

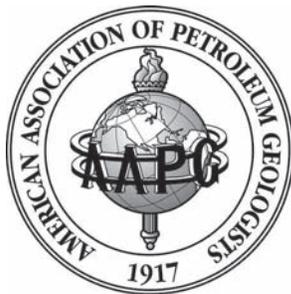
# Guiding Your Career As A Professional Geologist

Edited by Peter R. Rose  
and Stephen A. Sonnenberg



# **GUIDING YOUR CAREER AS A PROFESSIONAL GEOLOGIST**

**Edited by Stephen A. Sonnenberg**



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## DEDICATION

This book is dedicated to the mentors who have contributed so much to the careers and personal lives of each of the authors of these collected essays.

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A. S. (Sid) Bonner, Jr.

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# CONTENTS

## Introduction

<i>Peter R. Rose</i> .....	v
<i>Deborah Sacrey, DPA President</i> .....	viii

## I. Choosing a Geological Career

Future Jobs in Geology	
<i>David L. Copley</i> .....	2
Educational Foundation for a Geological Career	
<i>Peter G. Gray</i> .....	5
Student Participation	
<i>Robert C. Shoup</i> .....	8
Part-Time and Summer Jobs for Students	
<i>Peter R. Rose</i> .....	9
Geoscience Careers in a Changing World	
<i>James A. Gibbs</i> .....	11
That Critical First Year of Employment	
<i>James A. Ragsdale</i> .....	14

## II. The Working Professional Geologist

Setting Goals for Career Development	
<i>Peter R. Rose</i> .....	17
Participating in Professional Organizations	
<i>Willard R. Green</i> .....	20
Networking: The Art of Leveraging Your Business Presence Through Professional Contacts	
<i>G. Warfield "Skip" Hobbs</i> .....	21
Professionalism in Geology	
<i>Stephen A. Sonnenberg</i> .....	23
Continuing Education	
<i>Susan M. London</i> .....	29
Economics, Versatility, and Measurement	
<i>Edgar C. Capen</i> .....	31

## III. The Seasoned Professional

Learning to Manage People and Projects	
<i>Robert E. McGill</i> .....	34
Stress Management and Personal Growth	
<i>Robbie Rice Gries</i> .....	37
Changing Employers	
<i>Samuel H. Peppiatt</i> .....	43
From Corporate Employee to Consultant Geologist	
<i>William E. Diggs</i> .....	45

## IV. Later Stages of the Professional Career

Retirement: Preparations and Reflections	
<i>J. Fred Clement and Mark A. Clement</i> .....	48
Planning for Retirement	
<i>Robert D. Cowdery</i> .....	53

## V. Perspective

Personal Factors in Professional Careers	
<i>Edgar W. Owen</i> .....	59

## INTRODUCTION

I want to relate two personal experiences - apparently unconnected - that have shaped my perspective on geological careers and provided much of the impetus and motivation to assemble this book.

Several years ago I was giving a risk-analysis seminar to a group of major oil company professionals, primarily geologists and geophysicists, plus a few engineers and landmen. Most of those attending were men and women in their thirties, with a scattering of old hands. During a coffee break on the third day, I found myself visiting with two of the older geologists, trading "war stories." Suddenly I became aware that more than 20 class members had gathered around us, listening intently. This surprised me greatly, because what we were discussing was inconsequential, having no technical importance whatsoever.

My wife, Alice, helps me put on these seminars - her acute "people skills" are especially useful - and I asked her that evening if she had any insights about the incident during the coffee break. "They're hungry for mentoring," she replied. "And most of their mentors are gone - retired or laid off."

Over the past few years I have occasionally received visits from geological acquaintances who have been laid off unexpectedly, victims of corporate downsizing. Many of these people have a career pattern similar to this fellow's: "I had nearly 10 years of apparently satisfactory performance, but Houston said they had to trim 20% of the staff and I guess I just didn't make the cut. It's taken me several weeks to come out of shock. And now, I must confess that I have absolutely no idea as to what I should do. Do you have any suggestions?"

I looked through the resume he brought. It listed no published papers or professional talks, even though he had done good work on some interesting company projects. He wasn't a member of any local geological societies, let alone a participant in committee activities, or of any of the certifying professional organizations, even though he is well qualified. He has degrees in geology from well-respected universities, but he has had few subsequent continuing education courses, and those he has attended have all been sponsored by his employer. His resume lists many outside activities and hobbies, none of which relate to geology or business. When I asked about well-placed friends or contacts in other outfits, he shakes his head.

"Do you want to continue working as a geologist, John?" I asked.

"Absolutely - I'm competent, and I can contribute!" he replied.

So I gave him a few leads, identified a couple of emerging geological subspecialties, encouraged him to write and talk to every acquaintance and firm he can, and suggested he get involved in the professional geological community. Then I walked him to the front

door and shook his hand. "Good luck, John. I'll let you know if I hear of anything. Meanwhile, keep looking, and keep your chin up."

Because he needs encouragement right now rather than criticism, I don't say to him what I'm really thinking, which is "John, what in the world have you been doing these past 10 years besides wrapping yourself in a corporate cocoon? While your corporate career was in progress, you should have been developing the professional contributions and contacts and subspecialties you need so badly right now. You've been an employee, when you should have been a professional!"

### Professionals and Professionalism

A professional person is generally understood to be someone who continually pursues and becomes highly accomplished in some specialized occupation, ordinarily for monetary gain. Commonly involved in this pursuit are elements of learned study, personal dedication, and service to mankind, perhaps because the traditional professions were law, medicine, and the clergy. With the rise of technology, the list of professional occupations has expanded and now includes such fields as engineering, architecture, and accounting, among others.

What is more important here than the *definition* is the *concept* of professionalism, which is an *attitude* - the personal endorsement of consistently high standards of knowledge, work performance, and conduct. Professionalism requires capability beyond mere competence, and it requires a willingness to be accountable. I believe that many of our geological colleagues find themselves in career crises now because they do not actively see themselves as professionals. I see three main causes for their dilemmas:

- (1) The long-standing tradition of geology as an observational and descriptive - rather than objective and predictive - science seems to persist, especially in academia. In addition, our deterministic, Cartesian society has not understood the variance and uncertainty that attend geologic processes, even though probability methods and chaos theory now provide a clear mathematical remedy. The result has been a common (although by no means universal) timorous subjectivity on the part of many geologists, which I ascribe to an understandable fear of *accountability*.
- (2) During 1945-1990, large numbers of geologists were employed for long periods by corporations and other organizations touting job security and loyalty to the firm. These geologists were encouraged to think of themselves as *employees of Company X*, rather than *professionals who happened to be employed by Company X*. Today, most geoscientists

understand that they will probably change jobs several times over the course of their careers. Nevertheless, they seem complacent about preparing a professional network and are actively or passively discouraged from participating in professional affairs.

- (3) Given the common heavy workloads borne by today's geoscientists, the continual maintenance, and updating of geological knowledge, and the acquisition of new geotechnical skills the required commitments of time and energy are far beyond the traditional 40-hour work week. Such dedication is difficult to sustain in the face of the legitimate demands of family, community, and regular employment. It is all too easy to "let the professional stuff slide."

## Geologists and Careers

Many geologists seem to think of a career as whatever happens to occur during your professional work history. Increasingly, this outlook causes the geologist to be caught unawares by changes in the job market, and to be at the mercy of economic developments rather than to be able to take advantage of them. When those inevitable crisis points arrive, usually unexpectedly, such geologists find themselves regretting that they had not previously laid the groundwork that would have allowed them more attractive career options now. Or they find themselves bored and resentful, quietly locked into dead-end or demeaning work situations with no practical alternatives. Regardless of the success of an individual's career, crisis points tend to recur throughout the 25 to 50 years that span most careers. Some crisis points are predictable, especially those related to educational and societal patterns. Other crisis points relate to personal attributes. Some are truly random. Typical career crisis points include (1) graduation from college and the search for initial employment as a geologist; (2) an unsatisfactory performance appraisal or missed promotion; (3) being laid off or terminated;

(4) a transfer to an undesirable location; (5) an attractive employment opportunity elsewhere; (6) negative signals from the economy; and (7) retirement, early or otherwise.

This book is for geologists of any age or level of experience and provides practical suggestions for developing a fuller, more rewarding, and more secure professional career. Whether you are an emerging graduate, a 10-year corporate professional, a middle manager considering the start of an independent consulting practice, or a seasoned veteran contemplating retirement, you may be at a career crisis point. It can be quite scary.

This book, however, is about the things you should be doing *before* the crises occur – ongoing activities and projects to help guide and strengthen your geological career during the more orderly periods of your professional lifework. This book was written by about 20 seasoned geoscientists, women and men, most of whom are Certified Petroleum Geologists and members

of the Division of Professional Affairs (DPA) of the American Association of Petroleum Geologists. All but one of the contributors are petroleum geologists. The book draws on more than 600 man- and woman-years of experience, including hard knocks as well as gratifying successes, and a variety of employment situations.

## Mentoring

The guidelines provided to all the contributors to this volume were simple: "Consider what counsel you would give a younger geologist about your particular topic – keep it brief, to the point, and pungent. Think of yourself as a Dutch uncle, giving practical, kind, but direct advice." Mentoring commonly is undervalued as an important and time-honored way to provide continuity and convey wisdom. Mentoring is one of the chief casualties of the severe staff reductions in the domestic petroleum exploration industry during the past decade. This book is an effort to redress that loss, even in a small way. And it also provides each of the contributing authors an opportunity to honor mentors who have exerted powerful and beneficial influences on their own careers and lives, by maintaining the tradition and passing it on.

## Organization and Summary

Section I is addressed to young people on their way to becoming geoscientists. This section begins with a summary of the mix of geological employment fields that exists at the present time, together with some forecasts of future trends. The next topic is a review of desirable educational preparation in terms of necessary course work, academic levels and standards, and desirable ancillary skills. Extracurricular student participation is considered next, followed by a discussion of summer employment – how to obtain it and what the summer-hire should expect to contribute and receive during the summer's work experience. The fifth topic in section I is a review of the job-hunting process, that is, resumes, interviewing, and site visits, and is applicable also to experienced job seekers. The final subject concerns the critical first year on the job as a geoscientist.

Section II is for the working geoscientist who has already embarked on a professional career. This section begins with a discussion of organizational and career goal-setting. Next, the merits of participating in professional organizations are reviewed, leading naturally to the topic of networking. The subject of professionalism comes next, followed by an essay on the importance of continuing education. Section II concludes with the admonition that most careers in applied geology have a lot to do with money and measuring results.

Section III is aimed at the more experienced geotechnical professional and begins with management training, then moves on to stress management and personal growth. The next topic concerns the process of changing jobs. Section III concludes with a discussion of the transition from corporate employment

to self-employment as an independent consultant.

Section IV concerns the latter stages of the professional career. Two essays cover the overall aspects of retirement from somewhat different viewpoints. Both essays discuss planning, financial considerations, new activities, and practical tips.

Section V consists of a reprint of Ed Owen's fine article "Personal Factors in Professional Careers," written by this respected petroleum geologist toward the end of his 50-year career. If you're looking for a thoughtful, experienced perspective about the human aspect of geological careers, this is it.

The epigrams that appear with each essay came from a long list of "Life's Lesson's Learned," compiled from different sources, including many from the authors of these essays. A few of these quotes are attributed; most are not. As editor, however, I should make it clear that, in most cases, the author of a particular epigram is not the author of the essay in which it appears.

## **Acknowledgments**

The original concept for this book arose in 1990 during a meeting of the Advisory Board of AAPG's Division of Professional Affairs. Presidents Bob Cowdery, Chuck Noll, and Pete Gray have since provided encouragement and support, and many members of the Board have contributed essays and editorial suggestions to the project. The DPA updated the book into the second edition in 1995 and into this third addition in 2006. Elizabeth Sherry and Norma Newby put all the contributions into consistent format and helped with editing. Steve Sonnenberg helped editing updated papers in 2005. I thank them all.

*Peter R. Rose*

## From the DPA President

Gosh, how I wish this publication had been available when I was starting my career in the mid-1970's! If it had been, I would have been much more prepared for the 1980's and the career changes I experienced during the "slump".

Many geoscientists have "transitioned" in their careers similar to my experiences, first starting out with a major company, then moving to smaller and smaller organizations, until they found themselves "out on their own", either as a consultant, or as a small independent. These choices have either been made for them, or they have found their transition paths on their own accord. Regardless of how one moves in their career paths, success is dependent upon the network of professional contacts and visibility within the geosciences community one can build.

As Pete mentioned earlier, no one in this industry really expects to stay in one job their whole career, and who would want to? Like Pete, I have had the opportunity to mentor professionals who have spent 16-20 years with large organizations, only to find themselves "out on the street" for one reason or another. Each time, I am amazed at the lack of participation in outside geosciences activities these "professionals" have had during their tenure with their employer. Many large organizations in fact, discourage "volunteerism", as distraction from the tasks at hand. I have even heard of one company which discourages their employees from being active in the outside geosciences community for fear of losing company secrets, or even worse, losing their employees.

While this mindset is fine if you are a manager, it is suicide for a person who views their job as only a part of their career, and wants to expand not only their technical world (and find out what other companies are doing), as well as their social world. Many of my best friends and business associates are people with whom I have worked on various committees, conventions and other professional activities. By expanding my network through volunteerism, I have expanded my consulting business, and found additional opportunities for professional and financial growth.

Being a member of the Division of Professional Affairs is also important in this regard, as it focuses on professionalism in one's career, issues on ethics and career management through the business aspects of this industry. The additional credibility of being recognized among your peers as a "Certified" Professional, be it Petroleum Geologist, Petroleum Geophysicist or Coal Geologist, adds an additional boost to one's standing in the geosciences community.

Regardless of where you are in your career, there is valuable information contained in this publication for each and every one of us, and I urge you to read it from cover to cover!

*Deborah K. Sacrey*  
President, Division of Professional Affairs  
American Association of Petroleum Geologists

## I. CHOOSING A GEOLOGICAL CAREER

So you've decided to become a geologist!\*

Congratulations! It is a fascinating field, and one that can challenge, stimulate, and broaden you. It can be financially rewarding as well. In any case, we hope you find as much fulfillment in your geological career as we have in ours. This section contains six essays focused primarily on college choices and opportunities, plus the first year of professional employment. Jim Gibbs's article, "Geoscience Careers in a Changing World," applies to experienced professionals, as well.

