Works put on a display of dolls and various types of costumes for dolls.



What happens to a corporation's profits?

By CHARLES E. WILSON

This article, by the president of our Company is reprinted from the August 30 issue of "Look"

A high percentage of profits must be ploughed back into the business to boost its future earnings

HAVE you ever wondered what happens to the profits of a large corporation? At General Electric Company, we believe you have a right to know.

The financial operations of a large company may run to ten figures, to tens and hundreds of millions of dollars. This may be exciting for financial experts. But figures are cold facts to the average person who is not used to interpreting them.

It is hard for the individual to understand fully General Electric's annual report for 1948, recording a net income for the year of $123,835,000.

This figure on net income must be viewed through the eyes of three important groups of people: the stockholders, the employees and the customers. Each of these groups has its own appeals and wants.

The stockholders—and G.E. has about 250,000 of them—want larger dividends.

The employees—and G.E. in 1948 had 196,798 of them—naturally want higher pay and better working conditions.

And the customers, counted in the millions, want a better product at a lower price.

The daily life of a corporation is a constant effort to balance the wants of these groups. To lift wages and dividends the corporation must sell more goods, and this means that it must make a better product.

Our total income for 1948 was $1,651,559,000—another figure that's hard to grasp. Let's bring this billion-odd dollars down to something all of us can quickly understand—a dollar bill. The chart below shows you, in terms of that dollar, how our income was spent in 1948.

Of each dollar of income, 37 cents was paid to G.E. employees in wages and salaries. An additional 3 cents went to employees in the form of "job dividends," such as pensions, insurance, social security taxes and other benefits. A total of 44.2 cents went for raw materials, processed parts, supplies. Consequently, this represents in large measure indirect "labor costs" in the form of wages paid by others for processing the materials we buy.

Out of each dollar, 2.3 cents was set aside for "depreciation," to cover the replacement of plant and equipment that wear out or become outdated. Three-tenths of a cent was used to pay interest on borrowed money (not shown on the chart).

In 1948, G.E. set aside 5.7 cents of every dollar earned for Federal income taxes.

So the total bill for labor, materials, taxes, depreciation and other costs came to 92.5 cents out of each dollar of income.

That left 7.5 cents which we call net profit—the stockholders' or owners' share of each dollar of income. Some stockholders want to know why they got only a 3.1-cent dividend per dollar of income when our earnings were 7.5 cents.

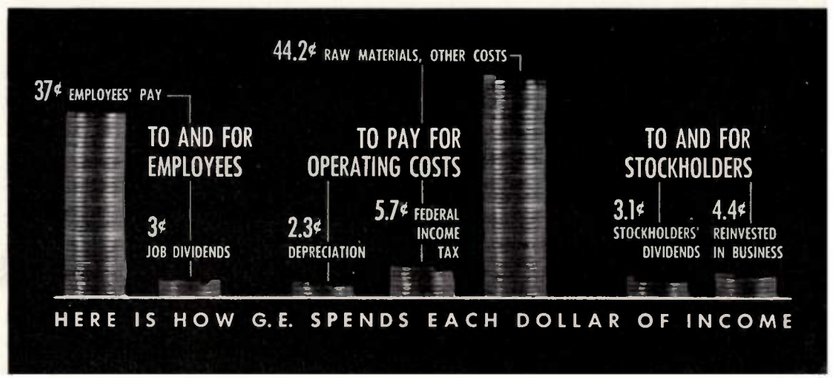
The other 4.4 cents was reinvested in our business. This is a large amount to plough back into G.E. But we believe it's a wise step. This large investment in new plants and equipment will enable G.E. to produce more goods at lower cost. Our customers will benefit. And the dollars they pay us for better goods will give employees and stockholders higher wages and bigger dividends.

Before the War

In the eight years preceding the war, the average dividends paid to stockholders amounted to 10.5 cents per dollar. This is much higher than it is now and stockholders naturally feel that they are entitled to more. Most Americans believe, according to public opinion polls, that a fair rate of profits is at least 10 cents on the dollar.

General Electric also feels that the stockholder should get more, but not at the expense of the employee or the customer. All three groups should advance together to a higher standard of living. The short-term benefit of any one group must not be allowed to endanger the long-term benefit to all.

That is our objective. It is the objective of all business. And that, we believe, is the American way.



Your Hobby

I'M STILL under 60. But I've been with the Company now for 43 years. One day I'm going to be retiring from my special secretarial work for the Lamp Department, in the administration division at Nela Park. When that day arrives I'm not going to be caught off base without a hobby, believe me.

Maybe you have heard how restless some pensioners are in their retirement, all because of their need for an interest, a hobby. As I see it, the earlier people acquire a hobby, the better. In my case, I have two. One hobby is that of water color and oil painting; the other, a genuine interest in other people's hobbies.

Thanks to that second interest, other people's hobbies, I got one of the biggest thrills of my life just a short while ago. I refer to the highly successful Hobby Show held at Nela Park Camp in June by the employees and pensioners of the Lamp Department in Greater Cleveland. The 741 people who attended seemed to get a real kick out of the 80 exhibits of more than 60 hobbyists.

Before I tell you about the Lamp Department's first big Hobby Show in Cleveland, let me explain how it got started. Last year, when plans were being formulated for a home office picnic at Nela Camp, I suggested a hobby display as one of the features. The industrial relations picnic committee accepted the idea and provided some space for exhibits. With the help of two fellow employees, we managed to get the word around. Lo and behold, if the little show didn't make quite a hit. In fact, it sparked a demand for the bigger, 1949 General Electric hobby show in which all the employees and pensioners in Cleveland were invited to participate.

All credit for the outstanding Hobby Show of 1949 should go to the industrial relations recreation steering committee composed of representatives of all local segments of the Lamp Department, a group headed by Chairman Robert E. Dirks. Snappy printed announcements, posters and such, encouraged a large turnout of exhibitors and spectators at Nela Camp on June 12. Chief objective was to let local General Electric employees, pensioners, their families and friends witness who does what for a hobby—but not necessarily how well. As it turned out, the exhibitors did remarkably well.

