MAP TO TOMORROW'S MANAGEMENT

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Petroleum Management Magazine

This is a down-to-earth case study of management in the petroleum industry. It is specially fitting to review it here because there are more engineers than any other profession in top management, and most of you probably have some management duties at this time. Management is an integral part of engineering and in our industry engineering is an essential element in management.

One producer, who is an engineer, told me that so long as independents consider themselves operators instead of managers, they aren't going anywhere and they may not even survive.

Charles Spahr, president of Sohio, says corporations aren't spending money to recruit persons to do the same jobs year after year. Companies look for those who intend to play a significant role in business. This means a strenuous life, facing change and hard work. The rewards are great. The excitement of the struggle breeds an unlagging interest. The measurement of achievement generates a will to excell.

Listen to this statement by L. F. McCollum, board chairman of Conoco, in his address before the Caltech Industrial Relations Center: "The phasing out of the proprietary management system and the phasing in of professional management, which is just barely getting underway, is one of the most significant trends of our time. Too often the proprietary system of yesteryear frustrated imagination and creativeness. Talented newcomers were frequently suppressed. The premium now is where it should have been years ago—on ingenuity, imagination, agressiveness, creative drive and on individual contribution."

We will examine management from two angles. First, we'll take a look at the management we have today and analyze the attributes that took them into the top echelons. Then we'll visualize tomorrow's management. Will there be much change in requirements? If so what will they be and how can you prepare now to be a manager?

Here's a composite picture of today's top management taken from a survey this writer made of 328 executives of the 25 largest integrated petroleum companies. These were board chairmen, presidents and vice presidents. Averages are not being used in this composite but the characteristics that stood out in each area of inquiry.

This management man is 53 years old and he comes from a small town in Texas. He has a bachelor's degree in engineering from the University of Oklahoma. He has taken outside courses since he went to work. His specialty is production and he has been in a lot of places but always worked for the company he started with. He married at 24, two years after getting his degree; he has two children, a son and a daughter. He belongs to three or four professional organizations. He lives in a suburb and takes pride in civic work. He is a director in other companies and on the board of a college or a hospital.

This is really a good factual description, but it doesn't spotlight the qualities that made this man a manager.

Let's examine the spectrum of statistics. Figure 1 divides the age groups. The youngest executive at this high level is 37 and the oldest is 82, a 45-year range. At least half are in their 50's and got out of school in the depressing 30's. Jobs were scare and diligently sought. After one was obtained it commanded deep respect and every effort was made to keep it.

We've talked with many who struggled through the early 30's and later became industry leaders. The importance of a job was forever impressed on these men's minds.

The sheepskin that was to have opened the doors to important companies helped little when there were no jobs. One executive said he got a fellowship and went back to school for a second degree because nobody would hire him. Another got a football scholarship that enabled him to go to university. One executive, who eventually got a doctorate in science, won his first degree

