

Т. Ю. САФЬЯННИКОВА



YOUR GEO-CAREER THROUGH ENGLISH

Книга для чтения на английском языке
для учащихся геологических факультетов



УНИВЕРСИТЕТ
южный дом



Московский государственный университет
им. М. В. Ломоносова
Геологический факультет

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*На обложке — карстовые берега восточной части
полуострова Юкатан. Северная Америка.*

Фото *А. В. Бредихина*

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Пособие ориентировано на тех, кто хочет построить успешную деловую карьеру в геологии и использовать для этого знания в области английского языка. Оно позволяет существенно усовершенствовать эти знания и расширить словарный запас. Даются конкретные примеры того, как написать резюме и пройти собеседование на английском языке.

Учебное пособие предназначено для магистрантов, аспирантов, выпускников геологических факультетов университетов и вузов, владеющих английским языком в объеме университетской программы.

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ПРЕДИСЛОВИЕ

Настоящее пособие предназначено для выпускников, магистрантов и аспирантов геологического факультета, начинающих свою профессиональную карьеру в области наук о Земле.

В качестве учебного материала использовались фрагменты выступлений, лекций, а также выдержки из публикаций ведущих зарубежных специалистов, посвященные проблемам становления успешной профессиональной карьеры.

Тексты отбирались с учетом их информационной и языковой значимости.

Авторы надеются, что, ознакомившись с данным пособием, читатели не только значительно расширят свой словарный запас, но и смогут активно использовать полученные знания при устройстве на работу и в своей дальнейшей профессиональной деятельности.

SECTION I: CHOOSING A GEO-CAREER

1. FUTURE JOBS IN GEOLOGY

(from David L. Copley*)

There are always doomsayers, especially those preoccupied with the status quo. They may argue that any discourse on future jobs in geology is moot, and that there are not enough jobs currently to go around for those trained in geology, let alone to idly speculate about the future. Clearly, many geologists have lost jobs in the recent past, particularly in the petroleum industry, and the search for reemployment for many of these professionals has proven to be arduous and uncertain. Some have given up the fight and no longer practice geology. Some who have successfully made the transition from petroleum geology to other geological specialties may have some misgivings about the future for the professional geologist. So it is legitimate to ask: *Why bother studying geology if the prospects for employment are uncertain?* But I believe that substantial opportunity does exist for future professional geologists in tomorrow's changing world. To explain why, we need to look at the current state of affairs and then consider the future.

Geology is defined as "the science of the earth," and the importance of this fundamental science cannot be overemphasized. Mankind's very existence depends on our ability to understand, use, maintain, and live compatibly with the earth's environment, and geology is the foremost science that seeks to integrate and achieve these goals.

A primary concern of mankind is the quality of life, especially as it pertains to the basic necessities for our survival. Food, water, shelter, and a suitable environment are key ingredients. We are all at least peripherally aware of these basics, but most of us have a tendency to take them all for granted. The world, however, is a finite place and as the population continues to grow and third-world countries develop, we must learn to manage our resources effectively or ultimately cease to exist. Geology, the science of the earth, and geologists who practice this science inevitably will play an increasingly important role in this process. We will do so on both sides of the management equation.

On one side of the management equation is finding and using the earth's resources in an efficient manner. Specialties, such as petroleum geology, mining geology, hydrology, and economic geology, will continue to be im-

portant job sources for geologists because the demand for the earth's resources will continue for the foreseeable future. For example, in the petroleum industry, current drilling activity is not replacing oil and gas reserves at the rate at which they are being consumed. The apparent looming shortfall can be alleviated only by a large-scale increase in petroleum exploration and development, or a decrease in consumption related to expanded alternative energy sources or increased conservation and efficiency. These efforts will require more petroleum geologists, as well as geologists specializing in other energy resources, working at unprecedented levels of efficiency.

On the other side of the management equation is preserving the environment. For much of this century, most nations have been preoccupied with growth as the primary way in which to improve their standard of living. Often, we did not pay adequate attention to the environmental ramifications and consequences. Now, environmental awareness and protection have become an important social value in most of our lives. The geologists most sought after today are those involved in mitigating or containing pollution brought about by past environmental transgressions.

One can easily visualize that the future of geology will be in preventing pollution of the earth; in assessing, monitoring, and minimizing environmental impacts; and in the efficient discovery and production of the earth's mineral wealth. These geological tasks do not represent a contradiction, but rather a necessary balance between acceptable standards of living and preserving the environment.

**Dave Copley is a petroleum geologist who never worked for a major oil company. His geological experience is in domestic exploration and development, and the rocks he studies are mostly east of the Mississippi River. He attended eastern schools, which are not noted for petroleum geology.*

Fully 75 % of his more than 20-year geological career was spent in Buffalo, New York, a place also not noted for petroleum geology. Despite these shortcomings, he views his career in petroleum geology as successful because of a high level of job satisfaction and because financial security, although highly volatile at times, always seems to follow. He truly loves his work, although periodically he is accused of purposely generating prospects convenient to hotels, restaurants, and shopping centers.

1. Give the Russian for:

To be helpful; to lose a job; to make up a transition from ... to ...; the prospects for employment; the current state of affairs; substantial opportunity; misgivings about the future; to be of a primary concern; the

* Guiding Your Career as a Professional Geologist. Edited by P. R. Rose; USA, Oklahoma, 2000, pp. 1, 3.

basic necessities for survival; key ingredients; to be aware of ...; to take for granted; to manage resources; to play an important role; a looming shortfall; a large-scale increase in exploration; a decrease in consumption; alternative energy sources; unprecedented levels of efficiency; to preserve the environment; to be preoccupied with; to improve standards of living; environmental ramification; awareness and consequences; acceptable standards of living; to pay adequate attention to ...

- ... let alone ...
- ... no longer ...
- ... at least ...
- ... as well as ...
- ... but rather ...

2. Give the English for:

играть важную роль; основные составляющие; альтернативные источники энергии; охранять окружающую среду; иметь первостепенную значимость; обращать должное внимание на ...; потерять работу; поиск новой работы; современное состояние дел; эффективно управлять ресурсами.

3. Grammar Revision:

- ... especially *those preoccupied with* ...
- ... *for those trained in geology*...
- ... *the search for... has proven to be uncertain* ...
- ... the opportunity *does* exist ...
- ... the geologists *most sought after* today are *those involved in* ...

4. Discussion Time

Agree or disagree with the following:

“Follow your bliss – the money will come.” (Joseph Campbell)

Give your arguments.

2. GEOSCIENCE CAREERS IN A CHANGING WORLD

(from James A. Gibbs*)

It may be helpful for young job-seekers to recognize that geological employment has traditionally been cyclical. During periods of rapid

* Guiding Your Career as a Professional Geologist. Edited by P. R. Rose; USA, Oklahoma, 2000, pp. 13, 17.

growth and expansion, the major oil companies — the primary employers of geoscientists — have added employees. In other times, such as now, the major companies (or “majors”) downsize, selling many of their domestic properties and reducing staff size.

Timing of the periods of high employment has been difficult to predict. Many students in past years have made the decision to major in the geosciences during boom days, only to find few prospective employment opportunities when they were ready to go to work. Other students who began their undergraduate or graduate program in geoscience during periods of low employment found, to their benefit, that they were much sought after when they had completed their schooling.

For the past half-century or so, majors have determined hiring patterns. Not only have they been the dominant employers of geoscience graduates, but also they have set salary levels and have supported the departments and schools where they hired their personnel. The relationship between academic institutions and oil companies generally has been a beneficial one for students, although critics will contend that closer cooperation might have helped dampen the swings in the employment cycles. Always there existed the belief during slow employment times that the industry was between booms, and that majors eventually would once again increase the number of new hires.

This time may be different. Representatives of the majors are now saying that their future is elsewhere because of a perceived lack of large exploratory targets and an unfavorable political/environmental climate in the United States. They are shifting their attention to overseas areas. With downsized domestic operations, these companies presumably will need fewer United States-trained geoscientists. For geologists specializing in petroleum or mining, employment patterns here may never be the same again.

Nevertheless, a case can be made that recent events inside and outside the petroleum industry provide significant new opportunities for employment. Entry-level geologists, as well as experienced geoscientists who are willing to adapt to current conditions and to consider new vocational activities, may find that now may prove to be one of the best times ever to launch or shift careers.

Much oil and gas still remain to be found and produced. Successful explorationist will be making discoveries here for many decades.

It's true that fewer funds are going into exploratory prospects now than during some past periods. But it's equally true that funds always seem to be available for projects that offer significant returns: witness the millions of dollars now financing three-dimensional seismic surveys

and drilling programs in Texas and elsewhere. Sometimes, well-conceived and well-controlled prospects don't get drilled because their originators become discouraged after a few (sometimes many) turndowns. Consider the possibility of finding new funding sources for your projects.

Talk with any successful explorationist, inside or outside a company, about his or her career. Almost without exception, each person will relate experiences of the difficulties of selling prospect ideas to a skeptical boss or to wary investors. Their common trait, however, has been to persevere in convincing others to join in the search. Without this persistence, these successful explorationists might have become discouraged enough to leave the business many times. With persistence, each person has found success, and in the oil business, nothing succeeds like success!

Many new, interesting, and challenging tasks await the geologist. Not all of them have been defined. In fact, seeking new opportunities and creating new career paths should be your primary goal.

Tomorrow's geologist will need to be more independently minded and broad gauged than those of the past. Entrepreneurship, optimism, self-motivation, flexibility, and creativity will be increasingly important. The desire, willingness, and ability to communicate to sell a prospect, an idea, or a service to others is necessary. A long-term plan for accomplishing professional and personal goals will help you get through periods of discouragement.

There is plenty of geological work to be done. Finding a handle — the way to integrate your education, skills, and experience into work you want to do — is your task. In a few years, it will be interesting to look back to see how many successful geoscientists launched their careers during the present, industry-depressed times.

Following receipt of a master's degree in geology from the University of Oklahoma, Jim Gibbs began work for The California Company in southern Louisiana. He moved to Dallas, Texas, in 1964 and opened an office as an independent geologist. Primary activities have included geological consulting, assembling drilling prospects, and buying and operating producing properties. Gibbs has founded two oil and gas companies and served as the exploration manager of several successful independent companies. Gibbs has long been interested in the entrepreneurial opportunities of geology, and has helped many recent graduates and mid-career professionals explore new employment tracks. He is the author of **Becoming an Independent Geologist: Thriving in Good Times and Bad.*

1. Give the Russian for:

job-seekers; employment; employees;² to downsize; to reduce staff size; to make a decision; to major in ...; boom days; prospective employment opportunities; majors; to seek after; to be sought after; hiring patterns; to hire personnel; to be beneficial; to dampen the swings; slow employment times between booms; to shift one's attention to ...; entry-level geologist; experienced geoscientists; to adapt to current conditions; to consider new vocational activities; to launch one's career; to shift one's career; job search; nevertheless.

2. Give the English for:

периоды быстрого роста и развития; главные нефтяные компании; работодатель; нанимаемый; сокращение штата сотрудников; период расцвета; уровень заработной платы; отдел кадров; циклы занятости; неблагоприятные условия; начинать или менять карьерный путь.

3. Grammar Revision:

- *Not only* have they been the dominant employers but also they have set salary levels ...
- The relationship *has been* a beneficial one, although critics *will* contend ... that close cooperation *might have helped* ...
- *With downsized domestic operations*, these companies will need ...
- ... *now may prove to be one of the best times* ...

4. Discussion Time

Agree or disagree with the following:

"Be adaptable — if bananas aren't selling, try apples or oranges."

Give your comments.

3. PROFESSIONALISM IN GEOLOGY

(from Stephen A. Sonnenberg*)

Almost all geologists think of themselves as scientists. Unfortunately, far fewer seem to think of themselves also as professionals; this thinking constitutes an unrecognized career handicap.

Geology is both a science and a profession. A science pertains to accumulated systematized knowledge. A profession pertains to a special occu-

* Guiding Your Career as a Professional Geologist. Edited by P. R. Rose; USA, Oklahoma, 2000, pp. 30, 31, 32, 35.

pation, often for monetary gain. Petroleum geology, for example, is an occupation that requires specialized knowledge and academic preparation.

What is Professionalism?

The dictionary defines professionalism as the conduct, aims, or qualities that characterize or mark a professional person. A professional person is one who is engaged in a learned profession and who has an assured competence in a given field or occupation. A professional develops an attitude that brings about a dedication of time and effort to acquire knowledge, and to apply it for the benefit of mankind.

Professionalism and Ethics

Professionalism also is linked to ethics. Ethics is the discipline of dealing with what is right and wrong. "In a general sense ethics is the name we give to our concern for good behavior." Ethical behavior is motivated by adherence to high moral principles (based on personal philosophy and ideals); desire for a good reputation; enhancement of productivity; fear of sanction demands of society (environmental regulations and protection of investors); and requirements of professional affiliations.

Maintaining and Expanding Your Expertise

Other important qualities of a professional include knowledge and competence. Formal education gives an individual a certain amount of knowledge that leads to professional competence. Work experience supplies additional knowledge and competence. The half-life of one's scientific knowledge has been estimated as being 8 years in other words, half of what you know today will not be correct, useful, or remembered after 8 years. The answers to the problems keep changing, which means that the professional must be committed to expanding and improving his or her knowledge. Maintaining professional and technical competence, however, requires continuing education, which can take many forms.

The changes that have taken place in our profession during the last 10 years are remarkable. Part of being a professional geologist implies that the individual stays current with the latest ideas. *Such is the state of progression in geological science, that the geologist who stands still for but a very little, must be content to find himself left behind.* The following guidelines for becoming a professional are modified from those offered by Gibbs:

- Know what you know; always keep learning.
- Know what you don't know; don't bluff or proffer opinions on matters about which you're not informed.

- Acquire a broad overview of geological knowledge, not only as a science, but also as a business and a profession.
- Comply with the highest standards of ethical behavior.
- Communicate. We all need to help educate the media and to pass on our knowledge and enthusiasm to students and the public.

Concluding Thoughts

- Professional practice is an ongoing, active undertaking.
- Professionalism is not a product, it is a process of becoming.
- Professionalism is an attitude; it is a frame of mind.

APPENDIX 1

Code of Ethics (American Association of Petroleum Geologist)

SECTION 1. General Principles

Geology is a profession, and the privilege of professional practice requires professional morality and professional responsibility.

Honesty, integrity, loyalty, fairness, impartiality, candor, fidelity to trust, and inviolability of confidence are incumbent upon every member as professional obligations.

Each member shall be guided by high standards of business ethics, personal honor, and professional conduct. The word "member" as used throughout this code includes all classes of membership.

SECTION 2. Relation of Members to the Public

Members shall not make false, misleading, or unwarranted statements, representations or claims in regard to professional matters, nor shall they engage in false or deceptive advertising.

Members shall not permit the publication or use of their reports or maps for any unsound or illegitimate undertakings.

Members shall not give professional opinions, make reports, or give legal testimony without being as thoroughly informed as is reasonably required.

SECTION 3. Relation of Members to Employers and Clients

Members shall disclose to prospective employers or clients the existence of any pertinent competitive or conflicting interests.

Members shall not use or divulge any employer's or client's confidential information without their permission and shall avoid conflicts of interest that may arise from information gained during geological investigations.

SECTION 4. Relation of Members to One Another

Members shall not falsely or maliciously attempt to injure the reputation or business of others.

Members shall freely recognize the work done by others, avoid plagiarism, and avoid the acceptance of credit due to others.

Members shall endeavor to cooperate with others in the profession and shall encourage the ethical dissemination of geological knowledge.

SECTION 5. Duty to the Association

Members of the Association shall aid in preventing the election to membership of those who are unqualified or do not meet the standards set forth in this Code of Ethics.

By applying for or continuing membership in the Association each member agrees to uphold the ethical standards set forth in this Code of Ethics.

Members shall not use AAPG membership to imply endorsement, recommendation, or approval by the Association of specific projects or proposals.

SECTION 6. Discipline for Violations of Standards

Members violating any standard prescribed in the Article shall be subject to discipline as provided by the Bylaws.

