

Monogram

**HE'S A
BIG BROTHER, A PART-
TIME PSYCHOLOGIST,
A TEACHER, A FATHER
CONFESSOR, A PRODUC-
TION MIRACLE WORKER,
AN ACCOUNTANT,
A LAWYER, A POLICEMAN,
A CLERK, A JUDGE,
A REFEREE, A MECHANIC,
A MR. FIX-IT, AND ALSO
A FOREMAN FOR
GENERAL ELECTRIC.**

SEE PAGE 5

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Ars Longa

Talks with art directors by your editors always brings on the reminder that art is, indeed, very long, and that time is brevis. Most of the pleasant people in the graphics business don't like to be rushed. TIME is something one keeps downstairs at the bank. So if deadlines come too rapidly, you go down and say, "I'd like to withdraw three hours of time. It's for our art director." You have to have this sort of arrangement because art can be a long time aborning.

But not so with the two men who produced the covers and the colorful layouts on the inside pages. Bernie Karlin of AMK Associates, conceived and executed the covers in brisk time, as did Larry Sowinski who produced designs for the editor's page, the foremen story, the economic forecasts, and the splashy number on Red Red Rassman.

GENERAL  ELECTRIC

We've a Dialog Going

Our November number on the New Work Force seems to have been the most controversial edition since, er — 1951, when the then *Monogram* editor informed readers he was publishing in a new format — over the objections of his boss, a vice president. Ah, now *there* was flak!

What we learned from the tear-out questionnaire included in the November issue will be along in a minute. For now, some random observations from the editorial department.

None of the people who took the trouble to write us letters or additional comments was lukewarm. For which, thanks, since lukewarmness, according to scripture, gets the heavenly heave-ho.

The complimentary words held the clear majority. Many readers wrote as to how much they appreciated our departures, i.e., "GOOD! GOOD! GOOD!" — "Best edition in 30 years." — "I am a Shakespeare fan. Never expected to see *Henry IV* quoted in this or any other industrial publication." There were some splendid words about facing current problems, which included a note from a gentleman who congratulated us, but warned in great capital letters: "DON'T REGRESS!"

The smaller number of negative comments were just as interesting. Some random samples:

"Worst issue ever! ! !"



"Who runs *Monogram* — HEW?" (No, it's EJK.)

"Next thing you know, we'll have Panama Red in the cigarette machines."

"Your cover was in very bad taste!"

And a guy who sounded nice, despite some harsh criticism, took us to task for using words like "groove," and "hang tough." Among other things,

he, and several others accused us of "selling out to the kids."

We want to report now that that statement is absolutely untrue. The kids haven't even made us an offer.

What we are for, and have been saying so for the past five editions, is joy, cheerfulness, elan, fun, even when we deal with serious subjects like the New Work Force. We are talking to adults, not merely "employees," and our mail seems to justify our contention. We are pro-people, our people.

We are 100% with Fred Borch and Dr. Tom Paine, both of whom have recently expressed parallel thoughts: that it is high time we got up off of the analyst's couch and began slugging — joyfully. We have been too introspective as a nation; too awed by our own private fears; too shaken by the revolution going on around us to perceive that our jobs are much as they have always been with regard to the company.

Now, as to the purely statistical, here's how the first 2500 of our survey replies were analyzed by our research experts and their computer:

Computer Talk

We asked you how the New Work Force rates in your mind compared with new employees of a decade ago. Some 45% of you believe that the NWF has more intelligence now than new people had a decade ago; 42% think it is the same; and 13% say the level is lower. On a related matter, skill, the verdict is also complimentary — 22% vote higher, 39% the same, and 39% lower.

On matters of attitude — sense of responsibility, ambition, and efficiency — the judgment is more severe. But many of the respondents seem to echo the sentiments of one who told us: "The NWF has the brains to recognize eventually the importance of attitude. I'm confident it will improve. And fortunately, you can improve attitude, but you can't do much to achieve more basic brainpower."

Four out of five respondents believe that the NWF needs to improve its sense of responsibility. About half saw the need for the NWF to increase its efficiency and to sharpen its ambitions.

We also asked if you wanted more issues to concentrate on one subject as the November one did. Sixty per cent said yes; 40% said they preferred shorter articles.

We inquired if *Monogram* helps you in discussions about the company with people outside General Electric. Some 22% said it aided considerably; 61% replied that it helped some; 17% said it gave no help.

The age mix of the first 2500 respondents showed 7% were under 25; 26% 25 to 34; 32% 35 to 44; 26% 45 to 54; and 9% over 55. And 81% of our respondents were men, and 19% women. The geographical mix of you who responded corresponded closely to GE's plant population distribution—heaviest in the Northeast and Midwest.

Of the jobs held, 71% were in exempt salaried positions; 8% were non-exempt technicians; 19% were non-exempt clerical or administrative people; and 2% held hourly jobs.

But the statistics don't tell all the story. Nearly one-fifth of the first 2500 respondents took the time to add letters or comments to the checked-in replies. This, we believe, is a real, if intangible, measure of the concern and thoughtfulness that General Electric people possess. We thank you. We

will try to respond to your concerns and measure up to your thoughtfulness.

Names

In the November *Monogram* we speculated about who would lead off and end a mythical national telephone directory for General Electric, from an alphabetical standpoint. That prompted this note: "I can't top V. Aare alphabetically, but I think in any directory my name should come first." It was signed by Mike First, regional sales promotion specialist in the Advertising and Sales Promotion Department's Houston office.

J. L. Meitin of Apollo Systems draws attention to the fact that page 132 of the directory for the city of Daytona Beach, Fla., begins with the name, Trust, GE.

Distribution

You should receive this issue no later than Dec. 31. If you did not get it by that date, notify your long-suffering employee relations people who will, in turn, give us the sad news. In that way, we can pinpoint difficulties and attempt to correct them.

The Eds

Season's 2nd GE TV Special Set for Feb. 5

The heroism of dedicated men who risked their lives recently to fight a spreading forest fire is spotlighted in "Wildfire!," the second "GE Monogram Series" special of this season, which will be colorcast on the NBC television network Friday, Feb. 5 at 7:30 to 8:30 p.m., EST.

"Wildfire!," produced by the MGM Documentary Department in cooperation with the U. S. Forest Service, will present the story of 10,000 fire-

fighters as they battled one of the worst fire disasters in the history of the state of Washington last August. More than 150,000 acres of federal, state, and private land were ravaged before the fires were stopped. They raged along a 100-mile front from the town of Wenatchee up the Columbia River to an area near the Grand Coulee Dam.

When it became known that the fires were sweeping parts of the state, Jeff Myrow, producer-director-writer of the program, assembled seven camera crews and headed for Washington. Myrow and the crews spent 10 days in the fire areas and used over 60,000 feet of film to record the human drama.

The first "GE Monogram Series" special this season, "Kifaru—the Black Rhinoceros," appeared Nov. 12.

What follows are the views of ten front-line supervisors in plants located in the South, the far North, and the Midwest. As in the New Work Force articles published in our November edition, no attempt is made here to suggest that these views necessarily represent those of all front-line supervisors. We consider what follows a mere illumination of a small portion of key people who perform a role of indisputable importance for General Electric, as they revealed themselves to the editors during the preparation of the article.

foreman: man in the middle

You can color the GE foreman loyal. As individuals they may be the most loyal and committed people in the company. Every working day, they stand-to on the firing line, often under strain to get critical work finished, while at the same time coping with absenteeism in the ranks and the attitudes of what one supervisor called "some pretty rough-cut people who try to give you a bad time. But you've gotta get production. Sometimes my stomach is churning." Yet their loyalty remains undiminished. To the question, "What's your overall opinion of GE?" replies ran thus:

"It is a *fair* company."

"Solid, very stable. You can depend on it, and you know it's concerned with



Symbolizing the man
in the crunch

social problems."

"The company is very interested in people."

"The most wonderful company in the world. I stress this to my people. I say if you went out and worked for others as I have done, you'd know this."

Such effusiveness may smack of chauvinism, or unvarnished boosterism, but after a few minutes of conversation it's obvious

from the front-line men and women who control production that their loyalty is deep and unshakable. In fact, it is so deep they are puzzled and a little shocked when they detect in anyone — their own employees, their peers, or even upper management — degrees of loyalty less intense than their own. As for the New

Work Force — well, *their* loyalty is questionable. But so too is the loyalty of the oldsters, sometimes.