Future Jobs in Geology .....	David L. Copley
Educational Foundation for a Geological Career .....	Peter G. Gray
Student Participation .....	Robert C. Shoup
Part-Time and Summer Jobs for Students .....	Peter R. Rose
Geoscience Careers in a Changing World.....	James A. Gibbs
That Critical First Year of Employment .....	James A. Ragsdale



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*\*or geophysicist, geochemist, hydrogeologist - or for that matter, a member of any other profession!*

## FUTURE JOBS IN GEOLOGY

David L. Copley

When I was first asked to write this section in 1993, there were a lot of negative employment factors facing the geological workforce (Copley, 1993). The petroleum industry, the largest employer of geologists, was going through a period of very low oil and gas prices, which in turn led to a severe cutback in drilling and the concurrent loss of many jobs in the geological sector (and all sectors of the petroleum industry for that matter). As if to add insult to injury, the environmental sector, another large employer of geologists, was faced with increasing competition from the then growing list of environmental contractors, and decreasing numbers in terms of volume of environmental contract work and the money available to complete that work. Simply put, geologists were losing jobs at an alarming rate, and the search for reemployment for many of these professionals was arduous and uncertain. Some gave up the fight and no longer practice geology. Others, that successfully made the transition to other geology related fields, never forgot the turmoil they went through, and remain skeptical about the future for the professional geologist. So it is legitimate to ask: *Why bother studying geology if the prospects for employment are uncertain?* 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.

Today there are about 65,000 professional geoscientists at work in the United States. Most of them were either solving problems related to the environment, or finding and developing energy and mineral resources. Most of these geoscientists were employed by private industry, although substantial numbers worked for agencies of the federal, state, and local governments.

Starting in the early 1990's, increasing numbers of geoscientists were being employed in assignments relating to environmental protection, including both prevention and remediation. The most rapidly growing areas in the environmental geoscience field involve governmental agencies, private industry, and engineering firms. Hydrogeology is an especially fast-growing field.

Many geologists work for companies involved in the oil and natural gas business. Such firms range from large

major oil companies operating around the world, to small independents whose activities are limited to a single producing area or basin.

Some industrial geoscientists are employed by mining companies to locate new ore deposits or estimate reserves in existing mining areas, but mining has decreased significantly in the conterminous United States. Geologists also work for the cement, chemical, and ceramic industries; for companies quarrying stone, sand, and gravel; and for railroads and other land companies.

The largest single United States employer of geologists is the federal government, especially the U.S. Geological Survey, but also the Soil Conservation Service, Bureau of Land Management, National Park Service, Bureau of Mines, Forest Service, Environmental Protection Agency, Department of Energy, and the Army Corps of Engineers. In addition, most states have a state geological survey and regulatory agencies that deal with mineral production, surface and ground water, pollution prevention and correction, urban and suburban planning, and so on. State highway departments and health departments also employ geologists. Increasingly, county and municipal governments maintain geological staff. Some geologists are engaged in teaching and research in colleges and universities that have geoscience departments, or they are in affiliated research institutions. Other geology graduates teach in junior and senior high schools.

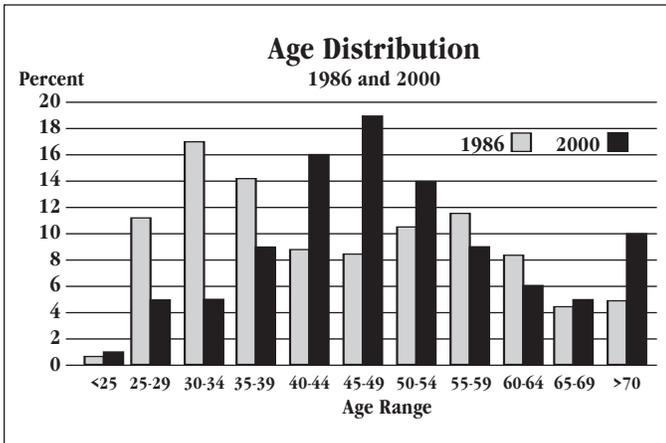
Thousands of geoscientists are self-employed. Some are independent oil operators and prospectors. Others work as consultants in some aspect of mining or petroleum geology. There also are increasing numbers of geological consultants specializing in engineering, environmental, and ground-water geology. Most consulting geologists do not go into private practice until they have acquired substantial practical experience and contacts.

In 2001, 40% of all undergraduate geological degrees and 38% of all master's degrees were awarded to women, (Holmes et al., 2003). Dramatic increases have occurred in both categories over the past two decades. These increases, while an all time high, lag behind other related disciplines (mathematics, chemistry, and the life sciences).

In terms of ethnic minorities the geosciences

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*David 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 30-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.*



**Table 1. Age distribution of North American Geoscientists (data from AGI, 2000).**

Years Experience	High	Average	Low
0-2	\$80,000	\$67,800	\$62,000
3-5	83,000	75,600	70,000
6-9	110,000	77,500	57,000
10-14	132,000	107,500	92,000
15-19	121,000	116,000	105,000
20-24	125,000	112,800	100,000
25+	170,000	128,300	100,000

**Table 2. 2005 Geological Salary Survey (data from AAPG EXPLORER, June 2005).**

continues to be very poorly represented. In the United States, bachelor's degrees in geosciences awarded to African Americans and Hispanics in 2000 amounted to 1.3 percent and 3.1 percent, respectively (Karsten 2003).

The American Geological Institute tracks geoscience enrollments and degrees granted (AGI, 2002). In the period from 1983 through 2002, geoscience enrollments declined 67% from a high of 47,031 in 1983 to 15,725 in 2002. Likewise, for the same period, geoscience degrees granted dropped 61% from 6,827 to 2,680. In recent years that trend appears to be changing, but not fast enough to meet the future demand for geoscientists.

In 2000 the AGI conducted a *Demographic and Compensation survey of North American Geoscientists* and compared it with a similar survey taken in 1986. One of the significant findings is the aging of the geoscience workforce. Table 1 (AGI 2001) summarizes this and as noted in that publication, "Aging of the workforce remains a factor across all sectors. The demographics suggest that the workforce is aging at such a rate that the coming wave of retirements over the next 5 to 10 years will severely strain the projected pipeline levels. In other words, it is likely there will be more geoscience jobs available than there are geoscience students to fill them."

The US Department of Labor ([www.bls.gov](http://www.bls.gov)) provides an online occupational outlook handbook for environmental scientists and geoscientists. The handbook covers nature of the work, working conditions, employment opportunities, training, job outlook, and earnings.

For 2002, they reported median annual earnings for environmental scientists of \$47,600 with the 50th percentile earning between \$36,820 and \$62,400. For geoscientists, median income was \$67,470 in 2002 with the 50th percentile earning between \$48,370 and \$102,120. For hydrologists median income was \$56,530 in 2002 with the 50th percentile earning between \$44,080 and \$70,120. AAPG conducts its own salary survey, limited to Petroleum Geologists (AAPG EXPLORER 2005). Table 2 presents the data for 2005.

If these figures represent where geologists and geoscientists are today, then what does the future hold?

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 important 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. That looming shortfall may never be reversed, but can at least be alleviated by a large-scale increase in petroleum exploration and development, and/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 the last 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 the 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 preservation of the environment.

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**“Follow your bliss – the money will come.”**

**Joseph Campbell**

# EDUCATIONAL FOUNDATION FOR A GEOLOGICAL CAREER

Peter G. Gray

## Educational Preparation

This chapter assumes the reader has already selected his or her college. If you have not done so, there is a brief, but useful, discussion entitled "Choosing a College" on page 3 of the 1985 AAPG book *Finding Work as a Petroleum Geologist: Hints for the Job-Seeker*, by James A. Gibbs. This publication will be referred to elsewhere in the following discussion and I highly recommend that you acquaint yourself with it. The Gibbs book contains much useful information related to preparing for a career as a petroleum geologist (Gibbs, 1985, p. 3-5).

## Necessary Undergraduate Course Work

The profession of geology, like all other scientific fields, has become increasingly specialized as our knowledge of the earth and its natural resources has expanded. However, no matter what your ultimate goal as a geologist may be, you must be well grounded in the fundamentals of the science. The following courses will provide the basics for any career in geology.

### A. Basic Geology Courses

- Physical geology
- Historical geology
- Mineralogy (including crystallography and optical mineralogy)
- Petrology

### B. Petroleum Geology Concentration

In 1985 the AAPG Committee on Academic Liaison developed a suggested undergraduate curriculum for geology majors planning a career in the petroleum industry. This curriculum, which combines a number of essential geology courses, including those previously listed, with courses in the allied sciences and liberal arts, provides the basic foundation for a career as a petroleum geologist. The following courses include all of those recommended by the AAPG committee, as well as those suggested by other sources. Also see Gibbs's Table 1 (Gibbs, 1985) for courses suggested by managers of a major oil company.

1. Essential basic geology courses for the petroleum geologist
  - Sedimentary petrology/petrography

- Sedimentology
- Stratigraphy
- Paleontology\*
- Structural geology
- Introductory geophysics\* (emphasizing reflection seismology)
- Field methods
- Summer field camp

2. Additional valuable geology courses, most of which will not fit into the undergraduate degree program and many of which are available only at the graduate level

- For the paleontologist: micropaleontology
- For the geophysicist and geologist: advanced geophysics

- Petroleum geology
- Subsurface geology
- Sequence stratigraphy
- Remote sensing
- Computer applications in geology
- Geostatistics
- Basin analysis
- Geomorphology
- Low-temperature geochemistry (including organic geochemistry)

When possible, applied problems should be used in all laboratory courses. Summer field camp is particularly important because students are forced to use their powers of observation and deduction to complete practical projects and compile reports in a limited time frame, in addition to being exposed to "real geology."

3. Foundational and allied sciences (these courses are considered fundamental and mandatory)

- Chemistry (two semesters)
- Physics (calculus based preferred; two semesters)
- Mathematics (including at least one semester of calculus)

Many graduate schools require two semesters of calculus, which is essential for the prospective geophysicist. The general rule is the more math, the better! Other courses considered most beneficial

- Differential equations
- Biology (at least one semester)
- Statistics (one semester)

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\*These courses represent introductions to potential areas of specialization.

**Pete Gray**, a consulting geologist in Lafayette, Louisiana, who has now retired, had more than 45 years of experience in the oil and gas business, primarily in southern Louisiana. Upon graduation from college in 1956, he was employed as a petroleum geologist by a "medium-size" major company (Pure Oil) for over 8 years. Since that time, he worked for a very successful consulting geologist and a variety of active independent oil companies. In 1982, he opened his own office doing both oil and gas exploration and consulting. Over the past fifteen years he has devoted most of his time to various geological organizations and in 1993/1994 served as president of the Division of Professional Affairs.

**Computer science (one semester)**

Computer science courses that introduce the student to using computer software on both personal computers and terminals/workstations are becoming particularly important.

**4. Important Ancillary Courses**

In addition to these courses suggested by the AAPG committee, several other courses, if available at your college, would enhance your career as a petroleum geologist.

- **Petroleum engineering:** Because of their immediate connection to petroleum production, geologists interested in careers in oil and gas are strongly encouraged to take courses in petroleum and reservoir engineering.
- **Communications skills:** The professional geologist must be able to communicate both orally and in writing; therefore, those courses that develop these skills (i.e., English, technical writing, and public speaking) are highly recommended.
- **Liberal arts (including humanities and social sciences):** These courses, both required and elective, should be used to round out an individual's undergraduate education. Because the petroleum industry is currently increasing its emphasis on foreign exploration, knowledge of one or more foreign languages, such as French, German, Spanish, Russian, Arabic, or Chinese, could prove very beneficial.
- **Economics, business, history, and political science:** A basic course in principles of economics is essential; other useful courses include oil and gas law, international business, international business law, international economics, and international politics. As with the language courses, the international courses are a reflection of the observed trends toward overseas operations and employment shown by the major United States companies. History provides an essential reference by which current developments can be comprehended.

**C. Environmental Geology Concentration**

Environmental geology is a relatively new specialization that has attracted an increasing number of geology majors, as well as a number of former petroleum geologists. The field has achieved such prominence that in June 1992 the AAPG House of Delegates approved the creation of the Division of Environmental Geosciences. Later that year, the AAPG Committee on Academic Liaison conducted a survey of experts in the field to determine what courses are necessary to prepare one for a career as an environmental geoscientist. The results of this survey are combined with recommendations from other sources to form the suggested curriculum.

1. Essential, basic geology courses for the environmental geologist
  - Sedimentary petrology/petrography

## Sedimentology

Stratigraphy

Geomorphology

Structural geology

Low-temperature geochemistry

Summer field camp

Applied ground water

Quaternary geology

Introductory geophysics (preferably emphasizing a broad range of techniques for shallow investigations)

Environmental geology

2. These additional geology courses are very valuable for the environmental geologist (many of these courses are available only at the graduate level)

Hydrogeology or hydrology

Engineering geology

Clay mineralogy

Advanced environmental geology

Instrumental analysis

Soils (may be offered by agriculture department)

3. Foundational and allied sciences (these courses are considered fundamental and mandatory)

Chemistry (two semesters)

Additional semester of organic chemistry

Physics (calculus based preferred; two semesters)

Mathematics (including at least two semesters of calculus)

Third-semester calculus (for hydrologists)

Differential equations (for hydrologists)

Other courses considered most beneficial

Statistics (one semester)

Computer science (one semester)

4. Important ancillary courses

- **Civil engineering:** Many of the activities and specialties associated with civil engineering are involved in environmental surveys and remediation work, such as surveying, strengths of materials, geotechnical engineering, and site evaluation.
- **Communications skills:** The professional geologist must be able to communicate both orally and in writing; therefore, those courses that develop these skills (i.e., English, technical writing, and public speaking) are highly recommended. Strong report writing skills are essential for environmental geologists.
- **Additional courses include liberal arts (including humanities and social sciences), economics, business, history, and political science.**

**Necessary Graduate Course Work**

Although there are and have been many successful petroleum geologists with only a bachelor's degree, if you intend to compete for a job in today's petroleum industry, you should plan on earning at least a master's degree, preferably from a school located in one of the major oil- and gas-producing states. The same advice applies to young people contemplating a career in environmental

geology. However, excellent environmental geology programs are offered widely in the United States at most first-rate universities.