**Steve Sonnenberg is a consulting petroleum geologist from Lakewood, Colorado, who specializes in international and Rocky Mountain area projects. He holds a doctorate in geology from Colorado School of Mines and has over 15 years of experience in the oil and gas business. Steve began his career with Exxon and later worked for a smaller independent, Bass Enterprises. Since 1990, he has been an independent consultant. He has published extensively on regional petroleum geology in the Rocky Mountain region. He is a past-president of the Rocky Mountain Association of Geologists.*

1. Give the Russian for:

an unrecognized career handicap; to pertain to ...; special occupation; monetary gain; to require specialized knowledge; to be engaged in ...; a learned profession; an assured competence; to develop an attitude; to acquire knowledge in a given field or occupation; to apply knowledge for the benefit of mankind; ethical behavior; adherence to high moral principles; desire for a good reputation; enhancement of productivity; requirements of

professional affiliations; to maintain and expand one's expertise; to be committed to ...; to stay current with the latest ideas; to keep learning; to bluff or proffer opinions ...; a broad overview; an ongoing undertaking; a frame of mind; professional obligations; professional conduct to be guided by high standards; pertinent competitive; to avoid conflicts of interests.

2. Give the English for:

иметь отношение к чему-либо; материальная прибыль (выгода); приобретать знания; применять знания на пользу человеку; поддерживать профессиональный уровень компетентности; продолжать учиться; образ мышления; профессиональные обязательства; руководствоваться высокими стандартами деловой этики.

3. Grammar Revision:

- ... far fewer seem to think of themselves as professionals ...
- ... the geologist who stands still for but a very little, must be content to find himself left behind.
- Members shall not give professional opinions without being as thoroughly informed as is reasonably required.

4. Discussion Time

Explain and expand:

- Professional practice is an ongoing undertaking.
- Professionalism is not a product, but a process of becoming.
- Professionalism is an attitude, a frame of mind.
- In this profession, your credibility is your only real asset.

4. THAT CRITICAL FIRST YEAR OF EMPLOYMENT

(from James A. Ragsdale*)

Let's talk about your first year out of college, working as a geologist. What are some things you could do during this critical period that might help positively direct your future professional life?

The First Year is a Provisional Experience

Regardless of whether it has been formally spelled out, you should operate with the notion that you are a provisional employee during your first year on the job. Look on it as a mutual opportunity for you to dem-

* Guiding Your Career as a Professional Geologist. Edited by P. R. Rose; USA, Oklahoma, 2000, pp. 18, 19, 20.

onstrate what a conscientious, capable geologist you are, how rapidly and thoroughly you learn and grow, how well you work with others, and how concerned with the firm's welfare you are, and also as an opportunity for you to assess the firm as a place in which to pursue a fulfilling professional career.

Work Habits

From your first day on the job, remember this: your education in the geological sciences has made you a professional. You have not been hired just to be present from 8 to 5; you have been employed to get geologic work done. Whatever the official hours may be, your objective is to do your job well, on time, and within budget. Always observe your employer's office hours, but remember that you are not an hourly employee; set goals for work to be done each day and fulfill them, no matter how long it takes.

Be Observant

Watch the people around you and learn from them; emulate the work habits of the best of them. Seek advice from those who are the most proficient at their jobs. Find a mentor, a person you can go to for advice and counsel. Don't let your ego get in the way; never be afraid to ask a question for fear you'll be thought stupid. Most people will be happy to share their knowledge with you and will be flattered that you asked them a question.

Be Enthusiastic

You probably got into geology because you like it. Make your vocation your avocation. Always be ready for new challenges. If you approach your profession with a positive attitude, you can find yourself throughout your career doing something you enjoy at work each day. Very few people are that lucky!

Communicate

Your work will be of value only if you can communicate your results clearly and concisely to others. Whatever the results of your work may be, maps, graphs, tables, written reports, or oral presentations, always strive to make your conclusions and their significance crystal clear. Think of your audience! Consider your readers; what do *they* need to know? The things that are most interesting to you about your work may not be the things of most interest to your audience. Construct your reports so that they convey the pertinent information.

Written Reports

Writing skills are essential for success as a professional scientist. Little of your written output will be descriptions of research you have done. Most of your writing will be letters, reports, or memoranda recommending and justifying action. Learn to write so that the important things get to the reader first. After reading the first paragraph, the reader should know what you recommend. You can then explain why.

When you read communications from others, consider how effective they are and how they could be improved. Learn from reading good reports. Consider taking a course in business or technical writing to unlearn bad habits you may have picked up in college—or learn good ones you didn't pick up at all!

Graphical Presentations

Your maps, cross sections, and other graphical means of communication should clearly illustrate the story you are presenting. No one should have to puzzle them out. Look at such presentations in the scientific literature and in your office: how could you improve them? If you have to make presentations to a group, think about the type of illustrations that will be best for the number of people and the size of the room. For slide presentations, AAPG publishes a good guide.

Public Speaking

Consider taking a public speaking course if you lack experience. You will be called on to sell yourself and your ideas to others, and good oral presentations will be vital. Anticipate questions (and their effective responses) by analyzing the strong and weak points of the project in context with the interests of your audience. Remember the old adage, "*chance favors the prepared mind.*"

Working with Others

Right away, you are going to find that you will not be working alone. And you won't be working only with other geologists. No matter what branch of geology you may be in, you will find yourself working with many people in other fields. They may be engineers, secretaries, chemists, drillers, biologists, drafters, or programmers, but they all are necessary to make the organization successful. Learn from them. Watch what they do. Ask lots of questions. Most people are proud of their skills and are glad to share their knowledge with someone who is genuinely interested. A knowledge of what other people do and how they do it will help you work better with them. Be

quick to recognize the contributions of others, and don't worry about getting credit for your own accomplishments – *recognition will come as deserved.*

Virtually every project of any importance will be a team project. Although individual creativeness and initiative are essential and expected, you must be prepared to work with others, share your knowledge, and cooperate. There are not many career opportunities for the loner — or prima donna—who makes life difficult for other people. Above all, try to maintain a cheerful, patient, positive attitude — *it works wonders!*

Establishing Contacts — Networking

Do not limit your professional contacts to those in the organization where you work. Try to meet as many people from outside as possible. They can give you a broader perspective about your science and your career, and possibly provide you with new ideas that can help you in your job.

Continuing Your Education

That framed sheepskin on your wall may have been a laudable goal a few years ago, but it is not an end in itself. Your degree just testifies that you have learned how to learn. Your education should never stop. You are a scientist, and you will find that scientific knowledge is always growing. Keep up with the literature in your field. Become a member of at least one national professional scientific organization, one that you think best suits your needs, and read its periodicals. If you get the opportunity to attend a convention, do so, but don't make it just a chance to have a good time. Hear the papers that you think will be valuable to you. Go on convention field trips. Take short courses that may be offered. Above all, meet your geological colleagues.

Attend the meetings of your local geological society. These meetings frequently offer some outstanding technical papers, and also sponsor useful short courses, at bargain rates, on important geotechnical topics.

Finally try to keep up with science in general. Such magazines as *Natural History and Scientific American* can be valuable, but their presentations are somewhat superficial. A serious scientist should read *Science* or *Nature* regularly. Both publications are relatively expensive, but they are available in most public libraries, or our own firm's technical library. Cultivate the lifetime habit of continued reading.

“You've Gotta Pay Your Dues.”

**Jim Ragsdale's career has been unusual for a petroleum geologist in that he has pursued all of it, both academically and professionally, within 200 miles of his birthplace, San Antonio, Texas. He received his geology de-*

grees at Rice University in Houston (B.A.) and the University of Texas at Austin (M.A.), and has worked in Houston since 1963.

For all but two years of Jim's career he has been on someone's payroll, working for every sort of company from small independents to majors. The bulk of his experience has been in the Gulf of Mexico Basin, although he has worked to some extent in many other basins in the United States.

1. Give the Russian for:

to spell out; to operate with the knowledge that ...; a provisional employee; a mutual opportunity; to be concerned with ...; to pursue a career; to be hired; on time; within budget; to observe office hours; to be hourly employee; to set goals; to be observant; to emulate the work habits; to seek advise; to be proficient; to get in the way; to share one's knowledge; to be flattered; to be ready for new challenges; a positive attitude; to communicate one's results; to strive to make your conclusions clear; to convey the pertinent information; to pick up habits; to lack experience; to be vital; the strong and weak points of the project; to get credit for one's accomplishments; to keep up with...

2. Give the English for:

взаимная возможность; ставить цели и достигать их независимо от того, сколько времени для этого потребуется; делиться своими знаниями; профессия; призвание; публичные выступления; недостаток опыта; идти в “в ногу” с ...

3. Grammar Revision:

- *Regardless of whether* it has been formally spelled out, you *should* ...
- *Whatever* the official hours may be ...
- You have been employed *to get geological work done.*
- Set goal for *work to be done no matter* how long it takes.
- *Whatever* the results of your work may be ...
- ... to unlearn bad writing habits you *may have picked up* in college.
- No one *should have to* puzzle them out.
- *No matter* what branch of geology you may be in ...

4. Discussion Time

Comment on the following:

- Make your vocation your avocation.
- Chance favors the prepared mind.
- You've gotta pay your dues.

5. SETTING GOALS FOR CAREER DEVELOPMENT

(from Peter R. Rose*)

Introduction

Geological careers often progress haphazardly, the chance result of random assignments and events. Although this may be adventuresome, it also tends to lead to troubling mid-career situations where geologists find themselves wishing their expertise were in specialties or areas of greater current interest — their own personal interest, as well as the interest of prospective employers.

The most important thing to understand here is that your view of your career development cannot always be the same as your employer's view. After all, *different interests are involved!* Although you must certainly respect your firm's needs (and try hard to meet them), your own career development must, in the final analysis, come first. Any professional position represents an implicit contract: the employee is trading his or her energies, knowledge, and time for (1) financial compensation and (2) the opportunity to learn new skills. When this contract, over a fair and prudent time period, is not being satisfied by either or both of the two parties, a change in employment is appropriate; therefore, considerations of balance and accommodation come into play.

Personal and Organizational Career Planning

Thus, we must talk about career planning and goal setting from two concurrent perspectives: (1) personal and (2) organizational. Commonly, these two perspectives will coincide; occasionally, they will diverge, sometimes only briefly. When they diverge, patience is well advised for three good reasons: (1) that unanticipated—even unwelcome—new assignment may well open up a promising area of professional specialization that, left to your own inclinations, you might never have chosen; (2) some assignments are necessary to meet your firm's needs, but of short duration; and (3) another employer may not necessarily be an improvement.

Often your company will work closely with you to set mutually beneficial goals, usually over a multi-year time frame. But sometimes the firm, or your own evolving values, may send you a clear signal that your personal career goals are not likely to be met within the organization. In the long run, *this is nearly always a blessing, even if it may seem disguised at*

* Guiding Your Career as a Professional Geologist. Edited by P. R. Rose; USA, Oklahoma, 2000, pp. 21, 22, 23.

the time. If you have doubts about your firm's future plans for you, it is your responsibility to seek clarification, keeping in mind that they themselves may not have settled on such plans. In any case, however, clear and constructive communication about personal career plans and goals in relation to organizational assignments is absolutely essential. Such career discussions should take place at least twice a year, and the conclusions should be written down and exchanged with your supervisor. Many professional employees have found that such career reviews are more effective when kept separate from salary reviews.

Different Time Frames for Career Planning

We also must talk about career planning and goal setting in different time frames. Early in your career, three measures are commonly used: short-term (1 to 2 years), mid-term (3 to 8 years), and long-term (8 to 20 years). Frequently, you will find that your employer has specific ideas about how your assignments fit into the firm's short-term needs, as well as some general ideas as to your career progression within the organizational framework over a mid-term time frame, but almost no ideas beyond that. After all, life is uncertain, and the firm is understandably self-interested. Also many companies, rightly or wrongly, maintain a short-term outlook.

So, inevitably, you are likely to have more concern about your long-term career goals than is your employer. Nevertheless, it should be of consequence for you to be progressing gradually and efficiently toward the fulfilling career situation you want to be in down the road. Those long-term goals are important!

Formulating Career Directions

Identifying long-term career directions is a classic boot-strap operation: you formulate and adjust as you learn and grow. But how to begin? How do you start figuring out where you want your career to go? Some considerable soul searching and self-discovery are required here. You need to have a fair sense of what you likes and dislikes, and your natural talents and deficiencies really are, including technical aptitudes and personal attributes. One of the major advances of western-society over the past 20 years has been the development of highly skilled and widespread counseling services that can give you extremely useful insights and advice about your natural aptitudes, personal temperament, and interpersonal skills. The bottom line is *know thyself*. Make use of such counselors! Also, talk to relatives and friends whose judgment you respect. They often know things about you that you don't know or haven't been willing to acknowledge.

In addition, try to imagine yourself in various professional positions. Talk with knowledgeable supervisors or mentors about what they do and how they like doing it. Sometimes you may arrive at a more comfortable set of long-term goals through a process of eliminating what you don't want than identifying what you do!

One more piece of advice: try to keep your long-term goals as broad as possible, consistent with your evolving self-knowledge, personal values, natural aptitudes, and career aspirations. This is particularly true for professionals under 40 years of age. Moreover, be aware that your long-term goals may (and indeed probably should) shift as you grow older, so don't be afraid to modify them after due reflection and discussion. You may not always want to be a carbonate stratigrapher!

Setting Personal Goals

So, now you're aware of what you're good at and have a rough idea of where you want to be headed in the long term. How do you go about getting there? First, recognize that unless you are independently and simultaneously setting your own *personal* career goals, you cannot maintain a purposeful, constructive, and efficient influence on your developing *organizational* career.

The next step is to target where you *personally* want to be in the mid-term, about 5 years from now. And in most cases, "where" shouldn't mean an address; it should relate to what you'll be doing and learning, what your responsibilities will be, and what new opportunities are opening up. This goal should not be couched in terms that relate to how many people report to you, how much access to the boss you have, or how much money you make. In general, you should focus on the fascination and fulfillment the work brings and on where that situation is likely to lead. As Joseph Campbell said, "Follow your bliss — the money will come."

Of course, there's nothing magic about the time of 5 years. Use a time period that's more than 2 years, and less than 8 years. Try to formulate your target so that it is broad enough to accommodate many of life's recurring uncertainties, but still specific enough that it can serve as a yardstick for measuring progress. And be sure your mid-term goal furthers the attainment of your long-term goal!

Now, what is the sequence of natural steps that people have gone through in the past to get to such positions? Is there more than one route? What will you have to know? What skills will be required? What training will be needed? Again, talk to knowledgeable people, both inside your

firm and outside, in other outfits. As before, discipline yourself to write down what you learn.

Next, you should formulate (that means writing them down!) the specific steps that will optimize your chances of achieving your personal mid-term goal. These steps are a series of short-term goals that will qualify you for the position or situation you aspire to. These short-term goals may involve outside continuing education or assignments that broaden your experience, allow you to develop new skills, or allow you to mature personally. Many of these steps will be your own responsibility, requiring personal investment of money and time. If you're lucky, your firm may be willing to help with some of them.

Now for a reality check. Are those steps and time frames realistic? Discuss them with valued colleagues. Try to set goals that will make you stretch, but are clearly attainable. *Don't set yourself up for failure!*

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Since 1989 he has been deeply involved in designing and implementing comprehensive, exploration risk analysis systems for the executive management of major oil companies operating in both the domestic and international theaters. He has been active in national and local professional geologic affairs for many years.

1. Give the Russian for:

to progress haphazardly; the chance of random events and assignments; to be adventuresome; mid career problems; current interest; to meet one's needs; to come into play; to be appropriate; to coincide; to diverge; for good reasons; to be of short duration; to set mutually beneficial goals; in the long run; to seek clarification; ever a short-term (mid-term, long-term), time frame; to be self-interested; to progress gradually and

efficiently; to figured out; soul-searching; knowledgeable supervisors; a piece of advice; to evolve self-knowledge; career aspirations.

2. Give the English for:

случайные события; точка зрения работодателя; отвечать нуждам фирмы; взаимовыгодные цели; в далекой перспективе; иметь сомнения; временные рамки; краткосрочные, промежуточные и долгосрочные цели; последовательность шагов.

3. Grammar Revision:

- *It tends to lead* to troubling situations.
- Geologists *find themselves wishing their expertise were* in areas of greater current interest.
- New assignment may well open up a promising area that you *might never have chosen*.
- Your personal *goals are not likely to be met* within the organization.
- Such career discussions *should take place* at least twice a year.
- You *are likely to* have more concern about your career...
- Set goals that will *make you stretch*.

4. Discussion Time

How would you explain the following:

“In the long run, this is nearly always a blessing, even if it may seem disguised at the time.”

“Good judgment comes from experience, and experience comes from bad judgment.”

6. NETWORKING: THE ART OF YOUR PROFESSIONAL CONTACTS (from G. Warfield “Skip” Hobbs*)

The ability to call on professional eyes and ears or helping hands in another city or country on an as-needed basis is a tremendous business asset. Whether one is a sole practitioner or an employee of a large or small company, networking with professional colleagues provides tremendous leverage in terms of access to new geotechnical developments and business opportunities, and in providing services.

