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PREFACE

This booklet is the result of my several years' participation in the Visiting Petroleum Geologist program of the American Association of Petroleum Geologists. Conversations with undergraduates, graduate students and faculty members in geology departments across the U.S. reveal that many students receive their degrees having given little thought or preparation to finding work. As a result, the transition from the classroom to the office is not always a smooth one.

Students commonly report that they lack information about available work and do not know how to get started on a job search. They complain that they:

1. don't have a clear understanding of the daily activities of a working geologist;
2. don't receive accurate information regarding competition for jobs, and don't see data on

employment trends and projections;

3. don't know who are the prospective employers; and

4. don't know what to do if they don't receive a job offer before graduation or soon thereafter.

It is my purpose to discuss some of these concerns and to offer encouragement that work is available for most, if not all qualified geology graduates. Suggestions are provided to those students currently in school who want to use their time to become better prepared, and to those recent and not-so-recent graduates who face job-hunting in a lukewarm employment environment.

The ideas outlined herein are presented in the hope that they may stimulate the student or recent graduate to think more innovatively about planning a job search, and to make one's own experience a unique, enjoyable, and successful one.

The American Association of Petroleum Geologists provided me the opportunity to visit several colleges and universities across the United States through its Visiting Petroleum Geologist program. Many of the concepts and methods of securing employment were developed for the program during discussions with company recruiters, individual employers, and faculty members. To all who provided suggestions and information I am grateful.

Ms. Mary Sue Hayward of Sun Exploration and Production Company and Dr. David Eby of Champlin Petroleum Company reviewed the manuscript and made many helpful comments and suggestions.

My wife, Judy, offered enthusiastic encouragement, never once complained when I left on a VGP trip or spent evenings typing, and even proofread the completed manuscript.

ATTITUDES MAKE A VACATION OF YOUR JOB SEARCH

Many young graduates regard the whole prospect and process of job-hunting distasteful, if not downright painful. Nobody likes to beat on doors to ask for a job and be turned down time after time, particularly when the stakes of failure may be to leave the industry for which one has been educated. There's probably a limit of time and cash available to conduct a search. It can be a frustrating and humiliating experience.

Let me suggest that you view job-hunting in a very different perspective--a more positive one; one that can change the way you assess the objectives of the task ahead. It can make the entire process of looking for work more interesting and rewarding than you might have thought possible.

Think of it as a vacation; not one you'll spend on the beach in Bermuda, but one you'll use as a launching pad for your geological career. You may visit parts of the country, perhaps for the first time, that can offer employment and new learning experiences. You'll meet people you've always wanted to meet, talk with successful oil finders about how they run their companies, and perhaps establish friendships that will enrich your life and future.

Even though you may feel apprehensive about the jobhunting routine, try to give yourself sufficient time, a month or so if possible, to go about it properly. It's difficult to enjoy working at any task "under the gun." If you haven't yet graduated, you can do a lot of preliminary activities which can shorten the search time after graduation. If you're already out of school and are underway in your quest, perhaps some of the suggestions presented herein will provide short-cuts.

Ironically, perhaps at no other time in your career will you have the time and the opportunity to visit some of the people you can now. The very fact that you are unemployed and need help may elicit a sympathetic response from people who would otherwise be too busy or uninterested to see you.

Maybe you've read or heard about a geologist whose ideas or work appeals to you. He may be a successful explorationist, researcher or businessman. Now's the time to meet him. If he understands that you're not coming to put the hard sell on him about employment, he'll probably be flattered by your call. Even if the meeting doesn't directly result in employment, and you shouldn't expect it to, several positive results may be achieved. You may meet someone you will possibly remember for the rest of your life. A friendship may

develop and a basis for later communication may be established. You may explore mutual interests, and you may learn of others whose interests and activities are similar to yours. And maybe you will find an advocate - someone who can help you in your search (more about "advocates" later).

I believe you may be surprised how friendly and helpful the persons you contact may be. Most employers realize that it's not to anyone's advantage to have a large group of unemployed geologists on the streets looking for work. I've found that, taken as a whole, the geological community is an exceedingly open and cooperative one, and its members

generally respond actively in helping find employment for other members. You may contact someone who is momentarily too busy or preoccupied to have time to help, but most will try to "create" time if contacted. Nevertheless, if you find someone who is unresponsive or uncooperative, thank him for his time and move on.

As you go from office to office and person to person, keep in mind that meeting other industry people and finding out what their interests are is as important as any other activity of your professional life. Even though you're not being paid for this part of your education, you'll find it can pay significant dividends if you use the opportunity well.

Keep a diary of the names and dates of persons visited, what they tell you, and any other observations of your visit. You'll be amazed at how fast your book fills and how important your notes can become to you later.

DON'T LET A DEGREE SPOIL YOUR CHANCE FOR EMPLOYMENT

From my parochial, oil industry-related viewpoint, I have observed that some universities, not all located outside of oil producing areas, refuse to accept geology as a vocation as well as a science. On more than one campus visit, faculty members remarked to me that they were concerned that if a substantial number of their graduates found employment in the oil industry their departments might come to be regarded as "trade schools."

Students vaccinated with that attitude may have to rethink what defines "proper" work for a geology major.

I am not suggesting that a geoscience department's primary responsibility is to supply industry with graduates. But for a department to imbue its students with the attitude that a career which utilizes the practical applications of geology is of less value than one spent in research or academia does a disservice to its graduates.

One of the benefits of education is its usefulness

in helping integrate persons into productive society. If it imposes limitations on the work we can and should do, it becomes a liability rather than an asset.

In this sense, a geologist who selects employment as a mud engineer or logging specialist, or as a representative of geological equipment and services is using his or her education to no less purpose than is a classmate engaged in teaching, research, or exploration.

Geology is an applied rather than a pure science. One of its appeals is that its usefulness covers a broad spectrum of human needs. I try in several places in this booklet to express my view that geologists should look toward wider rather than narrower horizons of geologic utilization. We should ever be seeking new applications of geology. Your best opportunity may well be in an industry or company that does not now have a single geologist on its payroll. The fact that "no geologist has ever been hired for this position before" is no argument that a geologist might not be the best qualified person for it. You may bring knowledge, experience and a viewpoint to a situation where they are needed.

Utilization of geologists in one area may lead to applications in another, and provide employment opportunities to more geologists.

The oil industry is marvelously complex and extensive. Besides the thousands of companies whose principal activities are drilling and operating, there are literally thousands more in ancillary businesses which serve the industry and are dependent on it. For every employment position in exploration and production now staffed by a geologist, there are dozens of other job possibilities which could be competently filled by geology majors.

Some of these alternative jobs may provide a track leading back to exploration. Others will not. But the important thing is that they may be just as interesting and satisfying to you as the more traditional ones. It is your task to ferret out the opportunities.

EMPLOYMENT CONDITIONS IN INDUSTRY HISTORICAL PERSPECTIVE

The employment situation for petroleum geologists has always been cyclical. During times of expansion, companies stampeded to geoscience departments to hire the graduates. Such periods occurred in 1953 - 55, 1960 - 62, and 1972 - 80. During such times geoscience graduates received multiple job offers and high salaries. Students signed up for geology classes in large numbers and schools increased their faculties to turn out more

graduates. Invariably, the expansionary periods were followed by recessionary ones, and companies laid off their less-experienced or less-qualified employees. New graduates had difficulty finding employment, and many were ultimately forced out of geology-related careers altogether.

