

# THE CAMPUS

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THE CAMPUS

Thursday, March 14, 1957

## New Graduate Must Adjust to Industry

### Ingenuity and Teamwork Important for Success

By Donald Oakley

Industry today is short of engineers because of its tremendous growth. An engineer is a versatile man by training; he can fill so many different niches in industry that he is in demand for long range planning in jobs that can cover practically every branch of sales, production and research. Engineers are trained to think clearly and analytically, and hence are potentially good stock for career development into higher management positions.

Getting you to a higher position is a goal you and your employer share. Your industry, ingenuity and teamwork will help you both to succeed in this common goal. Your employer wants to promote you, give you respect, position and remuneration. It is not his goal to keep you in a low grade position without advancement. This is sometimes important to remember when you do not become a top supervisor overnight. He wants you to advance, but most of it is up to you.

These are some observations which I pass on, having learned them most painfully:

1. The sheepskin means you passed. Bury it until you become president. Try to keep this glowing achievement a secret. Your associates will be able to tell whether or not college did you any good without you telling them.

2. Joe, the lowly workman next to you probably could have passed a lot of your college work if he had the chance. He feels slightly inferior ("out of the fraternity"). Keep your secret and work sincerely with him. He'll break his back to help you in most cases, and teach you basic process "savvy" not covered by the sheepskin. These make equipment and processes work even when double integrals won't. You are going to have to know these "things" en route to the big job.

3. Learn everything you can about your company, its people, its products, the details of the job, who to see to get information and action. Do more than is needed, know more than is needed; it's one of the surest ways to stand out from the crowd and convince the boss he's

*Donald Oakley joined Metal and Thermit Corporation in 1947 to begin production on metalloorganic compounds and thereafter assumed the positions of plant manager and production manager. He is currently technical adviser to the president.*

*Mr. Oakley, 38 years old, received his masters in chemical engineering in 1941 at Columbia and worked for seven years with duPont as a research chemist and development engineer.*

under-paying you. Remember that only when he is convinced that you are underpaid do you get a raise.

4. No matter how much of a genius a man is, he has only two hands and generally a limited amount of capital. Your big problem lies in getting many hands to work with you, and many dollars risked in your wonderful new schemes. You must be a salesman of the highest order to do this. You must learn how to inspire genuine teamwork and enthusiasm and competence.

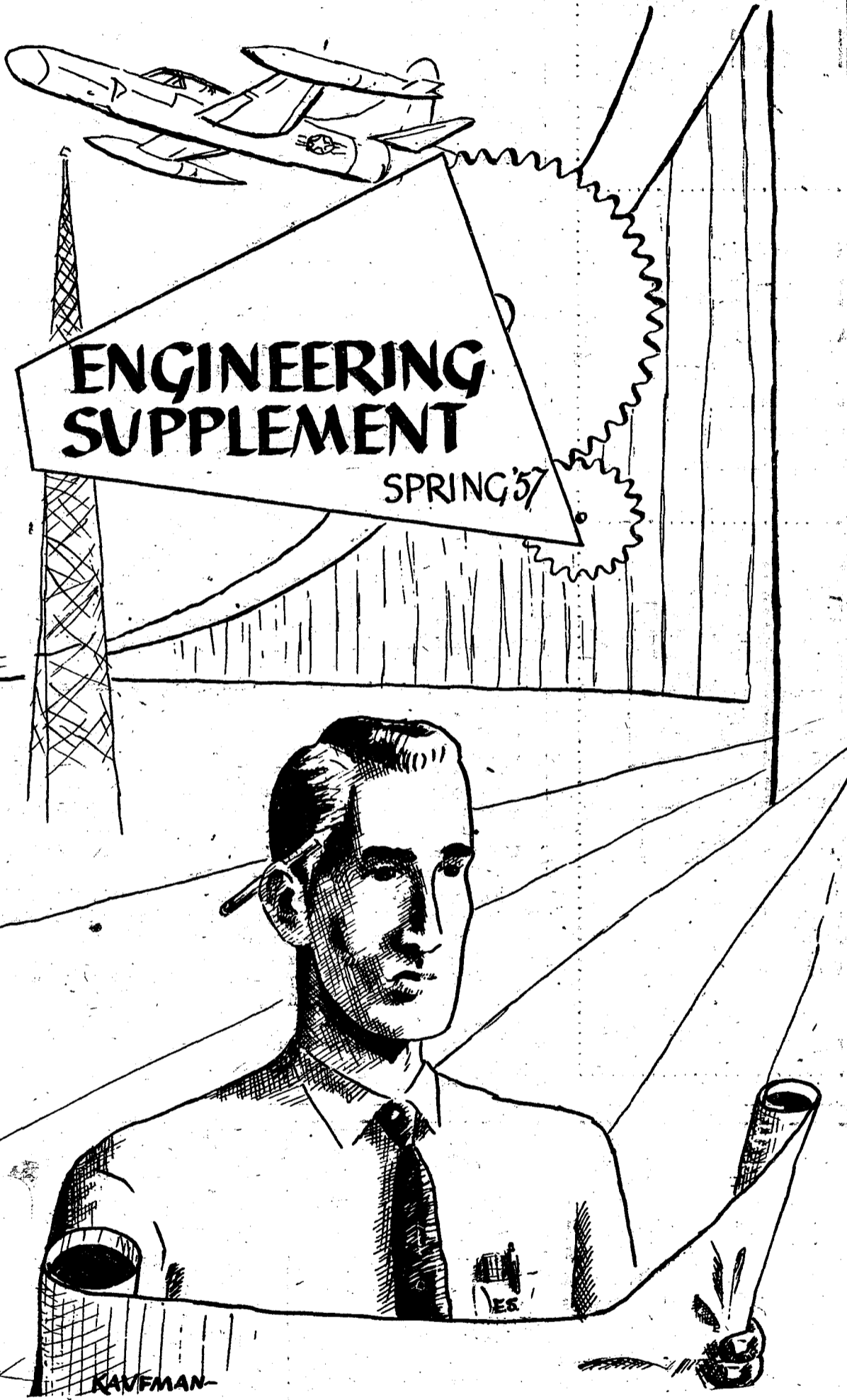
You must communicate your ideas in direct, brief, simple language in terms of profits, and investment requirements to those who control the appropriation purse strings. How much money will be needed to earn the profit you claim is the yardstick they use to sort sheep from goats. Is the proposal one that the company can handle in terms of its skills, its financial resources, and the market available for the product or process?

Companies hire scientists and engineers to make bigger profits, not to study and explore scientific curiosities ad infinitum. Your discoveries have to be translated into actual operation before they turn to profit. Thus, failure to plan carefully, to sell your idea, to get the money to try it, to enthuse others on the development, or to expedite the final job, is just like an uncollected milk bill wherein everyone from the bull to the consumer had the pleasure but there is no profit yet. Only the plays that go across the goal line count!

5. Despite great efforts there just isn't time nor money enough in the world to build the ideal plant or develop the ideal process. Dive bombers in the blueprint stage never sank a battleship. Time and fortunes are wasted by engineers in poorly planned programs that gild the lilly, study the nonessential, and lack the courage and competence to take sound chances to put across an 80% perfect plant one or two years ahead of Milktoast Inc. The extra profits of early operation in many cases will render third decimal point design time ridiculous. Judgement is involved here, particularly where very high unit investments are involved.