### A. Petroleum Geology

The Committee on Academic Liaison has turned its attention to graduate-level courses that would be most beneficial for future petroleum geologists. The committee report for 1987 recommended the following courses, which are ranked according to their importance:

*Group I:* Basin analysis, exploration geophysics, carbonate-evaporite facies, clastic facies, subsurface geology

*Group II:* Geophysical log analysis, seismic stratigraphy, advanced structural geology, petroleum economics, risk analysis

*Group III:* Global tectonics, paleoecology, remote sensing, advanced geochemistry

Courses listed under the prior heading "Additional Valuable Geology Courses..." in the "Necessary Undergraduate Course Work" section, may be taken at this point if they were not previously included. Future petroleum geologists also are urged to add some background courses in petroleum engineering, especially reservoir engineering.

### B. Environmental Geology

Environmental geologists should select graduate courses from among the following:

- Geology: Advanced hydrology and related topics, remote sensing, advanced computer applications, scanning electron microscopy, clay mineralogy, applied ground water, quaternary geology, advanced environmental geology, instrumental analysis, geochemistry, exploration geophysics of the shallow subsurface
- Agronomy: Soil classification and laboratory, sustainable agriculture
- Biology: Environmental assessment and

management, ecology

- Civil Engineering: Flow through porous media, geotechnical engineering, solid waste management, waste-water treatment
- Petroleum Engineering: Drilling fluids
- Statistics: Statistical methods for researchers
- Sociology/business law: Environmental law

Many fairly specialized courses have been mentioned in the preceding paragraphs. However, it is particularly important to note that most prospective employers emphasize that what they seek is an applicant with a good basic education in geology, preferably with some background in geophysics. What most do not particularly seek is a great deal of highly specialized training in the use of particular software packages. Each company has its own preferred software and will usually provide its own training in the applications. Indeed, the increased use of computers to perform so many functions in the typical industry office brings its own problems, when a geoscientist has little understanding of what the "black box" is doing for him or her. Experience with hand correlation, contouring, log interpretation, seismic interpretation, etc., on paper inoculates one from falling into the trap of accepting computer interpretations which are clearly in error. This is analogous to using a calculator without basic ability to do simple math.

I am deeply indebted to the faculty of the Department of Geology at the University of Louisiana at Lafayette, and, in particular, to Professor Brian E. Lock for input and guidance in preparing this chapter originally, especially the section on environmental geology. Ramona Viguerie, department secretary, was generous with her time in typing drafts of the original document. Recently, Dr. Lock met with me and helped with this updated version, including the above paragraph.

## References

- Gibbs, J.A., 1985, Finding work as a petroleum geologist: hints for the job-seeker: AAPG, 18 p. □

**“Chance favors the prepared mind”**

## STUDENT PARTICIPATION

Robert C. Shoup

From the moment you selected your major, you have embarked on what can, and should be, an interesting and fulfilling journey along your career path. How interesting and fulfilling it becomes is up to you. One way to get the most out of your career is to get involved, and your college participation should set the pattern for your subsequent professional career.

It's all too easy with homework and tests (and later, with job assignments) to avoid being actively involved in your profession; this is a trap that the majority of students (and, later, professionals) fall into. Yet, there are many compelling reasons to avoid the trap and become involved. First, being involved is fun. Second, you can broaden your sphere of knowledge substantially through other students, outside authorities, and your own involvement in the activities. Third, you are contributing to the well-being and improvement of your profession, and you can derive a great deal of personal satisfaction from that. Finally, your involvement will provide you with a strong return in new friends and, later, an expanded circle of industry contacts. Involvement, then, has the benefit of making you a better and more well-rounded professional, and that will improve your ability to succeed in a competitive job market.

You can become involved in the profession in many ways, even when in school. Most schools have some type of geology club or a Sigma Gamma Epsilon chapter. Most schools offer outside speakers, field trips, and other activities. Additionally, AAPG offers a number of programs in which you can participate. Foremost among these is the Student Chapter program. This program offers opportunities for students to be participating AAPG members on campus. A number of student-oriented activities are sponsored at the annual AAPG convention and at some of the section meetings, and the program provides an opportunity for valuable contact between students and professionals in the petroleum industry. If your college geology department does not avail itself of

this program, perhaps your geology club could ask the faculty sponsor to contact AAPG.

AAPG also sponsors a Visiting Geologist Program (VGP) program for college geology departments. The VGP program is a vehicle for communication among students, faculty, and geology professionals. It is an excellent forum for discussing current energy topics, the role of the petroleum geologist, new developments and resources, career opportunities, and other subjects of concern to academia and industry. Similarly, the AAPG's Distinguished Lecturer Series provides a slate of outstanding speakers presenting topics of current interest to the profession. Finally, AAPG sponsors several annual Student Expos. These provide excellent opportunities for you to showcase your work in an environment where there are industry representatives present, including recruiters.

One of the best ways for geology students to get involved is to join and participate in the local geology society or association. Many of these societies sponsor student activities and offer scholarships. These organizations provide an excellent avenue into part-time or summer jobs in geology. Attend their monthly meetings and volunteer for one or more committees - we learn by doing!

Involvement however, comes with a price: a commitment of your time, your energy, and occasionally of your money. Sometimes you may need to make some personal investment without being certain of a positive outcome. Usually, however, the benefits of involvement far outweigh the cost. Look for ways to be involved that play to your strengths and interests.

The profession you have chosen is one that is truly interesting. What contribution you make to that profession and what satisfaction you take from it is up to you. One way to get the most out of your profession is to become involved, and that involvement should begin in college. □

**“Understanding is seldom gained from a distance.”**

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**Bob Shoup** is a Certified Petroleum Geologist who has over 25 years experience in the oil industry, having worked for Shell Oil Company and several independents. He has explored for oil and gas in the Gulf of Mexico, and in Asia, and he is currently Chief Geoscientist - Asia for Knowledge Reservoir Inc. Bob is an active member of the geologic community; having served on and chaired a number of AAPG Committees, including the Membership Committee, Student Chapter Committee, Mentoring Committee, and the 21st Century Committee. He is also has been active in the affairs of AAPG's Division of Professional Affairs as a member of the DPA Advisory Board, editor of the DPA newsletter, *The Correlator*, and has served the Division as its Vice President and President.

## PART-TIME AND SUMMER JOBS FOR STUDENTS

Peter R. Rose

Most college students need income to support the high cost of higher education. Commonly, they earn such income through part-time jobs during the academic year and temporary full-time jobs during the summer. Such jobs are ordinarily in considerable demand.

Commonly, students seem to be more concerned with how much money such a job pays rather than with what new skills, contacts, perspectives, or knowledge the job may provide. Students frequently don't see the temporary or part-time job as a part of their education. But most successful professional geoscientists report that one or more such jobs were pivotal experiences in their early careers.

Summer jobs with petroleum or mining companies are not as abundant as they were 10 to 20 years ago; nevertheless, such jobs do exist. You should strive to land a summer job with a firm that is carrying out geological work, or work allied to geology – the benefits are multiple:

- Commonly, the best way to find out if a career in geoscience is really what you want is to work with geoscientists! See what they do and how they like it. Is the work inherently interesting to you? Does it seem to be fun most of the time? Try to visualize yourself doing such work on a full-time basis. Perhaps your experience may suggest other aspects of geoscience that are more appealing, or that geological work is not really what you want after all.
- On-the-job training is one of the most effective ways to learn more geology, geophysics, and geoscience skills, especially when the work involves practical applications of geoscience to real-world problems using real-world data.
- If you like the work, your temporary job will allow you to demonstrate your work skills – your energy, ambition, reliability, honesty, innovation, and intelligence, as well as your interpersonal capabilities. Start making those important contacts for the future. Get your foot in the door!
- Additionally, you will be earning badly needed

income to meet your college expenses.

Summer employment, especially, is used by many firms as a cost-effective way to evaluate a young person's work habits, attitude, and intelligence without having to commit to a formal employment agreement. Deciding that a young geoscientist doesn't fit is a lot easier than terminating him or her after one or more years of unsatisfactory regular full-time employment. At the same time, the firm can try to make a favorable impression on promising young people who are still a year or two away from professional status. In addition, the firm may be able to get some technical work done that the regular staff hasn't been able to do because of the press of other ongoing work. Meanwhile, the student may be able to size-up the firm as a compatible future employer. So, the summer-hire approach can be a classic win-win deal, but only if the geotechnical work is meaningful, and the student is a dedicated worker.

How do you find a fulfilling summer job? First of all, start looking early in the preceding fall. Talk to your professors about your interests and goals; ask them to call their personal contacts, or provide you with the names, addresses, and telephone numbers of those contacts. Talk to all company recruiters who come to the campus about your interest in summer work. Obtain information about summer programs sponsored by government agencies such as the U.S. Geological Survey, Minerals Management Service, Bureau of Land Management, Forest Service, State Geological Surveys and Water Commissions, and so on. Identify geoscientists with companies in which you are interested. Search the internet, which today provides a ready and extensive source of companies that employ geoscientists as well as the names of influential geotechnical people who may be able to respond to your short courteous email or telephone call. Read the want-ads in the geological and geophysical periodicals and monthly newsletters and respond to those that seem interesting. Identify the firms and professional consultants in your area who do geotechnical work and try to target an individual with whom to establish contact. Inquire about Ph.D. students who may need a good field assistant

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for the summer field work. Write all such potential contacts about your interest, and then follow up with a friendly telephone call in which you try to set up an interview. Be cheerful, confident... and persistent. Remember, you're trying only to get your foot in the door so you can have a chance to show how capable you are!

What about part-time jobs during the academic year? Much of the previous paragraph will apply here. Start your search for the coming academic year early in the previous spring. Commonly, you can find part-time work within your own geoscience department as a student assistant or lab technician. Inquire around the department about the existence of research projects that might need part-time help. For the names of active local professionals, search through the directories of professional societies and associations, such as the Division of Professional Affairs of AAPG, the Society of Independent Professional Earth Scientists (SIPES), the American Institute of Professional Geophysicists (AIPG), the Association of Engineering Geologists (AEG), the Society of Exploration Geologists (SEG), and so on. Find a way to get acquainted with some of these local active members. Plan your campaign. Talk to everyone you know about their suggestions, then start making calls, sending emails, and writing letters. Don't worry about getting turned down.

Follow Ringer's rule about "...the sustenance of a positive attitude through the expectation of failure!" No harm is done if they say "no" - but give them a chance to say "yes" (or even "maybe"). In any case, you'll be making contacts, and the word will eventually get around.

You may run into a situation in which you have a choice between a temporary or part-time job in geoscience that doesn't pay very well, and a job in a totally different field that pays much better. In most cases - that is, if the wolf (or the sheriff!) is not at your door - take the job in geoscience. The experience will be a lot more important than the money.

Finally, in the course of making contacts in your search for that part-time or summer job, remember to focus on the individuals, not the firm in general. Email is a wonderful tool for conducting your search. But always remember that a real, live person will evaluate you, will hire you or will turn you down, and will write a future recommendation for you. *All business is done on a personal basis.*

## References

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**“Persistence is the key to success”**

# GEOSCIENCE CAREERS IN A CHANGING WORLD

James A. Gibbs

## Introduction

My comments may be of more interest to new graduates or others contemplating entry into petroleum related geosciences than those seeking other career options. However it may be helpful to all to learn something about traditional employers, industry trends, and where current employment opportunities may exist today.

Good current data of geoscience employment is difficult to obtain. For many years the American Geological Institute conducted surveys and compiled the results. The surveys were discontinued in 2000, but general trends can be projected from that time.

AGI's 2000 demographic survey of geoscience employment found the following: petroleum 30%, academia 20%, government 16%, environmental 14%, mining 8%, other 6%, and unemployed or retired 6%. A comparison with a similar AGI survey in 1986 indicated that in the fourteen-year intervening period a percentage decrease was experienced by those employed in petroleum ( 50%), while increases were seen in academia ( 7%), environmental ( 7%), and in government ( 12%). During the period total geoscience employment remained fairly constant at about 125,000.

Petroleum related employment in the United States has traditionally been cyclical and volatile. During periods of rapid growth and expansion the major oil companies - the primary employers of geoscientists - added personnel. At other times the majors downsized, sold many of their domestic properties and reduced staff size. For many years the best index of employment has been the price of crude oil. A close correlation of new hires to then-current energy prices can be demonstrated over a multi-decade period.

Today, in late 2005, the petroleum industry is again in the process of expansion. With oil and natural gas prices at near-record levels, qualified geoscience graduates are in high demand and universities offering appropriate degrees are beginning to ramp up their geoscience departments, although not with the determination of past years.

Predicting future periods of strong employment can be risky. Many students of the past made decisions to major in the geosciences in boom times, only to find

employment opportunities scarce when they were ready to take a job. Other students began their undergraduate or graduate programs during periods of low employment and found, to their benefit, they were much sought after when they completed their schooling. For those finding a soft employment environment at graduation, one solution has been to remain in school and work toward advanced or additional degrees. Another has been to find work peripheral to the industry until better opportunities arose.

## Employment Trends

The list of prospective oil-patch employers currently differs from that of the past. With a two-decade period of consolidations, downsizing and property divestitures behind them, major oil and natural gas companies comprise a smaller group than previously. Offsetting, an innovative group of smaller companies and individuals are actively exploiting opportunities created by new technologies and new economics in an environment of higher product prices.

With a large segment of older petroleum geoscientists retiring or idled by company consolidations, the total number employed in the United States may never reach the number required in earlier days.

The primary reason that fewer may be needed is that the great advances in data gathering, storage, processing and manipulation in the last quarter-century now allow workers to be much more efficient than in the past. One geoscientist can do more work in a short time today than many could do in the same period years ago. Individual explorationists now have one-line access to data and information that were once available only within large organizations.

This current era of increased efficiency and productivity requires a high level of professional and technical proficiency. Each individual must be prepared to carry a workload that once was distributed among a larger group. There is no room in an organization for those who are not capable or interested in helping meet the company's goals.

Petroleum exploration targets are increasingly more

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*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 served as the 1990-91 president of the AAPG and is the author of Finding Work as a Petroleum Geologist: Hints for the Job-Seeker, published by AAPG in 1985.*

subtle, deeper, and located in more hostile environments. Exploiting “unconventional” reservoirs, such as fractured shales, methane rich coals and extremely tight sandstones is now common. Finding and developing reserves in such rocks demands more data, more science, and more engineering expertise than in past years. Academic and professional disciplines that were largely separate and discrete are coalescing. A geologist today needs to know more geophysics and engineering than ever before, and be prepared to participate in project teams in which his or her knowledge is critical.