In 1980, when I made my first Visiting Petroleum Geologist (VGP) visits to college campuses, conditions in the industry were much different than they are today. The latest "boom" was on and oil companies were expanding at a rapid pace, hiring geologists to beef up their exploration departments. New oil and gas exploration companies were being formed at an unprecedented rate. The call was out for geologists of any experience level. New graduates had not experienced such a plethora of job offers since the early '60s. A shortage of geologists resulted in starting salaries bid rising to dizzying heights. In those days, a VGP helped students sort out their multiple job offers, talked about paths of advancement in exploration companies, and explained such terms as "overrides," "carried working interests," and "net profit shares" that were being tossed at them by eager employers.

In response to the perceived future demand, students signed up for geology classes in record numbers just as they had in previous expansionary periods. New graduates with bachelor's degrees found work with little difficulty.

Some of the VGPs, recalling past booms and busts, argued for students to stay in school to get a master's degree. However, the lure of immediate employment was too much for most of the students to resist, and many went to work as soon as possible. Their employers were commonly new companies with few if any experienced geologists, and operated on shoestring budgets. When the "bust" came in 1981, it developed with surprising speed. It seemed that one day there was a shortage of geologists, the next day a glut.

A large number of recently employed young geologists were released from jobs. To make matters worse, scores of experienced geologists, perhaps hired by smaller companies from large companies only a short time before, found themselves back on the street also. The new geologist faced competition for the few available jobs not only from his peers, but also from the older hands. It's been a difficult time for many since the end of the hiring spree.

CURRENT SITUATION

No reliable figures exist on the total number of petroleum geologists that are employed by U.S. firms. As of August 31, 1984, the membership of the AAPG. was 39,459 (not including student

members). A "guesstimate" is that there are about 50,000 U.S. geologists working in petroleum-related jobs. Currently there are about 45,000 geoscience majors enrolled in U.S. universities, a total equal to the entire membership of the AAPG.

In 1984, approximately 6,500 students will receive undergraduate and graduate geoscience degrees. Of these, only about 200, or 3 percent, will be hired by the 20 largest U.S. oil and gas companies. The remaining 97 percent will have to look elsewhere.

Where will they go? The latest report of the American Geological Institute Mini-Manpower Survey (1981-1982) provides some clues, although the report is now out-of-date. The survey covered 5,173 1980-81 graduates. Three months after graduating, 3,768 or 72.84 percent had found jobs, 1,381 or 26.70 percent had enrolled in graduate school, and 24 or 0.46 percent were known to be still job searching. Of those hired, 2,803 or 74.39 percent found jobs in industry, 205 or 5.44 percent with the federal government, 140 or 3.72 percent with state and local governments, 160 or 4.25 percent in academia, and 380 or 10.08 percent were listed in "other" category.

The category "other" was the second largest employment choice (after industry) in the survey. Jobs in this category included members of the Armed Forces, consultants, the self-employed, and a number of other vocations with no recognizable connection to the geosciences.

Significant in the overall statistics is the fact that less than one-half of one percent of geoscience graduates were still looking for a job three months after receiving their degrees. As a group, geoscience majors are highly employable, and it should be encouraging to anyone receiving a degree that a broad spectrum of employers can use his or her services.

PREPARING FOR A CAREER IN PETROLEUM GEOLOGY CHOOSING A COLLEGE

With any task, good preparation is essential to its successful completion. This is true in finding employment. The sooner that you begin, and the more thought you give to making yourself employable as you progress through your university studies, the more likely you are to have job offers when you graduate.

It's never too early to begin your preparation. If you are still in high school and enjoy physical sciences and math courses, you may want to take geology courses in college. If you major in geology, your employment opportunities may be influenced, perhaps greatly, by your choice of schools.

If you ask a college recruiter of a major oil company what he is looking for in a prospective employee, he likely will tell you that he wants a person with above-average grades (particularly in geology, math, and other science courses), an M.S. or M.A. degree (which includes completion of a thesis) from a well-regarded school, good recommendations from the faculty, and some record of work experience. Anyone who has those credentials usually can get at least an interview appointment. During boom periods when the supply of geologists lags the demand, companies may become less restrictive in applying these criteria. Nowadays, graduates receiving job offers generally fit this profile.

Major oil companies traditionally interview, recruit and hire from a rather limited number of colleges. When the supply of available candidates is low, companies may expand their recruiting efforts to include a larger number of schools. But even in times of an oversupply of qualified graduates, as now, most companies will continue to send recruiters to a few of their "farm club" schools to selectively hire the better students and maintain their visibility with the geoscience departments.

Thus, when choosing a college, you should talk with the department chairman or geoscience advisor to learn how the graduates typically fare in the job market. If the department's graduates are not finding work, or if your advisor appears unable or unwilling to discuss the department's role in helping students and graduates to locate jobs, be cautious. It may be that the school's contact with industry is weak or non-existent, and that it has little interest in assisting you to find employment when you graduate.

In general, consider attending school in an oil-producing rather than a non-oil-producing state, and at a larger rather than a smaller institution. There are obvious exceptions, but the larger schools are more likely to offer a breadth of instruction that smaller schools cannot. The larger schools are better known to the companies, and they have more graduates working in the industry. The choice of undergraduate school is less significant if graduate work is completed at a larger one.

CURRICULUM

I am often asked what courses should be taken in undergraduate and graduate programs that will be useful later.

The Committee on Academic Liaison of the AAPG. (currently chaired by Dr. Charles F. Dodge, 111) is charged with serving as a liaison between the Association and academic institutions. One of its activities is advising geology departments on matters of curriculum for students interested in

petroleum geology. It is currently compiling a list of suggested courses, and when completed sometime in 1985, its recommendations will be published and made available to geology departments through the AAPG.

Dr. A. V. Lewis, a member of the committee and the Manager of Special Projects of Union Oil Company of California, asked his colleagues for their opinions regarding a suggested geologic curriculum. Results summarizing the opinions of eighteen Regional and District Managers who are responsible for Union Oil's exploration in the Gulf coast, East coast, Permian basin, Mid-continent, Rocky Mountains, West coast, and Alaska are provided as Tables I and 2, for undergraduate and graduate students, respectively. The respondents ranged in age from 35 to 65 and almost all graduated with M.S. degrees in geology. You may find this opinion survey useful in considering your course selection. It is the most comprehensive survey that I have seen on the utility of specific courses to the industry.

There are several college courses which are normally not required of geology majors, but which will be helpful to you in your career. Economics, statistics, petroleum and reservoir engineering, computer programming, and oil property valuation are subjects of which you should have some understanding. If you don't have sufficient time to take these courses for credit, perhaps you can audit them to attain familiarity with the terms and concepts. Even if you don't have time to do all the assigned homework, you will learn much by just attending the lecture sessions.

ADVANCED DEGREES

Several questions are often asked by students about advanced degrees, and I include my thoughts about them:

Q. Is graduate work really necessary to get a job?

A. In boom times probably not. But most of the larger employers of geologists, particularly these days, like to know that a prospective employee or associate is capable of doing graduate-level work and capable of completing a project that is presented in written form (like a thesis). The M.S. degree has become the *required degree* of companies *now*, to the same extent that a B.S. degree once was. When hired, a qualified M.S.-degreed geologist will probably be retained in preference to an *equally experienced B.S. recipient if the company faces retrenchment.*

Q. Is it better to do graduate work at a different school than where the undergraduate degree was received?

A. My opinion is that it is better to transfer, particularly if the undergraduate degree is from a

small school, or one outside of oil-producing areas. All schools develop their own objectives, styles and strengths. Exposure to a different group of students and faculty members and a new academic environment is a broadening and worthwhile experience.