6. Analyze yourself occasionally. Are you a real person? Are you being a real guy to the men around you, or are you bucking solely for yours truly? Can you be above reproach even when no one is watching? Can you stand up for your principles intelligently and fairly, and have real guts to defend associates when a good alibi would put you in clover? Do you feel compelled to be a good engineer because you must be one to express yourself and contribute to our civilization? Are you

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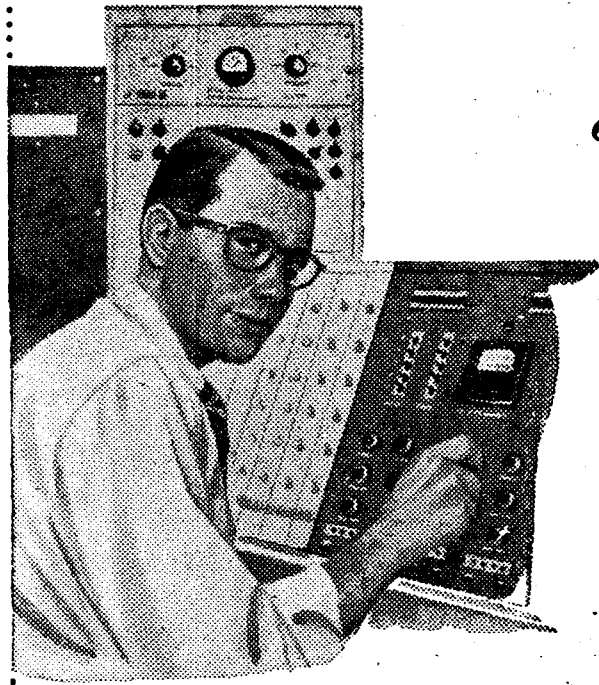


### A Word About This Supplement . . .

This supplement, the first of its kind at the College, is designed primarily to present the engineering student with some of the alternatives he will face in his senior year (or when he seeks summer employment in his field). It is by no means an attempt to survey the entire field, but rather to acquaint the student with some opportunities he may have overlooked.

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We'd like to explain the engineering career advantages to YOU in becoming a

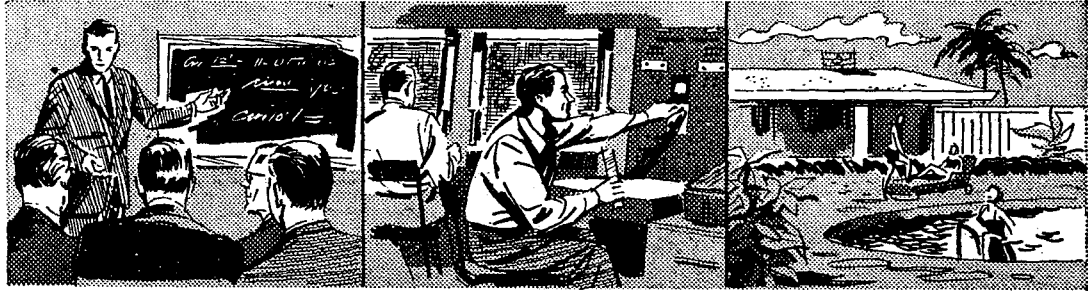
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# Engineering Writing Discussed as Career

## Most Openings Are With Temp Firms and Trade Magazines

By Robert Lockwood

Speaking from the prejudiced position of one engaged in the field, technical writing is one of the most interesting and challenging careers an engineer can enter. It is interesting because it involves a wide variety of experiences. It is challenging because as a writer you will constantly be working on the frontier of new ideas in a rapidly expanding profession.

Good writing is, of course, basic to all aspects of engineering from management to research. From the inception of an engineering concept to its final application in the production of some commodity be it a plastic comb or a multi-million dollar super highway, the clear communication of ideas by the written word is vital. However, we will confine our comments to the field of writing for publication in technological journalism, if you are inclined to big words.

Opportunities in this field fall into two general categories. One is writing for commercial periodic magazines and the other is writing for major industrial corporations who have a need to communicate about their product to the consumer. By this, I do not mean advertising or promotional literature such as is regularly encountered in consumer magazines, but rather specifications for materials, operational manuals and descriptions of product applications.

It is not generally realized, but there are thousands of so-called trade magazines (magazines aimed at a specific type of reader market to the advertiser, with limited circulations and containing highly technical editorial matter) throughout the United States. Many of these are aimed specifically at engineers. The writers and editors for these publications with few exceptions are engineers. They must be since in their reporting and writing they must be able to comprehend and evaluate significant facets of the projects and trends about which they report. Such evaluation primarily requires a solid technical background.

Technical writers and editors by the nature of their job must travel. They go to conventions, technical conferences and generally keep in contact with the leaders of their field so that as new ideas are developed they are the first to know. The profession is one requiring a liking for meeting and talking with people. As a technical writer you will do a lot of it.

Thus far, I have briefly described what you as an engineer would do as a technical writer. Obviously a capacity for clear lucid prose is also a requirement. As a chronicler of the engineering field you will be scanning the entire scene and passing on to your reader a condensed image of what you have observed. To do so effectively the proper choice of words and word pictures is essential. It is not enough that the words and ideas are there. They must be easily understood and accurately portray the concepts you are presenting. If a reader has to work too hard, mining the nuggets out of your mountain of words, chances are he won't.

There are many opportunities for engineers in the writing field. Pay is on a par with other fields open to engineers such as management, design, research, etc. And, as in the other areas of professional practice there is a shortage of engineering writers also. Chances for advancement are good for the capable engineer-writer. Many have advanced to the top echelon of the technical publications field and some own their own publishing companies.

Popular myths to the contrary, engineers make good writers. The qualities of imagination and clear analytical thinking are just as essential for writing as for engineering.

Robert Lockwood is the Executive Editor of "Civil Engineering," the national organ of the American Society of Civil Engineers. He graduated from the College with a bachelor's degree in Civil Engineering in 1948. He specialized in sanitary engineering and has held positions with Malcolm Pirnie Engineering and later with the consulting firm of Robert W. Sawyer.

### 225 Jan. '57 Graduates

The engineering class of January 1957 numbered 225 students. The electrical engineers, numbering 80, were the largest group among the graduates. The civil engineers were the smallest with 38. The remainder consisted of 40 chemical engineers and 60 mechanical engineers.

### Interview Tips

Walk into your interview neatly dressed and greet your interviewer with a firm handshake. Look him in the eye and don't evade his questions. Don't attempt to excuse your shortcomings. Above all be on time.

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# Sales Engineering—Opportunity, Pitfall?

## Emphasis May be on Technical Competence or Salesmanship

By A. L. Morris

For the engineering graduate, regardless of his field of specialty, sales engineering unquestionably offers great opportunity and challenge. But there are "ifs" to this statement—those which relate to the type of selling he considers as a career, and those which center around the personal desires and characteristics of the graduate himself.

Let's consider for a moment the opportunities and their relation to the practice of engineering. In today's manpower market there is certainly no lack of need for sales engineers in every industry and there is unparalleled opportunity for the graduate. In many cases the job requirement for engineering knowledge is entirely secondary—particularly where marketing of relatively standard, mass-produced units is involved.

Here, in general terms, is sound opportunity for the engineer who feels his training and profession are but a means to an end. But the graduate who is proud of his profession and who wants to remain an engineer first, last and always had better avoid this area of selling like the plague. For he will, of necessity, become primarily a salesman and his technical competence will diminish rather than grow.

It is a reasonably common misconception that this is typical of all sales work for the engineer. Nothing could be further from the truth. At the opposite end of the scale, for instance, is the consulting engineer. His product is his knowledge and his engineering ability to design a plant to solve a problem for a client. He is essentially performing a service on a completely professional basis, and yet he too must sell this service. He must, of course, sell within the framework of proper professional ethics and behavior, but he is "selling" nevertheless. Here then, is a complete and thorough mixture of high-level, professional selling and engineering stature of the first order.