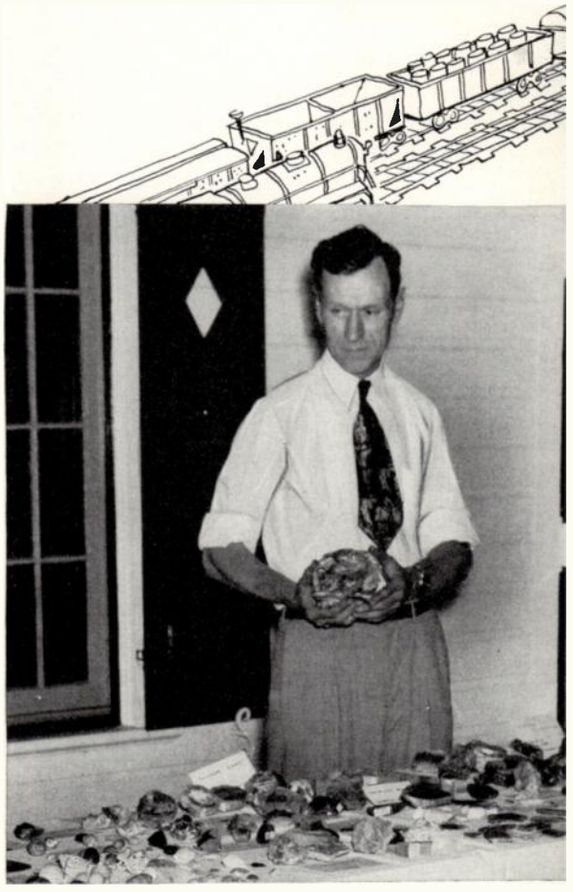
Varied Exhibits

Included among the 23 different kinds of hobbies on display were exhibits of live bees, doll clothes, miniature railroad systems, miniature working tools, wood carvings, enameled goods, toy racing autos, mineral collections, guns, jewelry, hand-blown glass novelties, and stamp and coin collections.

Strangely enough, the rather elaborate show of this year was produced at an almost unbelievably low expenditure, the largest single item being $90 for rental of the Nela Camp grounds including use of the clubhouse, breezeway and dining quarters for exhibit purposes.

I felt honored to be permitted to hang some of my oils and water colors in the show to indicate what "Sunday painters" do in their spare hours. As I say, I was most thrilled to see so many new General Electric hobbyists and their "works" discovered. If the recent Hobby Show at Nela inspired no more than one potential pensioner to think about a hobby now, before it's too late, the event was worthwhile. Personally, I believe a lot of our employees had their eyes opened to the value of a hobby. I venture to say that next year's show will reveal many new exhibitors and many new hobbies. May all 6000 local General Electric employees and pensioners participate. My hobby is theirs!

Small sailboat made by Theodore Minc, Cleveland Wire Works. Admirer is Rudy Cefaratti, son of another G-E employee.



Louis F. Langer of the Cleveland Equipment Works is shown here with one of the many minerals from the diversified collection which he exhibited.

Like to take a

ROCKET TO THE MOON?

You're not likely to for a while yet, say Company experts

FOR centuries men have been obsessed by an ambition to escape the clutches of Mother Earth and travel into space. Astronomers have speculated about the possibilities of life on other planets. Novelists and science-fiction writers go even further; they have worked out many of the details of space travel (although they usually show a lordly disdain of such a mundane thing as engineering).

In the nightmare world of Flash Gordon, rocket-propelled space ships are as casually accepted as your Ford or Chevrolet. For rocketry is usually associated with space travel—it is the only method of propulsion which could conceivably be used, as it doesn't require air either for combustion or other propulsion operations. Possibly because of this association of rocketry with space travel, it has acquired an atmosphere of magic in the minds of many people.

For that matter, rocket engineers, too, have been forced to treat their subject more like magic than like engineering. They have to deal with things on such a grand scale and in such an unorthodox manner that their conventional engineering techniques become inadequate. They work in a realm of hundreds of thousands of horsepower, of temperatures running to thousands of degrees, of speeds far greater than sound. For example:

A single rocket engine such as that in the V-2 type of rocket tested at White Sands, New Mexico, develops power equivalent to that of half a million horses. In one second it generates more than enough heat to boil all the water used during that time by the Borough of Manhattan. The temperature of the gas inside the motor is between five and six thousand degrees F. The propulsion jet leaves the rocket with a velocity from six to seven times the speed of sound. Since most materials used to propel rockets are potentially explosive, elaborate precautions must be taken in handling them and expensive test facilities must be provided for research and development. And flight testing, of course, has been complicated by the fact that the rocket is usually destroyed by a single test.

Nothing But Extremes

But these problems are mostly engine problems; the vehicle or missile which the engine propels also brings up many problems which are outside the realm of conventional engineering practice. The science of aerodynamics must be extended to cover speeds not only as great as the speed of sound but far greater. The rocket engineers must study what happens at extreme altitudes, where the atmosphere is so rare that air molecules can travel a yard or more without bumping into each other. Electronics equipment must be so designed that it will operate satisfactorily under the extreme and rapid variations in pressure which take place when the rocket races away from the earth's surface.

And in addition to these and other problems, there is the constant demand that weight be reduced. So extreme efforts must be made to make electronic parts tiny and structural parts paper thin, yet able to withstand severe strains and stresses.

Yes, if it seems like magic to the layman, it's not very far from it to the

General Electric engineers taking part in Project Hermes. Mostly these are men of the Aeronautic & Ordnance Systems Divisions of the Apparatus Department, but they work in collaboration with representatives of the Research Laboratory, General Engineering & Consulting Laboratory, Electronics Laboratory, and the Service Engineering Division of the Apparatus Department.

To most of us, the whole concept of Project Hermes (which General Electric is working on for the United States Government) seems like something lifted bodily from a science-fiction story. It covers research and development work not only on rockets but also the ramjet—a vehicle, nicknamed the flying stovepipe, which is roughly like a jet engine without any turbine or compressor and which is still shrouded with a great deal of military secrecy. Project Hermes includes responsibility for all the technical phases of the V-2 test program at White Sands, New Mexico. Another of its responsibilities is the bumper test vehicle which early this year reached a velocity of 5000 miles per hour and an altitude of 250 miles above the earth's surface—records which are unlikely to be exceeded or even equalled for some time to come.

The Fact of the Matter

As far as rockets are concerned, the General Electric engineers in this project feel it's up to them to take the magic out of rocketry. And they report happily that real progress is being made. They've calculated the theoretical performance which can be expected from most of the promising chemicals and other materials used for propulsion purposes, and tests have shown they can expect at least 90 per cent of this performance in practical motors. At least half a dozen big wind tunnels will go into operation this year, in which to test the motors. They're getting ready to use new and improved mathematical machines for calculation, for the complicated equations involved in missile flight dynamics are too time-consuming for solution by human beings; they have to be solved by machines. Yes, they're really getting started—but it will be a long time before a rocket engine can be designed from a handbook like a generator, or a supersonic missile with the certainty of a radio set.

Now about that trip to the moon. The one thing the rocket engineers can say with real certainty is that it won't take place in 1949 or 1950. And as a matter of fact, they add, it seems highly improbable that it will ever be done using the chemical type of rocket with which the engineers are now working.

They have good reasons for this disappointing verdict. First of all, such a rocket would have to have a velocity something like seven miles per second, in order to escape the clutches of the earth's gravitation. To achieve this velocity, the rocket would have to be a two-stage affair; that is, a larger rocket carries a smaller one until the larger one has used up its power, then the larger one drops off and the smaller one continues under its own power. The engineers figure such a rocket would have to carry at least ten tons of payload, including two men plus equipment and additional rocket devices for landing on the moon and returning to earth. Their calculations show that this, in turn, would mean a gross weight for the rockets and their cargo of nearly 4,000,000 pounds. The length of this monster would be something like 500 feet and its diameter, about 70 feet.