* Guiding Your Career as a Professional Geologist. Edited by P. R. Rose; USA, Oklahoma, 2000, pp. 30, 31, 32, 35.

What exactly is networking? I define the term as “purposefully pursuing and maintaining regular personal contacts among old friends and acquaintances and actively cultivating new relationships with the specific objective of keeping current in one’s profession and developing new business opportunities.” Keeping in touch with professional friends and acquaintances, consciously expanding the circle of contacts in numbers, diversity of professional disciplines, and geographical distribution, and encouraging people to call you whenever they have the chance or reason to do so is what networking is all about. Those who are successful at networking will benefit from significantly greater access to new business opportunities and requests for their services, and be able to keep up-to-date on the geotechnical developments they have not had time to read about in the professional journals. Knowing what is going on, who is doing what, and where the money is coming from and where it is being invested, essentially a business intelligence-gathering process, comes from networking and is essential to a successful business enterprise.

There is an art to networking successfully. First, you cannot be shy; you must make a deliberate effort to initiate and maintain personal contacts. Second, you must to be selective. Third, you have certain obligations and responsibilities in maintaining good professional contacts.

How do you start to develop a good network? A good starting point can be high school and college classmates who share the same professional interests. Give them a ring, find out what they are doing, and tell them about your activities and business interests. Have lunch! It’s easy because you already know them.

As earth scientists, petroleum geologists benefit most by developing contacts with other petroleum geologists, geophysicists, engineers, and landmen through the various professional societies. Get involved! Join committees. Consider running for office in your local geological society. Present and publish papers on your specific areas of professional interest. Expand your geographical coverage by attending regional and national conventions. Rather than always chatting and socializing with your close buddies and company colleagues at professional society functions, make new friends and acquaintances by introducing yourself to the person sitting next to you at technical sessions, by sitting at a luncheon table where you do not know anyone, and by taking continuing education courses and going on field trips and making the effort to meet everyone in the group. With each new acquaintance, find out what that person’s specialty is and the kinds of projects in which that person is involved. Tell him or her the same about yourself. Finally, be sure to exchange business cards and organ-

ize them into regional card catalogs for future reference. Write the date of the meeting on the card, and jot a brief note on the back regarding what that person's interests are and where they might coincide with yours.

Many of the people you meet at a convention or elsewhere may have nothing in common with you and would not be useful long-term business contacts. The art of networking is in selecting those acquaintances who will be useful business contacts and, most important, with whom you will enjoy a two-way exchange of information. One must become a good judge of personal character in determining whether the acquaintance is someone with whom you would want to network, what you have in common, where your skills and knowledge might be complementary, and finally, whether the relationship would be mutually beneficial.

How do you use the network? By keeping in touch with your professional acquaintances, you will be in a better position to know, for example, the latest and most effective technologies, who is buying into drilling prospects and in what trends, who has a producing property for sale or is looking for a reserve acquisition, and who is hiring geologists or needs a consultant. Knowledge is power! On a regular basis, particularly when traveling to another city, flip through your business card file and call your contacts and meet them, if possible, for lunch, dinner, or drinks during your visit. Keep them informed of what you are currently doing, have to sell, or are looking for, and learn the same from them. Capitalize on the synergies when it turns out that there is a fit on the "buy" and "sell" sides of your activities.

Networking can be successful only if the parties work to their mutual benefit. There are responsibilities and obligations to networking. First, the process must involve a two-way flow of information. Cooperation will soon fade if calls are not reciprocated. *Favors and referrals should be returned.* Give and get. One must make an effort to maintain regular contacts. Use the occasion of a published paper, promotion or award, or announcement of a new field discovery by your friend's company as a reason to call him or her. A visit from out of town is a perfect excuse to get together. Second, information and opportunities that would be of genuine interest and possible benefit to the parties should be exchanged instead of old news, and done so in a timely manner. Effective networking is essential to brokering the sale of a prospect or producing property, for example. Do not call your network after you have had the prospect on the market unsuccessfully for several months. Call these people early on, and offer to share fees and overriding royalty or other promoted interests as an incentive for their actively helping you market the submittal.

My attitude when marketing something for a client is to get the submittal out as quickly as possible into the hands of those whom I know could effectively help me place the venture, and to share whatever compensation we receive. *It is better to have a slice of baked pie regularly, than to hog the whole opportunity to yourself and never get the pie baked.* Finally be prepared to share information with someone when you expect no immediate benefit, but you know the information to be of immediate interest to your acquaintance. This might be information such as an employment or consulting opportunity or the availability of a specific acquisition you recently heard or read about. *Favors are returned, and sometimes in the most unimagined ways.*

Networking is the most effective and inexpensive way to keep informed of geotechnical developments, multiply opportunities, and leverage your presence throughout the oil patch. It takes work to build and maintain a network of professional contacts; however, with an effective network, success may be considerably less elusive than you had figured!

**G. Warfield "Skip" Hobbs is managing partner of Ammonite Resources, a firm of consulting petroleum geologists and engineers that advises major financial institutions, utility companies, and industrial end-users on the technical and financial aspects of direct petroleum investments. From his headquarters in New Canaan, Connecticut, Hobbs networks on a daily basis with a core of 26 professional Ammonite associates located in the United States, Canada, Europe, and South America. Skip received a B.Sc. degree in geology from Yale College and an M.Sc. degree in petroleum geology from the Royal School of Mines, Imperial College, London. Prior to forming Ammonite Resources Hobbs worked as an exploration geologist for Texaco in Ecuador, the United Kingdom, and Indonesia, and for Amerada Hess in New York City.*

1. Give the Russian for:

to call on; on an as-needed basis; business asset; a sole practitioner; to provide leverage; in terms of access to new developments; to keep current and develop new opportunities; to maintain regular personal contacts; to cultivate new relationships; to keep in touch with ...; to expand the circle of contacts; to encourage people to do smth; to be successful at networking to benefit from ...; to keep up-to-date; a business intelligence-gathering process; to be a business enterprise; to make a deliberate effort; to share the same professional interests; to expand one's geographical coverage; to be

involved in the project; to enjoy a two-way exchange of information; to be mutually beneficial; a producing properly; a reserve acquisition; on regular basis; to capitalize upon; a fit on a “buy” and “sell” sides; to work to one’s mutual benefit; a two-way flow of information; to be of genuine interest; to share fees and overriding royalty; to market the submittal; to place the venture; to share compensation; to share information with someone; to expect immediate benefit; away to keep informed of ...; to maintain network.

2. Give the English for:

по мере надобности; устанавливать связи; поддерживать контакты; иметь доступ к новым возможностям; идти в ногу со временем; нести обязательства и разделять ответственность; обмениваться визитками; не иметь ничего общего с ...; долгосрочные деловые контакты; взаимный обмен информацией; взаимовыгодные отношения

3. Grammar Revision:

- *Whether one* is a sole practitioner or an employee...
- ... encouraging people to call you *whenever* they have chance to do so ...
- *Rather than* socializing with your buddies, make new friends.
- One must become a good judge of personal character in determining *whether* the relationship *would be* mutually beneficial.
- ... you *know the information to be* of immediate interest.
- *It takes work to maintain* a network ...

4. Discussion Time

Explain and expand. Give your own examples:

- Favours and referrals should be returned.
- It is better to have a slice of baked pie regularly than to hog the whole opportunity to yourself and never get the pie baked.
- Favours are returned, and sometimes in the most unimagined ways.
- It’s not just what you know — it’s also who you know.

7. ECONOMICS, VERSATILITY, AND MEASUREMENT

(from Edgar C. Capen*)

People build their careers on many different foundations, some accidental in nature. While no one formula will work for everyone, it may help

* Guiding Your Career as a Professional Geologist. Edited by P. R. Rose; USA, Oklahoma, 2000, pp. 39, 40, 41.

people just starting off—or those who may be at a fork in the road — to see what has worked for others. In that spirit, I offer these few thoughts.

Economics

Most of us who work in earth science went to college, and while we were there, making money probably did not jump to the top of our priority list. Instead, we may have focused on making good grades or achieving a certain social status, or finding the right spouse. Many possible goals may be maximized while going to school and each person chooses his or her own.

While studying physics, mathematics, and a little geology at college, I never heard the words “profit” or “economics,” or any other financial term. Clearly, my professors were unconcerned about the relationships between money and the courses they taught; that goes as well for history professors, English professors, chemistry professors, German professors, and, of course, the military science professors (Army officers). In my first 180 semester hours, I heard not one mention of how the subject matter I studied would fit into the American free-enterprise economy. Only when I returned to school on a work-study program in probability and statistics some years later did I begin to hear about how my studies were related to money. In retrospect, I have to say that I went out into the world with a handicap. Thank goodness I was competing with people suffering from the same problem.

When I began my geoscience career, as a young research physicist for a major oil company, making money for my shareholders was the last thing on my mind. Somebody assigned me to projects. Someone furnished the money and the equipment. Supervisors carefully reviewed my reports, making me feel that I was doing something worthwhile. A very wise scientist instructed me that *good research required good salesmanship* — another skill not learned with my degree.

One day, the lab manager called all the new technical recruits together and began to tell us something about the corporate birds and bees. He said we were hired to help the company make money. He told us that there are plenty of interesting and enjoyable research projects. Because essentially all research projects are fun, we might as well concentrate our fun on those projects that can make the most profit. This idea made sense to me.

I can see at least three big reasons for paying more attention to the money-making parts of your job. (1) Focusing on the money will help you keep from squandering time and valuable resources. You will no longer be trapped by statements like, “wouldn’t it be nice to know ...” (2) The “make

money” mindset will serve you long after you cease to do whatever specialty you were taught in school. An attitude directed toward profit will attract employers to you and give you a better chance of success. (3) Just as grades and times and scores helped you measure yourself throughout your schooling, you will find that money, profit, rate of return, etc. will enable you to keep track of progress in your career. Am I suggesting the sacrifice of scientific principles? Of course not, but one must always balance effort, outcome, and resource requirements. Not even science is free.

Versatility

The quest for versatility may bring great discomfort. One has to step outside oneself, take chances, and risk failure. I was fortunate to spend my early career in a research facility, where management took pleasure in developing people. They accomplished that goal by moving people from job to job, even if the new job required a whole new learning experience. Moving from seismic to well logging may not seem like such a leap, but to me it was pure trauma. New people, new management, new goals—*scary!* A few years later came the request to transfer from now-comfortable well logging to economics, a research planning and evaluation position. Again, I agreed to the move, but did not have a single clue as to what economics was all about. What incentives to learn these moves create!

Use whatever job you have to learn something new. Keep reaching. Explore. Get a group together to self-teach some unfamiliar area of technology. Whatever you do, don't think for a moment that because you have one or more degrees from fine schools you can afford to let up in your quest for knowledge. You're still in school; only the shape of the classroom has changed.

Volunteer to give a lecture on a subject you know little about, but wish you knew more. Believe in the adage, “each one teach one.” Don't wait for company policy to encourage such adventures. Just do it. Remember that other saying, “it is easier to seek forgiveness than to ask permission.”

Measurement

Common sense: what gets measured gets done.

You need to find an objective way to measure your contribution to organizations to which you belong. Don't wait for others to do it for you. Keep records on your recommendations to management. Learn from your

mistake. Keep track of how many prospects you bring to the inventory. Record the key estimates on your prospect so that when it gets drilled, you will know how close you came to the truth.

Learn enough about economics to measure your personal contribution toward your shareholders' well-being. Practice adding value. Resist the temptation to waste your shareholders' scarce resources. Be a champion for those activities that enrich your shareholders. Don't get into the rut of doing something because everyone else does.

Home / Work Balance

The three previous areas depend mostly on you. This area involves your mate and may be only partly in your control. You're going to face hard problems and tough competition at work. The last thing you need clouding our career is a pile of personal difficulties at home. If you have a spouse and perhaps children, you've already made a large commitment to them. Those promises don't go away just because you also have commitments at work. You have to strive for a balance that pleases all your constituents.

I remember once attending a meeting in Washington, DC, with a few people from my company and some consultants we had hired. Although it looked as if the discussion had 2 or 3 hours to go, I rose and announced that I had to leave. It was the anniversary of my first date with the girl who became my wife some 25 years earlier. I always took her out to dinner on those anniversaries and so I wanted to get back to Dallas, Texas, for the event.

My company got lots of my nights and weekends, but it did not get those special days with my wife. It did not get the days my children were in school programs or sporting events. It did not get my family vacations. And although some may think it risky to walk out of a meeting for the purpose I just described, I don't ever remember the “company” telling me I was wrong. Forward-thinking companies know that happy families provide motivated and effective employees. But without a special effort on your part, neither the family nor the company will be happy.

Summary

The oil and gas industry is evolving along paths that were uncommon 30 years ago, although old-timers will remember, even then, frequent purges of exploration personnel as budgets gyrated to the market's beat. Today, the chance of a long career with the same company seems remote.

As a professional, you have duties to your shareholders and your management. Just don't forget your duty to yourself and your family. There was never a better time to heed the Boy Scout motto, "Be Prepared."

**Ed Capen began his professional career working for Atlantic Rich field out of Laredo, Texas. He retired from ARCO in Dallas, Texas, in 1992 as distinguished management advisor. Prior to 1992, he was a physicist in the company's research lab working on projects involving seismic and well logging, and later was director of research planning and evaluation. Subsequently, he was director of operations analysis for ARCO's production division. He later became manager of capital administration and expense control for ARCO's corporate headquarters in Los Angeles, California. He now has a consulting and teaching practice in Dallas. Ed has authored and co-authored many influential papers on competitive bidding, economic analysis, and dealing with uncertainty.*

1. Give the Russian for:

to be accidental in nature; to start off; to be at a fork on the road; in that spirit; to jump to the top of one's priority list; to make good trades; to achieve a certain status; to go as well for ...; to fit into free-enterprise economy; in retrospect; to go put into the world with a handicap; to compete with ...; to suffer from the problem; to share holders; to be the last thing of one's mind; to assign someone to projects; to furnish the money and the equipment; to do something worthwhile; the corporate bird and bees; to make the most profit; to make sense to somebody; to keep from squandering time and valuable resources; the make money mindset; to keep track of progress; to balance effort outcome and resource requirements; to be free; to step outside oneself; to make chances; to risk failure; a research facility; to accomplish the goal; to require a new learning experience; to have a clue as to ...; to keep reaching; the quest for versatility and knowledge; to let up; to give a lecture on a subject; to seek forgiveness; to ask permission; to record the key estimates; to resist the temptation; to get into the rut of doing something; to face hard problems and tough competition; to have commitments; to strive for a balance; forward thinking companies; the market's beat.

2. Give the English for:

быть на распутье; быть озабоченным чем-либо; какой-либо недостаток; акционеры; делать что-либо стоящее; зарабатывать деньги;

получать прибыль; обращать внимание на ...; установка на зарабатывание денег; воспользоваться случаем; здравый смысл.

3. Grammar Revision:

- ... no one formula *will work* for everyone ...
- ... we *may have focused* on making good grades ...
- I heard *not one mention of how the subject matter would fit* into ... economy ...
- Only when I returned to school ... *did* I begin to hear about ...
- I *have to say* that ...
- You *will no longer be trapped by* ...
- *One has to step* outside oneself.
- Moving from ... to ... may not seem like such a leap ...
- *Use whatever job you have to learn* something new.
- *Don't wait for company policy to encourage* such adventure.
- *Practice adding values.*

4. Discussion Time

Comment on:

- Good research requires good salesmanship.
- What gets measured gets done.
- It is easier to seek forgiveness than to ask permissions.
- Money, which represents the prose of life, and which is hardly spoken of in parlors without an apology, is, in its effects and laws, as beautiful as roses.

8. PERSONAL FACTORS IN PROFESSIONAL CAREERS

(from Edgar W. Owen*)

I make no apology for undertaking a discussion of this sensitive subject. *Personality, rather than formal knowledge, is the dominant factor in professional success.* Effective personal relationships often are more difficult to attain than technological proficiency. But we spend several years in technical training, while paying little attention to the personal attributes, attitudes, and habits that will govern our careers. I believe our traits of personality are as susceptible to development as are our intellectual capabilities. I am not an expert in this field; in fact, I do not know

* Guiding Your Career as a Professional Geologist. Edited by P. R. Rose; USA, Oklahoma, 2000, pp. 72-77.

anybody who is, despite all the counseling, preaching, and writing that are being done. My only claim to your attention arises from the fact that I have always been fascinated by the relation of the idiosyncrasies of myself and my colleagues to our respective careers. I have the further advantage of having met lots of folks in 50 years of professional life. I can approach our subject only on an informal basis, for which I ask your indulgence.