Q. Is it better to continue work for a M.S. immediately after receiving a B.S., or should one get out and work awhile?

A. The answer depends on several factors: one's own financial situation, the availability of meaningful employment, and one's personal interest in and aptitude for more advanced work. Generally, I'd recommend remaining in school if possible. Once a job is found and one stops attending classes, it's usually difficult to break away from work and start back to school.

If your financial situation simply will not allow you to stay in school on a full-time basis, I'd investigate the possibility of finding a job that would permit you to continue work on a graduate degree in night school or on a part-time basis. Several geoscience departments offer such programs and I believe your potential for full-time geological work is greatly enhanced by continuing your education.

Q. Will it help my chances for employment to get a PhD?

A. Again, an opinion. I would not, unless I was motivated by a strong desire to teach, work in a laboratory, or to do research in a specialized field.

Several years ago I attended an AAPG convention during which employment interviews were being conducted. There was a long line of employment applicants awaiting their turn to visit with corporate recruiters. After a full day, interviewers left the room saying that most of the applicants

were either under- or over-qualified. The graduates complained that the interviewers just seemed to be "tire-kicking" and did not really want to hire anyone. I believe that there were simply very few applicants who met the companies' screening profile. Many graduates seeking employment had PhD degrees and represented themselves as specialists. Most of the companies already had specialists who filled the small number of positions available. What the companies wanted were well-educated geologists who were ready and willing to do general geological work: construct contour maps, make electric-log cross sections, do wellsite evaluations, field-check data, conceive drilling prospects, and write recommendations and reports. The companies didn't need those candidates who expressed the interest to work solely as a specialist. Once one is hired however, being able to use a specialized skill in one's daily work is an asset, and

can be rewarding when promotion time comes around.

THESIS

One of the most valuable experiences in preparing for your professional career is writing a thesis. Selecting a topic, doing the research, organizing the material, writing, editing and rewriting are tasks that you will probably find as onerous and frustrating as they have been for thousands of students before you. However, as a professional geologist you will be doing many of the same activities as you do while working on your thesis, and there's no better time to learn than in graduate school.

When employed, you will be required to write technical reports, project proposals, recommendations to management, and mountains of correspondence. The ability to write accurately and succinctly will be of great help to you in your career, and your future promotions may depend on how well you do at it. After completing work on your thesis you will find that you can express your thoughts more effectively and with greater confidence than you did before. You may find that the thesis is the single most useful requirement of graduate school.

Work on a thesis can be an effective employment tool. Some universities encourage graduate students to contact exploration managers, geologists, and geophysicists of companies to suggest research topics suitable for graduate level investigation. Almost every active company will have a list of proposed research projects that it would like done, but hasn't had the time or budget to assign to a staff geologist. The company may welcome a graduate student to work on such projects. When faculty approval is secured on a selected topic, the student and faculty advisor can approach the company together to determine what cooperation and support may be available.

Perhaps the company can't fund any part of the research effort directly, but is willing to provide office space, use of a geologic library, data from commercial sources, cores and samples, seismic data, reports and files, access to company geologists, typing help or other services. Such an association can be a beneficial one for both the company and the student. The company receives work at little or no direct cost and has an opportunity to evaluate the abilities of a geologist whom they may consider hiring upon graduation. The student does meaningful work in a "real world" situation, establishes contacts with a company and its geologists, and successfully completes requirements for a master's program.

Even if the graduate is not hired by the company which sponsored the investigation, it is likely that a

topic suggested by an industry representative will be of interest to other individuals and companies. A thesis is often the ticket to get by the secretary at the front desk to see the chief geologist or exploration manager of a company. It is a rare explorationist who isn't interested in looking at the work and visiting with a graduate who has just completed a geological investigation in the company's area of interest. Many a recent graduate has been hired on the spot by a company who realizes that he can "hit the ground running" if his thesis and the company's interests coincide.

CONTACTS IN INDUSTRY

It is important for you to know as many people in your business and professional life as you can. To a large degree, contacts are the key to your finding employment, to enjoying your professional career, and often to advancement in your company.

One of the steps of preparing yourself for employment is to establish contacts with geologists in industry as soon as possible. If you are still in school, join and be active in your geology club, Sigma Gamma Epsilon, and/or an AAPG. student chapter. If your department doesn't have one of these, help start one.

Invite geologists to visit your clubs and chapters. Meet and talk with them. Find out as much as you can about them, their companies and the industry they represent. Establishing rapport with one or more of such professionals can greatly facilitate your efforts to initiate contact with industry representatives when you are ready to go to work.

Become a member of such organizations as AAPG., GSA., SPE., and other organizations that provide for student affiliations. Go to the meetings and conventions of these groups whenever you can. If one of the conventions is conducted locally, ask if you can operate a projector, be a runner, or do any other job that will enable you to meet and work with employed geologists.

Use every opportunity available to meet with people who might be contacts for you in your job search. I well remember the student reception scheduled at the AAPG. Annual Meeting in Dallas in 1983. Seven exploration managers of Dallas companies were invited by the Reception Committee Chairman to attend the reception. They were present to visit any of the students who might want to talk about employment or other topics. Each of the companies represented employed at least a few geologists, and would doubtless hire others in the future. Approximately two hundred students attended. Many regarded the event as just a beer-bust, wore jeans and T-shirts, and spent their time visiting with school acquaintances and pouring beer in each others' pockets. Some, however, came in

suits, brought a stack of resumé's, and were ready for any opportunity to talk with prospective employers. They soon recognized their chance, and spent their time in useful discussions with the company representatives.

Don't overlook the help that can be provided by faculty members. Company recruiters regularly solicit recommendations and evaluations of students from professors and instructors. You should work hard to keep your grades high while in school, and participate in those activities in which your abilities and contributions can be recognized. If you need financial help or other support while in school, visit with your faculty advisor about it at an early stage. An advisor may help find industry help for you, and be instrumental in getting interviews for you upon graduation.

CONTINUING EDUCATION

Your future career in geology will require much knowledge and many techniques that you have not learned in school. Traditionally, major companies provided advanced training to young graduates through on-the-job training and company-run schools and short courses. Even if you are currently unemployed or underemployed, you should plan to acquire the skills needed by a geologist, because the greater your command of these skills, the more easily you can find employment and the greater value you will be to yourself and an employer. Thus you should look beyond your college curriculum to the information that will be useful to you later on.

Fortunately, in the last few years there has been a veritable explosion in the educational opportunities and materials available to geologists. As an example, in 1976 the AAPG. published only five new publications; in 1984 there were 21. In 1976, it sponsored only two educational schools; in 1983 there were 19. AAPG. now produces slide tapes, course notes, and educational films; none of these were available a decade ago. It also sponsors single speaker programs, field seminars, short courses, distinguished lecturer tours, and visiting petroleum geologists.

Other professional organizations and commercial firms run courses similar to those of the AAPG. in cities and towns all over the country. Subject matter, quality of presentation, and costs vary greatly, but all courses offer the student an opportunity to increase knowledge and proficiency.

The basic tool of the subsurface geologist is the electric log. If you have not yet attained some proficiency using electric logs, you should do so as soon as possible. Many logging companies offer one and two-day schools on new tools, and occasionally short courses in basic electric log evaluation. Contact the various electric logging companies to learn of course availability and

schedules. In the meantime, pick up a copy of George Asquith's excellent new book *Basic Well Log Analysis for Geologists*, available from the A.A. P.G.

Other useful skills include typing, drafting and geological graphics, and computer programming. If you don't already have a working ability with these, find some way to acquire it.

Learn where geological data is available in your area. If there is a library of geological information or data nearby, learn what it contains and become familiar with its use. Your **first job may be to gather data for** a geologist's project and

help him with the mapping. If you can respond immediately to someone's need for data retrieval, you may be able to start work on short notice.