Such a machine, say the representatives of Project Hermes, is probably not impossible; if our national security depended on it, the job probably would be done. Our national security depended on producing an atomic bomb in a hurry, and we did it.

Engineering Problems

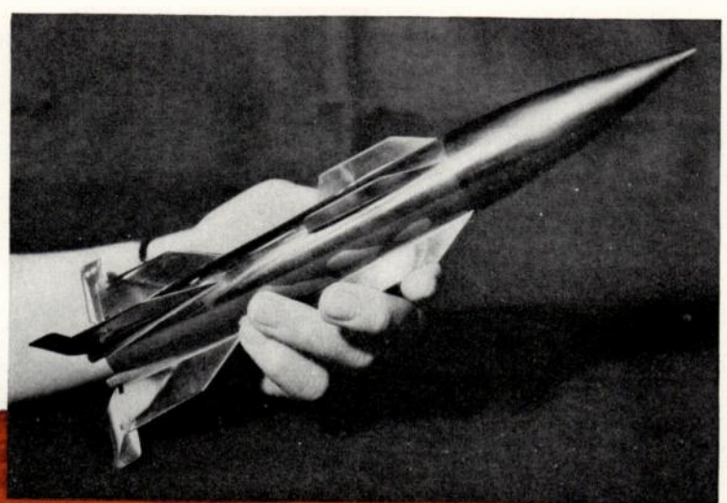
But even when they know how to do the job, the engineers responsible for producing such a rocket would be faced with a task roughly comparable to that of designing that $186,000,000 super aircraft carrier whose construction was under consideration early this year. Special shops would be needed, and special machines of vast size would have to be created. An accessory structure almost as great as the George Washington Bridge would have to be built just to support the rocket during construction and to make it possible to perform the manufacturing operations. Says Dr. R. W. Porter, one of General Electric's rocket spokesmen: "Although I'm careful not to say it can't be done, it's my sober engineering opinion that it will not be done unless very much better reasons are found for sending two men to the moon than I can now visualize."

But the enthusiastic advocates of space travel refuse to be discouraged. If they can't send men to the moon, how about sending a camera around to photograph the other side of the moon, which no one has ever seen?* In this case, say the rocket engineers, the gross weight of the rocket at take-off might be

* *The moon always keeps the same side turned toward the earth.*

Framed by desert cactus at White Sands, New Mexico, a 46-foot missile rolls toward the launching site over a road which is as straight as the edge of a ruler.

This tiny missile is an exact replica of the one to be used in wind tunnel testing. At present, Project Hermes rocket research is being done for military reasons.



under 100 tons, which begins to sound more reasonable—but it's still a formidable undertaking just for a few photograph negatives.

Another proposal is the so-called earth satellite vehicle. In essence, this would be a body traveling around the earth at a speed sufficient to keep it from falling back to the earth. The moon is such a satellite. The take-off velocity necessary to get such a rocket away from the earth's surface and into its orbit would be a mere five miles per second, compared to the seven miles per second for the one which would carry two men to the moon.

Although there are some who believe that a single-stage rocket could get away and become an earth satellite, General Electric rocket engineers say a two-stage vehicle would be more realistic. But again they warn: it would cost plenty—probably somewhere between $25,000,000 and $50,000,000 for the development and an additional million for each flight. However, this is so reasonable in comparison with the proposed trip to the moon that they are tempted to believe that it will be done some day.

But, says the skeptic, what good would it do to have one of these earth satellites traveling around the earth? For one thing, such a vehicle might contain television equipment which would transmit pictures of every point on the earth each 12 hours. Such pictures, picked up at weather stations, would enable weather experts to tell, from cloud pictures, the location of an impending storm. This information, in turn, should eventually make possible more accurate forecasts for a longer period than is now possible.

Space Stations

Man-made earth satellites could also serve as relay stations in space for high-frequency radio waves, such as are required for FM broadcasting and television. Seven such vehicles, equally spaced above the equator at an altitude of 4000 miles, could do the work of the 60 or so earth-surface stations which would be required to relay television signals from New York to Los Angeles or the approximately 1500 which would be needed to cover the United States completely.

And there is always the possibility that observations of the sun from such a man-made satellite might yield information leading to new self-sustaining atomic energy processes. In that event the cost would be cheap indeed.

Speaking of atomic energy brings up the question of using such energy to drive rockets. According to the Sunday supplements, such vehicles should play an important part in our thinking about the future. But the improvement is perhaps not so great as you might think, say the rocket engineers. They admit that the subject has interesting possibilities, but the design of such equipment involves problems so fantastically difficult that the engineers are pessimistic about solving them.

The Job at Hand

How about using rockets for air travel from one point to another on the earth's surface? The rocket engineers dismiss the commercial side of this picture by saying they cannot believe any sane individual would pay even $10,000, let alone $100,000, to go from Schenectady to Cairo or Rio de Janeiro in 30 minutes when he could get there in 30 hours for less than $1000.

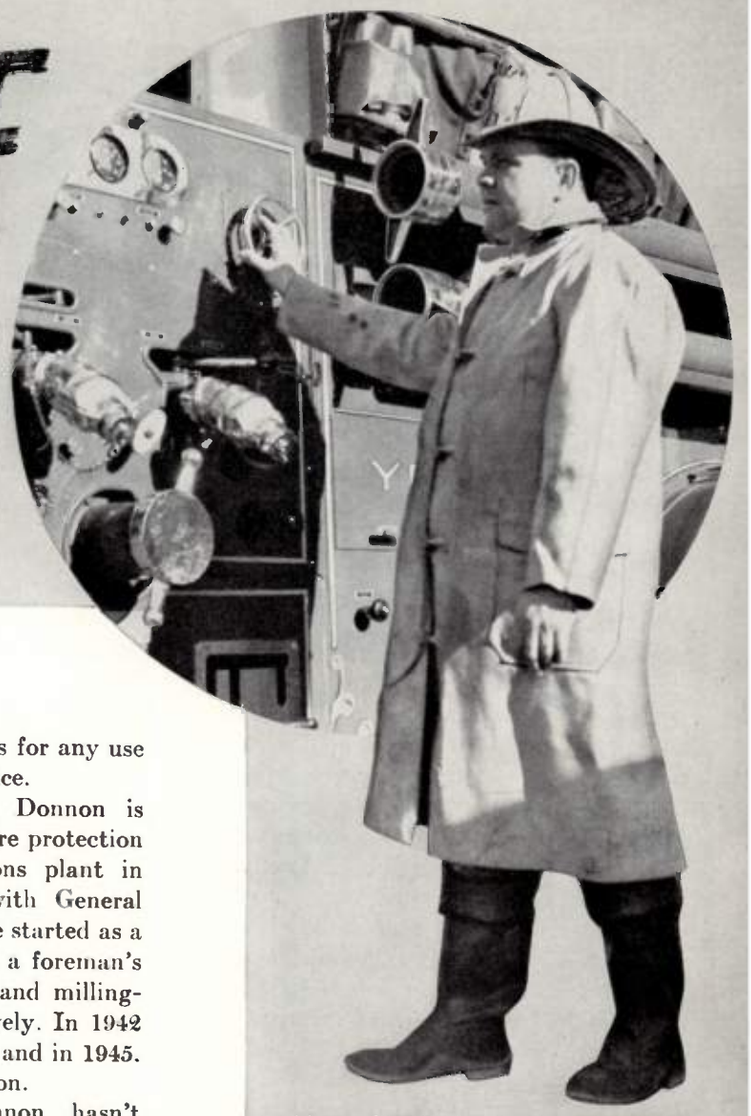
The only thing left for consideration, then, is the possibility of using rockets for military purposes. This, without question, is the one real reason for working on rockets in 1949.