You and I, then, stand together in the position of scientists inquiring into a problem of vital importance to us. Our attitude is the same as that which we would apply to any other investigation. We came here to learn by our own efforts, not to be taught or to receive the authorized doctrine of the elders and saints in these hallowed halls. I believe it is possible for us to stand back and look at ourselves—Ed Owen and Joe Blow—as objectively as we would at a rock outcrop. Our material is quite refractory; rocks in the head are even more difficult to analyze than rocks in the laboratory. The phenomena are not incomprehensible, although the fine balance between cooperativeness and initiative, for instance, which will permit the full extension of our abilities, may be difficult to determine. The thin line between self-reliance and intolerance, between leadership and arrogance, between loyalty and subservience, may be as elusive as the Pennsylvanian-Permian boundary, but it does exist.

Competition

Let us begin with a basic assumption. Regardless of all the talk of security and governmental supports, this is still a highly competitive world. The only prophecy of which I am confident is that it will continue to be so; otherwise, it will become a dead world and the vermin will eat it up. Even in the rarefied environment beyond any “new horizons” it will still be competitive, but the competition may be between the “planners” for control of the little tin men who do the work. A corollary then seems valid — that the most useful personal attributes are those that have competitive virtue.

If I am to do well, I must be able to understand and appraise my competitors. But I must be able also to understand myself and evaluate my assets and liabilities in comparison with theirs. Certainly, one of the most valuable human assets is energy, both physical and mental. Observing some of my best-loved and most successful friends, and remembering some incidents in my own life, I suspect that *a pound of energy may be worth a ton of brains*. Fortunately, the average man in good health possesses enough energy for normal demands. But the portion of it that is directed to con-

structive ends varies remarkably from person to person and from time to time. Any project important enough to be really rewarding is almost sure to demand an expenditure of energy which is more than just casual. Some wise executives tend to judge men not so much by their inherent capacity as by the portion of their capability that they habitually activate. Personally, I have always felt that I could not afford to let my boss or my competitors or even my closest friends see me at any time when I was not ready to put out everything I had. Even so, it was often too little and too late.

Eagerness, Patience, and Decisiveness

Mental energy, and also physical energy to some degree, depend upon the quality of eagerness, which is an emotional state. In the Air Force of World War II, we recognized only two kinds of men—the eager and uneager. The same distinction seems to apply generally. F. V. Hayden, a mediocre but eager geologist whom the Sioux Indians called “The-man-who-picks-up-rocks-running,” made the Geographical and Geological Survey of the Territories remarkably productive. I believe this eagerness can come only from an intense liking for one’s occupation, so intense that he cannot leave it alone. The excitement must be great enough to endure long periods of monotonous routine, for important results in most enterprises are founded on drudgery no more exacting than washing dishes. In no creative effort is the drudgery performed by slaves, or even graduate students, for the benefit of the master; the artist himself must know the feel of his material. The meaning seems plain — no man can afford a vocation with which he is not completely fascinated. The geologist or engineer who enters an industry because he considers it a quick and easy way to wealth will not be with us long.

Here let us face a serious difficulty. Geology is probably the most frustrating of all professions for the young man. Men’s innate creative ability reaches its full development during their 20s and 30s. Those are years of greatest achievement in many of the sciences and arts, but rarely in geology. The geologist must apply all the basic sciences to empirical observations that are infinite in variety. No matter how much the various phenomena have in common, there is always a unique historical element in every problem. The sureness of the geologist’s judgment depends not only on the validity of his theoretical concepts and the soundness of his reasoning, but largely on how much of the earth he has seen and understood. In the practical application of his science, the complications are compounded by the varying requirements of economics and

timeliness. So, the young geologist too often finds his ideas ignored at the time when he feels his powers are greatest. His major contributions are usually deferred until later years. Even then, he realizes that he has not yet seen enough. Possibly, I am one who matures slowly, but I often feel that I am still working only for experience. If I don't get it soon, it will come too late. I can hardly explain why I am learning, only now, much that I should have known 40 years ago. It is admittedly difficult for us young fellows to maintain our enthusiasm during this long ripening period.

The maturity of the earth scientist is almost directly proportional to the extensiveness of his opportunities for observation. Most of the master works in geology resulted from long voyages and protracted field study. Lyell, Hall, Dana, Darwin, Powell, Gilbert, and others were less notable for exceptional genius, than for their judicious interpretation of abundant and varied observations. They knew more than most of us primarily because they saw more. A burning curiosity that impels one to seek out and examine everything new and strange is an essential element of a geological career. In our science, the man who is held too tightly by the comfort and convenience of home, or who is satisfied with knowledge of a limited district has a restricted prospect indeed.

Going and seeing are not enough; one must somehow come to understand what is seen. The geologist must be not only a scientist, but also a historian of the earth, and an interpreter of events obscured by the interminable mist of geologic time. Facing a variety of potential explanations for every problem, our research discipline is an extreme form of the method of multiple working hypotheses. It is small wonder that many geologists become mental fence straddlers, but a decision is prerequisite for every practical application of scientific knowledge. A habit of decisiveness in the face of all uncertainties is an essential element of a productive professional career. This habit must grow up in awareness of the rules of probabilities and in response to experience under analogous conditions. Many exploration geologists who have developed a talent for making decisions in the midst of uncertainties have had distinguished careers as executives of corporations with a record of growth in the hazardous and ever-changing petroleum industry. Here, we seem to have an advantage over the lawyer with his respect for precedent, the accountant with his eyes focused on the current operating statement, and the engineer with a tight formula and perhaps too much respect for the dignity of its solution. The talent for decisiveness expands with exercise, and even the

timid soul may grow to be a vest-pocket Napoleon. In any event, there is always some office bearing the decisive notice "the buck stops here."

Individualism, Self-Reliance, and Cooperation

In contrast to the pioneer days of many industries, leadership in the modern industrial world is seldom the function of the autocrat. The arrogance of the business tycoons of an earlier generation would lead straight to extinction today; neither is outstanding scientific achievement compatible with the cantankerous eccentricity and jealousy that characterized so many early scientists. We recall with amazement Sedgwick and Murchison wrangling for years over the Cambrian; Hall and Emmons quarreling with each other and everybody else; and Cope and Marsh fighting for priority, cluttering the scientific journals with conflicting nomenclature and careless descriptions, and almost destroying the U.S. Geological Survey with the infection of their venom. Our history is replete with stories of men whose scientific attainments were often eclipsed by their personal antagonism. The geologist of earlier times was even more truculent than most scientists, an explorer assuming sole proprietary interest in the ground he trod, the rocks he described, the fossils he named, and the ideas he encountered. He is not yet extinct.

It is not entirely anomalous that some of the most self-assertive qualities are greater handicaps than virtues in modern competition. Any important position in today's complex economy and sophisticated technology is beyond the individual resources of the ablest man. The higher one climbs, the more support is needed. Accomplishment comes more and more to depend upon the ability to cooperate with men of many different qualities, to complement their efforts, and to alloy their talents with one's own. This necessity is not peculiar to the big corporation; it is even more imperative for the small organization or individual with limited resources and unlimited needs. The concept of team work has become almost a fetish and is often worshipped to the neglect of individualism, but its validity is undeniable.

We recognize at times the stereotyped figure of the "corporation man," the faceless image of "the man in the charcoal-gray suit." Such characters are not the result of cooperative endeavor, but of a timid retreat to anonymity. In the most rightly integrated organization, there must still be room for effective expression of individuality. The requirements are for the suppression of disrupting habits and irritating manners, and the activation of those personal abilities that are the individual's great-

est strength. The fine adjustment between initiative and compatibility is difficult for many men to make, but it is almost the decisive measure of competitive capacity. Effective cooperation cannot result from goodwill alone; it must be supported by awareness of mutual problems, respect for each other's opinions and functions, and knowledge of the appropriate mechanism of coordination. But it has not made self-reliance obsolete.

Self-reliance does not mean going it alone, but undertaking each enterprise with confidence in one's ability to see it through. Not resentful of appropriate direction, not too proud to seek and acknowledge help nor impatient of coordination, one must still be ever ready to go beyond guidance, opening new ways and accepting responsibility for the advance. Every project and every idea must originate with some individual. Each person, if he is to be truly useful, must be able to furnish his share of the initial impetus, and must find the ideas and formulate the actions within his special field of activity. But there are necessary limitations to this function; unrestricted universal initiative is anarchy. So, each man must recognize the boundaries within which action is appropriate to him and must respect those limits.

This does not mean that his ideas that extend beyond his own sphere of action should be ignored. It is his responsibility to look for proper and effective means by which he can cooperate with others for their realization. Cooperation implies working together. Although everybody sooner or later learns by force of circumstances to practice it to some degree, it remains the most difficult phase of human relations.

Inevitably, everybody's first concern is for himself; only by self-discipline and earnest effort or by the imposition of outside pressure can he be made to consider effectively the interests of those with whom his actions must be coordinated. Often those interests conflict with his own; seldom are they fully identical; but every man eventually finds that his success depends on the degree to which they can be integrated.

Whatever our position may be, our most urgent need is for development of a sense of values — the worth of things that cannot be bought, even more than the value of those that money can buy. In the intimate associations within which we spend most of our lives, sincerity and loyalty are qualities of paramount worth. I have never known a sincere man whom I did not trust, for he lets me know his limitations as well as his intentions. Loyalty, perhaps, is mainly an extension of sincerity to group relationships. It is not, as often is assumed, servility. It operates in all directions within a group, or soon does not operate at all. Disregard of that

basic fact has caused the decline of many organizations; adherence to it has been responsible for remarkable achievements. I have always believed that no man could afford to work in a position where he was unable to render and receive full loyalty.

The Individual and the Organization

For most of us, administrative procedure, or red tape, presents one of the greatest irritations of professional life. Beginning with man's essential need for cooperative effort, it tends always to devolve into effete ritualism. But it is the only mechanism by which anarchy is avoided; without it there can be no large-scale effort, no human activity above the primitive level. Every project must have a director; only in a hermit's cell can one man gather all the information, make all the decisions, and initiate all the action. In a university, an oil company, a government, army, church or home, the activities of each department and each person must be related to all the others. Whatever I do affects the others; whatever I know may be equally important to them; I can not move intelligently without knowledge of their activities. Interchange of information and interrelated timing of significant actions are essential functions of the administrative machinery. The effectiveness of an organization depends directly on the community of information, the fitness of decisions, and the surety with which they are put into operation at all levels of activity. The first function of administrative procedure is the clear definition and assignment of responsibility and authority at each level, but most of the red tape is concerned with coordination.

This mechanism is not dependent solely on the internal requirements of an organization, but exists within the framework of a complicated system of laws, business customs, and social traditions. Many outside agencies impose exacting and burdensome requirements. Each member of an organization inevitably shares part of the vast administrative burden inherent in the complex economic and governmental regime we have created. Superimposed on these vital elements is a variable structure wrought by caprice, vanity, jealousy, and all the other weaknesses of the human mind. Additional components consist of mere traditional practices, dusty remnants of a past when they may have been useful. Each man, when he is promoted, tends to carry along into his new position many of his previous functions and impedimenta. Much of this superfluous burden is difficult to eliminate because of sentiment, habit, or outside pressures; usually it persists because of inadequate executive competence. Critical appraisal

of red-tape structure is a continual responsibility of management at all levels. I take a dim view of business corporations that find it necessary to revolutionize their organizations on the basis of recommendations by outside consultants unfamiliar with their particular problems, conditions, and personalities.

Scientists are notoriously intolerant of administrative machinery; but functional conformability to the established pattern is as essential to their success as is scientific or technical competence. Ignorance of the system entails ineffectiveness; recalcitrance to its restraints insures frustration. The larger the organization, the greater are apt to be the resources that one can come to command by intelligent use of the appropriate means. The more complicated the mechanism, the greater are the rewards for a full understanding of its complexities. Difficulties have been compounded by the recent erection of research and development units within big industrial corporations. Many such departments live in a little world of their own, insulated from the economic realities and practical requirements of their parents, and isolated from their colleagues. Often denied the benefits of practical experience, sometimes wrapping themselves in an aura of intellectual snobbishness, few of these departments have yet come close to realizing their full potential. Here seems to be a great opportunity for the profitable application of more discerning and sensitive personal attitudes.

Communication

Most of the problems of our complicated lives grow from inadequate communication. Few scientists have learned to speak intelligibly to non-scientists; in fact our sciences have become so specialized that we can hardly understand the expert living in the pigeonhole next to our own. The creator of ideas cannot expect them to come to fruition unless they can be propagated outside the tight little capsule in which they were generated. Since the mid-17th century, the most effective institutions for the development and dissemination of science have been the professional scientific societies. In their publications is recorded the history of the growth of the modern world. Their meetings have furnished the most important contacts by which the individual workers have avoided excessive idiosyncrasy and escaped from provincialism. None of us can afford to be outside the societies devoted to our cultural field. Energetic participation in their activities is one of the most rewarding features of professional life.

Communication is a technical process dependent on training and practice, which are too generally neglected in the education of scientists. But it is also a very personal phenomenon, conditioned by mental attitudes and habits. Sincerity, earnestness, sensitivity, and common sympathy are vital elements. In a competitive world, the bore finds himself almost as isolated as the dummy. I suppose there must be some rules about how to avoid being a bore; if so, I have never seen them. I presume they might be something like the following: (1) say only what you really believe; (2) talk about what you think you truly know; (3) seek out your hearer's interest; (4) avoid some of the big words that I have used in this talk to show how smart I am; (5) be economical with language; and (6) say everything briefly, then shut up and listen. Perhaps one of the best places to practice this fine art is at home.

Conclusions

I suppose these personal factors of professional life are evident to all of us. But I believe we inquire of ourselves too seldom in their light, and apply them instead to the unpleasant characters around us. What a motley crew they are! The griper who doesn't like the working conditions or the salary or the boss, or is full of aches and pains and family troubles; we are not really interested in the gruesome details and fear his bad luck may be contagious. The quick-tempered or irritable fellow, the nice-guy-when-he's-sober-but-too-often-isn't, the one who can't make up his mind, the bore, how many there are and how nice it is that we're so different! I am only suggesting that we establish a habit of examining ourselves as objectively as possible. I see in myself certain weaknesses that can be remedied. Others are constitutionally fixed or too ingrained to change appreciably; I try to plan my course so they will be a minimum handicap. I recognize certain elements of strength; these I seek to apply where they will be most effective. I like to think that there are some things that I might do better than anybody else in the world. However slight these may be, I want to develop them for my personal satisfaction.

We can be certain that the competition for any important professional position will always be intense. Under the prevailing recruiting practices, the students in this audience already are competing for the most desirable future positions in industry or teaching. The decision will rest more on their personal attributes, which are already becoming very manifest, than on their bare grade reports. A record of growth and improvement during this training period is the most persuasive recommendation they

can acquire. As their careers proceed, I hope they will find, as I have, that their activities are progressively more exciting and satisfying, as they become more exacting. Most of all, I hope they will find many friends of the sort I have enjoyed—men whose fine personal qualities I could respect and whose superb ability I could admire. As I look back on these old friends, a strange anomaly appears. Those who have given the most of themselves and have devoted the most of their energy to our common interests generally have received the highest honor, the greatest power, and even the biggest financial success. In most cases these rewards have come seemingly without being sought or asked. Perhaps, in some strange way, over a lifetime, self-interest is most effectively served by unselfishness.

**Ed Owen began his professional career as a petroleum geologist in 1916 in the mid-continent region when that area was booming. Working for a series of small companies and private interests, he concentrated his geological activities in Oklahoma, Kansas, and north-central Texas. In 1929, he moved with his family to San Antonio, Texas, and then expanded his geological interests to include western Texas and New Mexico. Ed was one of the pioneers in the use of air photos in geological exploration. He was president of AAPG in 1940–1941. Beginning in 1952 he served for 20 years as unpaid professional mentor and sponsor of "Technical Sessions," biweekly seminars for graduate students in the Department of Geological Sciences at the University of Texas at Austin. In that capacity, he touched the lives of thousands of future geologists. His magnum opus, *Trek of the Oil Finders*, a history of petroleum geology, was published as AAPG Memoir 6 in 1975.*

1. Give the Russian for:

to make apology for ...; traits of personality; to have the advantage of ...; to approach the subject on an informal basis; to ask one's indulgence; to apply one's attitude to ...; to learn by one's own effort; to have competitive virtue; to evaluate one's assets and liabilities; to be rewarding; the quality of eagerness; to apply the basic sciences to empirical observations; sureness of judgment; soundness of one's reasoning; to maintain one's enthusiasm; the extensiveness of one's opportunities for observation; to be notable for ...; to face a variety of explorations; the fine adjustment between initiative and compatibility; awareness of mutual problems; to go beyond guidance; to furnish one's share of the initial impetus; to learn

by force of circumstances; qualities of paramount worth; to render and receive loyalty; the fitness of decisions; to exist within the framework of system of laws.