Within private industry there is this same opportunity for sales engineering with the emphasis on engineering competence rather than salesmanship. Those companies, and there are many, whose primary interest is their ability to engineer a job or solve a client's problem can offer to the graduate a challenging opportunity to practice his profession and build his technical stature as a sales engineer.

What characteristics should the potential sales engineer have? Some are obvious. The graduate who feels most at home in the laboratory—who is happy with the challenge of new technical problems but never with new faces—had better head for other pastures.

For the sales engineer deals essentially with people rather than things, and while he need bear little resemblance to the super-salesman he must have some skill in human relations.

He must have some degree of initiative and independence too. Freedom to plan his own work with minimum supervision must appeal to him. He won't be asked to punch a time clock and he must be capable of feeling a sense of responsibility to his company, his customers and himself without prodding from up the line.

Variety in his work must also hold appeal for him. For the man who is uncomfortable in a new situation or who needs a clearly defined pattern of action, sales engineering is probably not advisable. Conversely, for the man who thrives on variety and the challenge of rapid change, there will be great compensation and satisfaction.

In brief, the successful sales engineer must be attracted by the opportunity for freedom of action, initiative, variety, creative planning and competitive challenge his job will offer. And he must have a reasonable liking for an understanding of people. With these characteristics he can, and almost automatically does, practice his profession as a creative individual and build substantial stature as an expert in his chosen field.

As a matter of practical advice to those who are attracted to sales engineering, I would offer these suggestions. First, establish in your own mind the kind of selling you want to do. Is it the sale of off-the-shelf, mass-produced products—must it be at the maximum level of professionalism—or somewhere in between? Once you have the answer, measure your opportunities by this yardstick. And check the companies from whom you have offers in every way you can. Talk to their people—as broad a cross section as possible. Discuss their technical standing with your professors and others experienced in the field. Make sure their concept of sales matches yours.

For, while a sales career for the engineer can be infinitely rewarding to him, it can be equally frustrating if he is miscast in his role. And remember too, that despite the desperate need for engineers today, the corporations can better afford a mistake than the graduate.

A. L. Morris is Director of Company Relations for Dorr-Oliver Incorporated. In this capacity he has the overall responsibility for the personnel and public relations functions of the world-wide engineering organization. He is particularly well acquainted with the problems and opportunities in sales engineering, the majority of his twenty years of experience with the company having been with work attached to the sales department.

# Get Interviews With Concerns Not Scheduled

Although a great opportunity exists for reaching companies through the College's placement office, careful consideration should be given to contacting directly firms not scheduled to visit the campus.

It is important to remember that the same factors which contribute to the successful interview on campus apply equally well to this new situation. As always the key for success is to "be yourself."

The fact that many new and challenging jobs just on the fringe of actual engineering practice have been created, and are gaining in popularity, is something else which must be considered when taking such an interview. A prime qualification for these jobs, which usually require a good deal of contact with people, is an ability to handle oneself in a situation which one does not usually encounter.

The interview in the company office is, for the student, such a situation. The impression he gives under these conditions will largely determine whether he will be considered a "hot prospect" by the company.

Interview procedures vary from company to company. Many times it will merely be required that an application be filed. Other times the interview will become a "chat."

It is at this type of interview that the personality of the student will be readily revealed. It is recognized that this factor, intangible as it may be, is of great importance in communicating a favorable impression. It is impossible to state categorically the components of the "good" personality.

# Starting Salaries: Jan '57 Tech Class\*

DEGREE	NUMBER	MONTHLY AVERAGE	RANGE—MID 50%	NUMBER IN CIVIL SERVICE
Chemical	29	\$448	\$435-465	0
Civil	19	404	373-445	10
Electrical	47	465	450-481	1
Mechanical	36	467	445-480	0
ALL	131	450	—	11

\*One-half complete.

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# Jobs With Small and Large Concerns Success, Size Are Proportional; Specialization Benefits Cited

By Douglas Hill

If you want to do big things, join a big company. Much has been said about the security of working with a large concern; it has been less frequently pointed out that size means opportunity.

Success and size are directly proportional. The trend to bigness is one of the economical facts of life in 1957. Successful small companies become big. The big ones continue to thrive on jobs the small boys cannot handle. The continued growth of the bigs and the merger of smalls into bigs has often been limited only by legislation.

If you wish to do progressive work, there is no longer a real choice to be made between being a little fish in a big pond or a big fish in a little pond. Little ponds are obsolescent.

### Important Jobs Require Facilities of Large Organizations

Most of the important things which are being done in the business and technological fields require large organizations simply because they alone have the necessary facilities. Can the small company launch a satellite? Or conceive, develop, and build a modern electronic computing machine? Or build an atomic power plant? Or even match the large companies in the more prosaic jobs of manufacturing automobiles or selling soap? Only the large companies can afford the research staffs and laboratories, the electronic computers, the wind tunnels, the specialized manufacturing equipment. Only the large organizations can be sure of the degree of economic stability necessary to support such facilities over a long period of time.

To contribute to one of these projects, a man has to specialize. In fact, to work for a living a man has to specialize. The so-called generalist is only a species of specialist. His specialty is that of a juggler, that is, keeping a number of balls in the air at one time. Sheer versatility is no doubt enviable. However, the same talent, concentrated on a specific objective, is much more likely to advance the state of the art, enhance the employer's income, and further your career.

### Narrow Your Scope Sufficiently To Become Expert in Field

Since anyone who works specializes, it is well to recognize this at the outset and to choose an employer who will (1) provide sufficient alternatives to enable you to choose a specialty in which you are talented, and (2) narrow your scope sufficiently so that you can become expert in your field.

A good company will enable you to find your job and do it right. If you are not sure what your thought is when you start work, there may be an orientation program which will help you find it. Whether or not such a program has been formalized, a greater variety of paths are open to you when you start and as you develop.

A wag has defined a specialist as the man who knows more and more about less and less until he reaches the point where he knows everything about nothing. The significant part of this definition is that the specialist reaches this state of ignorance only in the limiting case. Can the same be said for the generalist?

The process of specialization insures good training. From the start, you will be work-

ing for experts. Working for a succession of capable men is likely to develop you more than working for the same period of time for one man, no matter how talented he may be. A single teacher may teach all the courses in grade school; in college, a specialized staff is needed.

### Rungs on "Ladder of Success" Closer Together

"The Ladder of Success" is a tired phrase, but perhaps a useful analogy to those who are interested in climbing. In the big company, the ladder obviously has more rungs in it. But they are closer together; you can climb gradually. In fact, there may be more than one ladder. In the big company, you need not wait for your boss to die before going up a rung. And, of course, the ladder reaches up higher. A department head's job in a large company may well require greater responsibility in men, money, and material, than that of the president of a small company. What will you have, the president of General Motors, or the corner candy store?

Certainly there are a maze of rungs at the bottom. Certainly, a man can get lost at the bottom of a large organization. But the good man can find himself and his future with the big company.

*Douglas Hill came to Grumman Aircraft after graduating from the Rensselaer Polytechnic Institute in 1950. He designed air frame structures and worked with the stress analysis group. Later he proceeded to do research in the guided missiles program. For the last three years Mr. Hill has been director of personnel. He is presently enrolled at Columbia for courses leading to an M.S. in industrial engineering.*

# Notes Sense of Belonging, More Responsibility in Small Firm

By Stuart Stern

There are many considerations to weigh when selecting a company for a permanent job affiliation. Certain tangibles are more easily analyzed and are usually considered first. These are:

- 1) salary, (2) benefits, (3) plant location, (4) job description (designs, production, etc.)