Continued population growth is placing greater demands on all commodities, not just oil and natural gas. After years of contraction of the mining industry, recent price increases are allowing new mines to be opened and mothballed ones to resume operations. The reawakening of interest in mining is creating a sellers’ market for the relatively few mining geologists and engineers now completing their degrees. Whether or not the current high level of activity continues is unknown, but it’s been a boon to recent graduates.

At the same time, the public’s sensitivity to environmental concerns is increasing. Protection of the environment, thoughtful development of energy and industrial resources, remediation of mining sites, and other such issues will require ever more planning and oversight.

The management of water resources in the U.S. and around the world will continue to be critical to populations’ lives, health and prosperity. Engineers are increasingly doing the business of hydrology, once considered primarily in the field of geoscience. Geoscience curriculums may likely include more engineering courses than in the past.

Unfortunately, in recent years many universities have reduced geoscience departments or eliminated them altogether. Most of the universities with major research departments and traditionally strong programs are continuing, but many of the “second-tier” state and private departments are eliminating courses and reducing faculty. As a result, the number of geoscientists employed in universities may actually decrease. However, losses in universities’ departments may prove a windfall for secondary and high schools, which have experienced difficulty in identifying and recruiting science teachers in recent years.

The integration of many disciplines or sub-disciplines to solve complex problems is becoming more commonplace. Dealing with an issue of ground water remediation, for example, may require in-depth knowledge of geochemistry, biology, fluid dynamics and civil engineering, as well as sedimentation, structural geology, stratigraphy and other traditional geoscience courses.

Dealing with public policy issues involves competency in even more disparate disciplines. Bringing science into the legislative process requires educating government officials and the public about the desirability or feasibility of a particular decision. Geoscientists with some background in government, law, public administration, business or academics can be

effective spokespersons. As a result, more geoscientists are establishing “crossover” careers, in which they combine knowledge and experience of two or more diverse areas of expertise. These they apply to the challenges of a broad range of societal issues.

## Preparation

Give yourself the best chance possible for a successful career. Try to determine as soon as possible, perhaps even in high school, if a career in geoscience might be right for you. A strong aptitude in math and science is essential, as well as a keen talent of problem solving. If you are still in the early stages of deciding if geoscience is to be your career choice, try to make certain you have a good concept of what a geoscience career is all about, and what it takes to succeed.

Talk with as many active professionals as you can. Learn what they do, and what they like and dislike about their work. Ask if you can spend some time in the office or field with them and try to decide if you might enjoy similar work.

As mentioned, many universities are de-emphasizing geoscience in their curriculums. Before enrolling in any school, talk with the department chairman or others knowledgeable about their geoscience program and try to determine if the institution has a long-term commitment to geoscience education.

The Master’s degree is the degree of choice for employment. It is generally considered the professional degree. Only about a quarter of Master’s recipients go on to the Ph.D. program. The employment value of the Bachelor’s Degree in the geosciences is far below other physical sciences and engineering. In fact, over 50 percent of geoscience BS recipients go onto other fields.

Once enrolled in a geoscience degree program, meet with the academic counselor at least twice a year to discuss your interests, goals and progress. He or she may suggest curriculum additions or changes that are appropriate to your situation. Keep in touch with those currently working in a field of investigation you hope to pursue. They can offer valuable suggestions about useful activities, professional contacts and employment activities. It’s your responsibility to insure that your education equips you for the career you plan to pursue.

Possibly the best advice is to obtain a broad education in the geosciences and be prepared to seek applications over a broad range of possible career opportunities upon completion of academics.

## Never quit learning

It’s impossible to learn everything in a university that one will need during a career. Graduation should be just the beginning of an education, not the end.

Most geoscientists admit regret for not having taken particular courses while they were in college. Often mentioned are accounting, economics, general business, business law, engineering, oil and gas property evaluation, and other related subjects.

It’s never too late to learn. Fortunately, opportunities

abound for professional growth. Many companies provide their own instruction, or pay for employees to attend classes elsewhere.

Join professional organizations in your field of interest. Most sponsor conventions, seminars, distinguished lectures, short courses and field trips. A little time and financial commitment allocated to continuing education can pay big dividends in satisfaction and paychecks.

## Employment Alternatives

### “Outside the box”

Geoscience is a highly versatile degree. With courses in mathematics, chemistry, physics, geology and other sciences, a geoscience graduate has a broader base of scientific knowledge than a graduate in almost any other field. The opportunities for applications are practically limitless. Let your degree be an enabling rather than a limiting tool in helping develop a career that's uniquely suited to your individual interests, talents and personality.

Geology is a science that begs for application. It's not surprising that after spending years in university classrooms and laboratories, graduates adopt traditional concepts, logic patterns, and methodologies. This serves them well in the academic world where the goal is obtaining knowledge, but sometimes less well when workaday problems demand pragmatic solutions. The geologists who have learned to apply their geoscience knowledge to industrial and societal problems will find many new opportunities for satisfying careers.

Geoscientists are currently finding rewarding employment in such seemingly unrelated but highly specialized industries as telecommunications and high tech defense. They are working in site selection, network design and other fields in which their problem solving abilities are in high demand.

### Consulting

Many companies and independents commonly lack personnel with technical expertise or experience. Geoscientists having specialized knowledge or professional training should consider services they can provide as consultants to small companies or individuals. Electrical log analyses, geophysical processing and interpretations, regional and field studies, and oil and gas property valuations are typical of the projects contracted to consultants. Marketing technical skills to prospective users may be an ongoing process, but working as a consultant can provide independence and freedom not usually found in large companies.

### Generating prospects

Drilling prospects, especially those “ready to go”, are currently in high demand. Recent prospect fairs, like the North American Prospect Expositions (NAPE) in Houston and an international event in London (APPEX London), have been well accepted and well attended. More and more investors are being attracted to such

events as venues where they can see many prospects in a short period of time and come prepared to commit funds for exploration or development. As long as oil and natural gas prices remain strong, investors will seek quality prospects to drill.

### Property acquisitions

Some geoscientists may be attracted to directly owning “a piece of the rock”. About 1989 the majors began selling interests in properties they consider only marginally useful, or outside their core areas of interest. Their divestitures initiated a cascade of sales from one company to another, each keeping those properties that fit their strategic plans, then passing on the others. Some properties have been acquired by geoscientists who enjoy receiving monthly revenue checks from a source they know and understand.

### Accessing capital

The oil and gas business runs on capital. Often the capital is “OPM” – Other Peoples' Money.

There's no faster way into a prospective employer's office, or to get his or her interest, than to be able to access capital. Capital is usually the weak link in the independent's chain of business. Without capital, a business plan simply cannot continue for long.

Take it as fact that sufficient funds are available somewhere to finance almost every quality exploratory and development project. The problem is that the interfaces between financial sources and the independent operators are not very efficient. Those educated as geoscientists are not often proficient in obtaining substantial dollars from potential capital sources. Likewise, the persons charged with handling investment funds for individuals or institutions may not be familiar with the technical aspects of oil and gas. You, as a geoscientist, can be the technical professional who provides logical, credible information to the financial community. Learn to bridge the gap; become the agent who locates sources of capital and helps direct it into the oil and gas industry and you will become a valued member of an exploration team.

## Conclusion

The combined factors of demographics and increasing technical skill levels are likely to pose major challenges to recruiting and managing the workforce over the next several years. The good news for geoscientists is that prospects for employment are likely to be bright for a long time to come.

Estimates are that between now and 2030 global economic growth will require more than a 50% increase in energy supply, with about two thirds of the growth in the form of oil and gas. The primary barrier to satisfying the increase will be the lack of key technical employees, primarily in the geosciences, including petroleum engineering and related fields.

Finding profitable new oil and gas fields won't be easy. Today's exploration targets are more challenging than those we've sought before. A greater percentage of hydrocarbons will be produced from unconventional

reservoirs: methane-bearing coalbeds, fractured shales, deep-water sediments and the like. A better understanding of rocks, reservoirs, and petroleum systems will be required. New drilling and production techniques will need to be developed and improved.

Companies are adopting more integrative and interactive approaches to exploration and problem solving than in the past. Geoscientists are working together more closely in project teams, and

incorporating more geophysics engineering into their decisions.

Many new, interesting and challenging tasks await the geoscientist. Not all of them have been defined. Thinking more creatively and opportunistically will create new methods and models. The characteristics typical of geoscientists of past years: entrepreneurship, optimism, self-motivation, flexibility and creativity will continue to motivate geoscientists of the future. □

**“Be adaptable – if bananas aren’t selling, try apples or oranges.”**

# THAT CRITICAL FIRST YEAR OF EMPLOYMENT

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 demonstrate 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. This period is also an opportunity for you to begin to evaluate the firm: is it a place where you can 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. Examine the maps that you generate electronically to make sure that they will be clear to people who have not worked the data as you have. Some presentations that look great on a computer screen become murky when transferred to paper. In particular, wells and other details on a map may be obscured. Additional work may be necessary to enable you to make your presentations smoothly and quickly. Look at similar 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

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*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 degrees at Rice University in Houston (B.A.) and the University of Texas at Austin (M.A.), and has worked in Houston since Texaco transferred him there after a short tour in San Antonio. Jim worked for a number of different companies, from majors to small independents, before taking early retirement from Agip Petroleum Company in 1999. Since then he has been consulting for various companies, with most of his work being in the Gulf of Mexico offshore.*

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 with just 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, chemists, drillers, biologists, technical aides, 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. 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, and/or in moving on to the next stage of your career. It is very likely in this rapidly changing economic environment that your first employer will not be your last.

Join one or more local geological or professional societies as soon as you get established in your new position. Most groups such as these are always in need of people who are willing to serve on committees to help get the work done. Go ahead and volunteer. You will meet many of the most active and vital people in the community that way.

But don't limit yourself by associating only with people in your field. Your personal development will be accelerated if you open yourself to opportunities to meet as many different sorts of people as possible. Get involved with semi professional, social, or service organizations that interest you. Consider becoming politically active. Almost every facet of your life can be affected in some way by government actions, so it will be in your own best interest to become involved.

### **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 your own firm's technical library. Cultivate the lifetime habit of continued reading. □

**“You’ve gotta pay your dues.”**

## II. THE WORKING PROFESSIONAL GEOLOGIST

You're on your way! You did well in your first couple of years on the job, and now you're being given increasing responsibility and challenging assignments. Congratulations! There will undoubtedly be some ups and downs over the course of your career, but we hope the ups far outweigh the downs. Here are some ideas you might want to consider to help your career turn out to be mostly chicken and not so much feathers!

Setting Goals for Career Development . . . . . Peter R. Rose

Participating in Professional Organizations . . . . . Willard R. Green

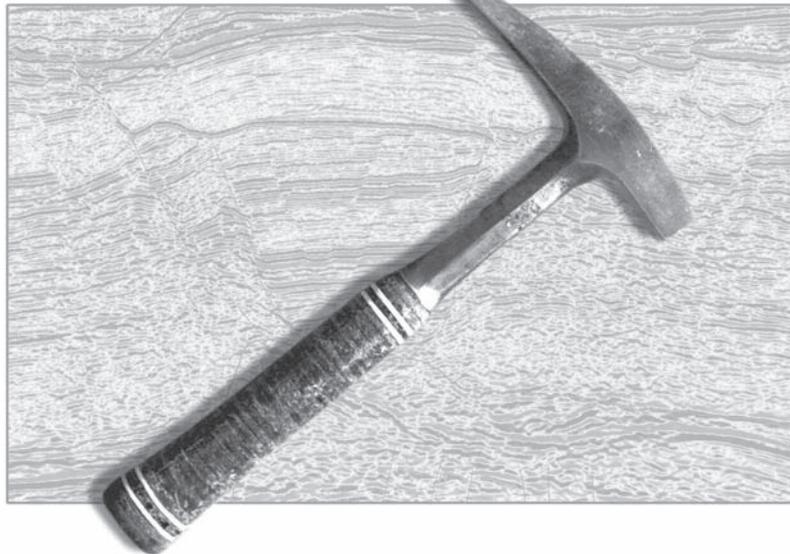
Networking: The Art of Leveraging Your Business

    Presence Through Professional Contacts . . . . . G. Warfield "Skip" Hobbs

Professionalism in Geology . . . . . Stephen A. Sonnenberg

Continuing Education. . . . . Susan M. Landon

Economics, Versatility, and Measurement. . . . . Edgar C. Capen



## SETTING GOALS FOR CAREER DEVELOPMENT

Peter R. Rose

### Introduction

Geotechnical 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 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!

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## Formulating Career Directions

Identifying long-term career directions is a classic bootstrap 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 your 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!

Finally, keep notes. Maintain a personal journal in which you write down evolving thoughts, make lists of various possible career situations, and record conclusions from significant conferences and conversations.

## 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!*

## Meshing Personal Goals and Organizational Goals

You have now arrived at a critical juncture: compare *your* personal mid-term and short-term goals with your *firm's* mid-term and short-term plans for you. If they are a good match, you should rejoice. If the fit is just adequate, you should accept that professional employment is a give-and-take proposition, build on the positives, and figure out what you can do to make the fit better during the coming year. If the fit is poor (and promises to remain so for some time), you should begin some serious self-inspection, as well as some constructive inquiries within the firm. *Don't let this slide - it's your career!*

To reemphasize a previous point: don't automatically reject your employer's plan to put you into a new field. Frequently, such new assignments, though temporarily quite challenging and even unsettling, can lead to important personal and professional growth. This is particularly true for younger professionals who have achieved confidence, and therefore comfort, in a narrow specialty, and who may think they should continue to specialize. An old axiom is appropriate here: *What you want is 20 years of experience - not one year of experience 20 times!*

All other things being equal, go for growth, but remember there's no gain without pain.

## Evolution of Career Goals

Professional career planning and goal setting is not a one-time thing. Ideally, it should be an ongoing process,

marked by disciplined reviews and reformulations, preferably every six months, but certainly once a year. Most responsible organizations now insist on structured performance reviews on similar time frames; these can serve as a trigger to motivate you to update your personal planning and goal setting, so that you go into such conferences thoroughly prepared.