2. Give the English for:

личные качества, черты характера; интеллектуальные возможности; дальнейшие преимущества; просить снисхождения; в противном случае (иначе); к счастью; к сожалению; встретиться с трудностями; практическое применение; невежество; ревность; достоинство; уверенность.

3. Grammar Revision:

- I have the further advantage of *having met* lots of folks ...
- Our attitude is the same as *that* which we *would* apply to *any* other investigation.
- It is possible to look at ourselves as we *would* at a rock outcrop.
- ... it may be as elusive as ..., but it *does* exist.
- The portion of energy that is directed to constructive *ends varies* remarkably.
- Any project *important enough to be really rewarding is sure to demand* an expend an expenditure of energy.
- The same *distinction seems to apply* generally.
- ..., *for* important results are founded on drudgery ...
- In no creative effort is the drudgery performed by slaves "*for the benefit*" of a master ...
- ... I can hardly explain why *I am learning*, only now much that *I should have known* 40 years ago.

4. Discussion Time

- Personality, rather than formal knowledge, is the dominant factor in professional success.
- A pound of energy maybe worth a for a brains.
- Over a lifetime self-interest is most effectively served by unselfishness.

SECTION II: MEET THE SCIENTISTS

I GEOMORPHOLOGISTS

A geomorphologist is a person who makes a study of surface landforms and the processes that cause them. Geomorphologists are also interested in the changes in landforms over time. Geomorphologists recognize that every landform is in the process of becoming something else. Hills that are worn down and V-shaped stream valleys that become flatter and wider are two examples of changes in the land surface that geomorphologists study.

Dr. A. Wesley Ward is a geomorphologist working for the United States Geological Survey in Flagstaff, Arizona. Currently he is working on a large-scale map showing the geology in the San Juan Basin. This region is located in northwest New Mexico. Dr. Ward is studying the surface features, soils, and climate relationships involved in the development of landforms in this area. When completed, the map will be used in the search for oil, gas, and coal that are thought to exist in this region.

To make such a map requires a great deal of training. Dr. Ward took many courses in geology, chemistry, physics, engineering, atmospheric science, and mathematics.

Geomorphologists usually have a great interest in and love of the outdoors. Dr. Ward's love of the outdoors began as a child when he collected frogs, turtles, and other living creatures with his grandfather in Michigan. When asked why he liked his work, Dr. Ward replied, "Because it is like solving a great big puzzle. I like the outdoors. I observe the surface and then try to figure out how it got to be that way. I like this kind of detective work."

- What does a geomorphologist study?
- What kind of changes in landform interest them?
- How do geomorphologists view energy landform?
- What particular changes in the landforms do they (geomorphologists) study?
- Where does Dr. A. Wesley Ward work?
- What is he currently working on?
- Where is this region (the San Juan Basin) located?
- What kinds of relationships are involved in the development of landforms in this area?

- What is thought to exist in this region?
- What for will his map be used (when completed)?
- What is required of a person to make such a map?
- What courses did he take?
- What did Dr. A. Wesley Ward love to do as a child?
- Why does he call his work a great big puzzle and detective work?

1. Give the Russian for:

- 1) to make a study;
- 2) to be interested in ...;
- 3) to work for Geological Survey;
- 4) to be working on a large-scale map;
- 5) currently ...;
- 6) to be used in the search for oil;
- 7) to require a deal of training;
- 8) to take courses in ...;
- 9) to have a great interest in ...;
- 10) to have a great love of outdoors;
- 11) when completed ...;
- 12) when asked, ...;
- 13) to solve a problem (a puzzle);
- 14) to figure out ...

2. Give the English for:

- 1) представлять себе;
- 2) по завершении;
- 3) проводить изучение;
- 4) работать в (на) ...;
- 5) в настоящее время;
- 6) взять курсы (учебный);
- 7) интересоваться чем-либо;
- 8) если спросить;
- 9) решать проблемы;
- 10) нуждаться в тренировке;
- 11) испытывать любовь к ...;
- 12) работать над составлением карты;
- 13) использоваться для (в) поиска нефти.

3. Explain and Expand:

“I like this kind of detective work.”

HYDROLOGIST

Some cities use streams and lakes as a source of water. Other cities use groundwater. How do the cities know about the water quality and how much water is available? They ask a hydrologist, a scientist who measures the amount and quality of fresh water.

Do you know anyone who started in one career but later changed to another one? Judy D. Fretwell, who started as an elementary school teacher, did that. She taught school for four years. She found doing research for science projects very exciting. But she also wanted to work outside, and she enjoyed writing.

Judy Fretwell left her teaching job and went back to college. There she studied science, mathematics, and computers. Two years later, she found work that included all the things she enjoyed doing. She was hired as a hydrologist by the U.S. Geological Survey. As a hydrologist, Judy Fretwell measures the water levels in lakes, streams, and wells. She also evaluates the water quality. After collecting this and other information, she writes reports. The reports tell other people about possible threats to their water supply.

Judy Fretwell wants other people to know about their surface water and groundwater supply and not to take it for granted. She states that water is our most valuable resource.

- Do all the cities use ground water as a source of water?
- Is it possible to know how much water is available?
- Who can provide the information on water resources to the cities?
- What career did Judy Fretwell start in during the first four years of her work?
- What was her attitude towards research?
- What else did she enjoy doing, besides science projects?
- What subjects did she study when she went back to college?
- Where did she start working as a hydrologist?
- In what way does she summarize the results of her work?
- What do people learn from her reports?
- What do people usually take for granted as regards water?
- How does Judy Fretwell evaluate water?

1. Give the Russian for:

- 1) to start in a career;
- 2) to change to another career;
- 3) to start as a ...;
- 4) to teach school;
- 5) to do research for science projects;
- 6) to be exciting;
- 7) to work outside;
- 8) to enjoy doing something;
- 9) teaching job;
- 10) to study science;
- 11) to be hired as hydrologist by ...;
- 12) to measure the amount of water;
- 13) to evaluate the water quality;
- 14) to write reports;
- 15) possible threats;
- 16) water supply;
- 17) to take something for granted.

2. Give the English for:

- 1) начинать работу в качестве ...;
- 2) быть принятым на работу в качестве ...;
- 3) поменять карьеру;
- 4) начинать карьеру;
- 5) работать в школе;
- 6) возбуждать интерес;
- 7) заниматься наукой;
- 8) преподавательская работа;
- 9) писать отчеты;
- 10) оценивать качество воды;
- 11) измерять количество воды;
- 12) водоснабжение;
- 13) принимать как должное;
- 14) делать что-либо с удовольствием;
- 15) проводить исследования по научной теме ...;
- 16) работа вне помещений;
- 17) возможные угрозы.

3. Explain and Expand:

“Judy wants other people to know about their water supply and not take it for granted.”

GEOCHEMIST

Geochemists study the chemical composition of and the actual or possible chemical changes in the crust of the earth. To do this work requires advanced study in the fields of mathematics, chemistry, and geology.

Dr. Rosemary Vidale, a geochemist, works at Los Alamos National Laboratory and lives in Los Alamos, New Mexico. She earned a B. A. degree in chemistry from Oberlin University in Ohio and a Ph. D. from Yale University. When she's not working on her field of special interest, the transport and concentration of chemical elements in the earth's crust, Dr. Vidale enjoys several hobbies. These include photography, hiking, reading, camping, and music. She regularly gives geology travelogues and talks to school groups and the public on such topics as hot springs, volcanoes, and mineral and rock identification. She leads local geology field trips for interested groups.

Her research findings are useful in determining a safe disposal method for chemically dangerous wastes.

- What do geochemists study?
- What kind of knowledge does the work of a geochemist require?
- Where does Dr. Rosemary Vidale work and live?
- Where did she receive her degrees?
- What is the field of her special interest?
- What hobbies does she enjoy?
- What topics does she talk on to school groups and the public?
- What else does she do in her field of interest?
- What is the subject of her research work?

1. Give the Russian for:

- 1) actual or possible changes;
- 2) to require advanced study;
- 3) study in the field of;
- 4) to work at the laboratory;
- 5) to earn a degree *in* chemistry *from* the University;
- 6) a field of special interest;
- 7) to work on one's field of special interest;

- 8) to enjoy several hobbies;
- 9) to give geology travelogues and talks on such subject;
- 10) to lead local geology trips for interested groups;
- 11) research findings;
- 12) to determine a safe-disposal method;
- 13) a safe disposal method for chemically dangerous wastes.

2. Give the English for:

- 1) исследования в области;
- 2) научные находки;
- 3) требовать углубленных исследований в области;
- 4) необходимость работать в лаборатории;
- 5) область особого интереса;
- 6) проводить походы для любителей геологии;
- 7) метод безопасного размещения химически опасных отходов;
- 8) работать над проблемами в области, представляющей интерес;
- 9) получить степень бакалавра университета;
- 10) рассказывать об экспедициях и проводить беседы по таким темам, как ...;
- 11) действительные или возможные изменения.

3. Explain and Expand:

“She regularly gives geology travelogues to the public.”

RESEARCH ENGINEER SCIENTISTS IN RADIOCARBON DATING

Persons working in radiocarbon dating use radiocarbon dating techniques to date archeological objects, antiques, charcoal samples, bones, shells, and wood samples. Radiocarbon dating techniques are usually applied to objects that are thought to be less than 40,000 years old. A research engineer scientist uses special chemical treatment techniques in preparing the samples for dating. This work requires at least a bachelor's degree in mathematics and chemistry.

Alejandra Gloria Varela is a research engineer scientist working at the Radiocarbon Dating Laboratory at the University of Texas in Austin. She attributes her interest in science and mathematics to her mother, who held daily classes with the children of the family in their early years. In this class her mother would teach the children to read, write, and do mathematics. Alejandra knew the multiplication tables before she entered first grade. In high school she had an outstanding biology teacher who helped

develop her math and science talents by setting up special projects and extra assignments for Alejandra.

In college she took as much mathematics and chemistry as possible. This prepared her for dating archeological materials, antiques, charcoal samples, bones, shells, and wood. Each substance must be treated chemically before its age can be determined. Calculating the age of a substance requires the application of her mathematics.

Alejandra has had more than ten articles published in scientific journals. She finds a special reward when she learns that other scientists refer to her work.

- What kind of objects can be dated by using radiocarbon dating?
- Can these techniques be applied to all objects regardless of their age?
- How does a research engineer scientist use these techniques?
- What education does this work require?
- Where does Alejandra Gloria Varela work?
- How did she get interested in science and mathematics?
- What did her mother do to encourage her children to study?
- Who helped her develop her math and science talents at school and in what way?
- What subject did she take in college?
- When did she use her knowledge?
- What is required to do before determining the age of a substance?
- When does she apply her mathematics?
- Where does she publish her articles?
- What does she feel when she learns that her work is referred to by other scientists?

1. Give the Russian for:

- 1) to use radiocarbon dating techniques;
- 2) to date objects;
- 3) to apply techniques to objects;
- 4) to use chemical treatment techniques;
- 5) to prepare samples for dating;
- 6) a bachelor degree in chemistry;
- 7) a research engineer scientist;
- 8) to attribute one's interest to ...;
- 9) to hold classes;

- 10) to do mathematics;
- 11) to enter first grade;
- 12) to develop one's talents;
- 13) to set up special projects for somebody;
- 14) extra assignments;
- 15) to take chemistry;
- 16) to treat substance chemically;
- 17) to calculate the age of a substance;
- 18) to require the application of ...;
- 19) to find a special reward;
- 20) to refer to one's work.

2. Give the English for:

- 1) применять различные методики;
- 2) определять возраст объектов;
- 3) приготавливать образцы для обработки;
- 4) степень бакалавра;
- 5) проводить занятия;
- 6) подготавливать специальные проекты;
- 7) дополнительные занятия;
- 8) получать особое удовлетворение;
- 9) ссылаться на чью-либо работу;
- 10) обрабатывать вещества химическими способами;
- 11) поступить в первый класс;
- 12) требовать применения чего-либо.

3. Explain and Expand:

"She finds a special interest, she learns that other scientists refer to her work."

PETROLEUM CHEMIST

Petroleum is a mixture of hydrocarbons and other substances. Crude oil from different oil fields contains various amounts of different hydrocarbons, other substances, and water. Before an oil company can refine the crude oil into gasoline and other products, it must know what substances and how much water are in a shipment of crude oil. A petroleum chemist is a scientist who analyzes crude oil to find out what is in it.

Sonia Hoffner is a petroleum chemist. She works for the Marathon Oil Company in Denver, Colorado. In addition to analyzing crude oil, Sonia

analyzes metals. Expensive metals such as platinum are used in the refining process. These metals help refine the gasoline that runs automobiles. By analyzing the metals, Sonia Hoffner helps to verify that her company gets what it pays for. She also analyzes groundwater from near oil wells. This information tells engineers what the rock formations are like.

When Sonia Hoffner was in school, she didn't know that one day she would be a scientist. She was very good in math and enjoyed studying it. A science course that she took increased her curiosity about the world. She learned to ask questions about things she didn't understand in books. With her ability in math and an active curiosity, she went to college and studied to become a chemist.

- What is petroleum?
- What does crude oil contain?
- What must an oil company know before it can refine crude oil?
- What does a petroleum scientist do?
- Where Sonia Hoffner work?
- What does she do?
- Where are expensive metals used?
- Why are they used in the refining progress?
- What does Sonia Hoffner help to verify?
- Why must groundwater from near oil wells be analyzed?
- Was Sonia Hoffner interested in science at school?
- What subjects was she good in?
- What did she learn in a science course?
- Was it her curiosity about the world or her ability in math that led her to study chemistry?

1. Give the Russian for:

- 1) oil;
- 2) petroleum;
- 3) gasoline;
- 4) crude oil;
- 5) to contain different amounts of oil;
- 6) to refine the crude oil into gasoline;
- 7) a shipment of crude oil;
- 8) to work for the oil company;
- 9) to analyze crude oil;
- 10) to be used in refining process;

- 11) to run automobiles;
- 12) to verify ;
- 13) oil wells;
- 14) to enjoy studying;
- 15) active curiosity.

2. Give the English for:

- 1) смесь гидрокарбонатов и других веществ;
- 2) нефтяные поля;
- 3) работать на нефтяную компанию;
- 4) подтвердить;
- 5) нефтяные скважины;
- 6) учиться, чтобы стать химиком;
- 7) процесс очистки нефти;
- 8) бензин.

3. Explain and Expand:

“By analyzing the metals, Sonia Hoffner helps to verify that her company gets what it pays for.”

GEOPHYSICIST

Geophysicists use the science of physics to study the earth and its surroundings. They use instruments to measure gravitation, magnetism, and electric and radioactive characteristics of the earth. Data from seismographs are used by geophysicists to learn about the interior of the earth.

To carry out this kind of work, you must have a strong academic background in geology, physics, mathematics, and computer science.

J. Tuzo Wilson is a geophysicist. He began college at the University of Toronto. In his early geological career, Wilson considered himself a non-drifter. Yet in a few years he became the supporter and architect for many of the ideas you have been studying. What brought about this change? He reports that the work with magnetic data helped change his mind. This work led him to study the islands in the Atlantic. If the islands had drifted, they must have left a clue. He found that the farther an island is from an ocean ridge, the older the island is. That was the clue he was looking for.

Wilson proposed the idea of hot spots—plumes. He was one of the first to explain how transform faults work. He became a super-salesperson for the drifters.

J. Tuzo Wilson is a person with a vision. This vision is not like seeing something that isn't there but a vision of reality—the world as it really is. Wilson has a knack for explaining the complicated in a simple way. His creative insights give him the ability to see the grand design within a mass of confusing details.

- Why do geophysicists use the science of physics?
- What do they use instruments for?
- What do seismographs help them to do?
- What scientists make up an academic background for a good geophysicist?
- What education did J. Tuzo Wilson get?
- What was the change in his ideal after a few years of work?
- What helped change his mind?
- What area did he begin to study and why?
- What clue did he find?
- What idea did he propose?
- Why is he called a super-sales person for the drifters?
- In what way do his creative insights affect his work?