Another factor which lends itself to measurement is the size of the company in which you are interested. A large salary is, of course, desirable and a small one undesirable, but can the same be said of a big company compared with a small company? Most of you will work for large companies simply because they employ more engineers. Does this again make it more desirable? The question can be decided only by the individual engineer. Some years ago when I was faced with the same problem I selected a small company. There were many reasons which pushed me in that direction and many more which have kept me there.

Probably the most persuasive argument is the fear of getting lost in a big company. When you work for a company having only a few hundred employees and fewer engineers, there is little chance of hiding, let alone getting lost. Your performance is usually known directly by top management officials. Performance reports do not have to filter up through channels in order to be brought to the attention of your bosses.

In many cases, perhaps during your first

*Stuart Stern has served as supervisor of the chemical engineering section of the Wyssmont Company since 1950 when he was graduated from the Polytechnic Institute of Brooklyn with a bachelors' degree in Chemical Engineering. He has written several articles on drying processes for engineering publications and for the Encyclopedia Americana.*

years of employment, you may be called upon to work directly under the personal supervision of top management. This, of course, is a very demanding experience for a fellow fresh from school. You will find it hard . . . very hard. However, you will be sure that any merit your work will come to the direct attention of management.

### Chance to Assume Responsibility Comes Sooner in Small Company

Because you are one among a smaller group, the chance to assume responsibility comes earlier in your career in a small company than it would in a large company. Every starting engineer is eyed right from the very beginning as a potential key man in the organization. Very rarely are there any formal executive training programs in a small organization. However, there are a great many jobs to be done in any company and in a small company not only specialists are available, so that every job is expected to assume several jobs. You may design, trouble shoot an installation, buy equipment, sell your company's product or service, run experiments in the laboratory, supervise production, or write advertising and publicity releases in the week.

One important and very satisfying aspect of working for a small company is the feeling of belonging. There is an unequal opportunity to get an overall view of company's aims and to know how your work fits into the overall picture. This certainly contributes to a feeling of accomplishment which we all find so necessary. Because the organization is small the success or failure of any project has an effect on the entire company. This tends to produce a high degree of cooperation among fellow engineers. There is always the knowledge that you can count on the fellow to you. He is, in fact, usually anxious to help. There is no doubt that salaries depend not only on personal ability, but also on the general health of the company. There is, therefore, a general effort aimed at the well-being of the company, rather than the jealous rivalry to see which dog will get the bone. This makes for very little "office" or cliques in small companies, and people who have trouble getting along with others soon leave.

### Low Budgets Can Be Frustrating But Success Is Sweet

An ability to improvise is an invaluable asset to an engineer in a small company. Budgets for experimental work or equipment replacement are not usually large. It is, therefore, required that the engineer use what he has available or work with expensive equipment. It can sometimes be frustrating, but if you push hard enough the salt of your sweat can be very sweet when the job is done successfully.

There is always the big question of "Will I make out financially in a small company?" During the early years you can do as well, and if you can accept responsibility a little better than your fellow graduates working for big outfits. Vice-presidents of other positions paying salaries of \$25,000 or greater, which a few people do reach in large companies, are rarely to be found in a small company. However, the opportunity to become a partner or own a good share of the business through profit sharing usually presents itself in a small company.

On the other side of the ledger, you have the lack of the stability which is offered by a large company or the prestige of an industrial giant, but if you select carefully and you think you have found a small organization which has growth potential and is respected in its field, you will not necessarily be at a disadvantage on these counts.

I know the decision was right for me. You are another individual and must decide for yourself.

# Keen Competition Faced By Summer Job Seekers

By Ivan Samuels

Those who are looking for summer employment must bear several points in mind. The most important of which is that, from the company's standpoint, summer employment is part of their recruiting program. It is expected that you are considering a permanent position with the firm which you approach for summer work.

In making application, the fact that there is no shortage of summer applicants puts you in a situation which is the reverse of what you can expect upon graduation. Companies can be, and are, very selective from a standpoint of academic standing, leadership ability, experience, potential, and all the other factors which are evaluated in the hiring process. This situation calls for a most intensive and extensive job seeking campaign.

If at all possible, willingness to travel is a tremendous asset (in addition to being a wonderful opportunity). Most firms with summer programs are not located in the New York Metropolitan area. Aside from the work experience, your travel and independence (or rather dependence upon yourself) is an excellent step toward maturation and an aid in learning how to shoulder responsibility.

Pay scales are good. However, in locating away from home you must be prepared to spend a good part of your salary on living expenses. More important than the money is the job experience you will obtain. Summer work programs are broken down roughly into two categories. One is a very well planned program which usually gives an excellent idea of the industry and the particu-

lar company (or division of a company) without actually getting into deeply technical work situations. This program is strictly for orientation. The other type of summer employment is a work program where you are placed alongside experienced personnel and actually become involved in engineering duties in your particular field.

Both programs have merit. If you are not too sure of your job objective, though you know the general field, then the planned program type of summer work is recommended. (Of course, you must have made a decision as to general field, e.g., aeronautics, petroleum, pharmaceuticals, steel, electronics, etc., or any combination.)

Once in the job, make the most of it. Don't hesitate to ask questions. Investigate your scope of interest thoroughly. Find out what career potential exists in the company. You will get out of the experience only as much as you put into it. Summer work will also give you a chance to show the company what you can do and may thereby secure for you a position after graduation.

*Ivan Samuels recently became assistant director of the College's placement office. After being graduated from the College in 1953 with a Bachelor of Arts degree he served as a lieutenant (j.g.) in the Navy. He then worked as a branch manager for the Winton Churchill Corporation in Petersburg, Virginia and Greensboro, North Carolina.*



# Women Called 'Brainpower Reserve'

## Engineer Shortage Opens New Fields to Women

By Cecile Froehlich

I am always surprised when people still come and ask me to speak or write about opportunities for women in Engineering. Does not everybody know by now that there is a critical shortage of good engineers, that there are not enough men to fill the jobs, that a person has to be smart to take up engineering, that women (to say the least) are every bit as smart as men, that there are more women in this world than men?

Yes, it is true, people generally have heard about the engineering shortage, but too many think of it as a passing phenomenon (due to defense contracts, maybe) and don't understand its basic sociological significance.

They do not realize that society is undergoing a revolutionary change due to rapid technological developments brought about by the advent of the vacuum tube and other electronic devices. These inventions, which have made possible the "automation" of machinery and computers on a heretofore unthinkable scale are more and more reducing the importance of physical strength and of manual and lowgrade intellectual skills in the job market. Many time-honored occupations are becoming obsolete whereas the number of engineers needed will increase at an ever-growing rate.

There is one almost untapped reserve of brainpower in our country to fill this need: women.

The situation is more and more understood by people in responsible positions. Employers gladly hire women engineers at equal salaries with men (if they can find any!). The accredited engineering colleges (with few exceptions) accept girls; male students consider them as equals in their engineering societies, elect them as officers, fight for their acceptance in engineering honor societies. Engineering faculties accept women in their midst (somewhat grudgingly); engineering teachers who have girl students in their classes say that they come just like the boys in all sizes: poor, fair, excellent.

Why is it then that in spite of all the recent publicity about shortages in engineering which has attracted a considerable number of males (qualified or otherwise) to our engineering schools the enrollment of women is still less than one percent? There certainly must be many more potential women engineers in the population. What is it that keeps them out of this promising profession?

I am afraid the answer is simple: "Prejudice." People think of engineering as a "male" profession, partly from habit and partly because they associate the word "engineer" with an engine man, an operator of grimy heavy machinery.