Unfortunately most of this work is shrouded in secrecy. It's no secret, however, that, within the limits of their respective budgets, the Army, the Navy, and the Air Force are all struggling to have the first and the best in this new field. Commanding officers are worried for fear that new developments may find their ships, planes, and guns powerless in the face of weapons which will fly faster than bullets and find their targets with unerring accuracy in any kind of weather. Says Dr. Porter:

"Perhaps 1959 will bring the kind of peace on earth which will permit rocketeers to go back to studies of space ships and satellite vehicles. But our task in 1949 and in the years immediately ahead is to make sure that our contribution to the safety and security of men of good will shall not be too little or too late."

FIRE CHIEF

J. J. Donnan is responsible for the safety of thousands of Pennsylvanians



Above, Chief Donnan checks the pump control on one of the volunteer fire company's three machines during a periodic fire drill.

Below, Chief Donnan with Yeadon's new ambulance, available free to families who contribute a dollar every year for upkeep.

IT'S HARD to tell where Jim Donnon's vocation ends and his avocation begins. Apart from being supervisor of plant protection for General Electric's Switchgear Divisions, he is the fire chief of Yeadon, Pa. As such, he heads the largest volunteer fire station in the Keystone state. Yeadon, a suburb of Philadelphia, is a town of 11,000 people.

Donnon's yen for fire fighting and fire prevention first showed itself in the early 1920's, when he was a school boy visiting a cousin during summer vacations. The cousin was a member of the rescue squad of the Woodbury, N. J. fire department. Young Jim was fascinated.

A native of Philadelphia, Donnon moved to Yeadon in 1927, when the town had only 2000 inhabitants. The fire department was made up of a few volunteers working with a chemical wagon and a model T Ford. Jim joined the force as a hoseman. Today the Yeadon fire department boasts 70 volunteers; equipment includes three pumpers capable of throwing 2100 gallons of water per minute, a hook-and-ladder which Jim Donnon designed, and a fleet 1948 ambulance. From hoseman Donnon first became lieutenant, then assistant chief, and finally fire chief. He's been chief 12 years now.

Purchase of the new ambulance was possible because of a dollar-a-year plan which Donnon inaugurated when the community needed an ambulance several years ago. Each of Yeadon's 3500 households is asked each year to contribute $1 for operation and maintenance of an ambulance. In return, the ambulance is at their service whenever needed, in a 20-mile radius. Noncontributors must pay regular ambulance fees for any use they may make of the service.

During the work day, Donnon is responsible for police and fire protection at the Switchgear Divisions plant in Philadelphia. He's been with General Electric since 1930, when he started as a mail boy. He later became a foreman's clerk, drill-press operator, and milling-machine operator, successively. In 1942 he was appointed fire chief, and in 1945, supervisor of plant protection.

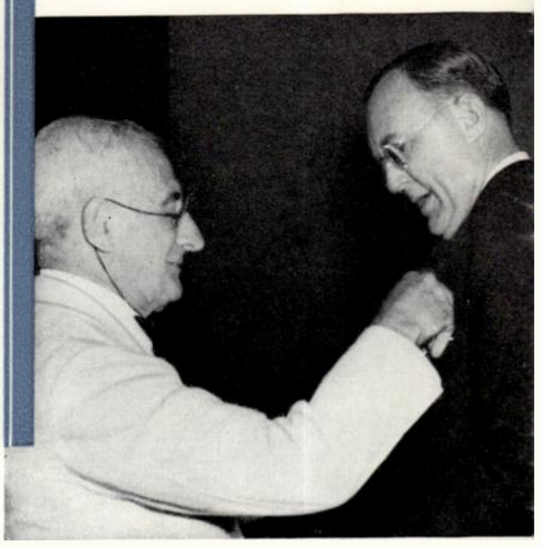
Civic-minded Jim Donnon hasn't confined his talents to Yeadon. He is also district fire marshal of nearby Clifton Heights, Lansdowne, and East Lansdowne; ex-chief fire marshal of Delaware County; state fire institute instructor; chairman of the Industrial Fire Prevention Section of the Philadelphia Safety Council; and a member of the Philadelphia Fire Safety Committee.

Since 1939 Donnon has taught 28-week night courses in fire fighting in fire districts near Philadelphia, and he has taught at eight of ten state fire conferences held annually at Pennsylvania State College.

Donnon was a student in 1942 and 1943. He completed the Army's chemical warfare course and the United States Firemen's Instructor's course.

In 1944 Jim married Justine Algard, who worked for General Electric during the war. They have a son, Jim—the subject of many pictures taken by his father, who is also an amateur photographer in whatever spare time he has.

WILSON *Anniversary is widely noted . . .*



Honorary President Gerard Swope pins on President Wilson's lapel the diamond lapel button given all members of the Half Century Club.

THE celebration of 50 years of service is a noteworthy accomplishment for any General Electric employee, but when that employee is the president of the Company, the event assumes particular significance. Thus it was that, when President Charles E. Wilson completed 50 years of service with the General Electric Company on September 2, the occasion was recognized throughout the General Electric family.

General Electric officers paid their tribute in the form of a dinner by the Company's Advisory Committee in New York on September 1, when Honorary President Gerard Swope presented Mr. Wilson with the 50-year diamond lapel button customarily given new members of the Half Century Club. The membership certificate to that organization, usually signed by Mr. Wilson, was in this instance signed by the members of the Advisory Committee. Mr. Wilson was also the guest of honor at a testimonial dinner given by the Company's Board of Directors in New York on September 8.

But the biggest and most elaborate celebration of all was the welcome given by 40 members of the Half Century Club at Schenectady's Edison Club on September 12. To provide a fitting celebration of the event, this organization staged a "gay nineties" parade and banquet, featuring an atmosphere of antique Fords, high-wheel bicycles, and other relics of bygone days.

The various departments and affiliates of the Company have been carrying on a number of specific activities during the last four months of 1949—activities designed to make General Electric a better Company in every way for the ultimate benefit of its employees, its customers, and its stockholders.