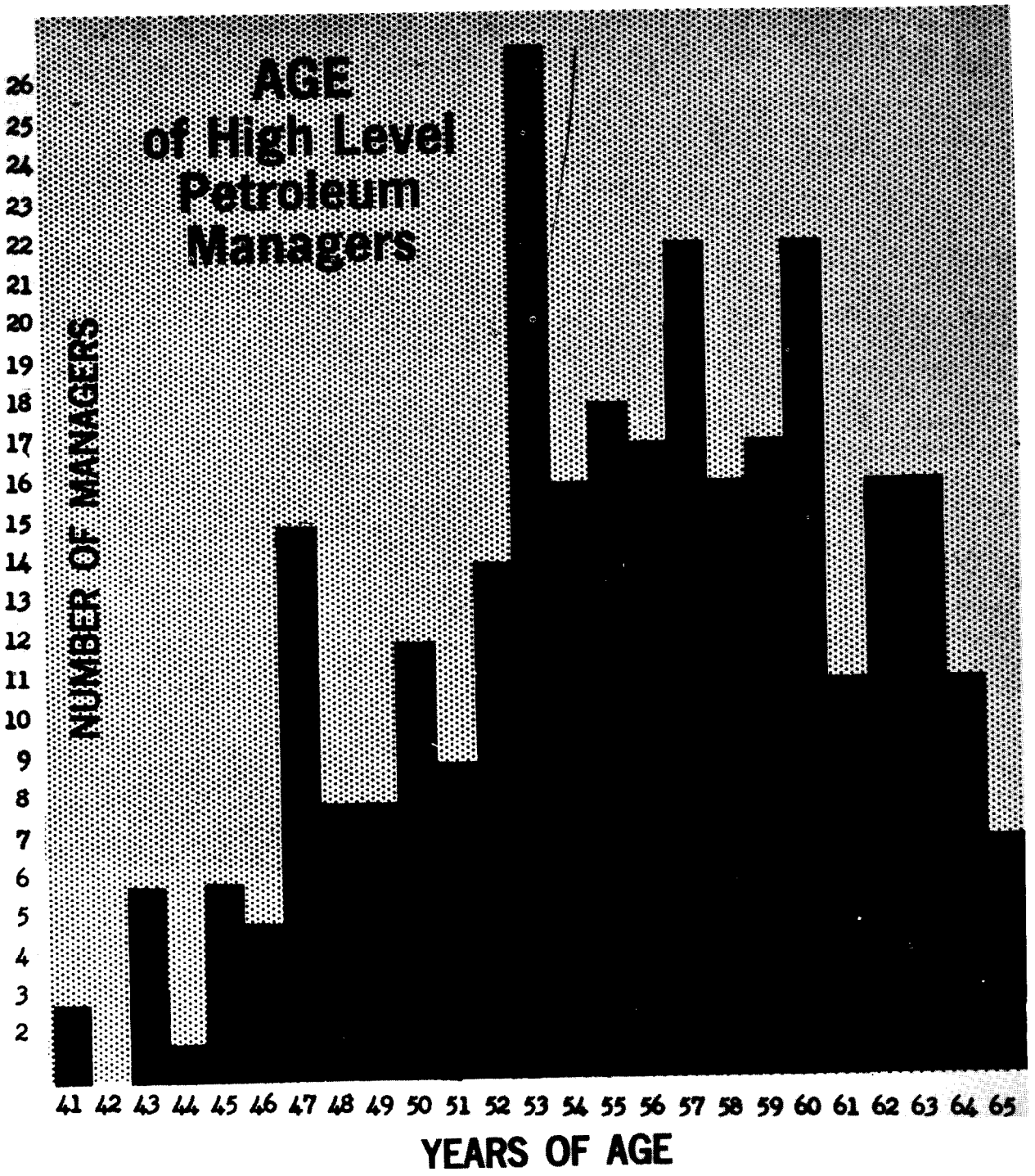


FIGURE 1

by supporting himself playing in a band. You could work your way through college during the 30's easier than you could get a regular job.

One manager was thrown out of a job in the bank holiday of 1933 and finally obtained a temporary job with an oil company. Fourteen years later he was president of the organization.

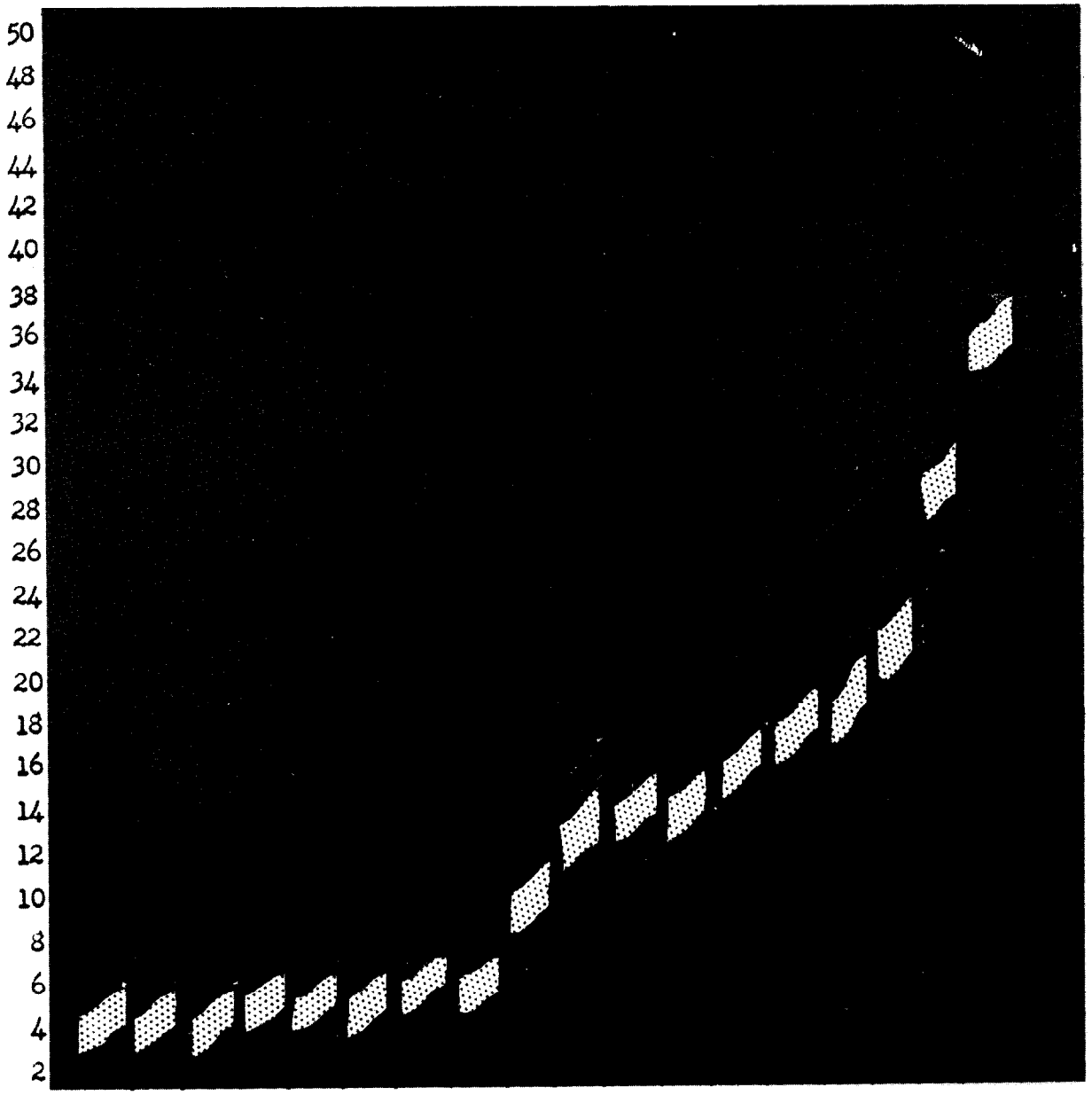
Most of our managers come from the oil country. As you can see from Fig. 2, more oil executives surveyed come from Texas than any other state. California, Oklahoma, Kansas and Illinois follow in that order.