Said a lady foreman from the Midwest about over-40 hourly people: "They act just like children. They want nothing but handouts, and they are taking advantage of the company every way they can."

A man from New England echoed the same opinion. "I don't know, maybe it's this hippie movement or protest or something, but the older people see the young people getting away with all this jazz and they figure, 'what the hell, nobody's doing anything about it, huh?'"

All of which makes the foreman's lot, like the Gilbert and Sullivan policeman's, "not a happy one."

They described their jobs like this: "Tough and rough."

"Well . . . it's a pleasure — most of the time."

"It's a hell of a demanding job."

"It's a full-time job. I suppose a man would have to have a desire for this kind of work to survive in it."

And full-time to all front-line men and women means at least nine hours a day, frequently ten, with a good chance that paperwork may have to be taken home a couple of nights a week.

Paperwork, once described in an insurance commercial as "the curse of the thinking class," gets an amen from the front-line types.

Only a few said they weren't unduly troubled by paperwork because their management had provided them with the services of a planner, or the part-time services of a secretary which got most of the load off their backs. But even these admitted that, should a firing be involved, or a union grievance, even this help wouldn't spare them the load of documentation that

they cannot escape. One man in the South put it like this:

"Every time I give a man a contact or a warning, it generates an automatic grievance. That means massive documentation. If I sit a man down for a talk, give him a lecture to try and straighten him out, I have to write, in general, what I told him, so that the next time and the next time and the next time it comes up, I have the backing I'll need."

Backing, via paperwork or what have you, is one area where our front-line people tend to worry about their superiors. The foremen interviewed believe their bosses and their bosses' bosses don't have enough feel for what it is like out on the factory floor these days, and as a result, have in some cases left the foreman to wing it as best he can. Concerns about upper management fall into two areas: support for disciplinary action, and the additional training they think they should have to perform their jobs more effectively.

Several of the supervisors, while they didn't especially welcome the job of coping with the hard core in the New Work Force, did admit that some additional consideration had to be given them because their experience qualifications are lower than for whites. They thought the company did favor blacks and was less strict with them than whites with regard to absenteeism. Yet, they saw it as a temporary thing until the blacks can be fully integrated into the work force. What bugged them more, however, was what they considered as a super-caution in dealing with *all* hourly employees. Said one: "We can't allow too many people to stay in their jobs without doing their jobs. We can't be tolerant of people who lay down on the job."

When it comes to additional training to help them do their own jobs, these ten foremen are split. Some feel their plants had done well in this area, while others thought little or nothing had been done. A black supervisor



in the Midwest said, "We've got beautiful programs. Only they aren't expanding fast enough." A woman from the same plant thought just the opposite. "I applied for a course that would really help me and the answer came back, 'sorry, we think it's too expensive.' I have had a few courses, but not enough." And a man in the South added,



"We don't do as much as we used to. We're cobwebbed." He added he had taken just one course in the last four years and, with a touch of irony in his voice, was one in "failure analysis."

Two Southern foremen were keen on taking any course that could bring them better understanding of the New Work Force, how to lead them, motivate them, etc., but they didn't see any such courses on their immediate job horizon.

In general, in these conversations with ten foremen, *Monogram* confirmed some of its findings made in the course of preparing the New Work Force articles: that the younger supervisor and the female supervisor worry less about young people and seem more enthusiastic about coping with them than do males whose age ranges from 32 to about 45. Above 45, males tend to be more tolerant of the young or of the minorities, and more willing to bring them along.

A black of 32 said, "Supervisors with kids of 21 or so are being taught by their kids."

It's the people who are 35-45 that have to be brought together. They've got to go to school."

And a white of the same age who recently completed a training program said he thought the single



most important mission for a foreman today in dealing with younger people is to keep them happy and productive by teaching them to do their jobs well. He added, "The older foreman doesn't have the same view. He's used to a totally different environment. We are changing today and changing more rapidly than we ever did before. It is difficult for a chap in his 40s to look at



the change, understand it, get with it, and get modern.

Foremen, like everybody, would like more money, but nobody we contacted thought their pay was really poor. Rewards, as they see it, might take the path of opening opportunities for advancement. Several had been on their jobs for over 15 years. They'd also like to see more recognition for their efforts and an increased freedom to deal creatively with the myriad of people problems that confront them. In general, they feel confident and up to the job.

Are there satisfactions to being a front-line supervisor? An ex-hourly employee, now a foreman in a northern plant, said, "I take pride in my young workers. Most of them have very little shop experience. And working with them, they seem to be able to do a good job." After a moment, he added, "I've got a couple of crackerjacks that have come along real well."

From others, came these satisfactions:

- "Understanding young people's needs. Not their physical needs, we've pretty well taken care of that, but their higher needs — motivation. How do we do it? How do we get them to work as a team?"

- From a white middle-aged foreman in the South seeing a young black foreman make out. "Contrary to some things you hear, he's getting on pretty well with these boys down here."

- Also from the South, another foreman said he was proud to be able to stand as a character witness for a black who had come afoul of the law. "I want to help that man."

- A black foreman thought managing a white work force was a genuine challenge to his leadership abilities. He told his boss: "I'm not here as a token head. Don't pat me on the back and tell me I'm doing a good job because I'm needed here as a showcase. Step on me if I'm not doing a good job."

- "Opening opportunities. Helping them get promotions."

In Summary The Crunch Is Here

In sum then, the front-line manager has a rough, demanding, often thoroughly frustrating job which challenges his ability to stay cool and calm and to deal fairly with people he may believe to be slow-witted, indolent, disloyal, and with sloppy or non-existent work habits. He must



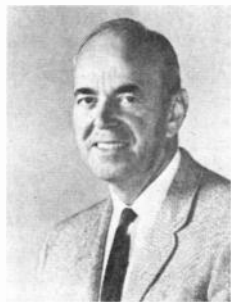
be a big brother to them, a part-time psychiatrist, teacher, father confessor. At the same time he must be a sort of miracle worker in the production department who never falters, never fails to meet his budget, runs a clean, neat, safe shop, has few if any grievances, wears

a nice white shirt, keeps his clothes pressed and always has good cheerful news to report topside.

Somehow, most seem able to bring this off. But they can use all the help they can get.

Commer

**Donald W. Lynch,
Vice-President and
general manager
of Kitchen Appli-
ance Products Di-
vision.**



What is management's view of the first-line supervisor's role? It is the critical link which determines how well many of the goals of the total organization are met.

In recent years, moreover, a new dimension has been added to their work in the form of the changed attitudes and the experience level of the New Work Force. This requires greater expertise in human relations on the part of first-line people; knowing how to lead, motivate, and yes, inspire these newcomers to industry to want industrial employment. The job can be uncommonly difficult for the supervisor who is set in his ways, but unusually rewarding to that supervisor who wants rapid growth in leadership skills and who has the maturity to handle the challenge.

The Appliance and Television Business Group has under construction at Columbia, Md. a new plant where we are having the opportunity to try in one place the many things we have learned in Louisville, Chicago and other plant locations.

First, we are trying to select for supervisors not only those with leadership skills, but also with good human relations characteristics.

Second, each candidate is being given a three-phase course in pre-foreman training. Phase one is 14 four-hour sessions devoted to role playing. Phase two is six two-hour courses explaining how the manufacturing operation works. Phase three is ten four-hour

Two General Electric Vice Presidents supply topside insight on foremen

courses of "how-to" with regard to job control, payroll procedures, and day-to-day paperwork. A special feature of these courses is that the new foreman's boss goes through the same courses.

After functioning on the job for a time, the new man will be called back and asked, "How are things going?" From this, we hope to gain new insights into our training and required support operations for first-line people.

Third, we have made a decision on the span of control. This has been reduced to a maximum of 35 and preferably 25 people. With fewer people, better relations involvement is possible.

Finally, as in all locations, we schedule many sessions with foremen to make his involvement with the total organization as complete as possible. In this way he can properly relate to the bigger picture, and at the same time see opportunities for personal growth.

The appliance business offers first-line supervision a great opportunity. At Columbia we will concentrate all our accumulated knowledge to further advance the effectiveness of this important management group.



Howard D. Kurt
Vice President and
general manager
of Process Measurement and Control Division.

I honestly don't get out into the shop as often as I did when I was a department general manager, but I do manage to see many of our foremen on visits through the factory a few times a year, so I am very much aware of the tough and critically important jobs they do.