WHO ARE THE EMPLOYERS?

EMPLOYER GROUPS

The following is a list of types of employers that utilize geological services. The list is not complete, but should indicate how wide a choice of companies there is for you to contact.

1. Major oil companies.
2. Independent oil companies.
3. Individual independent oil and gas operators.
4. Mining and mineral extraction companies.
5. Electrical well logging companies (examples: Schlumberger, Welex (Halliburton), Dresser, Western, independents).
6. Mud-logging companies.
7. Core and sample analyses companies (Core Laboratories, Inc., TerraTek, and others).
8. Banks (oil and gas divisions, trust services, new business departments).
9. Oil well drilling companies (they need prospects to sell to clients).
10. Water well drilling companies (they need field supervisors).
11. Workover and completion service rig companies (owners have oil and gas production, want to develop their own properties).
12. Well service companies (fracturing, acidizing, perforating companies. Geologists do research in laboratories on well treatments).
13. Federal agencies (examples: Internal Revenue Service, United States Geological Survey, Bureau of Land Management, National Aeronautics and Space Administration).
14. State governments (regulatory agencies, state geological surveys, highway departments).
15. Local governments (land fill inspectors, pollution and waste control, appraisals for taxing).
16. Tax appraisal firms (they value minerals,

- production, equipment for tax authorities).
17. Teachers (elementary, high school, college).
 18. Oil field product sales (chemicals, treatments, tubular goods).
 19. Data gathering and dissemination services (examples: Petroleum Information, Dwight's Reports, Petroleum Data Services, Hotline Reports and Log Libraries).
 20. Geophysical data acquisition services (observers, sales representatives).
 21. Geophysical consulting firms (record processing, geologic interpretation).
 22. Investor representatives (corporate and individual).
 23. Land ownership agencies (trusts, companies, estates, individuals).
 24. Testing laboratories (construction materials).
 25. Consulting firms (geological, pollution and corrosion control).
 26. Industrial and construction quarrying operations (reserve and quality estimation for silica glass sand, cement and road aggregate quarries).

It should be noted that employment of geologists in several of these jobs is a relatively recent development. As an example, many drilling contractors who had never used geologists before are now hiring them for permanent positions.

Traditionally, most drilling contractors obtain work for their rigs by bidding on jobs when requested by operators to do so. In times of slow drilling activity the contractors become more aggressive in soliciting work from operators.

During the 1971 to 1981 period drilling activity soared. New contractors came into the business, and established ones purchased new rigs or put back into service rigs they had previously stacked. The active rig count rose from 814 in March, 1971 to a peak of 4521 in December, 1981.

As of late 1984 the active rig count stands at about 2500. Many rigs, purchased at the peak of drilling activity at high prices, stand idle. Their owners are under severe pressure to find work for the rigs in order that mortgage payments can be made to the financial institutions that financed them.

Nowadays, some of the drilling contractors are hiring geologists to originate drilling prospects on which to utilize the rigs. The contractors then contact investors and operators to finance the drilling. If you have contacts with any drilling company you should ask about the possibility of working with them on prospect generation.

Employment of any kind should be viewed as an opportunity to work, learn, and integrate yourself into the geological community of the area. There are few really dead-end jobs.

I know of graduates who have refused offers

from mudlogging companies, for example, because they have heard that such work is dull, routine, and offers few opportunities for advancement. A geologist who accepts work as a mudlogger with such pre-conceived attitudes is likely to find the work to be just as he expected.

Alternatively, I have known geologists who have used a tour of mudlogging as a stepping stone to more rewarding work. They joined the local geological society and attended meetings and education courses. They spent time meeting clients and visiting with company geologists who visited the logging unit at the well site. They used their spare time to learn the stratigraphic column and read publications about the local geology of the area where each well was being drilled. As they looked at each sample they sought to ascertain its depositional environment and consider its position in a depositional model. They became aware of the succession of rock types in a sequence of strata, and made a game of trying to predict what the next recovered sample would be. After a year or two of such work, they were as knowledgeable about the geology of an area as other geologists who had studied it for a much longer time. They were ready to assume a position with any company as a competent wellsite geologist, and felt that they had learned much about oil field practices and operations.

MAJOR COMPANIES

Your job search should move from contacting the employers who can offer you the greatest opportunities toward those who can offer less. If you have the qualifications that the majors want, I'd recommend you begin by contacting them first, then work down the list toward the smaller companies.

There are many reasons why large companies are a good place to begin your career. They have attained their relative sizes because they have conducted their businesses well. All have been successful in managing their basic exploration objectives. As a geologist, you need to learn how the companies have become successful: what their exploration strategies are; how they organize and conduct their business; and how they attract, train, and utilize their people.

Large companies have excellent training programs. They conduct short courses on specific topics, and have long-term programs for moving a geologist through the exploration and production departments of the company. They have the time and resources to help you continue your education. Their spectrum of activities is sufficiently broad to acquaint you with a wide range of problems and learning experiences.

Jobs with large companies are fairly secure. Such companies have a longer-range perspective of

the future than do most small companies, and they can afford to make employment commitments to their people that small companies usually cannot. Salary levels are high and benefits generous.

Techniques and equipment used by the majors are usually state of the art. Innovations in technology and utilization of new exploration concepts are often pioneered by large companies because they can afford to do so.

Even if you work for a major company for only a short time, you will have an affiliation with it all your life. You will make lasting friendships that will be helpful to you throughout your career, and you'll acquire an understanding and appreciation of the way a large company functions. I'd recommend that you try to get some experience with a major company, even if just for the summer or part-time.

The contributions of major companies to the professional growth and general competence of many geologists working today can hardly be overstated. The problem is that the majors are hiring a relatively few graduates this year. Obviously, most of you will have to look for jobs elsewhere.

INDEPENDENTS

The next group of employers to consider are those companies of smaller size than the majors. The September 10, 1984 issue of the Oil and Gas Journal (pp. 103-107) lists the names and headquarter cities of the 400 largest publicly owned oil and gas companies, as of year end 1983. Even though many of the companies are small, they may drill or participate in numerous wells, as shown in the listing.

Besides publicly-owned companies, there are hundreds, perhaps thousands more, which are privately owned. In addition, there are literally thousands of individuals who are independent operators. The important fact is that there are many companies and individuals in the business, and any one of them may provide an opportunity for you to get started.

Smaller companies and independents have less well defined employment criteria than do the majors. They may fill their need for experienced personnel by hiring from the majors, but take young geologists directly out of school. With the current over-supply of geology graduates, many such companies are now hiring graduates with master's degrees for wages that they previously paid to those with bachelor's. You may find salary and benefit offers from small companies to be considerably less than from larger companies, but your chances for finding employment with one of them is much greater.

It may take some digging to find employment opportunities. Your prospective boss in a small company may be as unfamiliar with employment

procedures as you are. He may know that he needs geological support but is unsure about how to go about finding someone with the required technical education. He may be willing to hire one or more recent graduates but is not systematically conducting a search by placing advertisements in professional journals or in recruiting on college campuses. He may be waiting for someone he knows to refer a geologist to him. Getting together with him is your challenge, and will require your creative ideas and a little luck.

CONTACTING EMPLOYERS EFFECTIVELY KNOW WHAT THEY NEED AND WHAT YOU CAN OFFER

Before you start on your job search you should objectively make a list of your strengths as a geologist - these qualities will most likely be the result of the geological activities you have most enjoyed the last few years.

Your list might include field work, subsurface mapping, laboratory analyses, library research, computer programming, or verbal presentations. The list need not be exhaustive, but should point you toward the type of help you might offer an employer.