The East Texas field and other Texas fields discovered in the early 30's must have fascinated

many young Texans of that time who are managers today. In California, wildcatters were swarming over the central area and large discoveries evidently drew young Californians into the industry.

The Oklahoma City field was discovered in 1928 and the young men of the state could think of few careers more exciting.

So the managers of today came from the oil country and no doubt so will the managers of tomorrow. Except the areas probably will be different. Louisiana, Colorado, Utah, Ohio will provide more managers tomorrow. Or oil and gas exploration and producing may not hold the



BIRTH STATES

FIGURE 2

glamour it has in the past. Perhaps more managers will come from states with big refining and petrochemical centers.

The point is, every operation of business and industry is surveyed by youths who weigh consciously or subconsciously the value of various careers. The managers of tomorrow are attracted to ours or other industries by the managers of today. The man who got excited about oil yesterday was the boy who saw a gusher blow in and heard the tales of oil romance.

In Fig. 3 we see the small town boys did well in the oil industry, a third coming from towns below 5000 population. Oilfield towns were on the small side.

The preponderance of men with small-town backgrounds simply means petroleum operations were visible and youths in the oil patch could follow with pride he-man toolpushers, drillers, pipeline gang pushers, and refining foremen.

Petroleum managers are well educated. Only nine of our 328 executives did not go beyond high school. The great majority of 284 holds at least one degree. Of these 192 earned bachelor degrees