What strikes me the most is the impression foremen make on the cus-

tomers when he comes in to tour the plant. In my experience all the "sell" and polish a marketing man can generate does not impact on the customer with the weight of candid first hand comments made by foremen. The customer often visits the shop to get a feel for our capability to serve his needs. He frequently talks with foremen because they are the guys who typify the spirit and the competency of the work force. I've never seen anyone tell it like the foreman. I'm sure he feels pretty lonely sometimes working his line in the factory, but I also want him to know that he is a real factor out in the marketplace when the customer places his order.

In addition to their high customer impact, we expect a lot from our foremen in the day to day job. Based on past performance, we have been justified in our high expectations. We've always expected them to be particularly expert in getting output and understanding people. Traditionally the foreman who did not have a sufficient degree of empathy for his fellow man usually couldn't make it as a foreman. We taxed his patience, his understanding, and his humanity by demanding that he weld an efficient work force from men and women of vastly different cultural heritage and social background and at the same time meet quality production and delivery.

In the process we created a cadre of foremen with a high degree of sophistication in dealing with their fellow human beings. Now we're asking them to understand and accommodate the New Work Force without losing touch with the mature work force. Certainly it will take new responses, new preparation, for there are lessons we must all learn from this vital and dynamic force which is just beginning to make itself felt. But, we are asking our foremen to understand people and learn to adapt to change.

We feel comfortable in placing our confidence in them.

Benefits Picture

Many improvements in General Electric employee benefits go into effect Jan. 1, 1971. Here's a run-down on the major values:

Insurance Plan

- General Electric picks up the employee's contributions for his or her own coverage of 0.9 of 1% of annual earnings. This means about a 1% increase in take-home pay.
- Dental care expands to include extractions and root-canal therapy. New hearing aid expense benefits are added.

Pensions

- Pension minimums, which climbed in 1970, increase further up to \$5.50 to \$7.50 per month for each year of service for those with 15 years or more of credited service.
- As a result of an increase in past pension credits for employees with service before 1961, pensions for such service will generally increase 10% to 15%. Similar increases will apply on January 1 to eligible retired employees.
- An improved Survivorship Option becomes available to help protect your husband or wife after your retirement.
- An improved death benefit for active employees guarantees a lifetime pension for your spouse if you die before retirement and are eligible.

Individual Development Program

- A self-improvement program that can be custom-tailored to the educa-

tional needs of hourly and nonexempt employees. Up to \$400 annually in tuition and compulsory fees for courses ranging from basic reading, writing, and numerical skills to advanced college courses, as long as they are related to job and business needs. For those on layoff who are not eligible for unemployment compensation, a training allowance is available.

Income Extension Aid

- Minimum credits for those on layoff go to four weeks of pay (eight weeks of benefits).
- IEA will be available sooner — after two years of service.
- Credits are reinstated faster — complete reinstatement one year after layoff date if you are back to work.

Vacations

- GE people with 30 or more years of service will now receive five weeks of vacation with pay, those with 15 years or more will get four weeks.

There are many other improvements that add to the value of the job package in areas such as continuity of service, paid absences for death in the family and citizenship requirements. In addition hospital expense benefits for pensioners over 65 climb upward.



New Use for GE's Automatic Toothbrush

The bees don't do it. A General Electric automatic toothbrush does it — pollinates tomato blossoms, that is.

In an application of the product that no market researcher in Housewares Division has considered in his wildest brainstorming, the toothbrush accomplishes the pollination function normally performed by wind by shaking and vibrating pollen free from the base of the flower so that it settles on the pistil. (Bees seldom actually pollinate tomato blossoms even under customary growing conditions.)

A Phoenix, Ariz., firm called Hydroculture, Inc., is making the unconventional use of the toothbrush in the course of its commercial development of hydroponics, the cultivation of plants in water containing dissolved inorganic nutrients, rather than in soil. Hydroponic culture is not new. It was first developed in the laboratory in 1699, with many of today's standardized formulas developed by German scientists more than a century ago. While a few limited commercial applications have previously been attempted, and hobbyists have raised some succulent vegetables in their backyards, there has been no major

effort to develop any large-scale projects until recent years. Investigations of hydroponics, spurred by great concern about the world's population explosion, have revealed the outstanding quality, flavor, and appearance of hydroponically grown foods.

The toothbrush is just part of Hydroculture's automated method of hydroponic culture in a ten-acre commercial growing operation near Glendale, Ariz. Some 40 greenhouses, 26 feet by 128 feet, produce gourmet vegetables at the rate of 1 million pounds annually. Hydroculture staff members have developed plant types best suited to the hydroponic process. All plant life there begins from seed. When the plants are the right size for transplanting, they are transferred from their seedling house beds into a crop greenhouse where they are placed into their growing beds of 9-inch washed gravel.

The Hydroculture people tried several makes of automatic cordless toothbrushes, but selected ours because the charge lasted longest. In 45 minutes, the GE cordless model can pollinate some 1100 plants on one charge.

PEOPLE

HOLLYWOOD TO BLOOMINGTON, ILL.: Some people might think that Wendell (Casey) Kessinger is following the Great American Dream in reverse, but he regards his shift as a photographer from Hollywood to Bloomington, Ill., as progress. He has joined the General Purpose Control Department as an audio visual aids specialist. "I came to GE for advancement," he says. "I didn't really like taking portrait shots because it's so hard to satisfy people with their picture. But here, I'm working with video tape — the real challenge to me." As a staff photographer to an Air Force General in California, he took pictures of more than 400 famous personalities. He found Lyndon Johnson the most interesting, James Garner the friendliest, and Yvette Mimieux the most humorous "besides her other obvious assets."

VIETNAM HERO SON: Mrs. Les Marshall, with the Birmingham office of Industrial Sales Division, has reason to be proud of her son, Carl Marshall, an Army helicopter pilot who was decorated six times for valor in Vietnam. One of the decorations was for rescuing a downed flier despite heavy enemy fire near Qual Loi, Vietnam. The city of Midfield, Ala., celebrated "Carl Marshall Day" to honor him upon his return home.

100TH ADOPTED SUGGESTION: George Johnston recently received a check for his 100th adopted suggestion, a record for the eight-year-old Apollo Systems in Daytona Beach, Fla. It may be a company record, too, because the assembler has been on board only a little more than four years. George has two more suggestions cur-

rently being evaluated, giving credence to his statement that "I don't intend to stop now."

HONORED: Patrick P. Coppola, who's an engineering manager for the Visual Communications Products Department in Syracuse, has been elected a Fellow of the American Institute of Chemists. Pat has been with GE since 1956. James F. Young, vice president of technical resources, New York, has been elected to the National Safety Council's board of directors. Ted Nims district representative for the Housewares Division in the Cleveland Region, has been chosen by the board of advisors of Outstanding Young Men of America, as one of America's outstanding young men of 1970. Dr. Paul Greebler, manager of Breeder Reactor Physics at our Breeder Reactor Development Operation, Sunnyvale, Calif., has been elected to the board of directors of the American Nuclear Society. Willard H. Sahloff, chairman of the board of Phillips Screw Co., and former vice president of the Housewares Division has been presented with the Rutgers Medal by Rutgers University during the recent 40th reunion of the class of 1930, of which he was president. He was given the medal for his 40 years of alumni and four years of campus activities.

HERO IN TIFFIN: Sam Paradiso, who works in the core bonding area at the Tiffin, Ohio, plant of the Hermetic Motor Department, rescued an elderly man from a burning apartment recently. The volunteer fireman at the Tiffin plant was returning home from a baseball game when he noticed the fire. While a companion turned in the alarm, Sam entered the building to investigate, found the man and led him to safety.



Bob Brown, other GE-ers are . . . Jumping for Joy

Marge Beerli, Bob Brown, and Jimmy Coffey have at least two things in common — they're all GE employees, and they're all skydivers.

Marge Beerli is at Nela Park in Cleveland where she has been a statistical clerk in Lamp Division's Financial Department for more than seven years. She took up skydiving about two years ago because it "looked like fun." She has jumped more than 50 times,

most of them with a group called Tel-stars.