The anniversary also received widespread recognition outside the Company. What had started out to be pretty much a family affair ended by assuming national significance. Not only did letters and telegrams pour in to Mr. Wilson personally—and to Company representatives throughout the country—but the event was also noted by press and radio. Tributes included feature articles, news stories, and editorials. In many cases the account of Mr. Wilson's rise from office boy to president was used as an illustration of the traditional American Horatio Alger story. Typical is the following editorial from the New York *Daily News* of September 8:

"This newspaper has never made it a practice to go around patting industrial tycoons on the back. We don't believe in it as a general thing. The case of Charles E. Wilson, however, strikes us as meat for an editorial in anybody's newspaper, so here goes.

"The man we're speaking of is the president of the huge General Electric Co., with its headquarters at Schenectady, N. Y. G.E.'s activities spread far and wide, furnish jobs for about 200,000 persons, and dig up dividends for some 250,000 stockholders.

"Mr. Wilson on September 1 finished his 50th year with G.E. and is currently enjoying various social and company ceremonies in honor of that event. The story of how he got where he is today is what interests us.

"Born in New York City November 18, 1886, he had to wind up his formal education at the age of 12 and rustle some kind of job to help his widowed mother take care of the rest of the family. Wilson made his business debut in 1899 as an office boy ($3 a week, and not bad pay for that work in those days) with the Sprague Works of General Electric. G.E. itself was then only seven years old.

"Wilson literally grew up with the company. He worked successively in the shipping, accounting, production, engineering, manufacturing and marketing departments. He was made merchandising manager and vice president in 1930, executive vice president in '37, and president of the corporation January 1, 1940.

President Wilson's office in the General Electric Building at 570 Lexington Avenue, New York, was decked with flowers on September 2, the day he completed his 50 years of General Electric service.

"His greatest achievements have been in the electrical appliance line—developing and merchandising many of the innumerable gadgets which run on electric current and make life at home and elsewhere a great deal easier and more varied than it ever was for our ancestors.

"He has always been a terrific worker. Maybe he was shot with luck at birth; but if so, he never depended on luck to advance his career or carry him through difficult situations.

* * *

"Well, there we have a real-life story in the old American tradition—the man who started out as poor as Job's turkey and wound up at the top by virtue of his own driving energy, courage, and willingness to work. Horatio Alger used to write this story, with minor variations, two or three times a year, making himself wealthy and famous in the process.

"There is only one thing that worries us about the Wilson story and various others like it. That is the danger that the United States may be coming to the end of the era in which such things can happen in real life.

"These lives have been lived, these inspiring careers carved out, because this country's economic and social climate, so to speak, has been friendly to the hard-working and enterprising person.

"The American theory has been that if you gave such people all possible leeway to better themselves they would contribute much more to society in general than they took from it. Certainly it has proved out that way in the cases of Wilson, Henry Ford, the once hated Rockefellers, and numerous other builders and developers of American industries.

"Ever since Franklin D. Roosevelt first entered the White House, there has been a powerful inclination on the part of many politicians to make life tougher and tougher for enterprising, industrious, inventive people. Left-wingers hate that kind of person. They want to reduce all human life to a level of mediocrity and plain laziness, under the pretense that they are building security and plenty for everybody.

"Roosevelt was greatly influenced by left-wingers. So is President Truman, though sometimes you wonder whether he realizes it or not.

"From whatever motive, Harry consistently favors taxes and legislation which hamper free enterprise and frighten risk capital—though he takes care once in a while to throw a friendly word at business and industry out of the side of his face.

"It's hard to believe that the American people will ever be so blind as to let the era of the big builders and industrial adventurers come to an end. Crazier things have happened in world history, though not many of them.

"Anyway, ladies and gents, we give you the career of Charles E. Wilson, a typical American of his time and, we devoutly hope, a typical American of all time."

The same note was sounded in an editorial in the New York *Times* of September 1, as follows:

"The story of Charles Edward Wilson is a Horatio Alger tale come to life. Starting work at the age of 12 as a $3-a-week office boy, he rose in forty years to the presidency of one of the nation's greatest corporations, the General Electric Company. A production genius, he has fairly earned for himself a place among America's industrial immortals. But Mr. Wilson is something much more than that. He is an enlightened, progressive, public-spirited citizen whose contribution to the welfare of these United States has not been limited to the able management of a giant manufacturing concern.

"As executive vice chairman of the War Production Board he carried a large share of the burden of guiding the nation's enormous industrial effort during the war. As chairman of the President's Committee on Civil Rights he played a major part in formulating the report that has become the guidepost for those who believe with the committee that 'the great goals of human freedom and equality under just laws' are an essential part of the American heritage, and that the Government 'must assume greater leadership' in the securing of these rights. His personal philosophy is indicated in his conviction that 'industry is neck-deep in the sociological implications of its maturity.' We join with his colleagues in warmly congratulating him on the fiftieth anniversary of his association with General Electric."

* * *

Said an editorial in the Omaha *Evening World-Herald*, in part: *"The Horatio Alger story of the poor boy who works his way up to success is an old one in this country . . . But it is nevertheless the story of America . . . That constant process . . . has kept America young and virile and resourceful, even as it grows old in years."*

Col. Alvin M. Owsley, former U.S. ambassador and past national commander of the American Legion, made the following reference as part of a tribute broadcast August 28 from KIXL:

"Charles E. Wilson is an outstanding example of the abundance of opportunity afforded the youth who is willing to work for success in America. His life stands out boldly as the model for the ambitious youth of the nation who shall inherit and enrich the American way of life."

Above, members of the Half Century Club listen to President Wilson speak at the party they gave in his honor. Right, President Wilson and Half Century Club President Frank G. Vaughen in the Model T Ford which took them to the party. It was held at the Edison Club, Schenectady.

the Bulletin Board

ORGANIZATION CHANGES

GENERAL

GUY BARTLETT: acting manager, Exhibits, Lectures & Services Division, Advertising & Publicity Department.

W. W. JENKINS: counsel, General Administrative Departments.

General Engineering & Consulting Laboratory—DR. M. A. EDWARDS: associate engineer, engineering developments. DR. J. J. SMITH: associate engineer, engineering services.

Patent Department—A. COHEN: consultant, Domestic Patents Division. P. A. FRANK: patent counsel, Research Laboratory and General Engineering & Consulting Laboratory. R. E. HOSLEY: assistant to manager. P. S. MACK: manager, Domestic Patents Division. P. G. SADONA: manager, International Patents Division.

AIR CONDITIONING

W. O'NEILL, JR.: manager, water cooler plant, Bowling Green, Ky.

D. M. RUSH: materials engineer, Manufacturing Division.

APPARATUS

M. H. BLESH: manager, salary & wage policies, employee & community relations.

R. E. BOYLE: manager, Industrial Division, East Central District.

A. D. BRAGG: manager, Pacific District.

R. E. BURROUGHS: manager of engineering, Aircraft Gas Turbine Division.

E. J. FRANCOIS: supervisor, Drafting & Standards Division.

M. R. KING: manager, News Bureau.

T. L. MAYES: design engineering staff.

BERTRAM MILLER: manager, Erie Works.