1. Give the Russian for:

- 1) data from seismographs;
- 2) to carry out this kind of work;
- 3) to have a strong academic background;
- 4) to begin college at the University;
- 5) early geological career;
- 6) to become the supporter and architect for many of the new ideas;
- 7) to bring about the change;
- 8) to change one's mind;
- 9) to leave a clue;
- 10) to propose an idea;
- 11) to be a person with a vision;
- 12) a vision of reality;
- 13) to have a knack for ...;
- 14) to explain the complicated in a simple way;
- 15) creative insights;
- 16) the ability to see the grand design within a mass of confusing details.

2. Give the English for:

- 1) изучать землю и ее окружение;
- 2) измерять различные характеристики;
- 3) проводить работу;
- 4) иметь хорошую академическую подготовку;
- 5) выдвигать идеи;
- 6) видение реальности;
- 7) умение видеть общее за деталями;
- 8) человек с воображением;
- 9) изменить точку зрения.

3. Explain and Expand:

Wilson considered himself as a non-drifter.
 “He became a super-salesperson for the drifters.”

SEISMOLOGIST

An earthquake happens. Very soon the newspapers and TV are describing what happened, where the earthquake was, what time it happened, and how strong it was. Where do they get their information? The information comes from a seismologist, a scientist who studies earthquakes and the earth.

Kate Hutton is a seismologist at the California Institute of Technology. She collects information on earthquakes. The information is studied by students. It is also used by reporters. Sometimes she appears on TV to answer questions about a big earthquake.

Kate Hutton felt her first earthquake when she was 14 when her family was living in Taiwan. It woke her up, and when she went back to bed, she took a book to find out about earthquakes. Later, she took science and mathematics courses in college. After college, she had a job at the Goddard Space Flight Center. She used two radio telescopes focused on the same quasar to determine if the earth's crust was moving. After that project, she moved to the California Institute of Technology to work on recording earthquakes in southern California. Today she supervises the collection of data from over 200 seismology recording stations. She likes her job because it is interesting and because it has enough surprises not to become boring. She likes the idea that what she does may someday lead to the ability to predict earthquakes. That may help save someone's life when a big earthquake hits. She says that her job keeps her on her toes.

- How detailed are the newspapers describing an earthquake?
- What does a seismologist study?
- What does Kate Hutton do at the California Institute of Technology?
- Who uses the information she collects?
- Why is she sometimes invited to the TV studio?
- Did she feel her first earthquake in California?
- What was her reaction?
- What courses did she take in college?
- What kind of job did she do at the Space Flight Center?
- Why did she move to the California Institute of Technology?
- What kind of job does she have now?
- What does she like her job for?
- What are her hopes?
- What does she mean saying that her job keeps her on her toes?

1. Give the Russian for:

- 1) to be seismologist *at* the Institute of Technology;
- 2) to collect information *on* earthquakes;
- 3) to take science courses in college;
- 4) to have a job at ...;
- 5) to move to another institute ...;
- 6) to work on recording earthquakes ...;
- 7) to supervise the collection of data from recording stations;
- 8) to have enough surprises not to become boring;
- 9) to like the idea;
- 10) to lead to the ability to predict earthquakes.

2. Give the English for:

- 1) собирать информацию по землетрясениям;
- 2) взять курс по естественным наукам;
- 3) иметь работу в ...;
- 4) работы по регистрации землетрясений;
- 5) быть достаточно удивительными, чтобы не наскучить;
- 6) работать сейсмологом в университете;
- 7) отвечать за сбор данных с регистрационных станций;
- 8) перейти на работу в другой институт;
9. возможность предсказывать землетрясения.

3. Explain and Expand:

“She says that her job keeps her on her toes.”

EXPLORATION PETROLEUM GEOLOGIST

An exploration petroleum geologist studies surface and subsurface rocks in search for petroleum. The work involves the evaluation of potential areas as a source of petroleum and the analysis of the rock material that is removed when a well is being drilled. The exploration petroleum geologist is the first to know whether or not drilling is successful.

Marsha Findlay is an exploration petroleum geologist. She attended Walt Whitman High School in Huntington, New York. Later she studied geology and earth science at Vassar College. Her master's degree was earned at the University of South Carolina. Her thesis study on the effects of tectonic events on carbonate sediments of the Jurassic Period provides her with the kind of information that helps her locate potential sources of petroleum.

Her interest in geology began in elementary school when she learned about the glacial features near her home on Long Island. In the ninth grade she took an earth science course that she liked very much. This interest has continued and led to her present position.

An exploration petroleum geologist must be able to interpret surface land-forms and how they relate to subsurface rock formations that may hold petroleum. The scale of events that must be studied range from the microscopic to global. Marsha Findlay finds the study of geologic changes in surface and subsurface rocks exciting and the challenge of using this knowledge in the search for petroleum important.

Marsha Findlay is a member of the Scholarship Committee for the American Geological Institute's Minority Participation Program. This group encourages minority students to study the geologic sciences.

- What does an exploration petroleum geologist study?
- What does the work involve?
- What is the task of an exploration petroleum geologist as regards drilling?
- Where did Marsha Findlay get her education?
- Where did she earn her Master's degree?
- What was the theme of her thesis?
- What kind of information is provided by her research?
- When did she get interested in geology?

- Where did she live at that time?
 When did she take an earth science course?
 What are the objects of interest for an exploration petroleum geologist?
 What kind of work does she find exciting?
 What challenge does she find important?
 What is the Minority Participation Program aimed at?

1. Give the Russian for:

- 1) to study rocks in search for ...;
- 2) evaluation of potential areas;
- 3) a source of petroleum;
- 4) to remove material;
- 5) to drill a well;
- 6) to attend High School;
- 7) to earn master's degree;
- 8) thesis study;
- 9) to provide somebody with information;
- 10) to locate potential sources of petroleum;
- 11) to take an earth science course;
- 12) to interpret surface landforms;
- 13) to hold petroleum;
- 14) the scale of events;
- 15) to range from microscopic to global;
- 16) to be exciting;
- 17) the challenge of using the knowledge;
- 18) to encourage students to study.

2. Give the English for:

- 1) поиски нефти;
- 2) геолог-нефтяник;
- 3) оценка потенциала региона;
- 4) источник нефти;
- 5) бурить скважину;
- 6) получить степень магистра;
- 7) диссертация;
- 8) обнаруживать потенциальные источники нефти;

- 9) обеспечивать информацией;
- 10) содержать нефть;
- 11) масштаб событий.

3. Explain and Expand:

"Marsha finds the study of geologic changes in rocks exciting and the challenge of using this knowledge important."

REMOTE SENSING SCIENTIST

Are you concerned about pollution? Would you like to study what an increasing population does to land and water resources? Would you like to identify natural hazards at the same time you find new mineral and fuel sources? Would you like to provide information that would help farmers increase food production? These questions are about problems that affect everyone's existence on Earth. The answers come from information provided by a remote sensing scientist.

Remote sensing involves the mapping and analysis of Earth's land and oceans using airplane and satellite images. These images include ordinary photographs as well as computer analyzed temperature and radar images from satellites.

Aulis Lind is a remote sensing scientist. She does research on remote sensing of Earth's environment. This includes studying conventional photographs taken from high-flying airplanes and satellite images. Sometimes this means just finding out what the images mean about the environment. Aulis Lind also teaches others interested in Earth's environment how to use the imaging tools of the space age.

Remote sensing is very exciting to Aulis Lind because there are constantly new challenges. There are new data from satellites that need analysis. There are new sensors being developed that provide new kinds of information. There are new resource problems that require solutions. And there are new opportunities to help others understand remote sensing. Aulis Lind says that remote sensing of the environment allows her to become involved with places all around the world—places where much remains to be discovered. Remote sensing is a new and fascinating career.

- What questions affect everyone's existence on Earth?
- Who can provide the necessary information for the answers?
- What does remote sensing involve?
- What kind of images are used in remote sensing?

- What field of science does Aulis Lind specialize in?
- What is the subject of her research?
- What namely does she study?
- Why does she sometimes study conventional photographs taken from high-flying airplanes?
- What does she teach those who are interested in Earth's environment?
- Why is remote sensing so exciting to her?
- What kind of challenges does she constantly encounter?
- What does she say about remote sensing?
- Does she find remote sensing fascinating?

1. Give the Russian for:

- 1) to be concerned about pollution;
- 2) to identify natural hazards;
- 3) to provide information;
- 4) to affect everyone's existence on Earth;
- 5) the mapping of the Earth's land and oceans;
- 6) airplane and satellite images;
- 7) to do research on ...;
- 8) to use the imaging tools of the space age;
- 9) to be exciting to somebody;
- 10) to need analysis;
- 11) to require solutions;
- 12) to become involved with places all around the earth;
- 13) a fascinating career.

2. Give the English for:

- 1) определять природные катастрофы;
- 2) обеспечивать информацией;
- 3) проводить исследования по ...;
- 4) возбуждать интерес;
- 5) нуждаться в анализе;
- 6) удивительная карьера;
- 7) картирование суши и океанов;
- 8) снимки из космоса;
- 9) быть озабоченным проблемами загрязнения окружающей среды;

10) требовать решений;

11) влиять на существование всех на Земле.

3. Explain and Expand:

"Remote sensing is very exciting to Aulis Lind because there are constantly new challenges."

VERTEBRATE PALEONTOLOGIST

Vertebrate paleontologists study ancient life forms that had backbones. Fish, amphibians, reptiles, birds, and mammals are animals with backbones. Examples of ancient vertebrate life forms include such animals as dinosaurs, mammoths, mastodons, and pterodactyls. A paleontologist requires a strong background in geology, paleobiology, zoology, and chemistry.

Dr. Douglas A. Lawson, a vertebrate paleontologist, found the fossil bones of the world's largest flying creature, a huge pterodactyl. This flying reptile had a wingspan of more than 16 m and lived in southwest Texas about 65 million years ago. Dr. Lawson was walking up a dry streambed when he noticed some unusual looking bits of rock. These turned out to be fossil bone. Near these fossil bone pieces he found a larger fossil bone, nearly 1 m long. He took some of the fossil bones back to the lab where he and others discovered the bones had been hollow. This information, plus more of the fossil bone and many comparisons with other animals having hollow bones, left no doubt that the bones were that of a huge pterodactyl.

Dr. Lawson made his discovery of the pterodactyl while studying geology at the University of Texas in Austin. Currently Dr. Lawson is working at a petroleum research center in Bartlesville, Oklahoma.

What do vertebrate paleontologists study?

What ancient life forms had back bones?

What animals are included into ancient vertebrate life forms?

The knowledge of what sciences make a good paleontologist?

What did Dr. Douglas A. Lawson find?

When and where did the world's largest flying creature live?

What did he notice on a dry streambed?

How many fossil bones did he find?

What did he and his colleagues discover working in the lab?

What made them think those were the bones of a huge pterodactyl?

- When did he make his discovery?
- Where is he currently working?

1. Give the Russian for:

- 1) to require a strong background in geology;
- 2) to walk up a dry streambed;
- 3) to turn out to be ...;
- 4) to be hollow;
- 5) to leave no doubt;
- 6) to make a discovery;
- 7) to work at a research center.

2. Give the English for:

- 1) работать в научно-исследовательском центре;
- 2) требовать солидной подготовки;
- 3) оказаться чем-либо;
- 4) быть полым;
- 5) не оставлять сомнений;
- 6) делать открытия;
- 7) идти вверх по руслу.

3. Explain and Expand:

“A paleontologist requires a strong background in geology, paleobiology, zoology, and chemistry.”

II

Dr. Marie Morisawa

ENVIRONMENTAL GEOLOGIST

Dr. Marie Morisawa, a Japanese-American, is a professor of geology at the State University of New York, Binghamton. How she got to that position is as interesting as what she does as a geologist.

Dr. Morisawa started as a math major with a chemistry minor, graduating with honors from Hunter College. She discovered geology when a friend twisted her arm to take an introductory geology course. Although she liked the course and took several more courses after graduation, she entered Union Theological Seminary. After earning an M. A. degree, she taught two years in Hawaii before accepting a job as the director for geology laboratory work and equipment at Hunter College. This experience

led her to pursue graduate studies in geology at the University of Wyoming and Columbia University.

At the time she received her Ph. D., women were not so well accepted in geology as they are today. She encountered a number of interesting experiences as her career developed, such as waiting aboveground while her male students went underground at a mine because women were not allowed to go into mines. She summarizes her experiences by saying, “I discovered that those who like you and respect you as a person are more numerous and more important than those who do not. It is one’s inner self that determines success or failure, whether one is a man or woman.”

Dr. Morisawa is currently pioneering a new field of aesthetics and environmental geology.

- Where did Dr. Marie Morisawa work?
- What did she major at the college?
- What kind of diploma did she get from Hunter College?
- What made her take an introductory geology course?
- Where did she earn an M. A. degree?
- Did she start working at the geology laboratory just after getting her M. A. degree?
- What did she do at the University of Wyoming?
- What was the general attitude to women in geology at that time?
- What kind of experiences did she encounter when working at mines?
- How did she summarize her experiences?
- What, to her, determines success or failure?
- What is she doing now?

1. Give the Russian for:

- 1) to be a professor of geology at the University;
- 2) to get a position;
- 3) to get to a position;
- 4) to start as a math major with a chemistry minor;
- 5) to graduate with honors from ...;
- 6) to take an introductory course;
- 7) to enter the institute;
- 8) to earn an M. A. degree;
- 9) to accept a job as a director for laboratory work and equipment;
- 10) work experience;

- 11) to pursue graduate studies at the University;
- 12) to receive Ph. D.;
- 13) to be accepted in ...
- 14) to encounter a number of interesting experiences;
- 15) career development;
- 16) to be pioneering a new field.

2. Give the English for:

- 1) продвижение в карьере;
- 2) быть принятым в ...;
- 3) начинать со специализации в математике и, дополнительно, в химии;
- 4) окончить с отличием;
- 5) взять вводный курс;
- 6) опыт работы;
- 7) получить степень магистра;
- 8) получить степень доктора наук;
- 9) получить интересный опыт работы;
- 10) быть первооткрывателем в новой области;
- 11) согласиться на должность руководителя лаборатории (лаборанта);
- 12) получить должность;
- 13) достигать положения;
- 14) быть профессором в Университете;
- 15) поступить в институт;
- 16) продолжить обучение в Университете (в аспирантуре).

3. Explain and Expand:

"It is one's inner self that determines success or failure."

William Smith

STRATIGRAPHER

William Smith, one of the earliest great observers, lived in England between 1769 and 1839. At a young age Smith, a surveyor, was asked to plan the route of a new canal across southern England. Smith knew that the type of rock to be encountered would directly affect the cost of the canal. So he conducted some geological research. He traveled 16,000 kilometers a year on horseback and by carriage for his geological study. It was during this time that he developed his remarkable observational skills.

He noticed that various rock strata could be identified by the kind of fossils they contained. He observed that the fossils in each rock layer differed from those above and below it. He made this discovery when he was only 22 years old. Using this information, he could predict the location of buried rocks. His technique of matching the rock and fossils from different areas is still used today. As a result of his work, he was nicknamed "Strata" Smith.

Strata Smith visited the Reverend Benjamin Richardson, a fossil collector. The minister was astonished when Smith told him exactly where and in what formation specimen after specimen had been found. In a distant hill Smith correctly predicted the rock layers and fossils. It was as though he knew every rock in England.

Later, Strata Smith put his observational skills to good use for England. He constructed the first geologic map of England. He was rewarded in 1831 with a gold medal from the Geologic Society of London.

- When did William Smith live?
- What kind of job did he have at his young age?
- What was he asked to do?
- Why did he decide to conduct some geological research?
- In what way did he study the area?
- What helped him to develop his observational skills?
- What were his observations about fossils?
- How old was he when he made his discovery about fossils?
- How useful was the information he received?
- Is his technique outdated now?
- Why was the fossil collector astonished when he talked with William Smith?
- What impression did he produce?
- What was his contribution to the geological science of England?
- How was he appreciated by the Geologic Society of London?

1. Give the Russian for:

- 1) to plan the route of a canal;
- 2) the type of rock to be encountered;
- 3) to affect the coastline;
- 4) to conduct some research;
- 5) to travel on horseback and by carriage;
- 6) to develop one's observational skills;
- 7) to identify rock strata by the kind of fossils they contained;

- 8) to make a discovery;
- 9) to predict the location of buried rocks;
- 10) the technique of matching the rocks and fossils;
- 11) to find specimen;
- 12) to put observational skills to good use for ...;
- 13) to construct the first geological map;
- 14) to be rewarded with a medal from ...

2. Give the English for:

- 1) в раннем возрасте;
- 2) проводить исследования;
- 3) находить образцы;
- 4) быть награжденным медалью;
- 5) развивать наблюдательные способности;
- 6) определять слои пород;
- 7) содержать ископаемые;
- 8) делать открытие;
- 9) создать геологическую карту;
- 10) предсказывать местоположение пород.