After you move through the first 5 to 10 years of professional experience, moving from being the working geologist toward being the seasoned professional, you should expect to gradually narrow the scope of your career planning and related goal setting so as to concentrate on those specialties that fit your talents and interests, and also give promise of maintaining their importance to employers and clients in the coming years. Although you will still continue to set short-term goals, their natural focus should stretch out, typically 2 to 5 years.

### **The Importance of Professional Associations**

The single most important step the young professional geoscientist can take (and must take) is to become involved in the professional geotechnical community – local geotechnical societies, and national associations such

as AAPG. The connections you will make in such groups will broaden you and provide networking relationships that will last throughout your career.

### **The Importance of Writing Things Down**

Previously, I recommended keeping a personal journal and writing down things such as the results of interviews within your organization on career development, your evolving thoughts about career planning, and the provisional specific short-term steps that will lead to achievement of mid-term career goals. Hundreds of opportunities of all varieties will cross your path in life, but you'll be able to identify those that are most pertinent to your career goals because you're now alert to them, having already formalized them.

A mysterious self-fulfilling power attends such list making and goal setting. Those who practice this discipline are practically unanimous in believing this: *if you think about it seriously and write it down, it will usually be accomplished.* This process is such a powerful force that an additional admonition is also appropriate: *before you settle on your goals and write them down, be sure that's really where you want to go, because chances are, you'll get there!* □

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

# PARTICIPATING IN PROFESSIONAL ORGANIZATIONS

Willard R. Green

Soon after graduating from a university or moving to a new location, a geologist should join his or her local geological society. A geological society will be present in almost every community where petroleum, academic, mining or environmental geologists live. The membership of these societies will range from less than 20 to more than 5,000. Most of these organizations are affiliated with AAPG. The larger societies may have special divisions, such as structural geology, paleontology and environmental or geographic interest groups.

## How to Join

Finding and joining your local geological society is easy. Ask another geologist for the phone number for the society office or the name of the society president or search for a web site on the Internet. Next, complete the application form and pay the nominal dues. Then you will be on the list for notices of meetings and other activities. Much of this information will be posted on a society's web site. For example, to join AAPG log on to [aapg.org](http://aapg.org) and download an AAPG membership application form. With a geosciences degree and three years (fewer with an advanced degree) you can apply for Active Membership. Those with lesser experience may apply for Associate Membership.

## Advantages of Membership

### Education

Society meetings will offer technical programs of interest in your area. Your society may sponsor, at reasonable cost, short courses to provide opportunity for continuing education for earth scientists. Most societies also sponsor inexpensive field trips to allow geologists to study part of the earth in its natural laboratory. AAPG routinely sponsors many programs, short courses and field trips, some of which will have a geologic interest for you. Check the AAPG web site for information.

### Social

Meeting attendance and participation in sporting events and other social activities provides the opportunity to make friends with other geologists. If you attend a section meeting or AAPG Annual Meeting, you will have the opportunity to meet fellow geologists from other locations; some may be working your basin. Friendship with others is more than a human need - it has strong career benefits as well.

### Networking

Our industry friends are valuable assets. Often another geologist may have information or knowledge or experience that he or she will share with friends. This could mean drill stem test data from a tight hole, access to an out-of-print publication or experimental results from a new technology or tool. It could mean a tip about an interesting job opportunity or significant career advice.

### Leadership Development

Leadership development is a natural result of participation in professional societies. Societies are always looking for volunteers to serve on committees and as committee chairs. Committee chairs have the responsibility to organize and execute an activity and may direct the efforts of others on the committee, depending on the scope of the project. Diligent committee chairs likely will be asked to run for office in the organization. Participation as an officer will provide the opportunity for another level of leadership development. Leadership skills acquired from society participation can be transferred to the corporate or academic arena, the community, and one's personal life or to service in AAPG on an international level.

So...get involved! Your participation will be a rewarding experience that will pay dividends throughout your career. □

**“Come on in – the water’s fine!”**

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**Will Green** is an Independent/Consulting Geologist (Green Energy Resources) in Midland, Texas. He is an AAPG Certified Petroleum Geologist and a Licensed Geologist by the State of Texas. Green is a past president of the West Texas Geological Society, a past chairman of the AAPG House of Delegates and a past president of AAPG's Division of Professional Affairs. He has been associated with oil discovery and development in the Permian basin as an employed geologist and manager for major and independent oil companies and, since 1989, as an independent geologist.

## NETWORKING: THE ART OF LEVERAGING YOUR BUSINESS PRESENCE THROUGH PROFESSIONAL CONTACTS

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.

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 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 organize 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.

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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.

Consultants can greatly expand their business opportunities through networking with other consultants, particularly when complementary skills can be combined to take on a joint consulting project. As a direct result of networking, a geologist might know another geologist, geophysicist, or engineer with whom he or she could co-consult on a project that neither of them separately would be able to undertake. However, if embarking on a joint project with consultants you have met through networking, first be sure that they are what they represent by checking references and reviewing examples of their work, and then enter into a written agreement that clearly defines each consultant’s responsibilities and the compensation arrangement. I have found it is easier to attract consulting opportunities when it becomes generally known that you have a network of associates with multidisciplinary skills and local knowledge on whom you can call for assignments in practically any basin in the country. Finally, by making his or her particular expertise and availability known through successful networking, a consultant is more likely to be retained by new clients who learned about the consultant through mutual friends and acquaintances who also are network contacts.

One of the most valuable aspects of networking is the ability to use the network for marketing a drilling prospect or producing property, for finding partners for a venture, or for helping to locate a specific opportunity. If you have exhausted your contacts at the local petroleum club or in your own area of operations, pick up the phone and start calling your network across the country and overseas until the task at hand is accomplished. If your network contacts do not have the answer you are looking for, ask for the names of people they might suggest you call before hanging up. Be opportunistic!

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! □

**“It’s not just *what* you know – it’s also *who* you know.”**

# THE CHALLENGE OF PROFESSIONALISM IN THE 21st CENTURY

Stephen A. Sonnenberg

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

Professions fill a societal need. Professional societies are formed to support, nurture, and enhance the profession. Professionalism is a key trait for keeping professions and professional societies vibrant, alive, and growing. The purpose of this paper is to review what professionalism is and also discuss some of the challenges facing the geologic profession in the 21st century.

## Geologists, Science, and Professionals

Geology is both a science and a profession. The late Charlie Dodge of Dallas, Texas used to describe geology as the “oldest” profession. Science pertains to accumulated systematized knowledge. Geology is derived from Greek: ge- for “the earth” and logos for “science.” Geology is the study of the earth, its history, and the processes that shape it. The term was first used in this sense in the late 1700s.

Professions are vocations or occupations requiring advanced education and training in some liberal art or science, and usually involving mental rather than manual work, such as teaching, engineering, medicine, law, or theology, etc. and often for a monetary gain. Petroleum geology, for example, is an occupation that requires specialized knowledge and academic preparation.

The earliest meaning of “profess” comes from those professing the vows of a religious order. Clergy professed a duty to God. Professionalism meant the act of professing. Late in the 17th century, “profession” took on a secular meaning and was extended to medicine and law. In the 19th century it was extended to surveying and engineering.

Today it is often used as a principal calling or vocation, or employment. Competitive athletes paid for their performances are referred to as professional, a far cry from its original meaning.

Professions exist to serve society. Some characteristics shared by many professions are having the following:

- Specialized body of knowledge;
- Unique subculture (distinguished from the society they serve);
- Unique vocabulary and journals;
- Historical record of notable members and professional societies;
- Governmental recognition (definition clauses in statutes or licensure requirements).

Professional societies are formed to support and enhance the profession. They establish journals, maintain the specialized body of knowledge, establish membership requirements, and promote professionalism.

Geology as a profession got its start in the late 18th century. Some examples of the early history is work done by James Hutton in 1785 with his paper, “The Theory of the Earth,” and Sir Charles Lyell with his 1829 book, *Principles of Geology*. The oldest geological society is The Geological Society (of London), founded in 1807 with the aim of “investigating the mineral structure of the Earth.” The first meeting resolved: “That there be forthwith instituted a Geological Society for the purpose of making geologists acquainted with each other, of stimulating their zeal, of inducing them to adopt one nomenclature, of facilitating the communications of new facts, and of ascertaining what is known in their science and what remains to be discovered.” William Smith prepared the one of the earliest comprehensive geologic maps (1815), which presented the ordering of strata by fossils. The oldest geological survey is the British Geologic Survey, which was established in 1835. Thus, geologic profession has a rich history with many notable members, along with early-formed professional societies and geologic surveys (all key characteristics of a profession).

Governmental recognition is also a characteristic of a profession. Many states currently have registration bills or definition clauses that define what a professional

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geologist is and does. For example, Colorado defines a professional geologist as a person who is a graduate of an institution of higher education that is accredited by a regional or national accrediting agency with a minimum of 30 semester (45 quarter) hours of undergraduate work in a field of geology and whose post-baccalaureate training has been in the field of geology with a specific record of an additional 5 years of geological experience to include no more than 2 years of graduate work. Note that both academic education and experience are necessary to qualify as a professional geologist.

Professions profess the nature of their specialty better than anyone else. The AAPG constitution contains the statement "Geology is a profession, and the privilege of practice requires professional morality and professional responsibility."

## AAPG as a Society

There are two types of geological societies: scientific and professional. AAPG is both a professional and a scientific society. The scientific purposes of AAPG as stated in its Constitution are to:

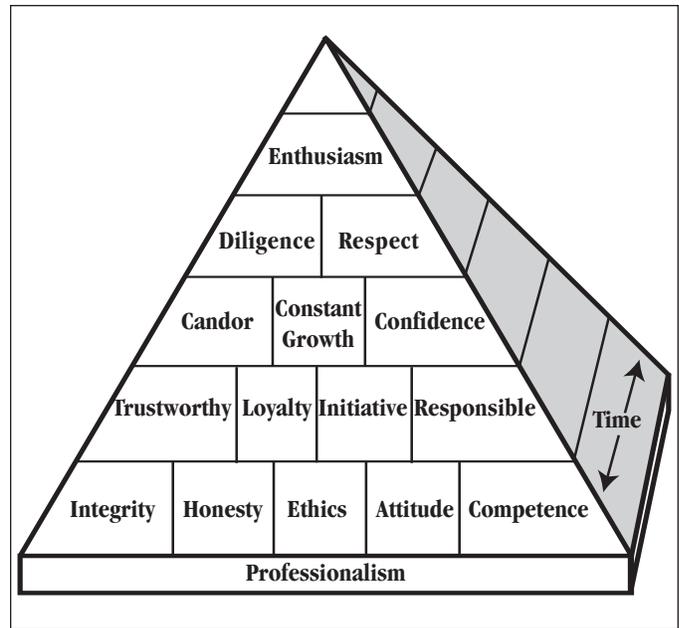
- Advance the science of petroleum geology, especially as it relates to petroleum, natural gas, other subsurface fluids, and mineral resources;
- Promote technology of exploring for, finding, and producing these products in an economically and environmentally sound manner;
- Foster the spirit of scientific research throughout its membership;
- Disseminate information relating to petroleum geology and the associated technology of petroleum, natural gas, other subsurface fluids, and mineral resources.

The professional purposes of AAPG as stated in its Constitution are to provide the public with a means to:

- Recognize adequately trained and professionally responsible persons;
- Inspire and maintain a high standard of professional conduct on the part of its members;
- Advance the professional well being of its members.

Professional societies often offer their members standards of conduct. AAPG has a Code of Ethics (see Appendix 1). The code has the following sections: (1) general principles; (2) relation of members to the public; (3) relation of members to employers and clients; (4) relation of members to one another; (5) duty to the Association; (6) discipline for violation of standards. Having a code of ethics along with educational and work experience requirements for membership makes AAPG a professional society. Removing these requirements would make AAPG a pure scientific society. Members of AAPG violating the standards of conduct are subject to discipline.

People are qualified for Active membership in AAPG by being engaged in the practice or teaching of geology,



**Figure 1. The pyramid of Professionalism contains the conducts, aims, and qualities that mark a professional (after Sonnenberg, 2004). The basal layer forms the foundation on which the other qualities are built. The third dimension of the pyramid is time, as these qualities and conducts should be embraced and practiced each day by the professional.**

having a degree in geological sciences, and having work experience in the geological sciences (being an Active member means that you are a professional by most definitions).

## 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 (Weimer, 1984). Professional practice is an ongoing, active undertaking (Sprinkel, 1987). Professionalism is not a product; it is a process of becoming (Gibbs, 1991). Professionalism is an attitude; it is a frame of mind (Foote, 1984).

Some of the key conducts, aims, and qualities of a professional are shown in Figure 1 (Sonnenberg, 2004). The professional should practice these attributes every day (time, the third dimension of the pyramid in Figure 1). The concept of using a pyramid was developed from reviewing AAPG's pyramid of benefits and John Wooden's Pyramid of Success (both available on the World Wide Web).

One of the cornerstones of professionalism is integrity. Integrity is a firm adherence to a code of values. You must have a code that you can live by. Personal codes are often found in religious writings;

professional codes are often contained in an organization's code of ethics. Let what you believe in be reflected by your actions.

The other cornerstone of the pyramid is competence. Competence is a product of education, training, and experience. No letters after your name (e.g., PE, PG) guarantees your competence. Improving and maintaining competence involves continuous professional development.

Between these cornerstones are other qualities that help form the foundation of professionalism. Honesty is fairness, and straightforwardness of conduct. It is adherence to the facts. It is the refusal to lie, steal, or deceive. Ben Franklin was quoted as saying: "A lie stands on one leg, the truth on two."

Ethics is also known as moral philosophy. It is the discipline of right and wrong, good and bad. It is conforming to standards of conduct. A French proverb translates as follows: "There is no pillow so soft as a clear conscience." Albert Schweitzer was quoted as saying: "In a general sense, ethics is the name we give to our concern for good behavior." Your reputation is your most valuable asset. If you have good ethics, nothing else matters, and if you have bad ethics, nothing else matters. 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 (lawsuits, lost sales, dismissal, etc); demands of society (environmental regulations and protection of investors); and requirements of professional affiliations (as stated in standards of conduct or code of ethics). Spoelhof (1992) offers the following advice: "do what is right before you receive a court order." Doing things to the letter of the law may be legally correct but in some cases below what is ethically correct. AAPG ethics lecturer, John Gibson (2003), uses the phrase "slow down and avoid a speed limit" to emphasize this point. Gibson feels that ethics ultimately is self-regulation and when we don't self-regulate, we create laws.