J. E. MILLER: superintendent, Richmond, Va. service shop.

W. M. SHEFFELD: counsel.

D. J. SULLIVAN: assistant to Employee & Community Relations manager, in charge of community relations.

W. J. WARTINBEE: engineer, Richmond, Va. office.

N. L. WHITECOTTON: manager, Industrial Division, Philadelphia office.

D. L. WRIGHT: accountant, Foundry Divisions.

Aeronautic & Ordnance Systems Divisions—M. E. KEENAN: manager, Burlington, Vt. plant. E. G. KELLER: consultant, aerodynamics. F. B. LAW: assistant to manager of manufacturing.

Aviation Divisions—R. A. AVERITT: manager, application engineering. E. S. GALLAGHER: manager of sales. H. T. HOKANSON: assistant manager, application engineering.

Central Station Engineering Divisions—R. C. BUELL: manager, Sponsor Division. ROBERT TREAT: assistant to manager.

Fractional Horsepower Motor Divisions—J. H. BEHM: engineer, A. C. Motor Engineering Division. J. J. CLARKSON: manager, H. B. CARTER: assistant manager, engineering.

Large Motor & Generator Engineering Divisions—M. A. BAKER: assistant designing engineer. K. R. MCDOUGAL: engineer, D.C. Motor & Generator & Dynamometer Engineering Division. R. E. PUMPHREY: engineer, A.C. Motor & Generator Engineering Division.

Specialty Transformer & Ballast Divisions—C. W. KRONMILLER: engineer, Specialty Transformer Engineering Division. M. O. MARSH: assistant to manager of engineering.

Switchgear Divisions—R. M. BENNETT: managing engineer, Power Circuit Breaker Division. A. C. BOISSEAU: managing engineer, Panel & Equipment Division. A. G. BOYD: assistant sales manager, Outdoor & Station Equipment Section. G. M. REED: assistant manager of engineering. B. W. WYMAN: managing engineer, Air Circuit Breaker & Contributing Division.

Transformer & Allied Product Divisions—F. E. FAIRMAN, JR.: manager of sales. W. S. GINN: assistant manager of sales. K. B. MCEACHRON, SR: manager

M. H. Blesh
Apparatus

Bertram Miller
Apparatus

E. S. Gallagher
Apparatus

R. A. Averitt
Apparatus

R. E. Burroughs
Apparatus

M. R. King
Apparatus

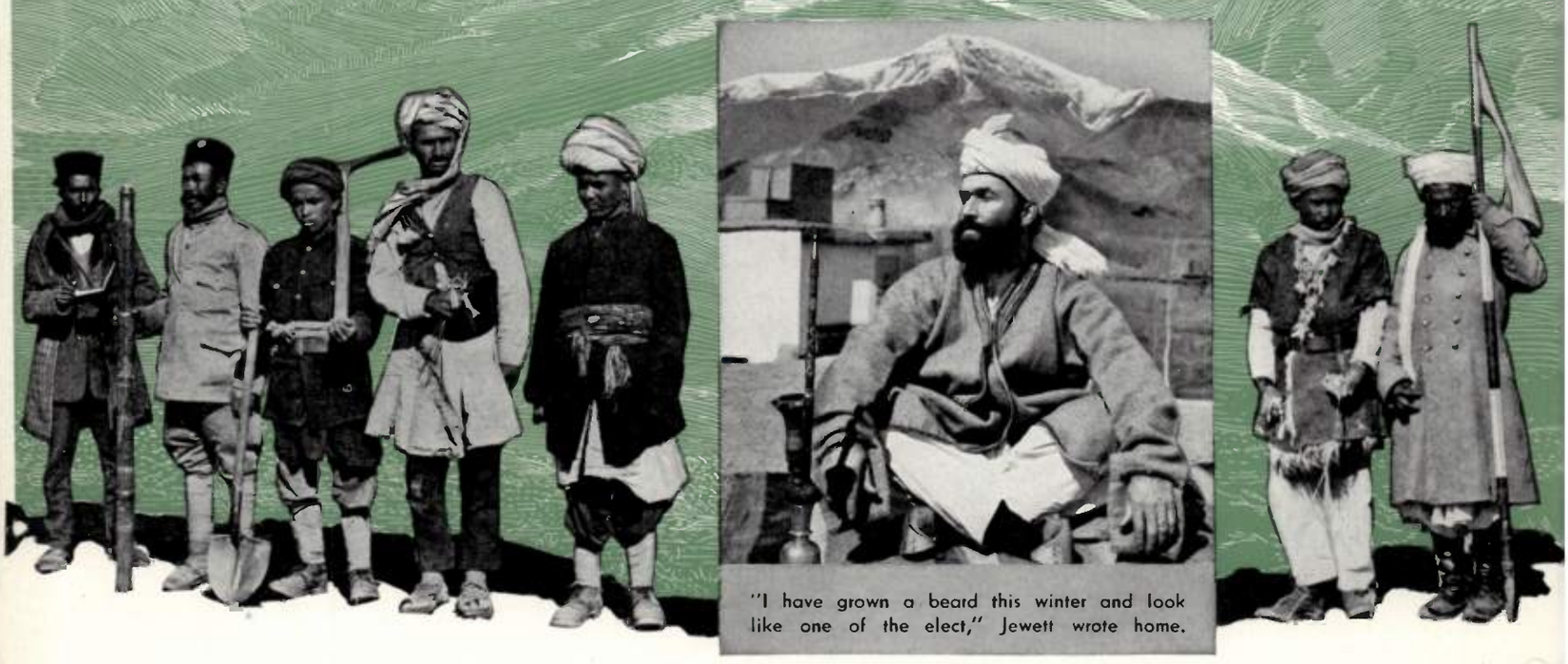
F. C. Tucker
Chemical

R. O. Sauer
Chemical

F. P. Holter
Construction Materials

G. E. Wickman
Construction Materials

an American Engineer in Afghanistan*



"I have grown a beard this winter and look like one of the elect," Jewett wrote home.

AGLANCE at the map of the Middle East will bring to mind the strategic position of the tiny country of Afghanistan. Bordered on the north by Russia, on the east by China and Kashmir, with Pakistan and India to the southeast, and Iran on the west, Afghanistan could well be called the keystone state of the area. It was given the title of "forbidden country" because of the rigid restrictions placed on foreign visitors and the warning issued by the British Indian government which once guarded the Afghan frontier north of the Khyber Pass: "It is absolutely forbidden to cross this border into Afghanistan."

When A. C. Jewett entered in 1911 to install a hydroelectric plant he was the first American permitted to live in the country since 1880. Although he went for one year, eight years passed before the job was completed.