3. Explain and Expand:

"As a result of his work William Smith was nicknamed 'Strata' Smith."

Rene Just Haüy
MINERALOGIST

Haüy was born in the small town of St. Just in northern France. His family lived in poverty. He would have followed his father in making cloth if he had not been helped by others. As a child, Haüy displayed a strong interest in religion and religious music. His constant attendance at church attracted the prior of the local abbey to become interested in young Haüy. Others aided in seeing that he received a good education, and he thus became a botanist.

Haüy was walking through the Royal Gardens in Paris and noticed a large group of people entering a lecture hall. A lecture on mineralogy was being given. He came away from that lecture impressed with the regularity and variety of crystals found in minerals. Later while visiting a friend who had a collection of minerals, Haüy dropped a fine group of

calcite crystals. As he examined the broken pieces, he noticed that their shape was similar to another crystal in his collection. He returned home and selecting from his collection a number of calcite crystals of different shapes, he broke them all. In every case the broken pieces were the same shape. Haüy did not hesitate to break up all the crystals in his collection. Furthermore, he broke up all the crystals he could obtain from friends. In all minerals that displayed cleavage, he believed that he could find some nuclear form about which their crystals had been built. This concept, expanded upon by others, led to the science of mineralogy. Rene Just Haüy is called the father of mineralogy. And all because he was willing to break things apart in order to see them better. Haüy became a professor of mineralogy under Napoleon's reign. When Napoleon was ousted in 1814, Haüy was discharged. He died a very poor man.

Where was Haüy born?

Was his family rich?

What was he interested in as a child?

Who aided him in getting a good education?

What did he specialize in?

What lecture impressed him in the lecture hall the Royal Gardens in Paris?

What was he impressed by?

What collection did he see at his friend's house?

What happened when he was looking at the minerals?

What did he notice as he examined the broken pieces?

What did he do when he returned home?

What did he do to all the crystals he could obtain?

What did he hope to find?

What was his life afterwards?

1. Give the Russian for:

- 1) to follow his father in doing;
- 2) as a child;
- 3) to display a strong interest in something;
- 4) to attend constantly;
- 5) to attract somebody;
- 6) to become interested in somebody;
- 7) to receive a good education;
- 8) a lecture on mineralogy;

- 9) to give a lecture;
- 10) to be impressed with something;
- 11) the concept, expanded upon by others ...;
- 12) to break things apart;
- 13) to be discharged;
- 14) to display cleavage.

2. Give the English for:

- 1) следовать по стопам отца в чем-либо;
- 2) читать лекцию;
- 3) заинтересоваться чем-либо;
- 4) лекция по минералогии ;
- 5) понятие, расширенное другими;
- 6) разламывать что-либо на части;
- 7) быть смещенным;
- 8) получить хорошее образование;
- 9) находиться под впечатлением чего-либо;
- 10) будучи ребенком;
- 11) проявлять большой интерес;
- 12) постоянно посещать.

3. Explain and Expand:

“Others aided in seeing that he received a good education, and thus become a botanist.”

Dr. David Lopez

FIELD GEOLOGIST

Dr. David Lopez, a field geologist, was born in El Rito, New Mexico, in 1949. While he was still a small child his family moved to Grand Junction, Colorado. He grew up loving the outdoors and has enjoyed fishing and hunting all of his life. His mother says he was a great rock collector as a child.

He started his career in geology when a college advisor suggested that he change from a forestry major to a geology major. He did very well in his studies in the new area. However, a summer job in the field really convinced him that work in geology was to be his future. Dr. Lopez was an outstanding student and received a number of scholarships during his college years. He completed his Ph. D. in 1981 at the Colorado School of Mines, Golden, Colorado.

Dr. Lopez's work experience includes several years as a field geologist doing research for the United States Geological Survey in Idaho and Montana. This work was primarily a mapping study that included an appraisal of the mineral and petroleum potential in this area. Currently he is working for Montana Power Company, Billings, Montana, exploring for petroleum in south-west Montana, Idaho, and northern Utah.

His love of field geology is based on a desire to know how things fit together. He enjoys figuring out the three-dimensional relationships between and within rock formations. He says that he has to develop a model of how things fit together before he feels right.

- Was Dr. David Lopez born in the USA?
- When did his family move to Colorado?
- What did he enjoy doing as a child?
- What made him major in geology?
- When was he convinced that work in geology was to be his future?
- How well did he study?
- What scientific degree did he get?
- What is his work experience?
- What kind of work did he do?
- Where is he currently working?
- What is he exploring?
- What is his love of field geology based on?
- What kinds of relationships of rock formations does he study?
- What is necessary for him to do before he feels right?

1. Give the Russian for:

- 1) to move to ...;
- 2) to enjoy hunting;
- 3) to be a great rock collector;
- 4) to start one's career;
- 5) a college advisor;
- 6) to change from a major to a minor;
- 7) to do very well in ...;
- 8) an appraisal of the potential in the area;
- 9) field work;
- 10) in the field of ...;
- 11) to convince somebody ...;
- 12) to complete Ph. D.;

- 13) to do research for ...;
- 14) to receive a number of scholarships;
- 15) explorations for oil;
- 16) to work for the company.

2. Give the English for:

- 1) начать карьеру;
- 2) проводить исследования ...;
- 3) основной предмет;
- 4) поменять специализацию;
- 5) увлекаться охотой;
- 6) хорошо успевать по ...;
- 7) куратор;
- 8) получить стипендию;
- 9) оценка потенциала района;
- 10) завершить работу над докторской диссертацией;
- 11) убедить кого-либо;
- 12) работа в поле;
- 13) работать на компанию;
- 14) поиск нефти.

3. Explain and Expand:

“He says that he has to develop a model of how things fit together before he feels right.”

Floyd Gray

RESEARCH GEOLOGIST

On September 15, 1951, Floyd Gray, a research geologist with the Western Mineral Resource Branch of the United States Geological Survey (USGS), was born in New Orleans, Louisiana. He moved at an early age to Baton Rouge, Louisiana, where he attended public school. His early interest in science was encouraged by his father, who took him through the laboratories in the refinery where he worked. In the fourth grade Floyd's interest in science was sparked by a wonderful science teacher, and in the ninth grade he won a statewide science competition.

In college he started studying journalism, but a summer USGS geology job changed his life. The job took him to Hawaii, where he saw a volcanic eruption. In fact, he had the opportunity to gather data and make observations of that eruption.

Upon returning to the mainland, Gray enrolled in the University of California at Santa Cruz. His two bachelor's degrees were in earth science and anthropology. He earned a master's degree at the University of Massachusetts in Amherst. For his thesis he studied the magmatic ore deposits in southern Oregon.

Currently Gray is working for the USGS, evaluating the mineral potential of rocks of the ocean floor that have been forced onto the continental crust in northern California and southern Oregon. He does field mapping and lab petrology work and makes geochemical analyses of these rocks. He is looking for geochemical tracers to ore deposits.

Why does he like his work? He says, “I like outside work that is challenging. I'm interpreting nature and I like that. I enjoy traveling and the chance to do something rewarding.”

- When and where was Floyd Gray born?
- Where did he attend public school?
- How did his father encourage his interest in science?
- How well did he do at school?
- What did he study in college?
- What did he do in summer?
- What did he see in Hawaii?
- When did he enroll in the University of California?
- What kind of degrees did he earn?
- What did he study for his thesis?
- Where is he working?
- What does his job consist of?
- What kind of work does he like?
- What does he enjoy doing?

1. Give the Russian for:

- 1) to a research geologist with branch of the Geological Survey?
- 2) to attend public school;
- 3) his interest was encouraged by ...;
- 4) to encourage one's interest;
- 5) to take somebody through the laboratories?
- 6) to sparkle one's interest;
- 7) to win a statewide science competition;
- 8) to have the opportunity;

- 9) to gather data;
- 10) to make observations;
- 11) upon retaining?
- 12) to enroll in the University;
- 13) bachelor's degree *in* geology;
- 14) to earn a master degree *at* the University of ...;
- 15) thesis;
- 16) to evaluate the mineral potential of rocks;
- 17) to do field mapping and lab petrology work;
- 18) to make geochemical analyses;
- 19) to look for geochemical tracers to ore deposits;
- 20) to be challenging;
- 21) outside work;
- 22) to interpret nature;
- 23) to enjoy travelling;
- 24) to do something rewarding.

2. Give the English for:

- 1) посещать школу;
- 2) поддерживать интерес (вдохновлять);
- 3) показать лаборатории;
- 4) разжигать интерес;
- 5) выиграть соревнование;
- 6) собирать данные;
- 7) проводить наблюдения;
- 8) поступать в Университет;
- 9) степень бакалавра геологии;
- 10) степень магистра Университета;
- 11) диссертационная работа;
- 12) оценивать потенциал пород (месторождение);
- 13) выполнять картирование на местности;
- 14) проводить лабораторные работы;
- 15) проводить геохимические анализы;
- 16) работа вне стен лаборатории.

3. Explain and Expand:

"I like outside work that is challenging."

SUPPLEMENTARY PART

RESUMES

A resume is a summary of your background and experiences written to interest a potential employer in your qualifications.

Because the resume is usually your first introduction to the employer, it must make a good impression. Since 30 seconds is typically allotted to skimming a resume, certain significant facts should be presented briefly and in a format that is readable and visually pleasing. Employers use resumes to identify candidates they would like to interview; they do not have time or patience for autobiographies, philosophical tracts, or mystery stories.

There are a few agreed-upon conventions in resume preparation, as well as wide areas of flexibility. The conventions prevail for the convenience of the reader: a short, well-organized, and physically attractive document communicates information more effectively than a sloppy, rambling one. Flexibility prevails for the advantage of the writer: choose the contents, organization, and style that are best for you.

The following guidelines and sample resumes are offered to help new graduates prepare their first resume and to suggest ways for those with previous experience in resume preparation to polish theirs.

Resume Contents

While developing your resume, you will be faced with a series of decisions about what items to include, stress, or omit. Keep in mind that every statement should show how you are qualified for the kind of employment opportunity you want.

Before writing, it is helpful to begin by thinking about yourself: your past experiences, your skills and talents, your most significant achievements. Make a list of all the positive points you want to convey to an employer and jot down specific examples from your past experiences that illustrate each. Think also about the types of employers who will be reading your resume and what they are likely to look for. Remember that employers seek graduates both for their immediately applicable technical skills and for their long-range potential as managers and professionals. Experiences that demonstrate responsibility, flexibility, leadership, and

* Киткова Н. Г. Дороги, которые мы выбираем, или как найти работу, о которой ты мечтаешь. Учебное пособие по английскому языку. М.: Менеджер, 2006. С. 83–90.

teamwork are more significant in terms of what you have to offer the employer than your height, weight, or eye color.

The college senior whose job objectives are not yet clear should present a broad picture (including some information on personal interests and extracurricular activities) that is suitable for a variety of employers. The resume of a Ph. D. candidate or of a graduate with some work experience should be more focused in terms of a particular type of employer or industry and should include fewer personal facts.

Resumes are usually organized into the following sections:

- 1) identification;
- 2) professional or job objective (optional);
- 3) educational background;
- 4) work experience;
- 5) research interests and publications (for graduate students and people with professional experience);
- 6) other activities, interests, and skills (optional);
- 7) personal data (optional);
- 8) reference information.

1. Identification. Your name, address, and phone number should be placed first so that employers can contact you easily. Those already employed should give their office address or phone only if they want to be contacted at work.

2. Professional or Job Objective. Since you may be exploring a variety of career fields, a statement of your job objectives is best included in the covering letter, where it can be adjusted to each job or organization of interest. If you have a very clear idea of the kind of job you would like, state your objective simply and specifically.

Sometimes people with a variety of career objectives write several versions of their resume oriented toward different job markets. This is an effective approach in your resume is organized differently for each type of job. However, if all you change is the job objective section, you might just as well alter only the covering letter.

Preclude false assumptions by being specific. Some employers presume that your past is the key to your future, that what you have done is all you are able to do or interested in doing. New job seekers as well as experienced people, who are changing career directions must call attention to a goal that is unconventional in view of their training or work history. A geologist interested in bank operations, a Ph. D. who wants to write for a trade journal, or a government worker looking for commission sales

should state this new objective both in the resume and in the covering letter to reiterate the point.

3. Educational Background. New graduates will probably want to place this section next, since their primary qualification is their degree. If you have more than one degree, start with either the most recent one or the one that is most in line with your career objectives. You will want to include all the following elements.

Degree, discipline, date, and institution. The reader will look for these first. They must be prominent, not buried in a prose paragraph. Spell out all degree abbreviations except B. S., B. A., M. S., M. A., and Ph. D. Give the name of the specific discipline or program in which you studied if your department offers more than one major. If you do not have your degree in hand, say "candidate for Ph. D." or "M. S. expected," and so on, with the date. State the name of the institution awarding the degree and that of the department if it is different from your major, plus the location (town and state) if it is not obvious.

Concentration or related course work. Bachelor's degree candidates may want to indicate the direction of their academic interests by mentioning specialized or advanced courses within their major and courses in other science and engineering departments. If electives are mentioned, choose those that seem most relevant to the work setting, for example, economics, psychology, business administration, international relations — or those that really interested you. Include a mention of your senior project. Graduate students should briefly describe their area of specialization, thesis topic, and other research or fieldwork.

4. Work Experience. New graduates, aware that work experience is of great interest to employers, tend to list individually every job they've ever held to make this section look more impressive, or at least longer. The result is jumbled and extremely tedious to read. A better way to handle a variety of jobs is to draft a chronological list of all your work experiences, paid and unpaid, and then sort them into various categories as described below. After you have decided which jobs to emphasize and how to organize them, describe them within each category in reverse chronological order.

Begin your work experience section with any paid or unpaid jobs related to your technical background or career. Next, examine all your other volunteer and campus activities to see if they can qualify as work. They do if you:

- were paid;
- organized an event or an activity;

sold on a commission basis (pizza, magazine subscriptions, furniture);
 supervised, led, or managed others (student cafeteria workers, construction crews);
 were responsible for people or money (accounts manager for campus newspaper).

Some of these examples are jobs in the traditional sense, others are often labeled extracurricular activities. They count as work experience because they give evidence of important work-related qualifications, such as leadership, initiative, responsibility, and ability to get along with people in a job setting. Your attractiveness as an employee worth long-term investment hinges as much on these qualities as on technical competence. (Even the original astronauts were evaluated, before selection, on their ability to work with others.) If you have had any such experiences in your college career, highlight them for individual treatment.

5. Research Interests and Publications. Graduate students may wish to present all their research and related publications in one section rather than breaking them up according to when or where accomplished. A brief description of each, in reverse chronological order, is most appropriate. Follow each description with the institution or organization where the research was performed, the name of the research director, and the dates. Your publications list can form a separate section if it is extensive.

6. Other Activities, Interests, and Skills. This section is useful to call attention to additional strong points or may be used to stretch a meager resume.

If, under Education, you have not included computer programming languages or foreign languages you can read or speak, be sure to list them here. Participation in extracurricular activities can be used to point out professional interests, hobbies or qualities of leadership and teamwork.

Certificates or licenses, professional memberships in scientific or technical societies, also belong in this section.

7. Personal Data. The most common error made by graduates is to provide unnecessary data about themselves or their family.

Present in this section only those work-related items that enhance your attractiveness to an employer or prevent what may be a false assumption on the employer's part. "Willing to relocate anywhere" may be a useful phrase to add if you do not want to be pigeonholed according to your home location or where you went to school.

Willingness to travel, especially in industries where it is a requirement, such as in consulting, is also considered a plus.

8. References. It is customary to use the phrase "Available on request" rather than listing your references on the resume itself. Since contact is usually made right before a hiring decision, it is unnecessary to waste space on your resume. It also allows you to tailor your choice of references to those most appropriate to the particular job for which you are being considered.

Resume Format and Production

No more than one or two pages are necessary to communicate your qualifications and what you can do for an employer. Even if you have extensive experience, it should be summarized for the sake of brevity. An extensive publications list or appropriate work samples (such as a design project or original computer program) may be attached to your resume or brought to the interview instead.

It is conventional to write in short phrases, although complete sentences may be used if your resume is brief and you need to extend your copy. Use the active voice without pronouns; the "I," as the subject, is implied.

Clear headings and wide margins should be used for attractive appearance and fast reading. Check for correct spelling and punctuation, and proofread the final copy carefully before it is reproduced.

A good resume takes time to develop and polish. Do not expect to write it in one day: the desired result may take several drafts.