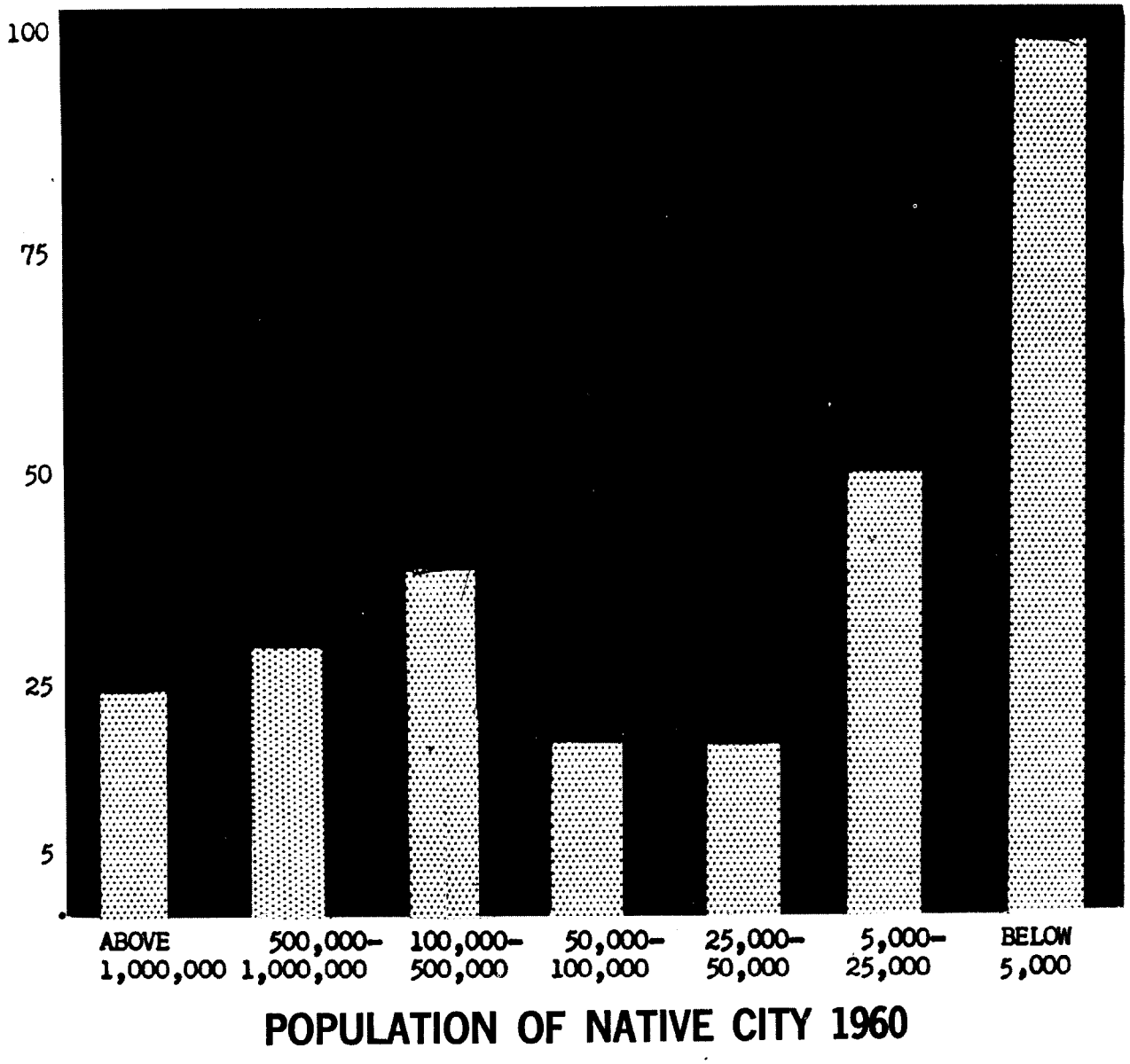


FIGURE 3

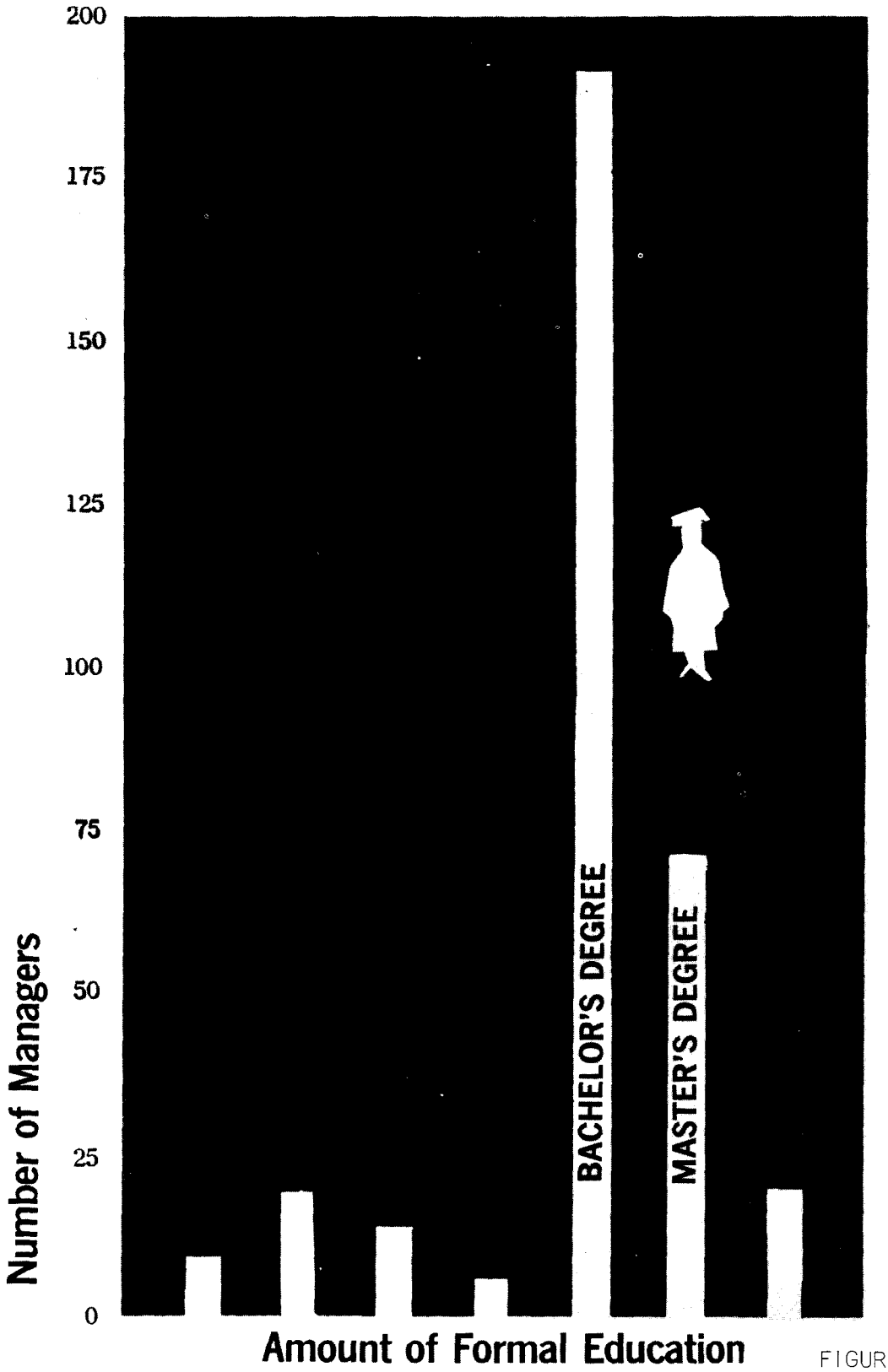


FIGURE 4

only; 73 others have earned bachelor's and master's degrees and 19 hold doctorates. All of them together have earned a total of 382 degrees.