Several years ago a study was conducted by a large oil company to learn how their geologists used their time. They found that 90 percent of a geologist's time was spent collecting, annotating and displaying data, and 10 percent interpreting the data. Knowing this, when you talk with a prospective employer you might emphasize your familiarity with geological data sources, or your experience in setting up a computer data base on a school project. If he can see that by hiring you he can reduce by as much as 90 percent of his current work of data collecting and annotating, he may hire you to do those tasks for him.

If a substantial part of an employer's business is representing drilling proposals to investors, he may be spending much of his time on the road making presentations. If you have good communication skills - in speaking and writing - you may be valuable in helping prepare prospect brochures and talking with investors. The employer thus high-grades his own time to making the initial contact with an investor, determining the investor's interest, and setting up a schedule of visits for you to make.

Almost every geologist has a special project in mind that he intends to work on "one of these days." The project may be of limited duration: the construction of a single map, for example. Or it may be an ongoing one, such as posting maps with current well information and integrating the data. You can ask a prospective employer if there are

such projects that you could work on. Sometimes "temporary" jobs turn into full-time employment if the assigned work is done well.

RESUMES

There are numerous guides available for helping you prepare your resumé. Available from the AAPG. are the course notes of *Workshop in Interview Skills* by Mary Sue Hayward, presented at the Dallas Annual Convention, April, 1983. It is an excellent guide for preparing for an interview, and contains a section about the preparation of a resumé.

The general rule about resumé is that they should be typed, but it's okay to distribute xerox copies to prospective employers. Two pages is usually sufficient to cover all pertinent facts.

It should include a statement of your career objectives, universities you've attended, and degrees you've received. List those jobs you've had which relate to your career objectives. Show publications, if any, and significant career-related short courses or special schools that you've attended. If you have particular skills, or proficiency in a foreign language, list them.

Attach a copy of your college transcript. Any employer will want to see it, and you'll save him the trouble of asking.

I suggest you attach a 2- by 3-inch black and white photograph. It will be of help to an employer to remember an interview later.

A list of references should be provided, or be available on request. It's usually not desirable or necessary to include letters of recommendation. If the prospective employer is interested in you, he'll follow up by talking with your references directly or by using his own sources.

A possible exception to the "no letter" policy might be that a previous employer, for whom you've done good work, is forced to terminate your employment because of his business failure or some other factor. A strong letter of commendation on your behalf might save a prospective employer the trouble of contacting your previous one to learn why you were let go. If you left of your own choice, and if your employer will provide a letter of recommendation, you probably should include it also.

My experience is that most employers will "deep-six" unsolicited resumé that they receive from geological applicants. You shouldn't expect replies from those to whom you send resumé. However you should have a resumé available to give to any prospective employer should he ask for it.

INTERVIEW SKILLS

An interview with a prospective employer is an important meeting. In a short period of time, usually

less than an hour, the employer will be trying to learn as much about you as possible, and assessing how well you might fit into his company.

You need to be as well-prepared for the interview as possible. The course notes of *Workshop in Interview Skills* was mentioned in the preceding section as a good reference. Interview workshops and seminars are frequently conducted by the AAPG., by other professional organizations, and often by schools and departments.

A few topics are sufficiently important to be covered here:

1. **Appearance.** For campus interviews, school clothes are generally appropriate. Your department chairman should inform you if there are guidelines regarding interview dress codes.

For interviews in a company's office, you should dress as you expect the interviewers to be dressed. If the company is in a major city, coat and tie should be worn. In small towns you can dress more casually. However, if there is any doubt, it is better to overdress than underdress.

2. **Be informed about the company.** Before an interview, you should learn as much about the company as possible: its primary activities, where it operates, its latest significant discoveries. For publicly-owned companies, you can write the company before the interview to obtain a copy of its annual report to stockholders. The report will include a letter from the chairman of the board or the company president describing its latest activities, its concerns, and how the company fared the preceding year.

Another source of data about a public company is the Standard and Poor's Standard Stock Reports. These provide a statistical profile of the company, particularly as it relates to the company's stock, but much additional information is stated also. The reports are available for reference at any brokerage firm or any large public library.

Information about privately owned companies may be more difficult to obtain. However almost any independent geologist located in the same city as the company may be able to tell you something about it or help you obtain additional information. Consult the list of members of the Division of Professional Affairs (DPA) of the AAPG. for names of independent geologists.

3. **Ask questions.** You should be as interested in learning about the company as the interviewers are about learning about you. Ask questions about how the company goes about looking for oil, what exploration tools are most useful to

them, and for small companies, how their drilling is financed.

4. **Don't be overly concerned about benefits, location of employment, or advancement schedules.** Once a geologist is hired, a company will usually be fair and equitable about rewarding his efforts. Promotions and salary adjustments are reasonably provided. Do be interested in the company's training program and how much emphasis is placed on helping you gain proficiency and experience.
5. **Be prepared to discuss your primary interests and strengths in geology, and your long-term career goals and ambitions.** Rehearse the answers to any questions you think might be asked.
6. **Be positive.** Companies like their employees to be enthusiastic about their life and work. They want to feel you are ready and willing to give their job your very best effort.
7. **Companies like their geologists to be team players.** Before the interview, review the positive experiences you've had working with other geologists at field camp or on class projects. Be prepared to discuss your involvement in working with others in school projects, on athletic teams, and in community and church affairs.

CAMPUS INTERVIEWS

It would be difficult to over-emphasize that your best opportunity to get hired is at your own college, while you are still in school.

At that time, everything is in your favor. The recruiter who visits your school probably does so on a tour that will take him to several schools before he returns home. His company has determined that it can hire a specified number of geologists for the year, and the recruiter may be able to make job offers on the spot.

You are on home ground. The interview setting is familiar. The recruiters will have reviewed your records, talked with your professors and will know much about you before the interview. No other employment opportunity offers you the same advantages.

For that reason, your school and department should do everything possible to attract employers to the campus. One of your school's policies should be to prepare a brochure for companies, as soon as possible in the school year, which contains resumés of the prospective graduates. Data should include schools attended, career objectives, titles and descriptions of theses, and other salient points. These can be updated at little cost again before the school year ends.

At least once a year, letters and brochures should be sent by the university to all known and

prospective employers of geologists, particularly those in your state. There should be follow-up calls or letters to the companies' employment representatives. Department alums should be contacted and asked to help recruit. If a departmental industry liaison committee does not already exist, one should be established. Whatever can be done to strengthen relationships with individual companies should be done.

You cannot be responsible for all these items independently, of course, but the projects can be worked on through your campus geology clubs and organizations, as well as through your faculty counselors and advisors. Your local AAPG. Student Chapter can assist your faculty with such items. If an AAPG. chapter doesn't yet exist on your campus, help organize one!

You should interview with all recruiters who visit the campus. Going through several interviews will help you develop poise and confidence, and each interview should provide information which will be useful to you in subsequent ones. Even if a company doesn't offer you a position, you may want to contact the interviewers later on.

Further, you will be helping your school and department make a strong showing with the companies represented. No recruiter likes to visit a campus and find a half-filled schedule. Be sure that your school or department does all that it can to adequately announce and promote on-campus recruiters, and that the recruiters have a full schedule of appointments when they arrive.

ADVOCATES

The most likely person to help you land a job may be an obvious one. Search your memory to recall anyone you know who might be able to hire you, or could put you in contact with someone in his company who can. If you know such a person, make an appointment and go by for a visit.