Bob Brown is a refrigeration and air conditioning technician in Pittsburgh. He has used skydiving as a means of working with an Oliver High School club in Pittsburgh, formed to get black and white students to work together. He and another instructor teach skydiving to the 30 teenagers in the club, including one girl. After 12 hours of ground instruction, many members of the group jumped on the first day in the air. Bob has received many awards for his jumping activities, and his work with the high school has received attention from the Pittsburgh press and from *Ebony* magazine. In a recent six-page *Ebony* article, the author described Brown as a "diminutive dynamo (who) won fame when he set a record of 101 jumps in one day." (*Monogram*, October 1968).

Jimmy Coffey is an assembly foreman at Numerical Equipment Control Department's Richmond, Va., plant. He has been jumping since 1964 and says that his hobby resulted from his living near an airport. "I used to watch them jumping and I figured if they could do it, I could do it," he says. He has a total of 318 free fall jumps to his credit. The highest jump came at an altitude of 17,500 feet. He is a member of a five-man group called the Shen Valley Sky Diving Team.

Erie GE Fights Pollution

Erie General Electric's \$440,000 solid waste collection and transfer program is operating. It's the third phase in the Erie plant's antipollution program and represents an investment of more than \$100,000 in physical facilities plus a contract calling for expenditures of \$68,000 per year over five years with a firm that processes and moves waste.

Other phases of Erie's antipollution

program include a \$2.5 million expenditure to curb air pollution by installing fly ash arresters and new power generating equipment, including electronic precipitators; and a \$250,000 investment to improve the Erie plant's liquid waste treatment process. This last expenditure represents an addition to the \$1.2 million facility already in place to collect and treat acids and alkalis.

Entree to Industry

Traditionally, blacks aspiring to a professional career have chosen those fields where they have been most welcome: teaching, preaching, and undertaking.

Even now, the black college grads tend to shy away from industry, mistakenly believing that industry would only be interested in them if they came bearing degrees in engineering.

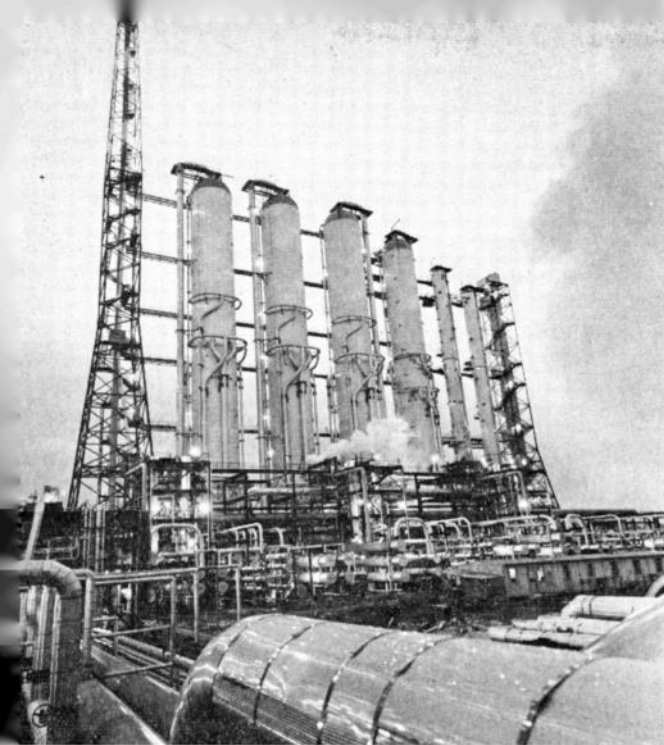
Last winter, Robert B. Ames, Vice President and general manager of our Power Transmission Division, headquartered at Philadelphia, saw it as industry's job to acquaint black college grads with the opportunities open to them in industry. Accordingly, he established a development program for minority professionals fresh from college. It is the first and, thus far, only program of its kind within General Electric. Ten young men from four different colleges, with degrees in math, psychology, business administration, and industrial arts, were taken aboard at Rome, Baltimore, Pittsfield, and Philadelphia, for a two years' course, in which the candidates would be rotated through each of the major functions of the business. The end objective, according to Stewart E. Na-

zarro, manager of employee relations for Circuit Breaker Department, is to expose the candidate to the functions, "so that he will increase his knowledge of the opportunities at General Electric, and perhaps make the decision that he would like to make one of these facets of the business his professional career."

Last fall, when the ten candidates were about mid-way through the program, they were convened at Crotonville for a two-day session given over to probing the general question: "How are things going?" Overall, the candidates thought things were fine, but they said they would like to know more about the organization of the Power Transmission Division, more about the semantics of business, and lots more about the GE benefits package which they found especially interesting.

Highlight of the two-day meeting at Crotonville was an informal talk by Bob Ames who went around the table giving each man his personal assessment as to the value of the man's assignment in his division. He stressed that these assignments were meaningful, important assignments, not in any way mere decoration.





HAIL a HEAVY

Deuterium is an isotope of hydrogen having twice the mass of ordinary hydrogen. It is usually found in fresh water near the seaboard. Lake Landrie at Point Tupper, Nova Scotia, has a high deuterium content.

Other parts of Canada are rich in uranium. Butt these two facts together and you get — a promise.

Separate the deuterium and you can produce heavy water. Heavy because its molecules are made up of deuterium and oxygen atoms instead of hydrogen and oxygen atoms, like the light water that gets clothes bright.

Atomic reactors use heavy water as a moderator to control the fission of the natural uranium. Fission can produce low-cost electric power.

So, in theory, Canada has it made as a producer of atomic energy for electric power. Except for one thing. Heavy water is expensive and scarce. During the '60s, the only source of it in the world was a plant at Savannah

River, Georgia.

But in 1965, Canadian General Electric, having completed studies begun three years earlier, was queried by Atomic Energy of Canada Limited about CGE constructing a heavy water plant.

"By mid-1966," according to Reginald D. Richardson, Vice President of CGE, the company had agreed to the heavy water plant and was "embarked on by far the largest financial and plant construction undertaking in its history." Late last fall and \$75 million later, monster 300-foot-high separation towers were working at Point Tupper. Richardson predicts the operation will eventually produce heavy water at a cost 40% below the present world price. Besides being the world's largest heavy water plant, Canadians point to the undertaking as a perfect example of private industry defining a national need — and stepping in to meet it at no cost to the nation.



1971 will be partly sunny or partly cloudy

(depending on how you look at it)

So suggests Frank P. Murphy, GE's chief economist, manager of the company's Economic Forecasting operation, and a man, in times like these, who spends seemingly endless hours following the erratic U. S. economy and stalking anything that suggests a trend and a hint of the future.

Not many people can envy Murphy for his job, at least not in a period of major strikes, and threats of strikes, fluctuating inflation, sputtering consumer spending and jittery rates of unemployment, among others. Meanwhile, the economy fidgets in limbo. Unquestionably, he's a man on a fence.

The General Motors strike of 1970 is a classic case in point. About the same time Frank was facing up to his third quarter review and look ahead, the General Motors strike began. No room here for the faint-of-heart. "It's like playing Russian Roulette with numbers," he says. Frank studies the

trends, looks at some of the details to see if that will help firm up his conviction and he makes up his mind. In the process "you've used the computer and the most advanced techniques, touched base with all those you know who are knowledgeable about this, talked with the people in Washington who are in a policy role, and then you make a judgment and just hope it's a correct one."

Our forecaster of the nation's economy isn't always in agreement with the rest of the forecasting fraternity from industry and government. Murphy says it's to be expected. He also thinks there ought to be more diversity than there is most of the time. "I've developed the position that readers are aware of the uncertainties. There's no sense reminding everybody at all times. You state what you believe will take place. Ambiguities are not a help to businessmen," he maintains.

The Man

Frank P. Murphy is a Columbia University man. His undergraduate and graduate studies in economics led him first to a teaching post at the Univer-

sity of Massachusetts and later to a career in business. Before coming to General Electric eight years ago, Murphy moved into the economic forecasting side of business with General Motors. He later worked for the New York Stock Exchange as a member of its research department. Some of his work

He also provides alternative forecasts "which give people an option of taking some other path. But when you've made up your mind, then state your conclusions boldly," Murphy says.

Well, Frank went out on a limb in mid-October and stated boldly in his forecast that the GM strike would continue through the fourth quarter. Just after his words were published, the log jam broke at the negotiations table, and as *Monogram* was going to press in late November a swift return to significant production hinged on local settlements.