Of the ones who did not complete undergraduate work, 19 had one or two years of college and 16 had three or four years. Seven went to business schools and most of these are CPA's—Certified Public Accountants.

Of those with high school education, the average age is 60 years. For those at the other

side of the educational scale, those with doctor's degrees, the average age is 51. This indicates growing usefulness of formal education for petroleum managers. Figure 4 illustrates the high level of education among our executives. A significant number of Phi Beta Kappas showed up in our group, and the many honorary fraternities to which the men belong indicate good scholarship was prevalent.

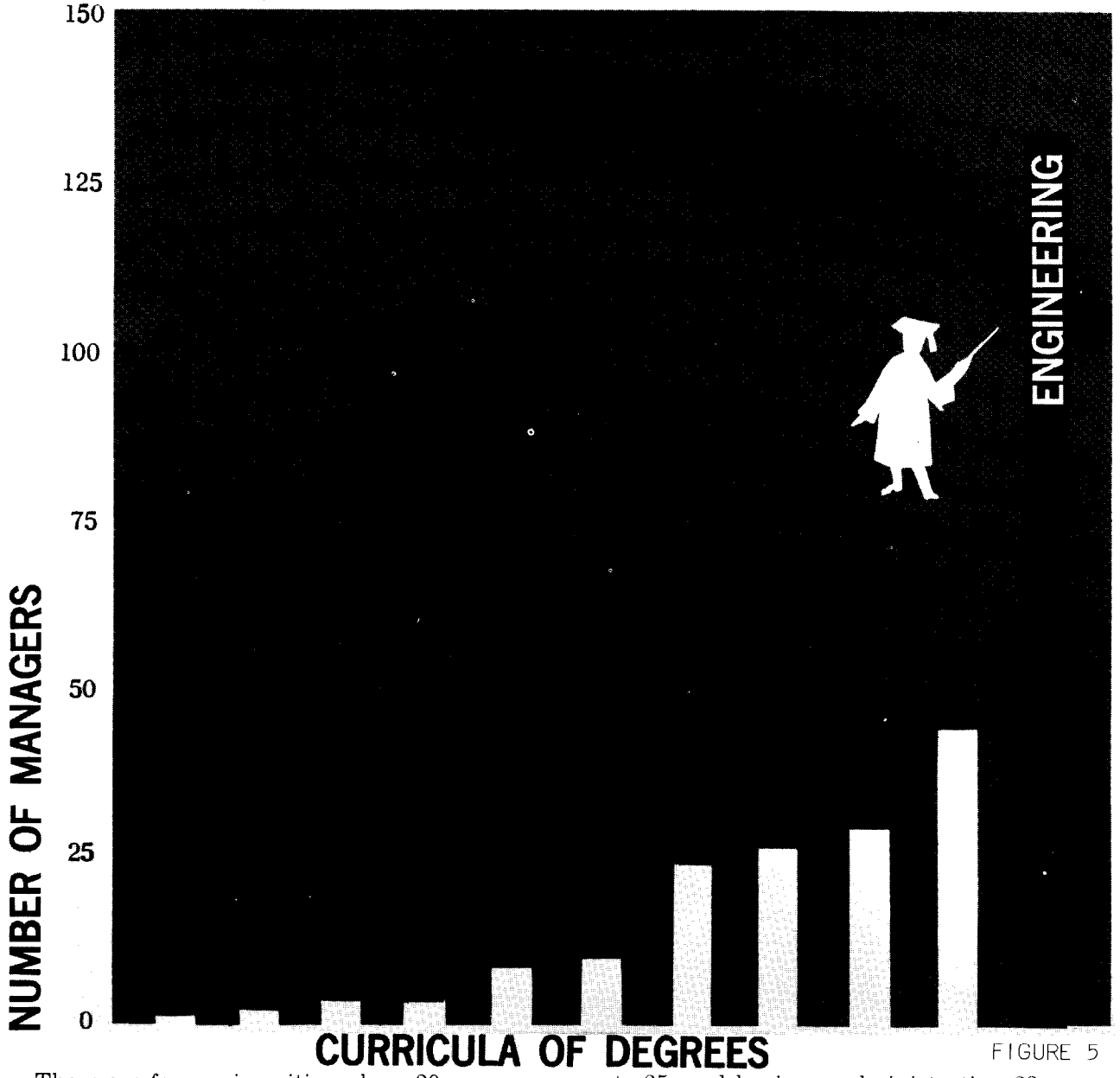


FIGURE 5

There are four universities where 20 or more of our surveyed managers received degrees—University of Oklahoma, Massachusetts Institute of Technology, Leland Stanford University and University of Texas. Except for MIT, these universities were pioneers in setting up petroleum engineer courses.