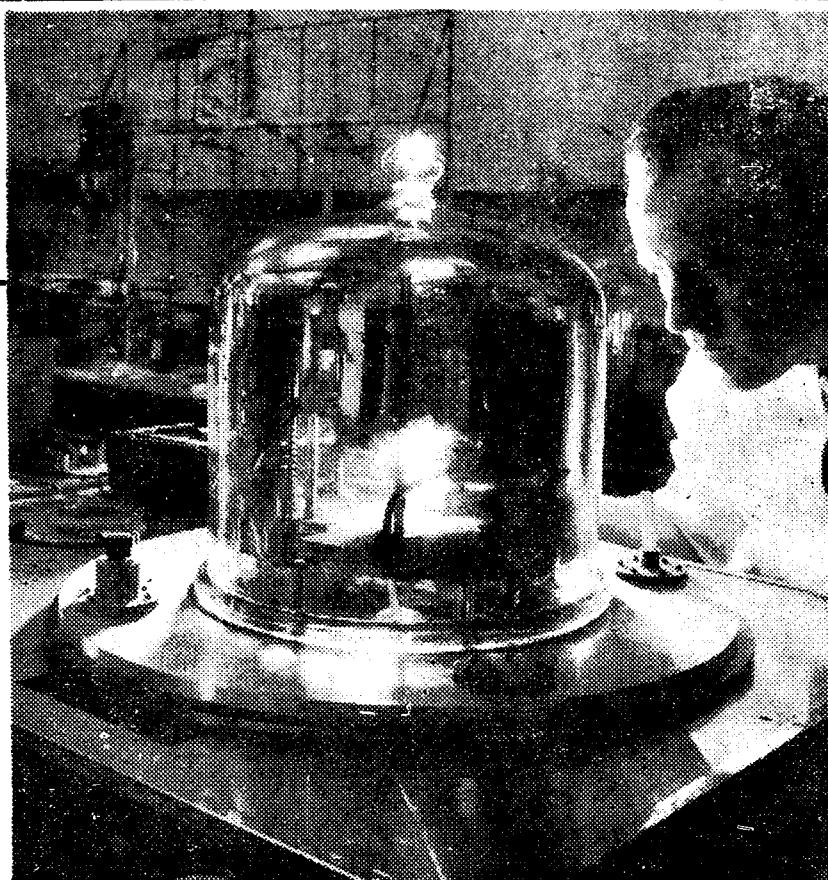
However, professional engineering in most of its aspects is intellectual and requires no heavy or dirty manual labor. (Come and have a look at our measurements, electronics or servomechanism labs for example!)

By the same token a modern engineering education is not a narrow technician's training but as broad and fine and modern an education as you can get (even regardless of its value as a preparation for a professional career).

This world in which we live is unlike the world of any other period. It is no empty phrase to say that the survival of humanity and civilization during the next decades will depend on four central issues: food, water, energy, education. The problems posed by these four issues are all interlinked and dependent on each other. For their solution society will be in need of an ever-increasing number of engineers, i.e. men and women, trained in honest and critical evaluation of facts with a background that enables them to interpret and direct the trend of technological developments, to anticipate the hopeful and the dangerous sociological problems which they might bring about and to understand their impact on humanity.

*Dr. Cecile Froehlich is the chairman of the Department of Electrical Engineering at the College. She studied at the Girl's Classical College in Cologne and the University of Berlin. She also has received doctorates from the University of Bonn in physics, mathematics and philosophy.*

*Dr. Froehlich came to the college as an instructor in electrical engineering in 1942 and succeeded to the department chairmanship in 1955.*



A Bell Telephone Laboratories technician performs one of the operations in the fabrication of a new germanium transistor. Here, electrical contacts are made to the germanium by vaporizing a metal onto the surface of the material. Later wire leads will be attached. The germanium crystal is held in a vise under a high vacuum in the jar. This technique has been used in making many laboratory models of new transistors. These models represent the latest development in transistors applied to the very high frequency range.

## Letter Decides If an Interview Will Be Given

The fundamental consideration and guiding point to remember when writing a letter of application is that the letter you submit will probably be the deciding factor in determining whether or not you will be invited to an interview.

It is fairly obvious that a letter which is crisp, neat and concise will go much further toward obtaining an interview than one which is sloppily penciled on a memo paper or even one neatly written, but two pages long in which no attempt is made to classify the information.

The letter is the first impression a prospective employer gets of you. It and your application will help him decide whether further contact is worth his time. A good letter is one which makes a very positive impression on the recipient.

When writing to a company requesting an interview it is a good idea to include a letter of transmittal and a resume. The cover letter should be short—no more than two or three paragraphs—and should state, as simply as possible, which position you are applying for and (if you wish) why.

A transcript of grades should not be enclosed unless your marks are outstanding or the company requests it.

A resume is important because it helps the reader picture the applicant. A photo submitted with the resume helps dispel many stereotypes in the reader's mind. It will also help your application to stand out from most of the others: less than ten per cent of engineering job (Continued on Page E-7)

## Electronics Offers New Opportunities

In this age of electronic miracles, there are few areas of science and technology that offer greater opportunity to the young scientist or engineer than the field of communications.

The electronic age began just 50 years ago with the invention of the three-element electronic vacuum tube by Lee deForest. In the intervening half century, science and technology have produced a mature and sophisticated communications art which serves the nation efficiently and economically in peace and in war, and which provides employment for millions of people.

The electronic research of gifted scientists and engineers during the past 50 years has created radio and television broadcasting, sound pictures, and the faithful recording and reproduction of speech and music.

In recent years this research and development has also made large and invaluable contributions to our military strength through the instrumentation of modern weapons systems. Radar, accurate bombing systems, guided missiles, and navigation systems for planes and ships are some of the military products of the electronic art.

With this large area of achievement, there is still opportunity for further progress.

Because science is an area in which the seeds of the future lie in (Continued on Page E-8)

## 28 Women Enrolled This Term in Tech

At present 28 women engineers are enrolled in the School of Technology. The majority, thirteen, are upper freshmen. Only one woman can graduate from the Tech School this June.

Since September 1952 ten females have successfully completed the tech curriculum. In February 1954, two women graduated. In September 1954, February 55, and September 1955 no women were graduated. A September graduation means completion of required work in summer school. One woman graduated in each of the other terms in the 1952-56 period.

## SENIOR ENGINEERING and PHYSICS STUDENTS

CONTACT OUR INTERVIEWERS ON YOUR CAMPUS

MAY 6th

BEFORE YOU SETTLE ON YOUR CAREERS

## NEW YORK SHIPBUILDING CORP.

CAMDEN 1, N. J.

don't jump too soon

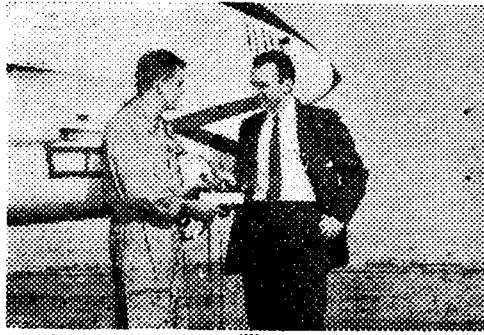


Get the full story from Olin Mathieson

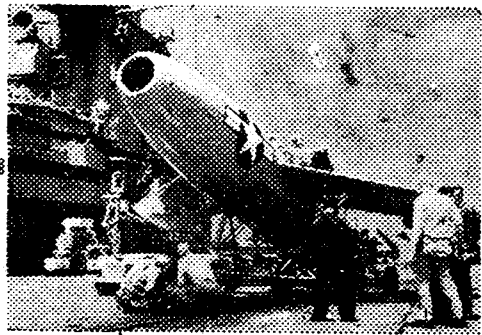
About to take the plunge into the business and professional world? See the man from Olin Mathieson for the full story on how that company offers opportunity unlimited in the fields of metals, chemicals, packaging and high energy fuels and propellants.