Jewett was a pioneer in electric work on the Pacific Coast. He installed the first electric streetcar system in San Francisco, the first polyphase electric transmission in California, and the original installation of the San Joaquin Electric Company, besides a number of other street railways and power plants. For a number of years he was a foreign installation engineer for the General Electric Company and installed power plants for the Company—in southern India for the Kolar Gold Fields in Mysore and in Brazil for the Sao Bento Gold Estates, Limited, Santa Barbara. Later, in Kashmir, near Srinagar in Northern India, 1200 miles by rail and 200 by tonga (caravan) from Bombay, he made the Jhelum Power Installation. Although he did not remain an employee of the Company, he was a stockholder until his death.

When Jewett returned to the United States from India in 1910, he was persuaded by a British firm to go to Afghanistan. The Amir of Afghanistan, Habibullah Khan, had ordered materials for a hydroelectric plant and needed an expert installation engineer. Jewett took the job, on the assumption that it would be finished in approximately a year. But as Jewett said later, one cannot estimate time in the East.

In a series of letters written to friends and relatives and edited by his niece, Marjorie Jewett Bell, he related the story of his eight years in the "forbidden country."

On May 26, 1911, Jewett left Peshawar, Northwest Frontier Province, for Kabul, Afghanistan with everything from a toothbrush to a bath tub, from lemon extract and yeast cakes to a sack of Delhi flour, 40 gallons of kerosene, bed, bedding, camp chairs and tables. He was equipped with a riding pony, a mehmandar or guest entertainer, and every necessary servant, all supplied by His Majesty.

Firman for Admittance

He also had a firman (pass), signed by the Amir. The firman stated that the bearer was to be allowed to proceed through the country unmolested, and that a bodyguard, pack animals, and tents would be supplied for the road. On presenting this firman to the Secretary of State for India, the bearer was granted a permit allowing him to pass the frontier.

When the pass was issued, Jewett wrote, the recipient was asked to sign a paper stating that he understood the

**From the book by the same title, edited by Marjorie Jewett Bell and published by the University of Minnesota Press, 1948. Miss Bell is A. C. Jewett's niece.*

of engineering. H. F. McRELL: assistant to the manager. C. E. SUTTON, JR.: manager, Power Transformer Sales Division.

Turbine Engineering Divisions—C. E. KILBOURNE: electrical engineer. P. H. KNOWLTON: thermodynamic engineer. F. C. LINN: mechanical engineer.

Thomson Laboratory, Lynn River Works—E. N. DOWNING and Dr. R. H. KRIEBLE: assistant engineers.

APPLIANCE & MERCHANDISE

A. H. HEITZLER: clock representative, Pacific District.

PHILIP KLEIN: appliance service representative, North Central District.

E. L. STEHLE: manager, appliance sales, Pittsburgh.

D. A. WASHBURN: appliance service representative, Southeastern District.

CHEMICAL

R. J. BAUMANN: marketing research section, Marketing Division.

H. M. BRUSMAN: manager, Plastics Division.

A. C. TREECE: manager, Employee Relations Division.

F. C. TUCKER: purchasing manager.

Chemicals Division—G. ALEXANDER: process engineer, Phenolic Products Plants. R. G. BAUMANN: sales manager, silicone products. H. G. DETERS: sales manager, alkyd resin products. C. K. MEAD, assistant to sales manager. J. W. RAYNOLDS: assistant manager, silicone products. DR. R. O. SAUER: engineer, silicone products engineering.

Laminated & Insulating Products Division (Coshocton)—J. A. BEALS: accountant. H. K. COLLINS: manager. E. G. GRAY: sales manager. DR. J. J. PYLE: engineering manager. A. B. WELLBORN: manufacturing manager.

CONSTRUCTION MATERIALS

W. W. BRYAN: manager, Northwest Sales District.

E. J. HARRINGTON: staff of the vice president, in charge of manufacturing policy.

F. P. HOLTER: manager of manufacturing.

K. E. LAZETTE: supervisor of accounting, Bridgeport Works Services.

J. J. LENGYEL: manager of sales

Wiring Device & Accessory Equipment Division—T. D. FOSTER: manager of sales. G. E. WICKMAN: manager.

ELECTRONICS

T. F. BOST: Southeastern District representative.

C. H. HARRISON: manager, Employee & Community Relations Division.

J. W. RONDEL: assistant to the general sales manager.

Receiver Division—G. O. CROSSLAND: sales manager, radios. D. E. WESTON: merchandising manager.

Transmitter Division—F. P. BARNES: sales manager, communications equipment. H. B. FANCHER: section engineer, broadcast studio equipment. C. M. HEIDEN: section engineer, radio communication equipment. W. C. JAEGER: sales engineer, television sales section. L. H. JUNKEN: designing engineer, product engineering. E. W. KENEFAKE: section engineer, carrier current equipment. C. G. ROBERTS: product manager, broadcast & television equipment.

Tube Divisions—B. S. ANGWIN: in charge of Pacific Coast Sales Region. J. L. BROWN: in charge of Midwest Sales Region. W. H. CLARKE: in charge of Eastern Sales Region.

LAMP

A. C. HAM: manager, Portland Service District.

E. A. HAWKINS: manager, Connecticut Valley Sales District.

J. M. LIME: manager, Midwest Sales District.

W. J. PITBLADO: manager, North Pacific Sales District.

W. P. THAYER: manager, Allegheny Sales District.

G. S. TROTTER: manager, Texas Gulf Sales District.

L. R. WILSON: manager, Puget Sound Sales District.

AFFILIATES

G.E. X-Ray Corp.—W. J. COX: marketing manager. R. L. LEFEVRE: commercial vice president in charge of Government Relations Division. R. R. ROBERTS: assistant marketing manager.

Trumbull Electric Mfg. Co.—L. E. BEES: manager of manufacturing.

J. E. BURMESTER: supervisor, Drafting & Standards Division; 49 years.

H. L. R. EMMET: manager, Erie Works, Apparatus Department; 36 years.

R. W. HERRICK: executive assistant to manager, New England Apparatus District; 44 years.

A. G. JONES: manager, Pacific Apparatus District; 44 years.

T. M. JONES: manager, Apparatus Sales, G.E. Supply Corp.; 22 years.

COL. CHESTER LIGHTENBERG: manager's staff, Fort Wayne Works, Apparatus Department; 18 years.

H. C. MEYERS: Standards Division, Executive Department; 49 years.

P. O. NOBLE: manager of engineering, Fractional Horsepower Motor Divisions, Apparatus Department; 45 years.

G. E. STACK: consultant, Control Divisions, Apparatus Department; 45 years.

L. J. TOMAN: General Engineering & Consulting Laboratory; 37 years.

W. G. CONANT: Schenectady Works Laboratory; August 27.

L. A. GALANTUCCI: safety engineer, Bloomfield Works; August 18.

R. D. GLENNIE: district manager, G. E. Supply Corp., Buffalo; July 27.

W. C. HAHN: Research Laboratory; September 11.

S. B. J. MALMBERG: General Engineering & Consulting Laboratory; September 20.

H. C. MAYNARD: I.G.E.; July 29

C. M. RIPLEY: retired lecturer, Advertising & Publicity Department; September 12.


J. J. Lengyel
Construction Materials


H. B. Fancher
Electronics


D. E. Weston
Electronics


C. H. Harrison
Electronics


W. J. Pitblado
Lamp


J. M. Lime
Lamp

British Indian Government took no responsibility whatsoever for either him or his business. It made no difference if he was a British subject. Of course the Afghans knew of this, and the helplessness of Europeans was occasionally thrown up to them in the country.