In Fig. 5 we see the curricula of our petroleum managers. Engineering far outstrips any of the other major subjects. Engineering degrees are held by 132 compared to 42 for the next, which is law. Then comes geology with 28, liberal arts 25, and business administration 23.

Unfortunately, no one did a similar survey 20 years ago so we don't know what backgrounds the earlier managers had, but present executives said men usually rose through legal or accounting departments to the high offices. The engineer did not take the spotlight as he does today. In the early days an engineer had all he could do to convince the toolpusher he was really on the payroll.

Managers' job experience shows production in the lead. Figure 6 indicates managers can rise

in any department of the industry; however, production was the primary job experience of 20 per cent, manufacturing of 17 per cent and marketing of 14 per cent. All the other departments together are in a minority.

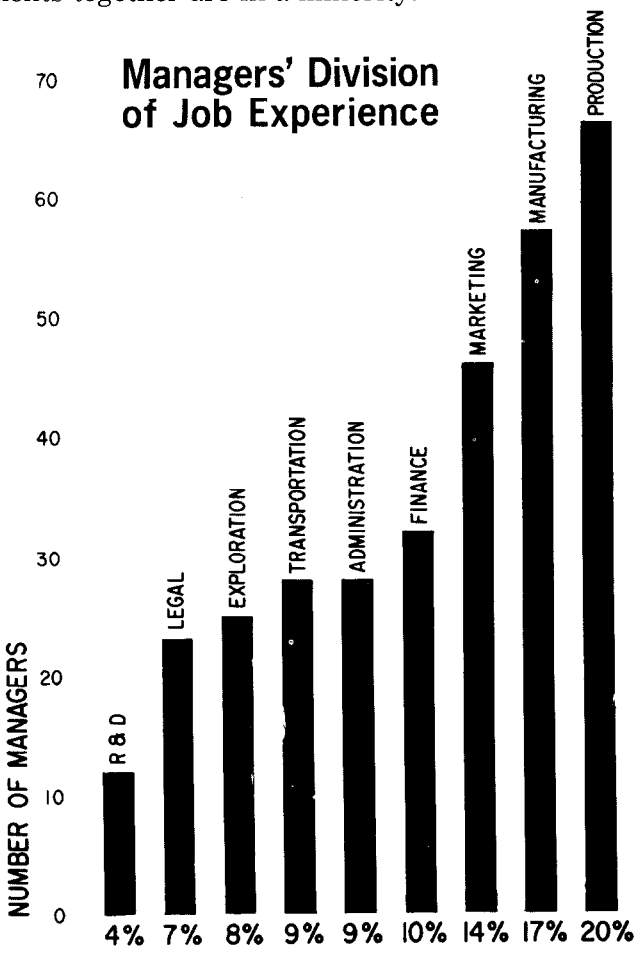


FIGURE 6

Education does not always set the course for a job. In our group, men with chemical engineering degrees have moved up through (1) personnel and business administration, (2) finance and economics, (3) marketing and (4) industrial and public relations. A geology graduate becomes a producing executive; a petroleum engineer ends up as vice president of exploration. A philosophy major becomes an exploration and production manager and a lawyer heads research. These are a few examples to show that different training may come after graduation.

A strong majority of executives—64 per cent—began work in the company they now help manage. Another 16 per cent have been with two oil companies; 13 per cent with three concerns and only 7 per cent with more than three. Some companies tell me that today turnover of campus recruits is rapid for at least five years. From the data on top managers, they may be dissatisfied with a company but they are inclined to stay. These executives were reluctant to change jobs. They did change home base often—all of them moving about considerably. Out of the total, 63 served their companies in foreign areas.

The younger executives have more overseas experience because of recent foreign ventures of companies which once limited operations to the U.S. In some companies, like Jersey Standard, most top executives have had foreign service; in others, such as Skelly, all have remained in the U.S.

No one has ever proved money is the strongest motivating power for managers but we've no doubt it is among the important reasons for men striving to get to the top. High level executives of the 25 companies represented in this survey are well paid but no more so than management in other industries.

Size of the company has a great deal to do with salaries paid. In one notice of the annual stockholders meeting the largest oil company, Jersey Standard, showed a remuneration for the 19 officers and directors of $2,284,507 during 1963. This averages $120,000. Mr. Rathbone, as president and later chairman, received $293,750 in salary. Gulf Oil Co. has higher remuneration. Its proxy statement indicates about $124,000 average in 1963 for directors and officers, including salaries and incentive compensation. W. K. Whiteford, chairman and chief executive officer at that time, received $175,000 salary and $150,-021 incentive compensation for a $325,021 total.