"I felt the strike would continue through the fourth quarter because there were no serious negotiations evident at the national level," according to Murphy. Working on the assumption the strike would continue past mid-November, the economist felt certain the upcoming holidays and interrupted work schedules of that period would make it undesirable to resume work before year-end. "The realization that the strike would last that long," Murphy recalls, "apparently prompted management and the unions to knuckle down to some hard and rigorous bargaining to end the strike."

Undismayed by the turn of events, Murphy says resumption of production by December 1 will, in the last third of the quarter, bring a surge of automobile activity. Before the strike abruptly ended, the GE forecaster stated the gross national product (GNP) would be \$10-12 billion off at year's end from a non-strike economic environment. Murphy now adjusts that

estimate to be only \$9 billion from its potential level. "So instead of seeing a zero growth in real national output in the fourth quarter, there will be a very modest 1% rate of growth."

With the end of the strike, the general profile of surging activity has been moved forward a month. "Production in the automotive and allied industries will be on an overtime basis. Buying sentiments remain fairly optimistic, so we have every reason to believe automobile sales will be maintained at the pre-strike level."

To regain this level of sales volume, a rapid build-up in inventories and production will follow the strike, says Murphy. This will boost economic activity. Then, before the economy absorbs those effects, the country will begin to see the preliminary moves in anticipation of a steel strike at the end of July. He expects this because steel consumers traditionally stockpile materials when labor negotiations are scheduled in that industry. Since steel is generally ordered four to six months in advance, the quickening tempo to stockpile will add to the economic pitch in the first quarter. Meanwhile, money supply growth will remain at a relatively high rate.

"What this means is, we will see a rapid increase in economic activity, from where we are now, through the middle of 1971. It will be quite dramatic," Murphy says.

Murphy is certain a trend toward recovery has taken place since the downturn of mid-1969. He calls the General Motors strike a factor that's obscured the course of the recovery.

with the exchange included major studies and reports for the Federal Reserve. As assistant director of economic studies for the New York Life Insurance Company, Murphy advised corporate management on investment policy. With GE his activities include quarterly economic analysis and devel-

oping forecasts of industries which the company serves or participates in. His group is engaged in the development and marketing of GE's Management Analysis Projection System (MAPS), a computer software capability designed to assist businessmen with economic market and sales forecasting.

After a standoff third quarter '70, the recovery movement got going in the fourth quarter, stimulated by easier credit policies. This initial movement, Murphy says, will continue in the first three months of 1971, not only in the auto industry but across the broad line of consumer spending.

"The consumer is the key to a continuation of the recovery," the economist says, rapping the desk for emphasis. It's his opinion that consumer buying sentiments and optimism point toward a renewal of buying, marking an end to the long decline in consumer confidence. He holds this opinion because buying plans of consumers have shown a modest up tick in the most recent survey. At the same time, consumers have had a considerable increase in income which has not been spent to date. The savings rate, another indicator, has gone up to near-record levels and will not remain there.

Murphy contends "consumers are not puritans and seldom maintain a high savings rate. We'll also see the savings rate come down, stimulating final demand."

Will it take a major economic or world development to unleash the flood gates to greater consumer spending? "No dramatic events," says Murphy. "Events in Vietnam and the Middle East don't look that favorable as to trigger a wave of consumer spending in the near future. One of the reasons why the recovery is going to be modest, except for the strike effects, is that no dramatic events are anticipated. Rather, spending will pick up because it has been slow for a long

time, because credit has eased, plus the other reasons I've cited. Another factor is some of the uncertainties in the economy will be cleared up. Back in 1969 there was concern that we might be entering a period of protracted economic decline. Continuation of the recovery this year will tend to dissipate that idea. People will no longer be as concerned about the imminence of a recession."

Based on all the indicators Frank Murphy has at his disposal, he can say that unemployment is expected to remain high. It will be higher than the country has experienced in the last several years, but "it will not be of catastrophic dimensions." Rates of unemployment will peak at between 5.5 and 6% before beginning to drift down by the middle of 1971, forecasts Murphy.

Although unemployment will be higher than satisfactory, Murphy describes the economy in 1971 as bright but unspectacular. It will be a more certain environment than we've had in the past year and a half, he believes.

Another view he holds is that consumers have a momentum all their own. As an example of this he points to what usually happens to most people who receive increases in income. "No matter how much we plan to save, we end up eventually spending and this is going to happen again."

On the subject of inflation, Murphy says it "had been a deterrent to spending, or at least a deterrent to commitments for durable goods. Soon it will be less of a problem." His forecast is for inflation to drop down to an annual

rate of 4 to 4.5%. "This is a considerable change from gains in the consumer price index at annual rates of 6 to 7% that we saw in early 1970. This is a healthy development for the economy," he comments.

One of the results of the GM strike Murphy thinks, is that it further narrowed the limited options the government had in dealing with inflation. He elaborates: "We are now in a phase in which the previous inflationary movements are accelerating the rate of wage increases. What I mean is, unions are coming in and asking for catch-up raises of large magnitude. Now the GM settlement is the highest in auto history, and that's significant because the automotive industry is

a pace-setting industry. Steel is another pace-setter, and it's rare that the steel and automobile industries settle for an amount that's very far apart. So I believe the steel unions will be expecting and fighting for a competitive type of increase. Consequently, wage settlements of this size, plus increased spending that's bound to come, will raise the possibility that inflation will get out of hand again. If so, I think we can look for the government shifting to a more restrictive policy after mid-1971, primarily on the credit front, to slow the economy down."

This drop off in money supply growth will have its effect on interest rates in a period in which business will still have very poignant memories of the

Eight Business Analysts Predict:

Utility, Industrial Markets to Be Mixed, Consumer Heading Up, Aerospace Down

With a forecast of the U. S. economy by our chief economist as a backdrop, *Monogram* surveyed marketing analysts within the company for their insights into expected activity in the four broad sectors of business in which General Electric participates.

Electrical Utility Market

Following record power generation orders between 1966 and 1969, the level of kilowatts of generating capacity ordered began dropping off as expected in 1970. The downward trend, part of a five year cycle, will continue in the coming year, analysts say.

The primary reasons given for this market buildup and drop off are twofold. One is the trend of electric utility executives to operate under abnormally long planning cycles, averaging a minimum of five years for major power plant equipment. The other and more obvious reason is the common

outlook of utilities for unusually high peak load growth through 1974.

Earl B. Hutchins, market analysis and planning, Power Generation Sales Division, reports that in 1970, for the first time in three years, peak growth was below, instead of substantially above, the long-term trend of 7.5%. He notes that this confirms GE's 10-year planning forecast of an *average* 7.5% peak growth.

As a consequence of the lower 1970 peak, many utilities will likely scale down slightly their forecasts for the middle 1970s. It's the conclusion of the Power Generation Sales Division that 1971 and 1972 orders will properly be somewhat below the levels of the last several years.

In terms of dollar volume, however, generation and transmission equipment orders placed in 1970 were at a high level and are expected to be very nearly as large in 1971 for several reasons. Principal reasons are the

threat of a liquidity crisis in 1970, contends Murphy. Interest rates will begin rising after next Spring and some firms will remain under financial pressure in 1971.

Plant and equipment spending in 1971 will be flat, in Murphy's opinion. "Businessmen will cut back their spending plans as much as possible. On the other hand, there is enough in the pipelines to assure that the dollar amounts spent will be stable. After you take into account inflation, real plant and equipment outlays will probably drop 3 to 4%."

The consumer sector will be relatively unaffected by the tight credit except in the area of housing, Murphy says. Presently, housing starts are pick-

ing up, building permits are strong. Based on a housing expansion like this, Murphy says, it's also safe to expect higher outlays for modernization, for building materials, and for appliances.

"So this will be part of the strength we'll see in the first half of 1971," he believes. "However, as credit begins to tighten again in the latter half of the year, mortgage funds will become less ample and there will be a slow-down in the rate of increase in housing starts. Likewise, when housing slows down, we'll see a corresponding slow-down in the secondary effects. In the final analysis, consumer spending on the products we're interested in, such as appliances and radios, will lack zip in the last half of 1971."

larger dollars per kilowatt content and high volume of gas turbines, the timing lag for power transmission equipment, and a higher proportion of nuclear equipment, which is very favorable to General Electric.

In the area of power transmission, the demand in the coming year should increase substantially over the moderate level of 1970. This bright picture emerges as planners correlate the anticipated purchase of transmission and auxiliary equipment with generating capability to be installed in 1972 through 1975.