Write to R. C. Thompson  
Olin Mathieson Chemical Corporation

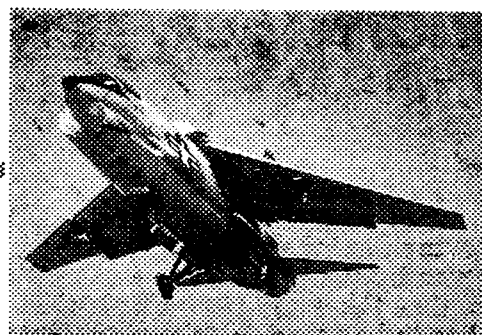
460 Park Avenue, New York, N. Y.



Flight Test Engineer



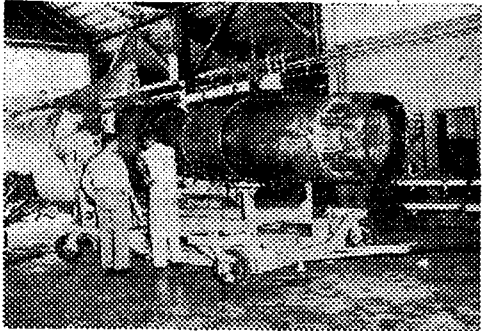
Project Engineer, Missiles



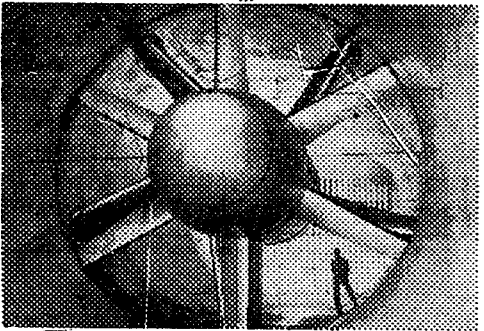
Project Engineer, Fighters



Electronics Engineer



Propulsion Engineer



Aerodynamics Engineer

*In which one of these fields of Engineering would you do your best work?*



FOLLOW THE LEAD OF CHARLES BIXLER  
B.S.M.E., CLASS OF '51

**Chance Vought offers the graduate engineer a wide range of opportunity**

CHUCK BIXLER knows how *variety* helps the young engineer find a career field that suits him best. In Chance Vought's missile and fighter activities, he discovered every specialty he'd considered in school. He found others he hadn't known existed. Vought measured him for all these fields, and together they selected a perfect fit: structures and preliminary design work, where Chuck has advanced to lead engineer in about five years time. The same variety can be found at Vought by graduates from every field of academic training. Electrical, civil, mechanical and aeronautical engineers alike find a rich selection of avenues for growth. Moreover, they find the guidance they need, to make a wise choice. Chuck, for example, was selected for Chance Vought's nine-month program of job rotation. After working in six different groups he gained a backlog of experience

that has since proved invaluable. Frank counseling, a versatile, growing company — everything that helped Chuck can help *you*. As a starter, ask our campus representative to point out the specialties you're qualified to enter. (You'll be surprised at the length of the list.) Your Placement Office can arrange your appointment. Or you may write for immediate information to Mr. C. A. Besio, Supervisor, Engineering Personnel Dept. CN-3, Chance Vought Aircraft, Incorporated, Dallas, Texas.

Our representative will be in your Placement Office, *Monday, March 18*, to describe firsthand Chance Vought's program for young engineers. Reserve time for your own interview by making your appointment today.

**CHANCE**  
**VOUGHT AIRCRAFT**  
INCORPORATED · DALLAS, TEXAS

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## 10 Companies Visit Campus in 1952

Ten companies visited the campus during the fall of 1952 in search of graduating seniors, mostly for engineering positions. This was the first time that any concern had ever visited the College for this purpose.

This term 148 companies are scheduled to hold interviews on the campus. In addition to seeking graduating engineers many are offering, for the first time, a summer job program on the undergraduate level.

## Tech School Graduates 8,520 Since Its Inception in 1921

Since the School of Technology first opened in 1921, it has graduated a total of 8520 engineers. Evidence of the rapid growth of the engineering profession during the past years is afforded by the fact that in the time interval 1921 to 1945 3151 degrees were granted by the Tech School compared to the twelve-year period from 1945 to the present in which 5369 students received degrees.

The rise in enrollment reflected by the after-1945 statistics is due, according to Registrar Robert L. Taylor, first to the influx of veterans after World War II, and second to the recent increases in technological development.

## Letter Decides

(Continued from Page E-5)

applicants submit photos unless specifically requested to do so.

The resume should be classified into an easy-to-read form (e.g. personal data, education, experience, references). Careful judgment should be utilized so as to exclude extraneous matter. This includes the details of extra-curricular activities in high school or descriptions of the work you did as a busboy or soda-jerk. However, be sure to include details of any technical jobs you may have had.

## ENGINEERS AND SCIENTISTS

We are seeking recent graduates with **CREATIVE ABILITY** and **NEW IDEAS** to work on our many diversified research projects. If you are looking for **IDEAL WORKING CONDITIONS** and an unusual opportunity for **PROFESSIONAL GROWTH**, you should consider the opportunities available at **ARMOUR RESEARCH FOUNDATION**.

A few areas of particular interest are:

### ELECTRICAL ENGINEERS

Radio and Radar  
Computer Development  
Instrumentation  
Electronic Components  
Control Systems

### MECHANICAL ENGINEERS

Combustion Research  
Heat Transfer  
Stress Analysis  
Thermodynamics  
Weapon Systems Evaluation

### METALLURGISTS

Physical  
Powder  
Foundry  
Welding and Brazing

### PHYSICISTS

Solid State  
Acoustics  
Optics  
Nuclear

### CHEMISTS

Fine Particles  
Analytical  
Propellant  
Organic and Polymer  
Physical

Some advantages of employment at **ARMOUR RESEARCH** include Tuition Free Graduate Study, generous Relocation Allowance, as well as Competitive Salaries and Excellent Facilities.

For further information see the literature on file at the Engineering Placement Office and arrange to talk with our representative

**APRIL 8th**

when he will visit City College,

Or Write:

J. A. METZGER

**ARMOUR RESEARCH FOUNDATION**  
of Illinois Institute  
of Technology

10 WEST 35th STREET  
CHICAGO 16, ILLINOIS

# ENGINEERING OPPORTUNITIES AT MELPAR TO BE DISCUSSED ON CAMPUS SOON

## One Of Nation's Leading Electronic R & D Companies To Interview Engineering, Physics, Math Majors

Unusual opportunities for rapid professional growth and advancement at Melpar, Inc., one of the Nation's leading electronic research and development organizations, will be detailed to interested engineering, math and physics majors in a series of interviews to be held on campus soon.

A subsidiary of Westinghouse Air Brake Company, Melpar is now engaged in a program of expansion involving substantial increases in staff and facilities.

Despite Melpar's rapid expansion, the highest standards of personnel selection are constantly maintained. This selective process has produced a vigorous organization of great experience and competence in all fields of electronics.

Younger men who wish to apply their engineering knowledge to problems of a varied and challenging nature are required to fill important posts in Melpar project groups. Plan to interview the Melpar representative when he visits your campus.

## Fine Living Conditions Offered By Melpar Locales

Melpar's R & D operations are centered near and in Washington, D. C. and Boston, Mass. Both are rich in cultural and educational facilities. The Northern Virginia area in which Melpar's headquarters laboratory is located is within easy driving range of beaches, lakes, mountains, as well as other recreational and scenic points. The climate allows outdoor recreation 215 days of the year. Fine homes and apartments in all price ranges are readily available.