Several larger companies pay salaries averaging around $100,000 annually. Smaller companies on our list usually pay officers and directors average salaries in the $40,000 to $50,000 bracket.

We received data on top managers' average remuneration from 17 of our 25 companies. Compensation of officers and directors are found in notices of annual meetings but our survey did not include all officers and directors—only chairmen, vice chairmen, president and vice presidents. Thus the salary average of $73,500 for our entire group is slightly higher than would be the average of all directors and officers.

In an over-all study of top management salaries in all U.S. business, the highest paid officers

received from $50,000 to "more than" $200,000; the second highest paid executives received from $30,000 to $219,000 with a median of $74,000. Thus oil industry top salaries are about in line with other industries.

Benefits in the petroleum industry are among the highest in the United States. Stock options have been a favorite type of payment. Thrift funds are usually two for one—the officer (or any employee) puts in $2 and the company $1. There are annuities, final pay, savings plans, insurance, etc.

Some companies, when giving officers' salaries, indicate how much they actually receive after Federal income taxes. One company gave "aggregate remuneration after Federal income taxes."

This is doubtless one reason why high executives are not solely motivated by high pay. Uncle Sam takes from a half to two-thirds of the big-sounding salaries.

Altogether our 328 executives receive some $24,000,000 a year in remuneration aside from substantial benefits.

All these executives are joiners. They take active roles in industry associations and civic organizations. They are leaders of human society in their communities, their states, their nation. As leaders they are sought by their government to serve on extraordinary missions, especially in time of war. Ninety-eight had military service and about the same number served as civilian experts during wartimes. They are also directors in other companies, trustees for colleges, hospitals and foundation boards and many hold church offices.

Their hobbies run the gauntlet from all outdoor sports to cooking and masonry and oil painting.

These executives are good family men. Nearly every one of them married in his 20's. There were no teenage marriages and divorce is rare. A large number of families—42 per cent—have two children. The range was from one to seven children.

Almost every church denomination was represented but a majority—62 per cent—were affiliated with Presbyterian or Episcopalian churches.

Many companies nowadays do not ask for religions and political affiliation. But half of those on our list volunteered church membership. In fact in interviews several have said they considered the ministry as a career. Strong religious convictions are expressed by some of these business leaders.

Only one-fourth of our group gave political preference. Of these there were:

Republican	74%
Democrat	26%
	100%

Party affiliation certainly does not reveal actual voting. For example, several who declared publicly for President Johnson in the last election listed their political party as "Republican".

Before we turn to the second part of this lecture on how you prepare to be a manager, let's take a glimpse of how did today's executives learn to manage?

"You learned as you went along," said one manager. They were improvisers.

The majority of our surveyed group early took responsibilities for projects where techniques were far from sure. "No one knew much about pipelines then," said another, who built his company's first big line in the early 30's.

It was a time of waste and these men are the ones who developed markets for liquefied petroleum gas and worked out projects for waterflooding. They improved refining and risked their reputations on deep drilling and offshore exploration.

This is just one of the shared characteristics of our executives: They never waited to be told what to do.

It certainly wasn't easy for them. Technology was expanding and there was a large segment of employees in the field who fought the changes that had to come.

This is a broad outline of today's management on which we'll try to map out the road to follow if you would reach tomorrow's management.

Some of you are going to say, "I don't want to be a manager. I'd just like to be a good engineer." As a good engineer your usefulness is limited if you turn your back on management responsibilities. You don't want to be boxed in without possibility of advancement. There is a wide level of middle management that reaches from supervisors to division or area managers. Many of you are now at management levels and most of you will be. How do you develop man-

agement capabilities? One thing is sure: You have to do it as you go along. You can't take a cram course.

Actually you've already started. Our composite picture shows the first thing you need is an education. The technological revolution has made more education vital for a manager. You've heard the figures—starting with the birth of Christ, the first doubling of knowledge occurred by 1750, the next doubling by 1900, the third in 1950, the fourth in 1960 and by 1970 the velocity will be so great we will double knowledge every six months. As business grows more technical, more scientific and more sophisticated, advanced education becomes indispensable.

If you have one degree, it is better in our industry to have it in engineering. Your opportunities advance geometrically with added degrees.

Shell, for instance, has 5000 engineers with BS's and MA's and 3000 others with BS's and a liberal arts degree. It also has 680 PhD's. The company is proud of picking up 53 PhD's out of the 2500 graduating last year.

Many companies help their people obtain a degree or take graduate work. Texas Eastern Transmission pays 75 per cent of the cost of approved college courses and more than 200 are using company aid to work toward academic degrees. Standard of California grants leaves of absence for study at universities.

In interviews with 82 company executive officers the concensus was that the most productive junior executives had a degree in engineering and one in business administration. The head of one major oil company said he thought a broad liberal arts education would be excellent background for top management. But he added, there was no way to bring such graduates up through the operating levels of an oil company.