Update your resume whenever facts change or when you see the need for improvement. Keep your resume current even when you have a job. As a summary of your background, it can be useful for an application to a professional society or for an employee data bank.

Letters of Application

A resume, no matter how complete, does not stand on its own without an accompanying covering letter tailored as much as possible to the organization to which it is sent.

Writing to a definite person is preferable to "Personnel Director" or "Dear Sir/Madam."

Make your letter brief. Normally three paragraphs should do the job.

The first paragraph should state why you are writing. If you are responding to an advertised opening, identify the position and how you learned of it. When you are not aware of a specific position, explain as persuasively as you know how why you are writing to that organization.

The second paragraph gives you the opportunity to state your career or job objective and to highlight the qualifications from your resume that are particularly relevant — courses that sparked an interest or provided training in the company's technical fields, extracurricular activities, etc. Do not repeat the information in your resume verbatim; rather, weave into your presentation of yourself the facts that make you particularly qualified for the kind of opportunity you seek.

In the third paragraph, state that you are enclosing a resume of your qualifications and background and request information on the next steps you should take. If you're writing in response to a definite opening, you might request a personal interview or information as to how to proceed with an application. It is appropriate to state that you expect to be in the employer's vicinity on a certain day or days and will take the liberty of telephoning in the hope that a mutually convenient time to meet can be arranged. Feel free to follow up one to two weeks later if you have not received an answer. This can do no harm and will further indicate your interest in the organization.

George Kemill

Home: 2409 King Rd.
Rochester, NY 14627 (716)
275-8084

Office: Department of Physics
University of Rochester
P.O. Box 223
Rochester, NY 14627
(716) 275-8830

Career interests

Preference for mathematics-related applied research that also involves physics; special interest in the development of techniques applicable to the theory and practice of numerical computation.

Education

Ph. D., Mathematical Physics, University of Rochester, expected May 2 ...

M. A. Physics, University of Rochester, 19 ...

Two B. S. degrees, Mathematics and Physics, Pennsylvania State University, 19 ..., GPA:3.88/4.0.

Doctoral thesis

Under Professor Keith Schuster, Department of Mathematics and Physics.

Calculation number and energies of bound states of quantum-mechanical particles in magnetic fields, making only general assumptions on the fields. This involves using methods such as functional analysis, complex analysis, and functional integration to estimate eigenvalues of partial differential equations that cannot be solved exactly. Extensive numerical calculations are not required. These techniques are also useful in numerical analysis, fluid mechanics, heat conduction, classical wave propagation, and many other areas.

Master's work

Degree involved examination in ten fields of physics, most of which needed independent study. Also required reading knowledge of a foreign language (German) and an experimental project: developed and tested a circuit to measure total power received by microwave detectors.

Publication

"A new bound on the number of eigenvalues for long-range magnetic fields," Letters in Physics 44 (25), 1706 (23 June 19..). With Keith Schuster.

Teaching experience

Supervision of freshman physics laboratory; 2 1/2 years.

Assistant in undergraduate course in thermodynamics and statistical mechanics; 1 year.

Assistant in graduate course in electricity and magnetism; 1/2 year.

Work experience

Research assistant, Department of Geophysics, Penn State, 19..-19... Wrote FORTRAN programs to translate seismic data tapes between incompatible machine codes, to search for seismic events, to plot them, and to analyze wave content.

Library assistant. Penn State Earth and Mineral Sciences Library, 19..- 20...

Awards

National Science Foundation graduate fellow 19..- ..., 19.. - ...

Penn State awards for excellence in mathematics 19.., 19..

Member, Pi Mu Epsilon (math society) 19..-...; invited to join Phi Beta Kappa 19...

Hobbies

Jazz, piano, bridge, reading.

Willing to relocate.

References on request.

INITIAL INTERVIEWS

Your initial interview with an organization, on campus or at the company personnel office, is intended only to establish parameters for what you and the firm might have to offer each other. Further interviews will take place between you and the various department heads who have the openings and the hiring authority.

Students frequently complain that campus interviews leave them unclear about the nature and activities of specific jobs, where they might be placed, and whether they will be favorably recommended. Unfortunately, that is unavoidable. A large company that plans to hire 100 new graduates yearly must start interviewing six months in advance of the starting work date. Company representatives often do not know what positions will be available or have the time to describe them all. And, until interviewers pool their assessments of applicants, they have no way of knowing who will be considered further. Unless there is a clear mismatch, you will seldom be rejected on the spot.

Interviews for a specific opening are more focused. The employer can describe the job's requirements and responsibilities, the skills it will entail, and its geographic location. The applicant, in turn, can direct his or her energies to appear as the ideal candidate for that specific position.

A successful interview, from the applicant's point of view, is one that results in a job offer or at least a chance to stay in the running. From the interviewer's standpoint, a successful interview results in referring an applicant who turns out to be an asset to the company. But since that outcome cannot be predicted, the average interviewer tends to be conservative: to prefer the safe to the erratic, to certify previous success rather than underwrite the untried.

Interviewers are a varied lot; it is impossible to predict the position or the personality of the individual you will encounter. Most frequently encountered on campus is a member of a company's college relations department whose immediate responsibility is to screen applicants from colleges and universities. Often, this campus recruiter has a technical background and previous work experience with the company. If not, a member of the technical staff may accompany him or her. Doctoral candidates are usu-

ally interviewed by a member of the company's research staff who has expertise in the same specialty that is being sought. Most large companies train their campus representatives in interviewing techniques. However, be prepared for the interviewer who just happened to be free and is sent in as a last-minute replacement.

What Will Happen?

A successful interview can be helped along if the candidate understands the interviewing process. In a half-hour's time (sometimes an hour at company headquarters or for doctoral candidates), the interviewer must establish a relaxed but businesslike atmosphere, ascertain certain information to transmit to other decision makers, and create a favorable company image both to interest a likely candidate and to retain the goodwill of a rejected one.

Interviews usually follow a set pattern of questions, although the style of the interview may vary greatly from company to company and from interviewer to interviewer. They may seem casual and informal, with open-ended questions that allow you to choose what to emphasize, or they may be structured according to a preplanned format. The "stress" interview, deliberately designed to arouse feelings of discomfort or defensiveness ("Why do you think we'd be interested in someone with your lack of experience?"), is rare at the entry level. Whatever the style, the typical interview will follow the same stages and cover the same topics to ascertain the presence of those qualities that all employers value. The chart on the following page outlines the stages, topics, and interests covered in the interview; the list of most commonly asked questions should also help in interview preparation.

Do not be misled into thinking that the employer always takes the initiative and that you are in a passive role. You are expected to explain, discuss, and elaborate on your answers, not just give "yes" or "no" replies. Some interviewers may start the interview by saying "Tell me about yourself" instead of going methodically through a sequence of questions. Another opener is often "Why are you interested in working for us?"

You Must Prepare

Students who rely on their gift of gab to carry them through their first interview are usually sufficiently unnerved by the experience to prepare properly for the next. Preparations involves acquiring some knowledge of the company or specific job beforehand. Is the company is not

listed in this guide, look it up in your office's collection of recruitment brochures and annual reports or consult a business reference source at the library. If, after exhausting these sources, you still do not feel adequately informed, ask the interviewer to tell you about the company and the nature of the job(s) available. If you already know basic information, it is still a good idea to ask some intelligent questions about the company's future and your possible role in it.

Preparation also involves learning to talk about yourself, your past experiences, and your career goals in a thoughtful way. What are you good at? What are you like and dislike? What is important to you? What can you offer an employer? These questions, in one form or other, will come up time and again. Think carefully about your answers; talking to a friend or counselor can help you articulate them. Then, if you can relate this to what you know about the specific needs and activities of the employer you are talking to, you can be relaxed, self-confident, and flexible in the interview itself.

The following details may also be helpful.

Dress. The proper interview outfit for men is a business suit; women may wear coordinated sportswear or a tailored suit or dress. The best guide for both sexes is to dress simply and conservatively.

Business manners. A firm handshake, eye contact when speaking and calling a person by name all make a good first impression. Women should extend their hand; many men have been taught to wait for it before extending their own. Treat men and women interviewers alike; women in the business world do not expect chivalry. The good manners you would show to anyone in a position of authority are appropriate. A thank-you note after the interview is a nice gesture, especially if some special circumstances warrant it.

Follow-through. During the interview, maintain interest even if the opportunities are not in line with your expectations. You may think better of them at a later point. Follow through on any things you must do such as releasing your transcript, providing references, filling out an application blank. Note the name of the person you were interviewed by in case you must follow up on your status. The interviewer should indicate what the next steps in the process will be and when you may expect a response from the company. If you do not hear by the specified period, call within six to eight weeks, you may want to call.

Handling questions about your further education. Employers are aware that many students are thinking about graduate study immediately

ly or after a few years' work experience. In fact, they expect that bright and ambitious students will pursue an advanced degree. However, they also calculate that a three- to five-year stay is the minimum necessary for a return on their investment in your training. Many will subsidize your graduate study provided it is related to the company's activities and that you study part-time while working. (Many will allow full time off for thesis work.) If you are willing to be flexible, in your plans to accommodate the employer's needs, you do not hinder your chances by admitting your interest in further education. If, however, you are certain that you will leave after a year or two to return to academia, it is better to be honest about your plans and ask for an assignment where you can be immediately productive rather than be assigned to a training program where your productivity will be delayed.

Stages and topics covered during the initial interview

(The screened area highlights the most important parts of the interview)

STAGES	INTERVIEWER TOPICS	INTERVIEWER LOOKS FOR
1. FIRST IMPRESSIONS	Introduction and greeting Small talk about traffic conditions, the weather	Firm handshake, eye contact Appearance and dress appropriate to the business, not campus, setting Ease in social situations, good manners, poise
2. YOUR RECORD	EDUCATION Reasons for choice of school and major Grades; effort required for them Special areas of interest Courses enjoyed most and least reasons Special achievements; toughest problems Value of education as career preparation Reaction to teachers High school record; SAT scores	Intellectual abilities Breadth and depth of knowledge Relevance of course work to career interests Special or general interest Value placed on achievement Willingness to work hard Relation between ability and achievement Reaction to authority Ability to cope with problems Sensible use of resources (time, energy, money) High energy level, vitality, enthusiasm

STAGES	INTERVIEWER TOPICS	INTERVIEWER LOOKS FOR
	WORK EXPERIENCE Nature of jobs held Why undertaken Level of responsibility reached Duties liked most and least Supervisory experience Relations with others ACTIVITIES AND INTERESTS Role in extracurricular, athletic, community and social service activities	Leadership ability; interest in responsibility Willingness to follow directions Ability to get along with others Seriousness of purpose Ability to motivate oneself, to make things happen Positive "can do" attitude Diversity of interests Awareness of world outside the lab Social conscience; good citizenship
3. YOUR CAREER GOALS	Type of work desired Immediate objectives Long-term objectives Interest in this company Other companies being considered Desire for further education/training Geographical preferences and limitations Attitude toward relocation Health factors that might affect job performance	Realistic knowledge of strengths and weaknesses Preparation for employment Knowledge of opportunities Seriousness of purpose; career-oriented rather than job-oriented Knowledge of the company Real interest in the company Work interest in line with talents Company's chance to get and keep you
4. THE COMPANY	Company opportunities Where you might fit. Current and future prospects Major divisions and departments Training programs, educational and other benefits	Informed and relevant questions Indications of interest in answers Appropriate but not undue interest in salary or benefits
5. CONCLUSION	Further steps you should take (application form, transcript, references) Further steps company will take, outline how application handled, to which departments it will be sent, time of notification of decision Cordial farewell	Candidate's attention to information as a sign of continued interest

50 Questions most commonly asked at interviews

The Endicott Survey, published by the Placement Center of Northwestern University, periodically updates its original list of questions most commonly asked of college graduates at interviews. Variations of that list have appeared in many publications.

1. What are your long-range and short-range goals and objectives, when and why did you establish these goals, and how are you preparing yourself to achieve them?
2. What specific goals, other than those related to your occupation, have you established (or yourself (or the next 10 years)?
3. What do you see yourself doing five years from now?
4. What do you really want to do in life?
5. What are your long-range career objectives?
6. How do you plan to achieve your career goals?
7. What are the most important rewards you expect in your career?
8. What do you expect to be earning in five years?
9. Why did you choose the career for which you are preparing?
10. Which is more important to you, the money or the type of job?
11. What do you consider to be your greatest strengths and weaknesses?
12. How would you describe yourself?
13. How do you think a friend or a professor who knows you well would describe you?
14. What motivates you to put forth your greatest effort?
15. How has your education prepared you for a career?
16. Why should I hire you?
17. What qualifications do you have that make you think that you will be successful?
18. How do you determine or evaluate success?
19. What do you think it takes to be successful in a company like ours?
20. In what ways do you think you can make a contribution to our company?
21. What qualities should a successful manager possess?
22. Describe the relationship that should exist between a supervisor and subordinates.
23. What two or three accomplishments have given you the most satisfaction? Why?

24. Describe your most rewarding college experience.
25. If you were hiring a graduate for this position, what qualities would you look for?
26. Why did you select your college or university?
27. What led you to choose your field of major study?
28. What academic subjects did you like best? Least?
29. Do you enjoy doing independent research?
30. If you could do so, would you plan your academic study differently?
31. What changes would you make in your college or university?
32. Do you think that your grades are a good indication of your academic achievement?
33. What have you learned from participation in extracurricular activities?
34. Do you have plans for continued study? (Graduate students may be asked: Why did you decide to pursue an advanced degree?)
35. In what kind of a work environment are you most comfortable?
36. How do you work under pressure?
37. In what part-time or summer jobs have you been most interested? Why?
38. How would you describe the ideal job for you following graduation?
39. Why did you decide to seek a position with this company?
40. What do you know about our company?
41. What two or three things are most important to you in your job?
42. Are you seeking employment in a company of a certain size? Why?
43. What criteria are you using to evaluate the company for which you hope to work?
44. Do you have a geographical preference? Why?
45. Will you relocate? Does relocation bother you?
46. Are you willing to travel?
47. Are you willing to spend at least six months as a trainee?
48. Why do you think you might like to live in the community in which our company is located?
49. What major problem have you encountered and how did you deal with it?
50. What have you learned from your mistakes?

SALARY AND EMPLOYMENT OFFERS

Until an offer is forthcoming, there is really no point in serious salary discussion, because the company will only start calculating a salary figure when it decides it wants you. The proper attitude until then is to concentrate on getting the offer by convincing the employer that you can benefit the organization.

What Amount Should You Expect?

Not only the salary but also the total compensation package should be examined and compared with that offered by other companies. This package may include benefits totaling between 20 % and 40 % added to the salary figure itself. Hospitalization; life insurance; medical, dental, and retirement plans; tuition assistance; sick leave; and vacations are the most common benefits offered by large companies. In evaluating a company whose benefits are minimal, deduct 20 % from the salary offered to see if it is still competitive with others.

Handling Offers

No matter how well the hiring interview seems to have gone, it is highly unlikely that you will be hired on the spot or even told that an offer will be forthcoming. If an offer should be extended then, always ask for a chance to think it over. Accepting immediately is poor policy because you lose your opportunity to negotiate salary, job assignment, or job location. Even if you think the offer is exactly right, the company's enthusiasm and your own at the time may cloud your objectivity. Sometimes an offer may be made through a telephone call; again, ask for time.

When an offer is made verbally, try to get the details in writing. An offer should specify your position or job title, salary, and the name of the department and supervisor to which you will be assigned.

Sometimes students inquire about the consequences of accepting an offer while at the same time hoping that a better one will come along. If you accept an offer in writing, you are at least morally bound to keep it. (Most employers will not, however, bother to spend the money necessary to hold you to it legally). Accepting, and then changing your mind, brings discredit on you, your college, and any references or contacts who may have helped you to that point. It may ruin chances for ever working for that company. However, breaking and engagement is better than marching honorably into a bad marriage. If you are convinced that you have made the wrong decision, immediately notify the employer. You won't get a Scout badge, but that is still better than not showing up without any previous warning.

Учебное издание

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Т. Ю. САФЬЯНИКОВА

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Книга для чтения на английском языке
для учащихся геологических факультетов

Пособие ориентировано на тех, кто хочет построить успешную деловую карьеру в геологии и использовать для этого знания в области английского языка. Оно позволяет существенно усовершенствовать эти знания и расширить словарный запас. Даются конкретные примеры того, как написать резюме и пройти собеседование на английском языке.

Учебное пособие предназначено для магистрантов, аспирантов, выпускников геологических факультетов университетов и вузов, владеющих английским языком в объеме университетской программы.



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