The power distribution market also appears in for a good year. Although distribution equipment tends to follow residential and certain portions of commercial energy growth, business was not noticeably affected by the economy last year. Accordingly, trend watchers look for a strong business level on two counts: the depression-proof characteristic of residential kilowatt hour sales, and the expected increase in housing construction.

Consumer Market

The major appliance industry, which has enjoyed substantial growth in re-

cent years, is on the threshold of the best years of its life.

The optimism for this business stems from the forecast that 165 million major appliances will be sold in the next five years, 30% more than was sold during the 1966-70 period.

Meanwhile, accelerated new construction is expected to add 12.3 million new dwelling units, including mobile homes, to the country's housing inventory by 1975. The new units will require 36 million new major appliances, but new construction will account for the smallest portion of the new appliances sold. The far larger share, 80 million, will be needed for replacement. The remaining 49 million new appliances will be additions to existing homes.

If the 49 million unit projection appears startling, marketing analysts say, "keep in mind that this forecast requires only that 4 out of 5 households have one more appliance on average than they do today." Most of the increase in this third category will be accounted for by appliances with relatively low saturation today that have indefinite growth trends. Such products

are room air conditioners, automatic washers, dryers, dishwashers and food waste disposers.

Progress in 1971 toward these five-year goals will depend on a number of conditions continuing. They are, according to analysts:

- Improvement in consumer sentiment and willingness to buy.

- A favorable consumer financial situation.

- A measure of relief from the current inflationary pressures.

- Unemployment rates no higher than their current levels.

- Residential construction amounting to 2,150,000 units.

- Continued tense international situation but no increase in U. S. military involvement.

- Continuing vigorous competition from foreign manufacturers with U. S. companies stepping up their efforts to meet that competition.

With this set of circumstances, the industry expects to sell 30 million major appliances in 1971, an increase of 8% over estimated sales in 1970.

The future of the television industry looks very promising, both in the immediate future and long-term, according to company marketing analysts.

Optimism over the coming year's market outlook is necessarily based on an improved economy. Given a more buoyant consumer mood and an increase in new housing and new family formations, manufacturers expect greater market saturation, a higher percentage of ownership, greater numbers of multi-set owners, and further development of a new replacement market of color for color.

Other trends to watch for: a continued swing from monochrome sets to color; and black and white sets developing their own niche as a personal product. Longer range, company forecasters say nearly 70 million new television sets will be sold in the United States during the coming five years.

Barring the major downturn in the

economy, the market for radio receivers in 1971, is expected to be slightly better than it was in 1970. Industry sales for next year are forecast to exceed \$400 million, an increase of about 8% over this year's level. FM sets, multi-band portables and digital clock-radios are expected to account for most of the increase.

Sales of radios with FM reception capability have been increasing rapidly over the past few years and now account for nearly 60% of all units sold.

Foreign competition is extremely severe in the radio business with sales of imports increasing rapidly. In 1970 it is estimated that import sales will reach 19 million units.

The company is optimistic about the opportunities in the growing transit market. Because of the mounting concern for improved urban environment, many cities are implementing regional transportation plans to improve existing transit systems or build new facilities. This increased activity, coupled with the company's initial successful entry into the rapid and commuter car business by securing the order for 144-advanced-design cars for New Haven service commuter lines, provides a solid base for GE growth in this market. The need for improved transit was emphasized recently by the overwhelming vote in both houses of Congress in approving \$3.1 billion for mass transit.

Continuing promise is also seen in the locomotive business — one which has grown 40% in the last two years. The company now has major locomotive fleets on 24 of the nation's leading domestic mainline railroads and in 50 countries around the world and is planning to add to this record in '71.

In one of our oldest markets, the lamp business will be moving at high speed to meet an expected boom for lighting along streets and highways to improve pedestrian safety and deter vandalism and crime. In this area, the

High Intensity and Quartz business managers see an annual growth of 15%.

In general, a reviving economy, an end to the General Motors strike, and an anticipated increase in housing starts buttress the expectations of marketing analysts who foresee an improved demand for lamp products in 1971. Industry wide, the use of electric light could triple in the United States within the next decade, they report.

Industrial Market

Business activity in the industrial market will exhibit many varied patterns in the coming year as widely differing situations face major industry segments.

One industrial marketing analyst comments, "Basic materials industries like metals, paper, and chemicals generally have surplus capacity right now, so there is little pressure on them to expand their facilities. However, all face the same problems of cleaning up their operations to comply with antipollution regulations and will be placing orders for equipment to do that job."

These anticipated equipment orders for motors, controls, transformers and switchgear, will come from manufacturers of pumps, compressors, fans and blowers, and electrostatic precipitators.

Company analysts find the mining industries not only have the same problems of pollution but say last year's more stringent safety regulations require considerable investment in electrical and mechanical equipment to comply with those laws. In addition, the demand for coal by utilities continues to put pressure on that segment and their orders for machinery of all types will be strong.

Machinery manufacturers purchasing electrical components for their products will represent a relatively strong segment of the industrial market in 1971, as spending continues for modernization and automation, and as pollution-control programs require

more and more sophisticated machinery and equipment.

As an important footnote in this industry, analysts point out that defense cutbacks have produced widespread difficulties in the aerospace industry and repercussions are still being felt in those businesses supplying components and equipment to that market. The consensus: there is little chance of any reversal in this trend in 1971.

Aerospace Market

Prevailing government policy amid uncertainties in the nation's economy, among other factors, continues to work against defense and space spending as the new year opens. No change is forecast at this time.

In fact, Defense Programs Division forecasters say funding for defense and space hardware will continue to decline for the near term, and GE markets generally follow these spending trends.

A side effect of the declining activity will be "even more intense competition for systems, equipment and components." At the same time, the changing mix of defense and space products may require shifts in effort and investment of resources into new applications and new product/business areas.

Under such depressed market conditions, it is very likely that there will be a "weeding out" of some marginal companies or segments of companies. GE, however, is a long time participant in defense and space programs, and, DPD analysts say, new approaches to procurement, such as demonstration of hardware performance before full-scale development, should favor traditional suppliers.

Looking abroad, Defense Programs Division planners view the international markets as increasingly important.

The space market although at only about half of its peak level, will continue to provide significant opportunities for GE, especially in manned spacecraft programs.

input-scope-infrastructure-factor
-realign-interface-system-option
not-so-familiar-in-equation
not-so-familiar-in-equation
input-scope-infrastructure-factor
-realign-interface-system-option

Jarring Jargon

If anyone asks you what inputs your organizational infrastructure has programmed this year to interface with appropriate components — watch out!

You're being subjected to an onslaught of "managerese."

It may be that John D. Rockefeller and Thomas Edison and other earlier giants of American industry used their own unique language, but the chances are they would never recognize the English (?) being utilized (that means "used") in corporate conference rooms today. We call this strange new language "managerese."

It may be the King's English, but some say the new king of the business world is the computer, and some of the new managerese is directly taken from the language of the computer. That is why you hear such terms as . . .

Input (Please read this draft program and give us your inputs by Friday.)

Program (We will program the meeting based on your inputs.)

Structure (We will program the meeting so that you can structure your inputs around it.)

Factor in (We will program the meeting structure so that you can factor in your inputs.)

Sound familiar?

Listen carefully and you may note that a proficient purveyor of managerese uses all of the above nouns, plus *scope*, *interface*, *system*, *option*,

and others, not only as nouns, but more often as verbs. (We must scope our next year's plan so that we interface with other components.)

At some meetings, the rising use of managerese around the table seems like a competitive game. Score 5 points for each computer word used in a noncomputer setting as a noun; 10 points for the same word as a verb; with a bonus 5 points if your listener had never heard the noun used as a verb before. (The reason he hadn't was that it isn't a verb, damn it, it's a noun.)

The computer is a wonderful tool, and we're not knocking it. Furthermore, you can't lay all of the linguistic sins of managerese at the computer's door. Some of the other strange sounding phrases rampant in the business conference fall into other categories:

Sports pages analogies. Pro football being as popular as it is in the executive suite, the business conference has become filled with analogies to football. ("Let's not send in our second team on this one." Or, "Maybe we'd better just punt.")

Attempts to "get with it" with the younger generation. You can spot these attempts in such terms as "it's what's happening," "do your thing," "where the action is," "not my bag," and the like. Coming from a 40- or 50-year-old, grey-flanneled-suit manager, these phrases sound strained. This phase of

managerese might be categorized as "broken hip."