What you are looking for is an advocate - someone who will become actively involved in helping you find employment. Many working geologists, particularly those in small companies, have contacts who can find room in their budgets to squeeze in some geological help on a full- or part-time basis if they really want to do so. The companies these professionals represent may not be actively recruiting geologists - possibly would not even discuss employment with you if you walked in their door - but nevertheless could use you if they were contacted by someone they wished to accommodate.

Your advocate may be a family member or friend, one of your professors who has good industry contacts, a recent graduate of your geoscience department who has already found employment, a fraternity or sorority contact, an

older alumnus of your college, a geologist you've met at a society meeting or convention, or someone with whom you've previously discussed your career. Such a contact can open doors for you that would be difficult to access other-wise.

When you have identified one or more possible advocate candidates, contact them by phone and make an appointment to visit in person. You need to spend a little time together and if they are too busy or preoccupied with other matters when you visit little will be accomplished.

Present your resumé with a copy of your college transcript attached. If you have completed a thesis, take a copy of it with you. It is probably your single best aid besides your resumé to represent yourself to a prospective employer. It can initiate dialog and may spark some thoughts in your advocate's mind about other people who might be interested in your work.

Briefly tell him about your situation and interests, and that you need help in identifying individuals or companies that you can contact about employment. Tell him that you would

consider hourly or part-time work, if you will, and ask him to provide the names of two individuals or companies that you might visit about finding work.

If he can suggest companies, ask for names of individuals to contact. If you know your advocate well, you might ask if he will contact them to help set up a visit with you. If you aren't comfortable in asking him to make calls, ask if you may use his name when you contact the individuals. If he is unable or unwilling to provide any names for you, he's probably not going to be particularly effective as an advocate. Move on and look for someone else to help. If he can provide names, contact the individuals as you did your advocate. Solicit two more names from each of them. By expanding your network of contacts in a local area you'll be learning "who's who" in the business, and may discover an advocate who's even more interested in you and more effective than your first contact.

In any case, report back to your advocate after you've made your visits to the persons he suggested. Let him know of your progress.

If you hit a blank wall and get no new names from your contacts, ask him for the names of two more individuals. As you periodically report back after your visits you may find that he will provide more, rather than fewer names each time you call. Your problem will become his interest, and together you can be more effective than you alone.

I'm not suggesting that you badger your advocate or make a pest of yourself. If you sense that he does not have the time or the interest in you, don't press. Pick up your net and begin again

elsewhere. But if you find that your advocate is really helpful, you may have found a lifelong friend, and someone you will recall with appreciation each time in the future you contemplate these now worrisome days.

DIRECTORIES

Directories can be effective tools in drawing up lists of companies and individuals to contact. Used properly, they can be gold mines of information and help. There are several types: commercial, professional and social.

Commercial directories list companies by operations (e.g., Oil and Gas Producers, Gatherers and Transporters, and Service Companies. Most directories cover only a local area, although some list companies worldwide. Most are available for purchase, or can be used at public or university libraries.

Many directories list names and titles of key employees. Thus, if you wish to contact the exploration managers of all oil producers in a city, such a list can be easily compiled. Additionally, some directories show the amount of oil or gas a company produces monthly or annually; some idea of the size and extent of a company's operations can be ascertained.

Here are examples of some of the more common commercial directories:

Armstrong Oil Directories, published by Oil Men's Association of America, 1606 Jackson Street, Amarillo, Texas, 79102. Current editions cover various areas. (806) 374-1818.

Midwest Oil Register, Drawer 7248, Tulsa, Oklahoma, 74105. (918) 742-9925.

Oil Directories, Inc., 2671 General Drive, Fort Worth, Texas, 76118. (817) 429-5172. Current editions cover various areas.

Oil Directory of Texas and Production Survey, published by R. W. Byram & Company, P.O. Drawer 1867, Austin, Texas, 78767. (512) 478-2551. Current edition.

The Oil and Gas Directory, 2200 Welch Avenue, P.O. Box 13508, Houston, Texas, 77219. (713) 529-8789. Current edition.

The Whole World Oil Directory, published by Tradex Publications, 4728 W. Alabama, Houston, Texas. (713) 6230690. Current edition.

USA Oil Industry Directory, published by Oil and Gas Journal, PPC Books, a Division of the Petroleum Publishing Co., P.O. Box 1260, Tulsa, Oklahoma, 74101. (918) 836-0409. Current edition.

Professional directories are those which list the members of professional associations, such as the American Association of Petroleum Geologists. Some of these are available for purchase from the respective societies' headquarters, or in public libraries. Any member of a society is likely to have

a copy which you could use.

Professional directories usually list their members alphabetically, but may cross reference them by business addresses, professional specialities, and geographic areas of practice and experience.

The directories of local geological and geophysical societies may be most useful to you, especially if you have narrowed your search to one city. Almost all geological societies publish directories which commonly include photographs of the members, company titles, addresses, telephone numbers and universities attended. This last feature can be of special help to you. With it, you can compile a list of graduates of your school and determine their job titles within a company. You will probably find that graduates of your school will be especially receptive to helping you find work, either within their own companies or with one of their associates.

Examples of professional directories are listed below:

Annual Report and Membership Directory, published by the American Association of Petroleum Geologists, P.O. Box 979, Tulsa, Oklahoma, 74101. Current edition.

Membership Directory, published by the American Institute of Professional Geologists, 7828 Vance Drive, Suite 103, Arvada, Colorado, 80003. Current edition.

Membership Directory, published by the Geological Society of America, Inc., P.O. Box 9140, Boulder, Colorado, 80301. Current edition.

Directory, published by the Society of Independent Professional Earth Scientists. Suite 100, One Energy Square, Dallas, Texas, 75206. Current edition.

Social directories can be useful to you too. Included in this category are lists of members of fraternal and sorority organizations (they may have alumni clubs in local areas), petroleum and energy clubs, and country clubs. Usually, directories of such organizations are provided only to members, but occasionally they are available at the clubs' headquarters or in local geological libraries.

These directories contain the same type of information as do professional directories: members' names and addresses, titles or occupations, and schools attended. They may include owners and key employees of companies, and others who you may wish to contact but who are not listed in the professional directories.

DRILLING AND ACTIVITY REPORTS

The most active oil companies are those most likely to need your services. Use of drilling and activity reports can greatly aid in helping you

decide who to see and how to make your contacts.

All the wells drilled in this country are reported in various periodicals: newspapers, magazines, and proprietary reports. The reports are ~ sent to subscribers. These subscribers include operating and service companies, independent operators, and petroleum data libraries. Names and addresses of the operators, and drilling completion information of each well is provided.

The reports, used as a cross reference, can quickly yield the names of companies you could contact for employment. For example, if your thesis covered a Mississippian formation in Hardeman County, Texas, a quick scanning of the drilling reports could provide the names of operators who had drilled wells to the Mississippian in Hardeman County within the past year, and those who have announced their intention of drilling future wells. The list is a valuable method of narrowing your search to a few companies who are interested in your thesis topic and are active in the area.

As has been previously mentioned, even if the companies you contact don't offer employment, they are good sources of information about other operators in the area who might be contacted for work.

Nation-wide coverage of drilling activity is provided by Petroleum Information Corporation, 4100 East Dry Creek Road, Littleton, Colorado, 80122. Through their district offices they collect and disseminate well information and provide various other services to the industry. Current copies of their reports can be found in offices of many oil companies.

Wherever you work, these or similar reports are available for the area. You should be able to locate a subscriber who will allow you a few hours' use of the reports, or a library where they are available.

GETTING IN THE DOOR

If you are to the point in your job search that you are contacting companies or individuals you have targeted as potential employers, you may find that it is difficult to get in to visit anyone with the authority to hire you.