Attitude is a mental position or feeling. The professional should have an attitude that includes a commitment to hard work and a commitment to achieve and maintain competence. The professional should have pride in their work and have a commitment to the highest quality work. Have you ever heard the saying: "Your attitude makes your attitude."

Overlying the base are many other important qualities that mark a professional.

Trustworthy means you are worthy of confidence, you are dependable, and you avoid conflicts of interest. Having trust in yourself is an important step in being trustworthy. Be worthy of trust - call a situation just as you see it (Spoelhof, 1992).

Responsible means you are able to answer for your conduct and obligations. You are marked by accountability. Spoelhof (1992) suggests you do not cheat on time and you give your full time while in the office.

Loyalty means you are faithful to a cause, knowing who and what you have allegiance to. You maintain

confidentiality. You do not use information obtained from one source to the unfair benefit of another.

Initiative is the energy or aptitude displayed in the initiation of an action. The law of physics tells us that it is much harder to start an object into motion than to keep it in motion. Initiative is the ability to make decisions and take actions. Will Rogers mused, "Even if you're on the right track, you'll get run over if you just sit there." Everyone knows the Nike slogan: "Just do it!"

The next layer starts with candor. It is fairness or freedom from prejudice, marked by impartiality. You are free from self-interests, favoritism, or malice. You are forthright and express yourself with sincerity.

Confidence is believing in yourself and having self-assurance. By being self-confident you gain the trust of your co-workers or clients. You want others to believe that you will act in the right, proper way.

Constant growth means that you are constantly learning, maintaining, and improving skills. The half-life of one's scientific knowledge has been estimated as being 8 years (Weimer, 1984). 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. You should subscribe to the theory of learning something new each day. Maintaining professional and technical competence requires continuing education, which can take many forms (modified from Knight, 1989):

- Academic courses on a university or college campus;
- Short courses;
- Seminars or field trips;
- Lectures, typically presented at luncheon or dinner meetings;
- Home or group study of technical or non-technical journals, cassettes, videotapes, CD's, etc;
- Formal correspondence courses;
- Having personal libraries (and using them!); and
- Attending conventions.

To quote self-improvements coach Jim Rohn: "Unless you change how you are, you will always have what you've got." The changes that have taken place in our profession during the last 20 years (advances in computers, software, geologic concepts, etc.) are remarkable. Part of being a professional geologist implies that the individual stays current with the latest ideas. Gibbs (1991) offers the following advice: "Know what you know; always keep learning."

The next layer begins with diligence. Diligence is steady, earnest, and energetic application and effort. It is your commitment to hard work. "Opportunity is missed by most people because it is dressed in overalls and looks like work" are the practical words of Thomas Edison.

Respect is an attitude of deference, admiration, and regard. It is being polite, kind, and considerate. You

should respect yourself and then you will be able to respect others. William Shakespeare's famous words are most relevant: *"This above all: to thine own self be true, And it must follow, as the night the day, Thou canst not then be false to any man."* Being respectable is being decent or correct in your conduct.

The top of the pyramid is marked by enthusiasm. You must like what you are doing and have your heart into it. You inspire zeal or fervor by your actions. Be enthusiastic until it positively thrills you. Have enthusiasm for life and radiate it outward. Enthusiasm is a quality that nourishes success.

## Threats to Professionalism

Several professional geologists today are concerned that professionalism among geologists is declining (e.g., Weimer, 1980, 1984; Sonnenberg, 2004). Declining professionalism is a threat to the future of professional societies like AAPG. Professionalism in geology is vanishing for several reasons: (1) attitude of the professional; (2) lack of professional ethics; (3) inadequate education; (4) lack of mentors; (5) lack of recognition of the professional; (6) the way success is measured by society (i.e., material wealth and monetary gain) and (7) the short-term approach.

The first reason deals with attitude. This starts at home, is augmented and refined in college, and is continuously reinforced in the workplace. Professionals must be committed to doing hard work necessary to achieve and maintain competence. They should also take pride in their work. They need to practice using clear and accepted ethical guidelines. Being a professional requires day-to-day applications of standards (see Figure 1). Academic institutions should do more to prepare students for lifetime professional careers through development of personal traits and habits. Miller (1969) points out that educators can help develop the following long-lasting desirable traits; self-discipline and individual competence; acute analytical observation; systematic interpretation and analysis; memory training; enthusiasm and patience; initiative and persistence; and imaginative reasoning and measured aggressiveness. The attitude of some employees and companies has in general shifted to short-term outlooks and anything to maximize the profit (the end justifies the means, regardless). Some employees often take the easiest way out, or finish the task at hand with the minimum amount of effort. The marginalization of the petroleum geoscientist in some companies is particularly troublesome. The overall support that industry gives professional societies seems to be decreasing.

The second reason deals with professional ethics. Professional ethics have deteriorated along with the attitude. One can pick up any news periodical and read about corporate malfeasance or individual impropriety. A common deterrent to professionalism is the pressure to conform to the biases of one's employer (Campbell, 1990). A professional should follow orders, but also should suggest alternatives (and reasons) if his or her

opinion conflicts with the employer's. A professional will not assume an adversarial role, but will try to overcome the employer's preconceived ideas with better, alternative recommendations. And in no case with the professional allow the employer to coerce him or her into unprofessional behavior.

The third reason deals with inadequate education. The educational background of today's professionals may not be sufficient for an ever-changing industry. The lack of proper industry training compounds the problem. Universities or colleges should continuously revamp their curriculum for geoscience degrees. Today, as in the past, most universities and firms consider the master's degree as the professional degree. The individual needs to make sure his or her educational background is sufficient to enter a chosen profession. Professionals also must be responsible for continuing their education throughout their careers. School is never out for the professional!

The new professional needs to be mentored in many cases. Good judgement and making the right choices comes from experience and experience can come from bad judgement. The mentors can help bridge the gap for the young professional and steer him or her towards good decisions. Mentors can also help achieving company goals quicker in that the young employee may reinvent the wheel that has already been invented.

The fifth reason is the lack of recognition issue. This reason has two aspects: lack of recognition by the organization for which one works, and lack of recognition by society. A corporate reward system should be in place to recognize and compensate productive professionals. Industry should recognize good professionals by giving raises, promotions, and reasonable job security. However, in the end, job security is in your own head, based actually on your own energy, knowledge, contacts, and integrity. Corporations cannot have loyalty - only people can. Thus, you must be a professional geologist first, and a company employee second. Society often does not recognize the importance of professions such as petroleum geology. Professional geologists must interact much more with the local community and government, as well as state and national agencies and legislative bodies, if we are to gain public recognition for the profession. So get involved! The poor public image of the petroleum industry contributes to the problem, because this lack of recognition keeps young individuals from entering the business.

The sixth reason is the way society measures success. Success as measured by society combines having the desired or favorable outcome with attainment of wealth. Recognition is diminishing for the person who does the job right for the sake of pride and accomplishment, regardless of external considerations. Individuals often succumb to societal pressures toward mediocrity, expediency, and bias.

The last reason is the short-term approach. The interests and standards of society often suffer from a preoccupation with short-term goals because of the absence of historical perspective. An example is Wall

Street's concentration on quarterly performance of petroleum and mining firms, whose real success depends on what is manifestly a long-term process – the discovery and development of mineral properties with lives of 20 to 100 years!

## Examples of Ethical Problems in Professional Practice

Many ethical decisions fall in the category of what is right versus what is clearly wrong; however, many also fall into a tougher to deal with area of right versus right (Kidder, 1995). Tough choices can not always be solved by simply following professional codes or criminal laws. Tough choices are often those that pit one right value against another right value (i.e., right versus right). Consider the following:

- It is right to protect endangered species – and it is right to develop oil and gas fields.
- It is right to tell a friend that he is about to get laid off – and it is right to keep your leader's communications confidential.
- It is right to keep information about an individual's health private – and it is right for a group to know about possible contagious diseases.
- It is right to find out all you can about your competitors lease play – and right to obtain information only through proper channels.
- It is right to punish an employee for bad conduct – and it is right to have enough compassion to mitigate the punishment and give the employee another chance.
- It is right to work in the same area that you previously worked in for a previous employer – and it is right to not work in that area until a significant amount of time has past.

The right versus right ethical questions can make for some of the tougher decisions. Right versus wrong ethical questions generally are clearer cut (cheating on an expense account; lying under oath, etc.) Kidder (1995) refers to right versus right questions as “ethical dilemmas” and right versus wrong questions as “moral temptations.” The really tough choices center on right versus right questions. Each side is firmly rooted in a basic core value.

After analyzing hundreds of ethical situations Kidder found that the problems generally fall into one of the following ethical paradigm pairs (frequently more than one must be considered):

- Truth vs. loyalty (Is your priority truth to the facts or loyalty to the company or leader?)
- Individual vs. community (Is your priority the group, or the individual?)
- Short-term vs. long-term (Are you seeking a long-term or short-term solution?)
- Justice vs. mercy (Do you seek justice or do you seek mercy?)

Resolving ethical dilemmas requires analyzing them and then making a decision. Kidder proposes three principles for decision making (drawn from traditions of moral philosophy):

- Ends-based (Do whatever produces the greatest good for the greatest number of people);
- Rule-based (Follow only the principle that you would want everyone else to follow);
- Care-base (Do to others what you would like them to do to you).

Whether dealing with right versus wrong or right versus right questions, each situation requires analysis and action (a decision). It is always a good idea to revisit and reflect on the decision later.

The following examples are typical situations encountered by professionals from time to time (modified from Sonnenberg, 1994). The problems are designed so that you, as a professional, can come up with your own solutions. (The solutions offered are short and incomplete).

### **Problem 1. What do you do when asked by your client or company to do something unethical or unprofessional?**

This situation can occur for company employees, consultants, and expert witnesses. For consultants and expert witnesses, the solution is simple – you do not work for such clients! The sad news is that it seems someone can always be found to do this type of work, especially if he or she is being well compensated. A difficult dilemma occurs when a professional employee is asked a similar question by his or her firm. Even so, the basic solution must be the same – play it straight, decline the assignment, or resign.

### **Problem 2. What do you do when approached by a colleague to divulge information or slant a recommendation?**

The solution again is fairly simple – you do not do it. Your colleague is being unprofessional by putting you in the position in the first place. This again can become a problem when people are being compensated for information or for proffering opinions.

### **Problem 3. What ethics are involved in job changes?**

Obviously, a professional will not steal or take information from one job to another. The gray area occurs for ideas that may be only in the mind of the professional – obviously these ideas do go with the individual. Many companies prefer that individuals not work in the same area or on the same type of project they worked on for their previous employer. Unethical companies want to steal or borrow ideas from their competitors, and may hire individuals from the competitor to gain an advantage. A professional simply must maintain confidentiality with the previous employer (for a minimum of six months to a year, there should be a time limit).

Sometimes it may help to get the previous employer to state what would be considered a conflict of interest.

**Problem 4. How do you handle short-fuse project in which you do not have ample time to do the job as you would like?**

Consultants are always being put in this type of situation. The professional should devote the time and energy necessary to produce outstanding work. If a time problem exists, it should be brought to the attention of the client. The client or company needs to be aware that short-fuse projects tend to produce lower quality work, which is commonly less precise or reliable. In severe cases, the professional may have to decline accountability for the project or turn down the assignment. Sometimes, a productive and realistic way to deal with such assignments is to express your results or predictions as probabilistic ranges; where there is much uncertainty, you will show wide ranges. Often the client will be uncomfortable with such results and request more time be devoted to the problem.

## Concluding Comments

Professional practice requires professional morality (principle of right and wrong), adherence to a code of values, and professional responsibility. Professional responsibility includes high standards of business ethics and professional behavior. Professionals must conduct themselves with the highest standards of ethical behavior when dealing with the public, employers, clients, and other professionals. Many of the attributes of a professional geoscientist are summarized in AAPG's Code of Ethics (see Appendix 1).

Practice, embrace, and promote professionalism every day. Embrace the conduct, aims, and qualities of the professional person (Figure 1). Promote your professional society to your co-workers. Get involved and get active. Also be willing to get involved in things outside the profession and promote the profession and thus earn the respect from the public. Public recognition of the profession will enhance the image of the profession and help attract new people into the profession. Remember that professions are advanced through professional organizations.

Education obviously comes in many forms. The academic world needs to continuously update its programs to ensure top quality graduates - and employees need to keep current by attending continuing education events. School is never out for the professional. "Constant and never ending improvement" is a motto to live by.

Spend some of your time mentoring to young, soon-to-be professionals or students. Help them make the "right" decisions.

We also need to promote the old concept of "*long termism*." I believe many of our problems associated with declining professionalism involve "the short-term outlook."

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## APPENDIX 1

### Code of Ethics (American Association of Petroleum Geologists, 1991)

#### SECTION 1. General Principles

- (a) Geology is a profession, and the privilege of professional practice requires professional morality and professional responsibility.
- (b) Honesty, integrity, loyalty, fairness, impartiality, candor, fidelity to trust, and inviolability of confidence are incumbent upon every member as professional obligations.
- (c) 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**

- (a) 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
- (b) Members shall not permit the publication or use of their reports or maps for any unsound or illegitimate undertakings.
- (c) Members shall not give professional opinions, make reports or give legal testimony without being as thoroughly informed as reasonably required.

**SECTION 3. Relation of Members to Employers and Clients**

- (a) Members shall disclose to prospective employers or clients the existence of any pertinent competitive or conflicting interests.
- (b) 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**

- (a) Members shall not falsely or maliciously attempt to

injure the reputation or business of others.

- (b) Members shall freely recognize the work done by others, avoid plagiarism, and avoid the acceptance of credit due others.
- (c) 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**

- (a) 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.
- (b) By applying for or continuing membership in the Association each member agrees to uphold the ethical standards set forth in this Code of Ethics.
- (c) 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 this Article shall be subject to discipline as provided by the Bylaws. □

**“In this profession, your credibility is your only real asset.”**

# CONTINUING EDUCATION

Susan M. Landon

## Introduction

Continuing education is an important part of career development for any professional. Doctors, lawyers, educators, and most other professionals are all subject to mandatory continuing education to maintain their credentials. It is just as important for the geologist to use continuing education to remain technically current or make a career shift. The four basic types of continuing education are

- (1) Learning new geologic principles, such as geochemical exploration;
- (2) Updating geologic knowledge, such as keeping informed about new advances in geochemical exploration;
- (3) Studying related topics, such as economics or negotiating; and
- (4) Learning new skills for a job change, such as management techniques or ground-water principles.