In this need for an educaiton never forget it is continuing. You're heard an engineer's knowledge is obsolete 10 years after he is out of school. A good engineer (or a good manager) never drops his education. You are here at this short course to keep abreast of technical studies, to sharpen your mind in discussion with others, to exchange ideas, to get out of routine, to learn more.

Your company may have development courses and you should take every one you can. When you come to a short course like this one, take notes and review them later. Keep information you gain in retrievable form.

It's a great help to learn rapid reading because you need to read all you can. Petroleum industry magazines seldom give you the complete story but you will be aware of what is going on and feel more confident in knowing the political, economic and research climate back of the operations you handle.

There is so much a good engineer with management potential needs to study that I hesitate to name them all but I'll sugegst one that's essential—economics. Without a solid understanding of economics, you can't be a good engineer or a good manager. I am not enthusiastic about the theoretical courses most universities provide. I know some oil companies have come up with excellent practical economics training. I hope yours gives you an opportunity to take one. A Shell man in London wrote a series for us on "How to Measure Profits" that was a revelation to a lot of our readers. A professional that goes into management is building on very shifty sand if he doesn't have some concept of economic evaluation of operations.

To be a manager you must learn the art of handling human relations. How do you influence those around you? How can you motivate the people in your office so they have a feeling of purpose and accomplishment? The essential element in this process is to be concerned about the people with whom you associate, to listen to their problems, to lend your strength when their morale is low, to praise outstanding performance.

It isn't a coincidence that civilization progressed spectacularly in Western areas where the Christian philosophy prevailed. Men are basically motivated by the concern of others in their achievements. Only fanatics or geniuses grow in hostile climates. A manager is thoughtful of others and seeks to develop his staff as he does himself.

One manufacturing vice president said he had to recruit men with technical degrees but he looked for engineers interested in people. He explained: "Engineering graduates are interested in things but some of the brilliant ones are indifferent to people. I look for the engineer who has been active on the campus—held office in student body organizations, worked in a political group—anything that indicates he has skill with people."

The third ingredient for management is the

ability to communicate. This is a stumbling block for many engineers who are first rate in intelligence but find speaking or writing a burden. English is more basic than mathematics. If you can't express yourself cogently, you can't understand abstractions. If you can't communicate you are a prisoner of society. One of our authors said Shakespeare's "Romeo and Juliet" demonstrates the tragedy of lack of communication. Juliet feigned death but made the horrible mistake of not communicating her plan to Romeo and thus destroyed them both.

How do you learn to communicate? You tackle it just as you do any other problem. You work at it and study how to do better. You write and rewrite your reports. Then you take a short course on how to write better reports. We have published an excellent book on "Better Communications" that has helped many improve their speaking and writing. We like the four-prong outline for writing—letters, memos, speeches, etc. It goes: (1) What are you talking about? (2) Why should I read about it? (3) How does it work? (4) What do I do now?

One way to practice communications is to be a joiner like our surveyed managers. You are forced to participate in discusions, to speak before an audience and to increase your person-to-person communications ability.

Get a recorder and practice speaking. This can be a shock treatment but you'll try harder.

Most of all, communications is improved simply by patient practice and critical study.

The fourth element in manager's preparation is personal integrity. The oil industry has suffered enough from a few flamboyant characters who put a stamp of irresponsibility upon the whole industry. With rare exceptions, management today is made up of professional people who are very solid citizens. I asked Carl Reistle, at that time president of Humble, what was the most important characteristic of a successful oil man and he answered, "Honesty," then added, "Optimism."

You'll get into situations where being honest won't be expedient. You'll find yourself in conflicts where you want to dodge the issue. Don't do it. But don't barge in with half-baked ideas either. Take the time to communicate carefully. Write down your opinions. I've actually changed my mind after I took time to write down all I knew of a situation. Document your judgment.

As Socrates said, "know thyself". As today's management experts say, "manage yourself".

From our researched description of today's management, we've chosen four basic points that seem certain to be significant for tomorrow's manager. There are many desirable attributes and attitudes but essentially they are related to these fundamentals: Education, skill in human relations and communications and ability to manage yourself.

Present management is well educated by today's standards but tomorrow's must be better educated. Two degrees instead of one will become the norm—one in technology and the other in administration or liberal arts.

Tomorrow's executive must have more skill in human relations. Some of our greatest problems are in labor, politics, personnel, the areas where everything depends upon the quality of your relations with people.

To be a good manager or a good engineer one needs communications ability. He must sell his ideas to his boss and sell his staff on excelling.

Tomorrow's manager must guard and develop personal integrity. Unethical practices sound worse today because they are more exposed. Standards are rising and no company can afford employees of questionable integrity.

Remember this—top management is as interested in your becoming a good manager as you are. Searching for and developing effective leadership is one of the chief problems of petroleum company officers.

Operating levels are exciting and satisfying but you don't get the full blast of challenge in the petroleum industry until you face the changes and complexity and responsibilities of management.