Of course, if you have made your contact through your advocate, you will probably be able to schedule an appointment. If not, you should still try to arrange a meeting beforehand rather than just showing up at an office unexpectedly.

If you arrive at an office without an appointment, you may find the person you'd like to visit busy or out of town. Even if that person consents to see you, he may regard you as an interruption of his day's business and resent the time he spends with you.

The best way to make an appointment is to identify, through use of directories, advocates, or

other referrals, the person in a company who would be most likely to be interested in your work, and who might be able to offer you a job. In a moderately large company, that person may have the title of exploration manager, district or division exploration manager, or chief geologist. In a small company it may be the operations manager or the president.

Contact the person by phone. Introduce yourself and *briefly* tell him where you went to school, when you graduated, and what you are calling about. If you completed a thesis, tell him its title and that you would appreciate the opportunity to discuss it with him. Ask if you might stop by for a short visit. If your thesis topic covers an area of company activity, or relates to one of his interests, he'll probably be willing to spend a little time with you.

When you arrive for your appointment, give him a resumé and show him your thesis. If your thesis has pointed out ideas which may have exploration possibilities, discuss them with him. Ask if there is any way you might continue to work the same area for his company. You may be able to get a retainer for at least a few months to follow up the ideas you've suggested.

If you have some experience in exploration and have originated some exploration concepts, discuss them in general terms with him. Almost any company is willing to consider or evaluate drilling proposals. A prospect brochure may be your passport to visit the exploration manager. It tells him much about you. If the prospect is poorly conceived and presented, his evaluation of you will be negative. However, if you present a valid exploration idea, complete with maps, cross-sections, and a brief explanation of your idea, the manager can assess your work and your possible value to his company.

Even if you have not written a thesis, you should take a portfolio of your best geologic work to an interview. A senior-year report, maps produced at your geology field camp, or other such projects can provide a starting point for a conversation with an employer.

Make an assumption that every company and individual could use one more geologist: you. The reality is that every company and individual who employs geologists now probably could use your help in some way, and the remaining questions are what can you do for them and what you will be paid.

Though not as effective as setting up interviews in a city in advance, going door to door in any active oil town will provide an opportunity to meet many people in a relatively short period of time. Use your time to visit as many offices as possible. You'll find that many potential employers have no

secretarial help, and you may be able to talk with someone who can help you immediately.

Where to start? If you are already in a city contacting a prospect lead, you might want to spend additional time in the same area. In many towns, oil-related companies and individuals tend to cluster in the same area, often in the same building. Check the directory board in a building for names of companies and independent geologists.

If you don't have a starting point for your search, consider first those states where geological employment is high now. The latest survey of AAPG. members reveals that 66 percent live in five states, as follows: Texas, 32%; Colorado, 11%; Oklahoma, 8%; Louisiana, 8%; California, 7%.

Twenty-one percent live in the remainder of the U.S., and 13 percent live in other countries.

With no other factors to influence your decision, pick a city or town in one of the states of high geologic employment where you think you'd like to live. Go there planning to stay at least a week or two, or until you have run through your list of leads. You'll find it more efficient to work one city well rather than several superficially.

GEOLOGICAL APPRENTICESHIPS

With the supply of geologists entering the job market now exceeding the demand, the situation is this:

1. Most companies are not actively recruiting new graduates.
2. Majors are hiring new graduates in very modest numbers, often just to replace retiring personnel. Their hiring criteria are rigid.
3. Starting salaries being offered by majors are high, having declined only marginally from those offered several years ago during boom times.
4. Only the top students are being offered jobs. The few students with the best records often receive multiple offers, but students with mediocre to low grades receive none.

Thus the employment situation is polar. A minority of graduates will find jobs with high salaries; the majority may have no offers at all. The best hope for most young geologists is to find some way to "get their foot in the door" of small companies or independent operators.

The "*geological apprentice*" program is an attempt to integrate the large numbers of new graduates into the industry at salary levels below those offered by the large companies. It is a post-graduate, on-the-job training program, at the lowest wages acceptable. The concept is similar to that which prevailed during the Middle Ages, when young men served apprenticeships to artisans and craftsmen for several years to learn their craft.

Ideally, an inexperienced geologist finds work

with an experienced one, who provides direction, suggestions, and critical review of work accomplished. Projects may include collecting and organizing data, making maps and cross sections, analyzing producing fields, working out the geologic history of an area, and proposing ideas for exploration and development wells.

Office space, access to geological data, and a minimum wage of \$5 to \$10 per hour is provided. When the young geologist has attained some proficiency in prospecting, perhaps within a year or so, and is actually contributing to the employer's success, his employment situation is reviewed. Salary levels can then be adjusted to reflect the geologist's acquired effectiveness. If wages can not be increased, the employer should aid the young geologist in finding work elsewhere where the salary levels are higher.

Several local geological societies have formalized the concept of geological apprenticeships into a program. They solicit individuals and companies who are willing to consider hiring young geologists at minimal wages, and help young jobseekers to get interviews with them. Even though local geological societies may not have such a program well established, many employers are receptive to the concept and are willing to discuss employment with you on such a basis.

As a job seeker, you should determine what is the minimum acceptable wage requirement before you talk with

prospective employer. Be prepared to propose a geological apprenticeship if you believe a job opportunity may exist but sense that the employer is unable or unwilling to pay a full starting rate.

ADVERTISEMENTS AND EMPLOYMENT AGENCIES

Young graduates often ask if they should place employment-wanted ads in magazines and newspapers, or contact employment agencies for help.

In my opinion, it will do little good for an inexperienced graduate to advertise for employment in industry publications. Employers do not usually look in publications for such help and I personally know of few ads placed by new graduates that have been successful. However, if you have a professional speciality or some experience in exploration, you may get some response.

You should regularly review the help wanted ads in newspapers and industry publications. Employers who live in remote areas or offer jobs with few possibilities for advancement often have difficulty finding and keeping help, and are more likely to run ads or use employment agencies.

Most employment agencies will offer little help

to you. They are more interested in working with experienced explorationists, specialists, or management people whose placement can earn large fees. They do not want to spend time working with anyone who may be difficult to place and/or earn them a small fee.

Many local geological societies have established employment committees as an aid both to their members who need geological help, and to unemployed geologists who are looking for work. Commonly the committee chairman keeps resumés on file of the "help wanted" and "positions wanted" people, and members and graduates can make arrangements to review the files.

Some societies publish in their society newsletter new employment listings. If you plan to look for work in an area that has a geological society, you should contact the society directly to learn if they can provide help. If you submit a resumé to a society, you should indicate on the form if you are available for part-time employment or as a "geological apprentice."

ALTERNATIVE STRATEGIES SELF EMPLOYMENT

Perhaps by this point in your job search you've already worn out a couple of pairs of shoes and a set of knuckles walking the streets and knocking on doors for interviews. You may have been to many companies but seldom made it past the receptionist's desk. On the occasions you have been able to talk with someone higher up in the company you've found he couldn't offer you much besides a few minutes' time and a suggestion that you look elsewhere. You may be thinking about chucking geology as a career, and are planning to talk with the nice folks at Sears tomorrow about work in the garden department.

Before you do, consider the possibility of working for yourself. Is there anyone, working in any position for any company, who hasn't thought about quitting his job and becoming his own boss?

It's not for everyone. The hours are long; the pay, at least initially, is peanuts; the boss, you'll learn, is usually a tyrant; vacations, bonuses, benefits, auto-allowances, and stock options are non-existent. Yet many geologists leave wellpaying and secure jobs each year to start companies or to work as independent operators or consultants. They do so knowing that the risks of failure are high but the possible rewards are great. Only a few who become independents achieve more than modest financial success, but the freedom to make their own decisions and the allure of possible profits can make the gamble worthwhile.