Planning future continuing education is very much like goal setting, as discussed in the first chapter in this section. Some continuing education may be provided by an employer, but each geologist is responsible for having input into continuing education he or she receives. Once you have established your personal goals, you should examine the education that may be necessary to achieve those goals. As you periodically review your goals, you also should review the continuing education that will help you achieve your revised goals. Because your personal goals may diverge from company goals, you may need to seek some education outside of company-sponsored activities. Also, if your company does not provide continuing educational opportunities, that does not relieve you of the professional obligation to maintain technical competency.

Continuing education is acknowledged as an important element in the professional development of a geologist. This point is illustrated by the internal training departments of major companies, the proliferation of public courses and field trips (especially by professional societies such as AAPG), and the discussion of possible mandatory continuing education for certification or registration of geologists. At present, six states with registration (Alabama, Delaware, Kansas, South Carolina, Minnesota, and New Hampshire) require continuing education to maintain registration. Mississippi has a voluntary continuing education program and Texas will be implementing a

mandatory continuing education program effective September, 2006.

## Keeping Track

Most organizations that offer continuing education provide a standardized method of credit so that the participant can document the course. CEUs (Continuing Education Units) are the widely accepted method of documenting attendance in a course. "One CEU is equal to 10 contact hours of participation in an organized continuing education experience under responsible sponsorship, capable direction, and qualified instruction" (from the Council on Continuing Education Unit's criteria and guidelines).

Even though a company may keep a record of the training an employee has received, each geologist should also maintain a written record with appropriate documentation. Although your memory may be better than mine, you may find it difficult to remember that one-day seminar you took back in 1982! Your record should include all educational activities, including half-day seminars, company courses, outside training, field trips, courses sponsored by local societies, courses taken through local colleges or universities, etc. This list also may be very useful if you decide to interview for a new position.

## Sources of Continuing Education

Educational opportunities are available from a variety of sources. In-house training or courses may be available to geologists with larger companies, but these can be supplemented through publicly available courses, sometimes at relatively low cost.

### Professional and technical organizations

AAPG publishes a catalog each year of courses, workshops, and field trips, which are also advertised in the EXPLORER magazine. Because of the format and quality, these courses are relatively high in cost; however, each geologist should be aware of them. Many companies send geologists to these courses. If a course is pertinent to a job-related goal, a documented request by the geologist may be approved by the company. The only downside of requesting permission to attend a specific course or field trip is being told no, but if you don't ask, no one has the opportunity to

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*After a 15-year career with Amoco Production that focused on exploration throughout the western United States and included nearly 3 years as exploration training manager, Susan Landon left Amoco to satisfy an entrepreneurial yen. As a partner in a small exploration group in Denver, Colorado, she is now actively pursuing exploration projects in the United States. One of her continuing exploration interests is the Precambrian mid-continent rift system in the upper midwest. She continues to have an interest in educational activities and teaches industry courses ("Petroleum Geology for Engineers" and "Petroleum Geology for Non-Geologists") worldwide. Susan has been active in many local and national geological organizations and has served as treasurer of AAPG (1992-1994), past-president of AIPG (1990), and President of AGI (1998).*

say yes. Other geological and industry-related organizations, such as the Society of Exploration Geophysics, offer courses. If you are considering changing geological specialty, universities, ground-water organizations, etc. also sponsor courses.

### **Local organizations**

The Houston Geological Society, Rocky Mountain Association of Geologists, and many other local geological organizations offer a variety of continuing education courses and field trips at very reasonable costs. The courses are usually very specific in content and are only a day or two long. Often, they are offered during evening hours or on weekends so participants can minimize time away from the office. The expense is usually within most personal budgets. Regularly scheduled lunch or dinner meetings usually feature knowledgeable speakers and also may provide an easy, inexpensive method of picking up specific information, concepts, and techniques.

### **Colleges and universities**

Geologists located near institutions of higher education that offer relevant courses can enroll in a non-degree program. Commonly, companies will pay a portion of the cost of these courses. Courses of specific interest to industry employees often are taught in the evening. Pertinent courses may be offered in geology, geophysics, support sciences, math, engineering, economics, management, and other areas.

A number of my colleagues have enrolled in and completed MBA programs. Usually, the goal is to accelerate career progression into management or to provide flexibility in a new career path. In my opinion, completing an MBA has little or no impact on the career of a geologist in a major corporation. Large companies have their own management programs and criteria for selecting geologists to advance in management. I believe that an MBA is of most value to those who are in a smaller organization or are considering making a career change from geology. Law is another degree that is occasionally pursued by geologists, and may have substantial career impact on geologists who have elected to broaden their professional scope.

If a geologist is considering making a change from petroleum to environmental geology, a number of university departments offer programs to provide specific supplemental training to make him or her more employable. For example, Oklahoma State University has an excellent accelerated program in hydrogeology and subsurface contamination.

### **Commercial organizations**

A variety of commercial organizations (IHRDC, OGCI, etc.) offer training courses pertinent to the oil industry. These courses are priced in the same range as those courses offered by AAPG. Catalogs listing courses, schedules, and prices are available from these groups.

### **Conventions and local meetings**

Although not usually included in formal continuing

education, the opportunity to hear papers on current work by other geologists at conventions and other meetings is an excellent way to remain current in the technology being developed within our industries. These meetings also are good places to begin the networking process discussed in a previous chapter. Conventions do not qualify for CEUs, but seminars, courses, and field trips associated with meetings do earn CEUs.

### **Support companies**

Well logging, seismic, and other support companies in our industry provide product-specific training as a marketing tool. These short seminars usually are free or available at a modest cost.

### **On the job**

All geologists should take advantage of the experience and knowledge of their co-workers. This informal training may not be quantifiable, but it is just as important as formal education.

## **Assessing Quality**

Given the number of activities that demand your professional time, you must have a method of assessing the value of any educational opportunity. The best method of determining the value of a specific course, field trip, or educational opportunity is to talk to colleagues who have attended it in the past. If you do not know anyone who has participated in a particular course, the sponsor of the event may have critiques from past courses.

## **Education, Guilt, and Fear**

During my association with continuing education as a participant, instructor, and manager of a training center for a major company, I have observed many geologists who experience stress resulting from guilt or fear about being away from the office to attend a course. I also have observed the tendency of some geologists to avoid training for a variety of reasons, including guilt, fear, intellectual laziness, and even overconfidence!

Guilt and fear are responses to being away from the job. With smaller staffs experiencing increased work loads, stiffer competition for advancement, and similar pressures on supervisors, individuals are more reluctant to spend time in a training course or on a field trip. One even hears people voicing concern about their jobs being there when they get back.

Remember, you are certainly your best, and perhaps only, promoter. If you are going to develop technically and professionally, you must take advantage of the educational activities necessary to achieving your goals. The chapter in this book entitled "Stress Management and Personal Growth" may be useful in helping to manage the stress that may be associated with the guilt and fear that you, your colleagues, supervisors, or corporate environment may put on you. □

**“He who rests on his laurels develops calluses  
in the wrong places.”**

# ECONOMICS, VERSATILITY, AND MEASUREMENT

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 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

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**Ed Capen** began his professional career as student doodle-bugger working for Atlantic Richfield out of Laredo, Texas, in 1956. 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, and has spoken at national meetings of AAPG, SPE, SEG, and API. He was an SPE Distinguished Lecturer in 1974 and 1987, and in 1989 received SPE’s J.J. Arps Award for Distinguished Contributions to the field of petroleum economics and evaluation; AIME Mineral Economics Award 1996-Citation: For outstanding contributions to Mineral Economics especially in decision analysis areas of Leasing Model, Investment Assessment, Probability, Risk, Risk Psychology; SPE Distinguished Member Award 1999; SPE Economic and Evaluation Award 1999, Citation: Distinguished Contributions in Petroleum Engineering in the area of Economics and Evaluation; AIME Honorary Member 2001-Citation: For profound and lasting contributions in advancing the industry’s understanding of risk assessment and creative problem solving in upstream economic analysis and competitive bidding technologies; SPE Honorary Member – Most Prestigious Award.

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 mistakes. 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 your 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, D.C. 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." □

**“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.”**

**Ralph Waldo Emerson**

### **III. THE SEASONED PROFESSIONAL**

How time flies! Has it really been a full decade since you started work as a professional geologist? Geology has turned out to be an interesting technical field for you, and now your career seems to be broadening into some new directions. Congratulations! A group of experienced professional colleagues of yours have some advice that may apply to your situation just now, and after 10 years on the job, you've learned to listen - occasionally!

Learning to Manage People and Projects ..... Robert E. Megill

Stress Management and Personal Growth..... Robbie Rice Gries

Changing Employers ..... Samuel H. Peppiatt

From Corporate Employee to Consultant Geologist ..... William E. Diggs



# LEARNING TO MANAGE PEOPLE AND PROJECTS

Robert E. Megill

*"In real life, all sorts of decisions are based on imperfect knowledge, simply because there is no other kind" (Sowell, 1992).*

*"Beware the title manager; it means man-age-er." (Robert Light Duncan)*

What does it mean to manage people? Is it supervision, direction, motivation, or perhaps inspiration? It is a little of all these things. They are positive indicators, but, in the real world there also are negative indicators, such as cajole, manipulate, push, restrict, and badger.

Much has been written about managing. One of the best was written in 1965 by Dr. Mortimer R. Feinberg, entitled *Effective Psychology for Managers*. Perhaps the most famous was Douglas McGregor's book *The Human Side of Enterprise*, that introduced the concept of theory "x" and theory "y" management. Theory "x" was a hard-driving, crack-the-whip manager, whereas the theory "y" manager tried to motivate employees by showing them how to work in their own self-interest.

## A good manager of people:

- Directs the work of others,
- Trains,
- Motivates,
- Evaluates those directed, and
- Inspires.

## A poor manager of people

- Drives others,
- Keeps employees in their proper place,
- Restricts their activities to only what he or she wants them to know, and
- Enjoys pointing out the flaws in employees' work.

Two general observations deal with the positive side of managing and directing people. (1) All of us resent anything that diminishes our self-esteem or the esteem of others. (2) The good manager makes the most of the unique differences in individuals. The super-pressure person, the spurt worker, and the methodical plodder all can be used best under certain - and different - circumstances.

Gently, but firmly, helping people toward their true

potential is the one general responsibility of the manager. If people do not grow under a manager's supervision, the fault, in most cases, is that of the manager.

## Motivation and Inspiration

How one is supervised is often overlooked in considering what motivates an employee. People motivate people! Major organizations tend to forget the importance of loyalty and what stimulates it. Loyalty relates first to people, then to the organization.

Motivation requires

- Good leadership,
- Good communication,
- Trust and confidence up the ladder, as well as down,
- Knowing the people supervised, and
- Backing the people supervised.

A company desiring maximum motivation should select its first-line supervisors carefully and should not hesitate to correct - quickly - any mistakes made in selection.

Inspiration is one of the best terms to think about in considering good people managing. Inspiration is much more than mere motivation. The best managers inspire for some of the least complex reasons. For example, they

- Expect the most of all employees,
- Always give full credit for work done,
- Are good examples to follow,
- Listen carefully,
- Are individuals of implicit integrity,
- Are secure enough and mature enough to admit error, and
- Allow maximum freedom if an employee demonstrates the ability to handle responsibility.

## Evaluating People

Just as supervising is an art, so is evaluating people. Some people work well only in a very favorable

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*The late Bob Megill, formerly a consulting geologist in Kingwood, Texas, received a B.S. in geological engineering from the University of Tulsa. He worked for Exxon, including predecessor companies Carter and Humble, from 1941 to 1984 as staff geologist, petroleum economist, reserve geologist, head of reserve economics, head of exploration economics, division manager of planning, coordinator of planning, and coordinator of economic evaluation. Bob published numerous technical articles and is widely known for his books and courses "Introduction to Risk Analysis" and "Introduction to Exploration Economics." He was a member of AAPG and for 12 years wrote a monthly column, "The Business Side of Geology," in the AAPG EXPLORER.*

environment. Some people are late bloomers. Many supervisors have their own priority of qualities desired in an employee. Thus, many factors enter into the evaluation process; these factors involve the employee and the employer, but evaluation is a necessary part of supervising. In evaluating

- Concentrate on recent performance,
- Relate performance to recently completed assignments,
- Concentrate on those aspects that will help an individual grow
- Listen if the employee has comments or gripes,
- Concentrate on those things a person has a chance to improve,
- Deal with someone's work abilities, not failures as a person,
- Discuss *significant* weaknesses, even if they are difficult for the employee to change, to make sure he or she is aware of the weakness
- (However, don't concentrate on the weaknesses; people are hired for their strengths.)
- Don't comment on an employee's personal life unless it is affecting an employee's work,
- Don't review long-completed projects (they should have been reviewed carefully at that time), and
- Be sure established criteria exist to judge success and that the employee finds these criteria reasonable.

## Consider the Poor Supervisor

Much can be learned about good management of people by considering what a poor supervisor does. He or she

- Runs off good people,
- Never trains anyone (it's a waste of time),
- Has trouble meeting deadlines,
- Is not people oriented,
- Does not foster employee loyalty and destroys it for the company,
- Is afraid to admit error,
- Never makes assignments clear,
- Believes employees should know as little as possible, and
- Disregards his or her personal growth and that of others.

## The Good Manager

The good manager can be both people oriented and achievement oriented. A good manager develops loyalty to the company; helps all employees reach their own maximum potential; keeps employees interested in growing for their own self-interests; gets things done because he or she inspires people to work hard and sets a fine example; and is organized and has sufficient

perspective so that employees have a clear idea of how their assignments fit in the overall picture.

## Managing Projects

Much has been written about managing projects. Elaborate diagrams can be constructed to follow the progress of people and projects, but the place to start the thinking process is to recall the succinct statement of Peter Drucker, who said the good manager is more concerned with the *right things to do* than how to do things right. His statement doesn't mean things should not be done right, but that one should focus on emphasis. First decide what are the right things to do. This decision requires understanding the mission and planning ahead, and requires distinguishing between what is important and what is merely urgent. It means setting priorities.