Melpar's Boston area plants allow engineers to enjoy the pleasant tempo of New England living coupled with Boston's splendid cultural and educational advantages. Melpar pays re-location expenses.

## Melpar Experiences Sure & Steady Growth

Founded in 1945, Melpar has doubled in size every 18 months for the past 11 years. Recently it completed erection of a complete new headquarters laboratory near the Nation's Capital, and is presently making substantial additions to its Watertown, Mass. laboratory (6 miles west of Boston), and to its research department in Boston.

Located on a 44-acre landscaped tract in Fairfax County, Virginia, only 10 miles from Washington, D. C., Melpar's main laboratories encompass over 265,000 square feet under a single roof. Fully air-conditioned, they are equipped with every facility. In addition to the new, ultra-modern headquarters plant, Melpar maintains additional facilities in Arlington, Virginia, Boston and Watertown, Massachusetts, for a total of 460,000 square feet.

## Booklets Available

An attractive, fully-illustrated booklet describing living conditions prevailing in the Washington, D. C. area can be obtained from your campus Placement Officer.

## Grads Go To Work At Once

The college or university graduate who joins Melpar is not required to undergo a formal training program. Instead, he immediately becomes a member of a project group and is assigned to work with an experienced engineer whose guidance and assistance enable him to advance rapidly. Members of Melpar project groups gain experience in all phases of engineering problems by free and frequent interchange of ideas during group meetings. Such experience is valuable in leading to eventual managerial responsibility.

## University Courses Offered at Melpar

Melpar staff members, both holders and non-holders of degrees, may take advantage of the many fully-accredited courses in engineering subjects which are offered at Melpar's headquarters laboratory.

## Qualified Graduates Offered Paid Inspection Trips

After a personal interview on their campus, qualified candidates may be invited to visit Melpar's headquarters laboratory at Company expense. Information on opportunities available for graduates together with details on living conditions in Northern Virginia is available by simply writing: Mr. William Schaub, Melpar, Inc., 3000 Arlington Blvd., Falls Church, Virginia.

## Make Appointment Now For Melpar Interview March 20th

To secure an appointment with the Melpar representative when he visits your campus, contact your Placement Officer today. At the same time ask him for booklets on Melpar and the Northern Virginia area. We believe you will find them of unusual interest.

## No Waiting For "Automatic" Advancement at Melpar

At Melpar there is no waiting period for "automatic" advancement. Instead, an engineer, regardless of his age or tenure, may move ahead as rapidly as his skill and performance dictate. Each engineer's achievement is reviewed at

least twice a year. In this manner engineers deserving advancement can be quickly "spotted" and promoted. As soon as an engineer is ready for more complex responsibilities they are given him.

## Melpar Gives Financial Assistance For Advanced Study

The list of universities located near Melpar laboratories that offer graduate and undergraduate courses in engineering subjects includes: Georgetown University, George Washington University, American University, Catholic University, University of Maryland, University of Virginia, Harvard, Massachusetts Institute of Technology, Northeastern University, and Boston University. Melpar offers financial assistance for study at these distinguished schools.

## Many Extra Benefits

Melpar's personnel policies and salary structure compare most favorably with those of the industry as a whole. The Company maintains a liberal program of benefits too extensive to detail in this space.

## Choose Assignments From Varied Fields

Engineers who join Melpar may choose their assignments from one or more of these challenging fields:

Flight Simulators • Radar and Countermeasures • Network Theory • Systems Evaluation • Microwave Techniques • Analog & Digital Computers • Magnetic Tape Handling • UHF, VHF, or SHF Receivers • Packaging Electronic Equipment • Pulse Circuitry • Microwave Filters • Servo-mechanisms • Subminiaturization • Electro-Mechanical Design • Small Mechanisms • Quality Control & Test Engineering

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# New Graduate Must Adjust To Conditions in Industry

(Continued from Page E-1) convinced that in the long run integrity and competence will bring you richer rewards than scheming, and four-flushing?

Do you want to be a topnotch man and know you are, or is the easier prize of a quick title, a fast buck, and a little authority more attractive to you? Ask yourself questions like these from time to time. The answers will determine the kind of man you see when you shave. Four-flushing is a strange disease, it gradually makes your skull transparent.

7. Try to define what kind of job you want ten, twenty and 30 years from now. Analyze someone who holds such a job. Often you can even talk to them. Define as accurately as possible all of the experience and knowledge you need to become a whizz bang at the job. Try to plan your reading, study, job rotation so that you will have those qualifications. When you get a dull or nasty job assignment, before you grouse too much, see if it fits the big picture. You can generally get these nasty jobs done in half the time it takes to gripe to the four guys in the locker room.

8. Lastly, I believe these pay off:

- Be a real person at all times.
- Real professional excellence pays off, but it is maintained only by life long diligence.
- Do more than is required, and do it on time.
- Plan for your career as best

## Recruiters Put Most Emphasis On Personality

College recruiters for engineering talent place greatest emphasis on personality, scholastic record and the results of an interview, in that order, according to a recent poll of college placement officers taken by Management Methods magazine.

Of the 162 officials approached, 152 responded. The following conclusions were drawn from the survey:

More than fifty percent of college recruitment directors blamed company recruiters personally for their failure to get the students they wanted. Many recruiters are not familiar enough with their companies to answer many questions posed by students. Fringe benefits, security, and company size have little to do with success in hiring.

According to the poll, the factors most appealing to job candidates are advancement opportunities, salary, and company location.

Negative reasons cited by the poll as tending to result in rejection of company offers by students are: lower-than-average salaries, unsatisfactory locations, and the personality of the recruiter.

College recruitment officials went on to list three possible methods whereby hiring programs could be improved: expansion of summer job opportunities for undergraduates, better "follow-up" of interviews, and the publication of better recruitment literature.

Although it was pointed out that the size of the company has little to do with hiring success, the poll revealed that the vast majority of the persons who answered the questionnaire felt that large corporations were in a better position to compete for top candidates than small concerns. The reasons cited were that they are better known, they offer more and better jobs and generally, pay higher salaries.

you can, and try to work your plan.

- Pick a good boss, make his life easy, and get him promoted.
- If you're convinced you're unappreciated, ask why, and correct the problem diligently. If you're still unappreciated, find an employer who does appreciate you.
- The best alibi is the one you don't use. People drop dead when you admit you goofed.

(Continued from Page E-5)

the present, it is possible to predict with confidence certain developments in communications which, though they seem revolutionary, are in reality based on knowledge possessed today.