It may be that the failure to find a job at this time in your life provides an opportunity you

wouldn't consider otherwise. With nothing to lose, why not take the risk?

Most of the people who become independent do so after working for someone else for a time, perhaps many years. During their period of employment they gain knowledge and experience, and maybe a substantial cash reserve. When they leave their old job they will probably work in a related field, bringing to their new situation a confidence developed from years of experience.

You don't have that advantage. You will have to learn to operate on your own, make mistakes, learn from them and go on. I wouldn't advise most beginning geologists to select this option, but a surprising number of successful geologists started their careers in this manner. If you are determined to succeed as a geologist, and can afford some irregular paydays, you should at least consider the opportunity.

Self-employed geologists generally follow one of two career tracks, and describe themselves as either consultants or independents.

Someone once remarked that an independent was simply a consultant without clients. In that sense, you are already an independent, and can start functioning as one immediately. Actually, there's more to the choice than that.

A consultant usually has knowledge and experience in a particular regional area or specialty, and is available to work with clients on an hourly, daily, or job basis. In any active petroleum province there is a group of geological consultants who do wellsite evaluations, mapping projects, evaluations of drilling prospects, and appraisals of producing properties. These tasks are of time-immediacy and limited duration. Clients who hire consultants for such jobs may not have need of full-time geologists, and satisfy their occasional requirements with a consultant.

Independent geologists work on their own, usually not under contract to a client. The products of their time are maps, reports, drilling proposals and the like, and are sold to individuals or companies who buy those services when the work is completed.

It is possible for a geologist to function as both consultant and independent, working on maps and drilling proposals on his own time, but being available to do consulting work when the opportunity arises. Often a geologist begins his career doing both, and later decides to work exclusively as one or the other.

It may be useful to outline briefly how an independent operator works. Once you understand what he does you may begin to perceive how you can integrate yourself into the business.

To drill a well, three components are required:

an idea, usually based on geologic considerations; land (or contractual rights) on which to drill; and funds to pay for the work .

It is possible for one individual, an independent operator, to provide all requirements; he may create the geologic and/ or engineering concept regarding the existence and location of oil in an underground trap, negotiate an oil and gas lease to secure rights to drill a well, then use his own capital or find investors willing to take the risks to test his idea. He may even contract the drilling services, evaluate the hole, complete the well, and market any oil or gas produced. In short, he performs all the primary functions of exploration that a major oil company does, to the point of transporting, refining and marketing the products. Some independent operators enjoy all the required activities, and want never to grow beyond their ability to handle all the activities of drilling and operating a limited number of wells each year.

Of all professional degrees, perhaps geology better than any other prepares an individual to become an independent operator. The relative availability in the industry of the three necessary ingredients to drill a well fluctuates over time in response to changing economic and political conditions. The one most critical however, is the geologic idea, born in the mind of a geologist. Without it, otherwise prospective acreage remains undrilled, and capital which could be invested in exploration goes elsewhere. Who better than a geologist has the skills to conceive of an exploration idea, or to evaluate a geologic proposal brought to him by others?

This suggests that the closer you get to becoming a prospect generator, and the more proficient you become in applying new exploration concepts and skills, the more valuable you become to yourself and the industry. The fastest route to financial success for any geologist is to establish a record and reputation for generating good exploration prospects.

Capital can usually be found to drill the better prospects. Sooner or later most prospective acreage becomes available to lease (unless it effectively has been removed from exploration by governmental agencies). Only the lack of geologically sound prospects can inhibit and stall the ongoing search for petroleum.

Some geologists, blessed with an ability to communicate effectively, find they most enjoy representing prospects to investors. They may work cooperatively with other geologists who provide them with drilling submittals, for which they procure the necessary drilling funds. If you develop the ability to sell prospect ideas to investors you become a valued and integral part of the exploration

process. The industry has a tremendous requirement for capital each year, much of it gathered from outside sources, and well rewards those who can help get it into exploration projects.

The goal of most independent operators is to build up a revenue stream that comes to them month after month without additional work. The nice thing about oil and gas production revenue is that it can continue for many years. Even though production rates will decline through time, the prices paid for oil and gas may rise. An income source from mature, paid out wells provides a basis of real security, and traditionally has been a good hedge against inflation.

An independent geologist may acquire working interests or overriding royalty interests in wells as a result of his work. Being active in a producing area also provides the opportunity to evaluate and purchase producing royalty or working interests in wells. Often such purchases can be bankfinanced and paid out over time. As soon as properties do pay out, the income can be used for financing additional producing interests.

KEEP YOUR OPTIONS OPEN

For those who simply have not been able to find geologic work anywhere and can't afford the time or funds to consider self-employment, all is not lost. If you are dedicated to the goal of becoming a geologist, there are still possibilities open to you.

1. Go back to school. If you don't have an M.S. in geology and can afford to return to college, do so. Getting a master's degree will not guarantee your getting a job when you get out, but it will put you in the top 20 percent of the most academically qualified. And as has been previously discussed, working on a thesis in an active oil producing area can result in a job directly, or will provide valuable knowledge for your future as an independent should you choose that career path. Besides, it is possible that by the time you graduate employers may be more actively recruiting than they are now.
2. Try to find work of some kind in an oil producing area. It will be much easier to learn of employment opportunities as a geologist if you live in a part of the country which has ongoing exploration, drilling and producing activity.
3. Even if you take a job other than one relating to geology, stay informed about exploration plays and company activities. Subscribe to publications such as the *Oil and Gas Investor*, *Oil and Gas Journal*, and *World Oil*.

Perhaps a new exploration play will develop in a nearby county or state. Individuals and companies may move into your town and require help on a full or part-time basis.

Go by your county or parish courthouse

occasionally to review the Deed Records to see who might be taking oil and gas leases in your area. Contact the lease owners to see if you can help them in any way. If you can meet a petroleum landman or lease broker, ask him about leasing activity in the area. He'll probably know about companies who are moving into your area and may be contacted for work.

4. Keep up your industry contacts. If the city in which you're employed has a local geological society, join it and attend the meetings, field trips, continuing education courses and social activities. Let people know you are available for full or part-time work, if you are, and ask them to keep you informed of any developments in their companies which might cause them to require additional geological help.

Retain your membership in AAPG, and other professional societies. Attend section meetings, conventions and short courses. Let everyone know you'd like to find work in petroleum geology. Remember that a single contact can provide a lead which results in employment.

5. Learn the geology of the county you work in better than anyone else. Become the "resident expert." Make your own maps and cross sections of the county and learn the characteristics of any formation known to contain hydrocarbons, water resources, coal or minerals. Collect any publications which describe or relate to the geology of your area.
Try your hand at prospecting. Put together a drilling proposal and take it to any company which may be interested in your area. A prospect brochure in hand will almost always get you in to see the exploration manager. Even if you don't get your idea drilled you will have established a contact within a company. Sooner or later your county may become an exploration target of some company, even if it isn't already. When it does, if you have done your homework in the meantime, you'll be in excellent shape to make use of your knowledge.
6. Make geology your hobby. Have fun going on field trips to collect minerals and fossils near your home. Regardless of your employment status, your degree in geology provides a basis for your continuing education, understanding and appreciation of the area you work in and the world you live in. Few other degrees provide as much.

Finally, don't become discouraged. If you stay informed of exploration activities in your area and alert to the opportunities for employment, the odds are in your favor that eventually you'll find a way to utilize your

degree in geology productively and profitably.

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