Euphemisms. When the stock market has fallen way off due to any number of reasons, most of which add up to very bad news, the financial press sums it all up as a day of "profit taking." The phrase conjures up an agreeable picture of relaxed market-players selling a few shares in order to realize their handsome paper profits — instead of a wild panic of desperate men who fear that the bottom is about to drop out and they had better sell *fast*.

Other euphemisms are "rolling re-adjustment" (recession), "price adjustments" (inflation), "reassigned" (fired).

Whitney Young of the Urban League correctly identified much of the phony

talk which came up at conferences all over the country a couple of years ago when people started trying to show how concerned they were about equal employment opportunity problems. Young, who had dedicated many years of his career to this problem before it became popular to do so, finally told an audience that he had been to many conferences on "Urban Problems," on "Equal Employment," on "Central City Problems," on "The Ghetto," on "Minority Aspirations," but hardly anyone mentioned "Negroes" and "jobs" — when that was what the whole game was about.

These are euphemisms — another symptom of the affliction, managerese.

NEWSGRAMS

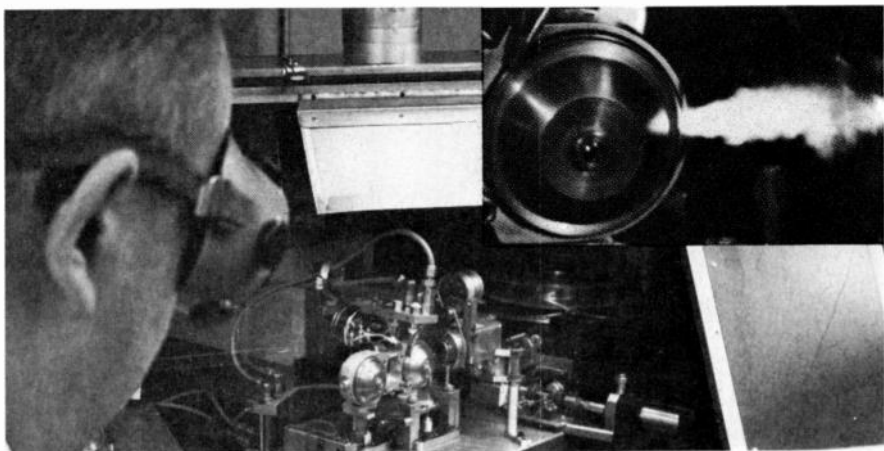
MARINE GAS TURBINE ORDER: The Gas Turbine Department has received its first major commercial order for heavy-duty gas turbines to be used for marine propulsion, reports Whitman Ridgway, general manager of the Schenectady-headquartered department. Broken Hill Proprietary Co., Ltd., Melbourne, Australia, has ordered two 17,000-hp gas turbines to be used for propulsion of two roll-on, roll-off special products carriers. The gas turbines will be manufactured in Schenectady, with delivery dates in March 1972. The ships are scheduled for launching in September and October 1972.

•
WINNAHS! GE has again this year produced the greatest number of winners in the annual "I-R 100 new product competition" sponsored by Industrial Research, Inc. Awards are presented annually to the "100 most significant new technical products of the year." Our seven winners this year: gem quality diamonds, an electrochemical crack detection technique, a mag-

netron ion source, a sub-micron particle analyzer, a multi-color monolithic numeric display device, the GES-CAN information retrieval machine, and an underwater facility with membrane (tensile) skin. Since 1963, the company has had 57 winners — nearly twice as many as any other company.

•
STILL SNAPPING — General Electric's SNAP-27 (Space Nuclear Auxiliary Power), was at last report, still producing about 98% of its original power one year after having been placed on lunar soil by astronauts Bean and Conrad. Initially, SNAP produced about 73½ watts, exceeding the design requirements by 10 watts.

•
LEXAN EXPANSION: The Plastics Department will raise Lexan® capacity to an annual rate of more than 150 million pounds by the end of 1971. Before the expansion, Mount Vernon, Ind. capacity was 25 million pounds. The department has also announced price reductions of from 6 to 12% on Lexan.



The powerful LASER, (inset) is now used in the production of gyroscope motors.

A leap of light years

Application of a scientific breakthrough, sometimes compared in magnitude to the transistor, has propelled General Electric light years ahead of certain competitors—at least for a while.

The technology being applied by GE is that of the LASER, an extremely powerful and concentrated beam of light. Only a decade old, the LASER has emerged from the laboratory for a small but growing number of applications. The devices are in use for welding, drilling, machining, surgery, guidance and illumination.

Another use for LASERS, verifying with great accuracy distance between heavenly bodies, was demonstrated during a U. S. Apollo lunar mission.

Industry has been busy looking into new applications for LASERS. Going back to the earliest days, GE scientists have been working to advance the state-of-the art. Today they have succeeded in moving the technology from the laboratories to our production floor.

For several months now, Aerospace Electrical Equipment Department, Wilmington, Mass., has been manu-

facturing small, sensitive gyroscope motors with the aid of a LASER system. The former manufacturing method was about as outdated as the idea that Detroit still builds automobiles by hand.

The critical process involved driving the motor to speeds well in excess of 20,000 revolutions per minute, noting imbalances in rotating parts, and stopping the motor. That was one phase.

The next step called for the use of a drill press to bore holes in the "heavy" side of the rotor to achieve the needed balance. This was followed by a repeat of step one. It was done over and over again until the correct balance had been obtained. Very slow, indeed.

"Think of it this way," explains Bob Duncan, a manufacturing engineering specialist who has been readying the LASER equipment for expanded production use: "You could say the system works like the reverse of balancing a tire. Instead of adding weights to the light side, we reduce the mass . . . (by) removing the metal from the heavy side to achieve the balance we need." The LASER is so powerful it

turns metal to powder and vapor — in a flash.

The advantages of the system are impressive. In terms of accelerated manufacturing rates, gyro motors can now be turned out eight times faster. Of significance to our military customers is the dollar savings. Initially it has been estimated the cost of balancing gyro motors is 70% less.

Basic research for LASERS in General Electric has been done by Dr. Joseph C. Almasi, Manager, Laser Programs, and his group at the Research and Development Center, Schenectady. Feasibility studies and related laboratory work for the gyro motor balancing system were performed by Dr. Almasi's group over a two year period.

Development work on the system was the responsibility of still other GE components. The heart of the equipment, the LASER system, was perfected by Al French, consulting engineer at Heavy Military Electronic Systems in Syracuse, N. Y. Joining him in related work were Aime Gehri, advance manufacturing engineer, AEED and Dr. C. W. Clapp, consulting physicist now retired.

Several other company components are extremely interested in the potential of the LASER. Don Croke, manager-Program Information, Heavy Military Electronic Systems, reports the system is also being used on a limited basis for machining operations around the company. At Avionics Control Department, Binghamton, N. Y., the LASER system is being applied in welding electronic components, among others. At HMES, drilling and wire stripping techniques have been greatly improved through use of the equipment.

AEED expects to eventually expand its use of the LASER system for balancing to all lines of gyro motor manufacturing, a major segment of their business.



Ballew Aids Once More

Al Ballew is helping out again. Cleveland Mayor Carl Stokes has appointed him to Cleveland's Community Relations Board where he will serve without pay to aid in resolving conflicts between groups in the city by bringing together the forces and people necessary to solve the underlying problems. Al Ballew, with Large Lamp Advance Manufacturing Engineering, is no stranger to community affairs. He has served on a Human Relations Fact Finding Committee and the Curriculum Priority Committee for the Cleveland Board of Education. The ten-year employee of the Lamp Division will fill an unexpired term through March 1972.

To Curb Illiteracy

Employees of the Re-entry and Environmental Systems Division and the Space Division have donated \$1500 from their Philadelphia area Aerospace Group Employees Community Service Fund to aid efforts to combat functional illiteracy among an estimated 200,000 Philadelphians.

The money goes to the Philadelphia Adult Basic Education Academy. Besides the grant, two Re-entry and Environmental Systems Division people provide aid. Robert Gauthier gives financial planning assistance, and Wayne L. Owens offers public relations counseling.

Vermont Visits

Seventy-three Vermonters, all employees of the Aircraft Engine Operations in Rutland, have been sharing their leisure time with mentally retarded young men and women at the Brandon Training School near Rutland. Over the past year, they have spent, collectively, a total of 1350 hours with them.