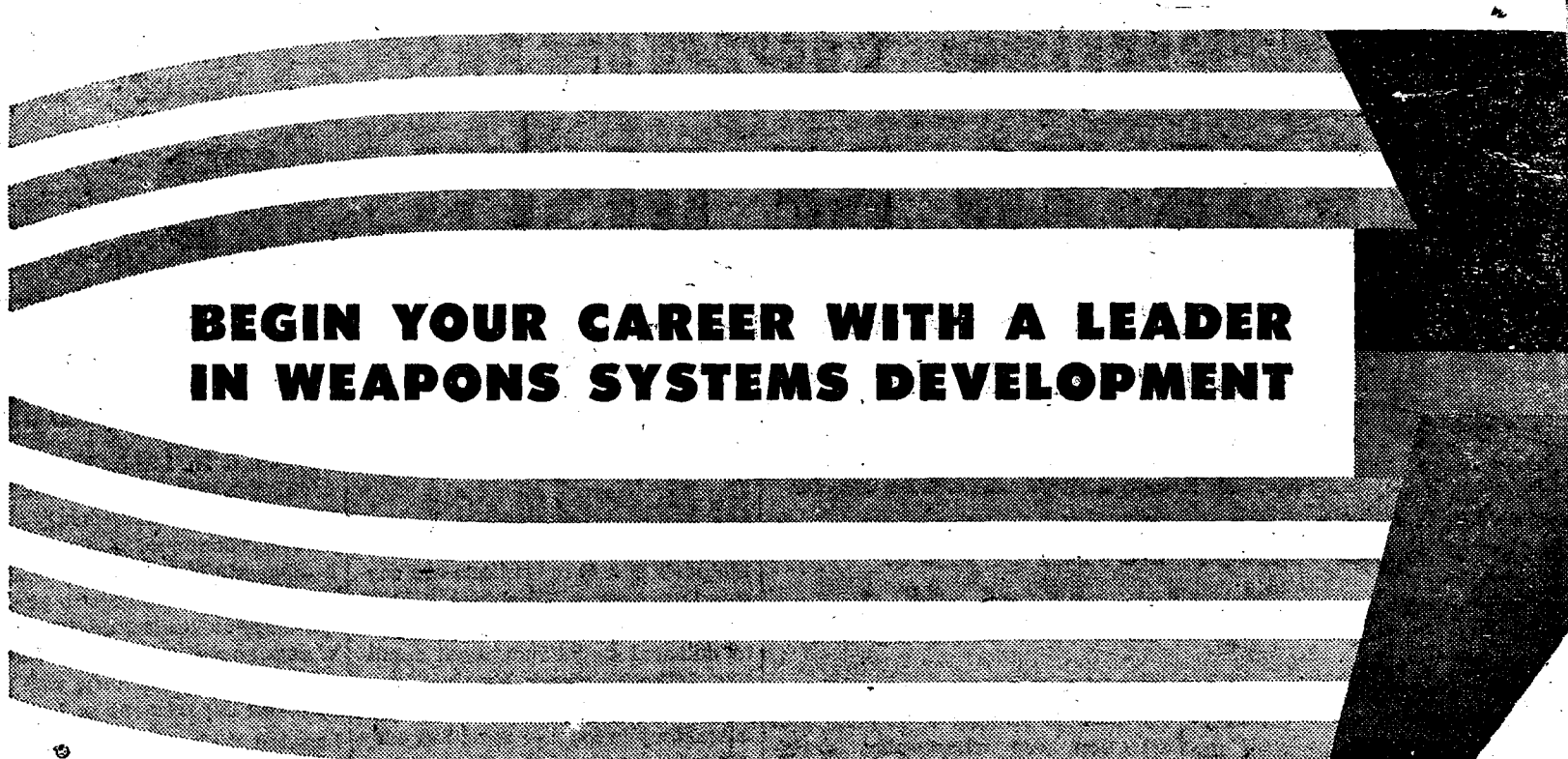
For example, in the foreseeable future, you will be able to see as well as hear the person with whom you are talking on the telephone. In the business and industrial world, procedures and processes will be revolutionized as an increasing amount of routine and repetitive operations are handled automatically under the programmed control of

solid state, electronic computers. Inventory, production, payroll and industrial control information will flow between the headquarters of a corporation and its widely separated branches in the coded form of electronic pulses—the language of computing machines.

Television programs may someday be transmitted from one continent to another over transistorized submarine cables and, in another transmission development, hollow wave guides or pairs of "pipes" will transmit tens of thousands of telephone conversations and hundreds of television pictures simultaneously from city to city.

To achieve these results the communications industry needs numbers of well trained scientists and engineers. This need will only continue, it will rapidly increase. For as revolutionary as creative contributions have been our social and economic patterns on our national security, the developments of the next 50 years will undoubtedly make the past years seem but a period of pioneering and early growth.

This issue was prepared by Sadowniek and Don Langer in operation with The Campus' staff



## BEGIN YOUR CAREER WITH A LEADER IN WEAPONS SYSTEMS DEVELOPMENT

Bell Aircraft Corporation now offers you the opportunity to join the Nation's foremost team of missile specialists. The combined efforts of our engineering team members directed towards the development of better weapons systems for defense have been crowned by such achievements as the Rascal Missile, key weapon in Air Force strategy, airborne electronic and servomechanisms systems, and rocket motors for a variety of missiles programs including the "Nike". The missile and aircraft weapons systems of the future are now being developed in our laboratories. In addition opportunities for a permanent and promising career are also available for engineering and scientific graduates in many other fields including our NEW NUCLEAR ENGINEERING DEPARTMENT.



★ Be sure to arrange through your placement office to meet with our representative on March 25 and 26, for complete information on the varied, creative assignments offered with the Bell Aircraft Engineering Division.

BELL AIRCRAFT CORPORATION, P. O. BOX 1, BUFFALO 5, N. Y.

### ASSIGNMENTS NOW AVAILABLE IN THE FOLLOWING AREAS FOR BACHELOR'S, MASTER'S AND DOCTOR'S DEGREE CANDIDATES

ELECTRONIC ENGINEERING	MECHANICAL ENGINEERING	AERONAUTICAL ENGINEERING	MATHEMATICS AND PHYSICS
<b>DESIGN &amp; DEVELOPMENT</b> GUIDANCE SYSTEMS INSTRUMENTATION TELEMETERING BEACONS AMPLIFIERS RECEIVERS UHF ANTENNAS COMPUTERS CODERS, DECODERS TRANSMITTERS POWER SUPPLIES MISSILE AUTOPILOTS HELICOPTER AUTOPILOTS AUTOMATIC LANDING SYSTEMS NUCLEAR PROJECTS	<b>DESIGN &amp; DEVELOPMENT</b> ROCKET ENGINES THRUST CHAMBERS TURBINES & PUMPS PRESSURE VESSELS SERVO VALVES HYDRAULICS INSTRUMENTATION INERTIAL GUIDANCE NUCLEAR PROJECTS	<b>DESIGN &amp; DEVELOPMENT</b> AIRFRAME DESIGN CONFIGURATION DESIGN STABILITY & CONTROL PROPULSION SYSTEMS ROCKET ENGINES THRUST CHAMBERS TURBINES & PUMPS CRITERIA & LOADS	<b>DEVELOPMENT</b> INERTIAL GUIDANCE ANALOGUE SIMULATION INSTRUMENTATION TEST EQUIPMENT NUCLEAR PROJECTS
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	<b>LABORATORY EVALUATION</b> POWER PLANT TESTING ROCKET COMPONENTS TEST EQUIPMENT TEST HYDRAULIC TESTING SHOCK & VIBRATION TEST STRUCTURES TESTING STATIC TEST	<b>ANALYSIS &amp; TEST PERFORMANCE</b> MANEUVERABILITY & LOADS WIND TUNNEL TESTING STATIC LOADS ANALYSIS DYNAMIC LOADS ANALYSIS LOADS & CRITERIA STUDIES WEIGHTS ANALYSIS POWER PLANT TEST FLIGHT TESTING	<b>MATHEMATICAL ANALYSIS</b> APPLIED MATHEMATICS OPERATIONAL ANALYSIS MANUAL COMPUTATIONS INFORMATION PROCESSING ANALOGUE & DIGITAL COMPUTERS
			<b>DATA PROCESSING &amp; ANALYSIS</b> DATA REDUCTION ANALYSIS OF TEST RESULTS STATISTICAL ANALYSIS RELIABILITY ANALYSIS
			<b>RESEARCH</b> FLUID FLOW THERMODYNAMICS NUCLEAR PROJECTS