All arrangements for the trip through the Khyber Pass, which leads to Kabul, Bokhara, and Turkestan, were made at Peshawar. This last substantial British outpost on the road to Afghanistan lay on a plain almost entirely encircled by hills. The foreign settlement, like all other Indian cantonments, was composed of the usual bungalows, official buildings, barracks, club, post office, and the one hotel. But the native city—narrow crooked streets huddled within mud walls—was less monotonous. Here to the bazaar came the caravan traders with their rugs, Swat blankets, furs, embroideries, old Afghan knives, and guns. Here also one found the distinctive Peshawar "wax work," a design made on textile with a waxlike clay.

Peshawar is 1500 miles by rail from Bombay and 12 miles from the eastern entrance to the Khyber Pass. The railway ended at Jamrud, about ten miles beyond Peshawar, but this section was used for military purposes only. There was another fort, Landi Kotal, at the far end of the Pass near the Afghan border. One crossed the Pass in the company of a kafila (guarded caravan) only, as such units were under government guard with British soldiers, well trained and well dressed, as far as Masjid, and with Afghanistan troops, poorly trained and in rags, for the rest of the way.

Through the Khyber Pass

The entire 30 miles of the Pass was under the guns of the forts and blockhouses built at strategic points. Camels were the chief beasts of burden and looked very odd with their huge packs of household wares, merchandise, children and small animals on their backs and the festoons of cooking pots and pans which were hung on last. A young donkey or colt whose legs were too weak to travel was often bound and strapped to his mother's pack.

The first stop in Afghanistan was Dakka within a half mile of the Kabul River. Except for a narrow strip along the river, the surrounding country was comparatively barren. By road it was two long marches from Dakka to Jalalabad. In hot weather one traveled at night if there was a moon. Otherwise it was customary to start at 3 a.m. and end around 10 or 11 in the morning.

At Kabul, capital of Afghanistan, Jewett had his first interview with the Amir, after waiting three weeks. (Orientals never seem to note the passing of time.)

The Amir told Jewett of his plans for the hydroelectric power plant which was to furnish electricity for the workshops, machine shops, gun factory, mint, boot factory and woolen mills situated in Kabul. It was to be set up in Kohistan in the mountains at Jabal-us-siraj, Mountain of Light, 50 miles by road from Kabul. The entire industry of the country was then run by steam at a cost of $150,000 annually, for wood is very scarce in Afghanistan. The plant was sold to the Amir f.o.b. Bombay, and all construction and transportation problems were left up to him. Some of the equipment had already been on the road by elephant cart for two years, and the remainder was stored somewhere between Bombay and Peshawar. The plan was for a 42-mile, 150-kilowatt,

It took a crew of 500 officers and laborers three years to construct the power canal, one and a half miles long.

Elephants hauling electric equipment. Fifteen elephants and nine carts finally arrived at Jabal-us-Siraj after spending the winter at Jalalabad.

44,000-volt, three-phase transmission line—not a large plant, but a big undertaking for Afghanistan.

It is no small wonder that often during the next eight years Jewett wrote: "I cannot see the end." The sappers and miners who worked on the digging of the canal and constructing the plant were pitifully poor and ignorant. They labored on the project by conscription and were subject to severe beatings and even death if they deserted and were caught. Life is cheap in Afghanistan.

All equipment had to be taken apart and stored under guard each night and completely reassembled in the morning, because thievery was so prevalent that anything not literally nailed down and guarded was subject to removal. When traveling or working in the field, the local ruler was responsible for Jewett's safety as well as his equipment, and the local thieves were hired to do the guarding on the assumption that they would not steal if they were hired for that job.

Afghan Customs

Religious custom also held up the work. During Ruza, the Month of the Fast, for instance, the men could work only seven hours a day. Some months it was only six, depending on the religious calendar. During Ruza good Mohammedans are allowed no food nor water between sunup and sundown, and during the time Jewett was in Afghanistan, Ruza came during the hottest and longest days of the year, as the Mohammedan calendar follows the lunar year. During the winter when snow was on the ground no work could be done at all. Jewett took his leave and went to India

in the winter, and once he went to the United States and did a great deal of shopping for the Amir, who liked all kinds of gadgets. Leave was usually held up by endless odd jobs the Amir wanted done or because he could not get his leave pay on the date he was to leave.

Very few Afghans could either read or write. A few had been trained along these lines and were known as Mirzas. Natives were slow to learn and repeated things parrot-fashion. Their ability to reason seemed almost nil. A group of students from Afghanistan's one "college" was assigned to Jewett to learn engineering. After much difficulty he managed to make fairly good maintenance men out of them, but none of them learned engineering because they lacked the necessary mathematics.

Food consisted of mulberries, both fresh and dried; delicious grapes, which were kept fresh all winter by storing them by the bunch in cotton wool bags; melons; and all kinds of native fruits. The natives were so poor that they ate white clover by the handful in the spring. Meat was very scarce, and even the lowly sparrow was at a premium. These birds were caught with butterfly-net arrangements. (The wealthy raised larks both for food and for their songs. In the main the Afghans were fond of birds and kept them as pets.)

Afghanistan at that time did not belong to the postal union. Unless mail was addressed to the bank in India where Europeans on leave could pick it up and bring it into Afghanistan, it often cost $4 to get a month's supply. Magazines and heavy articles were sent to the bank. Jewett wrote a firm in Troy, N. Y. a very strong note because an advertising folder had cost him nearly 40 cents. Mail was carried by dak wallas or runners, who braved thieves and all kinds of weather to get the mail through.

After Eight Years

The Amir did not believe in banks either. Consequently a year's pay often required several boxes, and these had to be taken to Peshawar by caravan and exchanged for British currency.

At the end of eight years the hydroelectric plant was finally in operation, and Jewett asked for a firman to release him from the job. The Amir, who by then considered him a personal friend, did not want him to go. But he had no alternative. So Jewett returned to California—and one month later he received word that the Amir had been assassinated while sleeping in a heavily guarded tent in one of the palace gardens.

Jewett retired after his eight years in Afghanistan, and after several years of traveling in the South Pacific he settled down on the Island of Tahiti. It was there that he died suddenly from a sunstroke on February 3, 1926, at the age of 55.

Some of Jewett's Kohistanis working above the dam. The armed guard seated at the left was necessary to prevent these conscripted workmen from either loafing on the job or running away.

The work elephants moved big boulders and hauled heavy machinery through the Khyber Pass.

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