International Dateline

Recife . . . GE has dedicated General Electric do Nordeste, S. A., a new plant at Recife in the underdeveloped, underemployed state of Pernambuco, Brazil. It will manufacture incandescent lamps and watt-hour meters, and will serve the growth market of the Brazilian northeast and other areas within the country. Plant site was selected in cooperation with the Brazilian government in the latter's fight against underdevelopment and poverty in Northeast Brazil. GE has been in Brazil for over a half-century, and now has over 8,000 employees at various locations. New Recife plant (photo above) will employ 250.

Wellington . . . GE locomotives, the most powerful ever to go into service in New Zealand, will propel the government-operated railway's innovative "Silver Star" express service. The export locomotives will haul new stainless steel all-sleeping passenger cars, heralded as equal to any luxury passenger equipment in the world. Geared for 75 mph service, the GE equipment will operate on an accelerated timetable and reduce the present running

time of 13.5 hours by 90 minutes on the Wellington-Auckland Night Limited Express.

Norway . . . Kvaerner Industries of Norway and GE have entered into a manufacturing associate agreement for the production in Norway of industrial heavy-duty gas turbines. Kvaerner is one of Norway's leading suppliers of heavy equipment to the hydroelectric market. It also has plans for future expansion. Turbines covered in the agreement range from capacities of 6,300 to 54,000 kilowatts, and from 3,500 to 60,000 horsepower. Kvaerner is the seventh manufacturing associate connected with GE's Gas Turbine Department.

Sussex . . . A major intersection on the Trans-Canada Highway here in New Brunswick is one of the best-lighted highway interchanges in North America. That was made possible with the completion recently of the first high-mast installation on the continent using our Lucalox® lighting.



You have to see him to believe him. He runs around with paint brushes in his hands. He draws all over the walls. And he has more designs on his drawing board than he has boards for.

Who is this of which we speak? None other than George "Pecan, Pumpkin, Red Red" Rassman, GE's Textolite artist in residence. Introduced in a grabber of a magazine ad recently, George enjoys recounting the ad episode and its implications for Laminated Products Department, Coshocton, Ohio.

The ad was part of a series of five, which was moved up to run early in the campaign. It shows George in trou-

sers of psychedelic design and color, a purple body shirt, the big leather belt and buckles on his square-toe shoes.

Flanked by copy, George is there in all his glory to stop people.

The accompanying message says our innovator of decorative surfacing is responsible for quite a few triumphs including "perfect complements for all the latest appliance colors, exciting abstracts, woodgrain patterns, original patterns like coach-wood and coffee pecan, and other darling new solid colors."

"We're sort of leading with our

chins when we say this," Red Red Rassman asserts. He explains that people working new design ideas for Textolite have an awareness that customers have been told to expect more zingy decorative surfacing materials in the months ahead. "A lot of the things we've done in our solid color line are in the flavor of the ad. We dared to be different with our product," he says with personal satisfaction.

The department is taking the bold, "we'll show 'em" stance "because we're bound and determined to hang on to leadership in this business." For example, George reports the line of solid colors have just been updated with nine new ones for a total of 51. Reaction, at least from professionals who have seen these just-released shades, is "very exciting," according to Rassman. "They think they're the greatest."

Meanwhile, I.P.D. has just introduced a pattern called Tracery. "It's a filigree design, fine and delicate, yet with detail," adds the industrial design graduate of Pratt Institute. Of course that's not all we're doing, he notes. "We're sort of rearing back to jump into that next quarter and do things in the patterns and woods to measure up to what we're doing in the solid color line."

George Rassman, wasn't always so "hip," at least not his mode of dress. It all came about when the treatment for the ad series swung from "pretty

pictures of your beautiful kitchen or bathroom" to one using more original artwork and copy. George remembers. The result, for Red Red Rassman, was a caricature suggesting today's "mod" approach in the design of decorative surfacing materials.

Now, with mod ads, far-out thinking, and eye-dazzling designs, George hasn't been able to resist playing the role to the hilt. I.P.D.'s designer shucked his business suit for the duds often seen on today's hip young people. "We're trying to live up to our image," he laughs.

Actually, George has been probing people with these newer designs over a period of time. He did some "tongue-in-cheek" work — pretty far-out — and exhibited it in the lobby of the Coshocton plant. "They remind you of the work of the artist who just squirted things around on canvas. That's the flavor. Although it violates all engineering principles, the colors are brilliant, rather arresting," Rassman says. "People wonder what's going on, but they like it," the designer finds.

And if that doesn't prove we're breaking the mold, then consider the significance of the fact that a Miami newspaper took some valuable editorial space to headline the news GE has a bunch of new cocktail, solid colors including martini, sauterne, and light olive.

From Memory

Nela Park, one of the first industrial parks in America, is still going strong after 58 years. Land for it was acquired in 1910 in East Cleveland, Ohio, and buildings on it were occupied in 1913 as the headquarters for the Lamp Department. Even though Edison developed the incandescent lamp, he was not the only one to manufacture and sell it. Many small independent lamp factories had sprung up in and around Cleveland. A consolidation of these small facilities, under GE leadership, took place shortly after 1900. They were grouped into the National Electric Lamp Association, whose initials stand for Nela, the name given to GE's lamp development laboratories and headquarters when they were established.

Making the

* Unplug that 1890 electric fan. Let the 1904 Hotpoint iron cool off. Turn in your 1917 Warren clock. The Smithsonian needs them, together with some other GE housewares of 1919 or earlier vintage, such as a teakettle, pot or tea service, chafing dish or lamp-socket oven. The Smithsonian Institution in Washington is setting up a permanent exhibit of the oldest and newest electric housewares products. Ed Pease of the Housewares Division in Bridgeport sent out a call last summer and was deluged with offers. Yet, he still hasn't located the items listed above. If you have any of them, write him at 1285 Boston Avenue, Bridgeport, and enclose a snapshot if possible. Don't send the fan until he writes you. If your cherished houseware product is one of the missing links, he'll send you the latest model in exchange for it. He's found nine authentic antiques thus far, including a toaster that dates at least as far back as 1909, contributed by Earl N. Turner of Pittsfield who was an engineer before he retired in 1960 after 31 years with GE.

* Schenectady saw him most recently, stepping out of the past, as he sometimes does, to amaze the middle-aged and the elderly that he is still going strong, still a giant of a man at age 84, with shoulders as broad as they remembered back in the 40s, erect as a soldier, convivial, stopping to talk with hourly guys and maybe swinging a slow punch, joking, bantering, his face alight. He's the fellow, straight from Horatio Alger, who started with GE as a messenger boy in 1899 — two years before Teddy Roosevelt became president of the U. S. — and who re-

tired as president of GE 51 years later; "Electric" Charlie Wilson, so christened to avoid confusion with "Engine" Charlie Wilson who was president of General Motors. "Electric" Charlie toured the R&D Center and Building 273 not long ago with his grandson, 14-year old Charles Edward Wilson Pierce.

* Those contract sales people have entered the prison market. Sal Bonasera, contract sales representative of the Boston District, reports that three Massachusetts correctional institutions with 1750 inmates have purchased more than 775 12-inch monochrome TV receivers and continue to acquire them at the rate of about 140 per month. Inmates buy the sets with their own funds and retain the set after leaving the institution. TV receiver models with ear-phone plugs for private listening are used to avoid disturbing others. Gus Gauthier, institutional service director at the Walpole, Mass., institution, says that, "The inmates are more stable with a reduction of security problems, and prisoner morale is improved."

* "My wife's stockings are held up with GE garters," read the headline in a recent ad appearing in the *Wall Street Journal*. We raised our eyebrows until the explanation came. "Bands of clear GE silicone rubber on panty girdles now hold up ladies' hose," ran the expository text. "They cling comfortably. Without squeezing. And their elasticity lasts indefinitely. Compatible with natural and synthetic fibers, there are GE silicones for everything from fabric conveyor belts to carpet backing."

**HE'S EXPECTED TO
KEEP PRODUCTION HIGH,
TO MEET HIS BUDGET,
TO WEAR A NICE WHITE
SHIRT, TO RUN A CLEAN
SAFE SHOP, and TO HAVE
FEW GRIEVANCES.
THANK GOODNESS, HE
USUALLY MANAGES TO
BRING THIS OFF, BUT HE
NEEDS ALL THE HELP
HE CAN GET. HE'S
A G E FOREMAN.**

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