Geologists (and researchers) have one problem that plagues them throughout their careers: measuring a geologist's productivity is difficult. An explorer's productivity is more than output - it is creative output! It is finding oil and gas, or contributing to that process, in a meaningful and profitable manner. So, the beginning point is one of acknowledging the difficulty of measuring, with precision, the results of an explorer's efforts.

The common steps in project management are

- Carefully outline the project;
- Get an initial understanding of the project and its objectives (have the employee describe the assignment in his/her own words);
- Discuss methods, without pre-setting methodology;
- Being satisfied with the understanding of the project; leave it in the hands of the employee;
- Review the status of the project (without smothering);
- Upon project completion, have a thorough evaluation and follow-up (a great training possibility); and
- Recommend acceptance of the project or minor revisions that may be needed (major revisions should have already been handled by the time of the final evaluation).

If the deadlines are reasonable, the employee is knowledgeable, and the work completed is of good quality, the project is done. If the project is not done satisfactorily, the good manager must immediately address the reasons. If the employee needs more training, a mentor or experienced person can be asked to help.

Managing projects is a function of motivating people, managerial organization, proper direction, and coordination. A good manager wants employees to excel, succeed, and grow. If a manager's efforts are directed in this manner, he or she will achieve much by providing a working environment where people want to succeed.

## **The One-Third Rule of Analysis**

Every project is different in some respects. One rule of thumb for gathering data for a project is to spend one-third of the project time gathering basic data, one-third of the time analyzing the data, and the final one-third of the time preparing the written or oral presentation. The most important one-third (and they are all important) is the final one-third. No project will come to fruition unless the explorer can sell his or her ideas. Thus, the written or oral report deserves careful preparation to make sure that a project based on good work and good analysis does not fail because of a poor presentation.

## **Finally**

In dealing with people who work on projects, every manager will do well to remember the Golden Rule.

One finds this rule mentioned in ancient literature, indicating that man has always recognized its wisdom. Work relationships based on the Golden Rule are always the best for both parties, manager and employee.

Be yourself, but emulate the finest managers you have known.

Work on your communications so they are clear and concise - it's the best gift a good manager can provide employees.

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**“Try to do something *important* –  
rather than *urgent* – every day.”**

# STRESS MANAGEMENT AND PERSONAL GROWTH

Robbie Rice Gries

## Stress and the Geologist

Stress is a creative force in nature, as we geologists know, forming magnificent structures and illusive petroleum habitats. This creative force includes and relies upon change—sometimes destruction of the old to form the new, sometimes a change in the old, an inversion, a complexity, something different. Stress in people is a similar natural phenomenon and is caused by both external and internal forces. Some of these forces are within our control and some are totally outside of our control. But stress causes things to happen within us and changes to occur, which can be creative or destructive, and always instructive!

## Positive Stress

Positive stress, to me, is controlled anxiety. It generates changes, creativity, excitement. For some people, the term “stress” can have no good connotation. This word, on a personal level, for some people always is associated with unpleasant feelings. These people would rather use another term to define the feelings resulting from stress that enhances creativity.

We should recognize that stress, or pressure, or any force that alters our experience can be positive.

Positive stress is when I impose a deadline upon myself to get a prospect finished, to get a deal turned, to make a certain amount of progress on a project by a certain date. Several years ago, when I worked for a company, my management imposed those deadlines, such as a mid-year meeting or district review. Like my own self-imposed deadlines, these were usually manageable and were excellent incentives to focus, get a job done, and get creative about the task at hand. Getting the job done meant opportunities to reap the rewards—praise from management, income from a client, selling a deal, finishing the project and feeling accomplished and

satisfied, and, best of all, getting a well drilled and finding oil or gas. As a petroleum geologist, each time I become immersed in a project, I get creative. I use my imagination and learned skills to find new places to drill for oil and gas. Using my imagination and other skills, I might find new ways to package a deal, to raise money for drilling, and so on; the list is endless where this positive stress or reasonable pressure is put to good use and leads to feeling more successful and more accomplished every day.

Positive stress is there to be used and enjoyed, to keep us on our toes, and be creative, active, and happy. Be aware of it. Recognize that positive stress is generative and energizing. Recognize that you can control a heck of a lot of it. Learn to create your own positive stress by putting yourself in situations that generate it for you, such as taking a new class, giving yourself deadlines and goals, creating games with your work. When you think about stress, remember the benefits and good parts of it!

## Negative Stress

Negative stress is something different. When I experience negative stress, it seems to be pressure from within or without that is overwhelming or out of control. This kind of stress drains a geologist of creativity, enthusiasm, and the desire to work. This stress, for one reason or another, leads one to feeling awful or victimized. Negative stress is exhausting and can be unhealthy, even dangerously so.

## Present-dominated and past-dominated stress

Positive or negative, sources for stress fall into two categories: present-dominated stress and past-dominated stress. Present-dominated negative stress consists of things that happen in the present that are justifiably

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*Robbie Gries stumbled into a geology class in college trying to escape a tyrannical chemistry teacher and fell in love with the science. Burdened with the traditional concepts of a woman's role in society, she continued to study geology just because it was so much fun. By the time her consciousness was raised in the early 1970s to thoughts of “working outside the home,” she was armed—fortunately—with a master's degree in geology and a new Affirmative Action incentive by the Johnson administration, and found gainful employment with Texaco, Inc., in Denver, Colorado. Raising a daughter as a single/divorced parent deterred her volunteer activities for several years, but she gradually worked her way into many professional activities as her parenting duties diminished. From 1973 to 1980, she traveled a familiar path professionally from major company to small company to independent consultant. In 1992, after 12 years of consulting and investing, she realized she might become a “victim” of the downturn, chose to seize the moment, and started a new facet of her career in oil and gas acquisitions. The first acquisition she was able to bring to closure involved purchasing a \$12 million Denver-based company. Since 1995 she has been President of her own company, drilled over 100 wells, and explored internationally. She was the first women President of AAPG (2000-2001) where she traveled to all six new international AAPG regions including 44 countries, giving over 300 presentations and starting more than a dozen student chapters. Robbie appreciates the review of this article provided by Kathy Aguirre, LCSW, Denver, CO*

upsetting to someone. For example, setting an unreasonable deadline for yourself, or getting transferred someplace you didn't want to go. Other examples are a change in job description to something you didn't want to do, volunteering to do a paper that you really didn't have time to do, working for a cretin who is unrealistic and unappreciative, or any number of similar things that would make a normal person feel agitated, angry, or victimized.

Past-dominated stress can be recognized by out-of-control or out-of-proportion feelings. Some event occurs—usually unexpectedly—and “pushes a button” that takes us, emotionally, back to the past. The intensity of our reaction is unusually inappropriate, stemming from emotions tied to old, unfinished business from the past. These emotions erupt like a dormant volcano suddenly gone active, often leaving us embarrassed and wondering where it all came from. Unfortunately, the person you dumped on is feeling this too! (“Wow, all I did was tell a joke, and she yelled at me for 10 minutes!”)

## Unfinished business

Everyone has some unfinished business from the past that gets carted around in everyday life, ready to rear its ugly head in an inappropriate place and time. It's as though you are carrying excess baggage around in a lifelong airport. I believe one of life's responsibilities is for an adult to figure out what that baggage is and, through time, to deal with it. Dealing with this baggage is an important, lifelong part of our maturation process. This baggage consumes a lot of personal energy. One of the most effective ways to relieve debilitating past-dominated stress (something that affects a person's quality of life) is good, professional counseling/therapy.

And, like hiring a geological consultant, hiring a professional counselor or therapist should be done by interviewing several professionals, looking at references, and first gaining confidence that the person has the experience and skills to assist you in resolving unfinished business. Don't set up counseling to fail by picking or staying with an incompetent. And, in this day of “managed behavioral care” make sure you find a consultant or counselor who can help you with “personal growth” issues—not just crisis intervention sessions.

## Personality differences

Stress is handled differently by different people. Some people get their “buttons pushed” by one kind of stressful event that doesn't bother their colleagues at all. I may get upset by something that you find laughable. This difference is a matter of personality type and not a matter of being right or wrong. For instance, a person having an analytical personality—like an engineer—may get bent out of shape by a change of schedule and plans, whereas it may only amuse the wild geologist in the corner office. But, the wild geologist may go berserk over a transfer out of a favorite project where the same engineer just shrugs and says, “It all pays the same.” Neither person is right or wrong, but is simply reacting to different stresses in different ways.

Don't assume that everyone else is feeling the same way you are, and certainly don't fall into that trap of feeling that everyone should feel and react the way you do. One of the best stress relievers in life is to accept differences in people—in fact, not accepting differences can cause enormous stress. If you are working in a group of people and find yourself home every night griping about things that everyone in the office does that are wrong or strange or distressing, be suspicious that you may be expecting everyone to think and act as you do. If so, you're in for a lifetime of disappointment and stress! Work on recognizing and accepting other personality types.

## Reaction

An extremely important thing to learn about negative stress (those events that are out of our control) is that we can control our reactions to these events.

In this era of victim recognition and identification, such as the dysfunctional family, abuse, sibling rivalry, racism, sexism, harassment, poverty, educational deprivation, social trauma (the list is endless), we can get stuck in the victim role and not use the enormous power we have over our reactions to these outside events. I'm not saying we should act like these things didn't happen, or be “Pollyanna-ish” about life's ugly turns. In fact, I think it is necessary to feel bad about something terrible happening in your job and career—feel very bad, for a while, but not forever. Traumatic events should be experienced in a natural progression of feelings over time (shock, denial, anger, grief, closure), but it is a progression of feelings, not a place to get stuck!

## Stress Relief

So what can we do about stress? I'll suggest a few things and you think about which ones fit you and your personality.

- Laugh, joke, see the humor of the situation.
- Think about geologic time and how an unpleasant incident fits into the overall scheme of life, the evolution of a planet!
- Make a pamper date for yourself; get a massage every week, or something else that is nice for you—something about which you tend to say “I can't afford the time (or money) to do that.”
- Exercise, walk, run, play tennis, play racquetball, use Nautilus machines, golf (that's exercise?). If you are already in an exercise or sports program, do more or try something new. If you're not in an exercise program, and think you couldn't, try it anyway. You will be shocked: if you give it two weeks to a month, you'll never want to give it up.
- Expand your interests, take a class, join a book club, join the mountain club, sailing group, whatever.
- Do something for someone else. Work with the disabled. Work with the Scouts, work with the aged. Give time to the homeless shelters, to the battered women's shelter, to Big Brothers or Big Sisters. Nothing helps put your problems into perspective better than

getting involved with someone else's.

- Again, when stress is overwhelming and out of control, hire a counselor. There's no longer a stigma or shame attached to seeking help from professionals in the helping field—that's one of the real advancements of 20th century civilization—and your life will probably be greatly improved for doing it.

## Personal Growth

There are lots of ways to go through life or, for some, to just "get through" life. Working in a profession you love is one of the key ingredients for having a personally successful life. Even with that advantage, each of us will have many opportunities for personal growth in the course of a lifetime of working and playing.

I have enjoyed the boom of pop psychology books of the last 35 years. When read seriously, these books, supported periodically with personal counseling, can be excellent aids for making life more enjoyable, less stressful, more rewarding, and less frustrating. Gestalt therapy, EMDR (Eye Movement Desensitization Reprocessing), and many of the new psychologies are too good to waste on only the very ill! There is a great revolution in psychology aimed at making life better for "normal" people with "normal" problems.

## Differences

Many books helped me understand that other people were not all like me and shouldn't be. These books helped me be a little less judgmental of people who do their jobs in ways different than mine, or who live their lives very differently from me. Understanding this makes my life easier and richer. It is a fact that people are different. They have different values, different paces, different humors, different rhythms, and different goals. They think differently, react differently, and feel differently. Working with other people and not understanding this can be very stressful. We all have a tendency to think everyone would be "perfect" if they would only think, act, or be just like we did. Wrong!

Two excellent books that discuss temperament and personality types are:

*Please Understand Me II*, David Keirse, 1998  
*Gifts Differing*, I. B. Myers, 1995

A great deal of sound, documented work has been done on this subject in the last 35 years, the chief benefits of which are to assist individuals to understand themselves better, and to help them realize that there are many different ways in which minds operate—and it's OK! In fact, many far-sighted firms routinely encourage their staff members to investigate such aspects of themselves as an aid to more effective teamwork. For those interested in the philosophical background of such differences, try reading:

*Zen and the Art of Motorcycle Maintenance*, Robert Pirsig, 1971

Two other timeless classics about the different modes of human interactions are:

*Games People Play*, Eric Berne, 1996  
*People Making*, Virginia Satir, 1972

## Relationships

Learning about relationships is helpful far beyond the husband/wife, boyfriend/girlfriend, couples issues. In our intimate relationships, we learn and develop our best (or worst!) skills at communicating. Our partners are the people who are most knowledgeable and frank about our communicating skills and, more important, communicating ability. If I am not communicating well with my own intimate partner, I probably am communicating even more poorly with my colleagues. My colleagues, however, don't tell me how poor the communication is, while my partner will tell me, possibly with tact, probably with conviction! The more I can improve my ability to communicate at home, the better my communication skills will be at work. Home life, in fact, can be the laboratory for developing communication skills that can then be taken to the office.

Some excellent books on interpersonal communication and relationships are:

*Intimate Enemy*, G. R. Bach and P. Wyden, 1983

*The New Male/Female Relationship*, Herb Goldberg, 2000

*The Seven Principles for Making Marriage Work*, J. Gottman, 2000

*Getting the Love you Want*, H. Hendrix, 2001

*How Can I get Through to You?*, Terry Real, 2002 (highly recommended)

## Managing

Books about management styles and work styles are also fun. Usually it's easy to recognize someone else's style and difficult to recognize one's own; however, my colleagues easily point out the style they see me use! Even if you are not a manager and never want to be a manager, learning about these roles in your work will help you cope with other people's styles.

A few books on this topic include:

*The One Minute Manager*, Ken Blanchard and Spencer Johnson, 1983

*Personal Style and Effective Performance*, D. W. Merrill and R. H. Reid, 1981

*Dealing with Difficult People*, Roberta Cava, 2004

*Who Moved My Cheese?*, Spencer Johnson, 1998

*The Seven Habits of Highly Effective People*, Stephen Covey, 2004

## Parenting

Books and courses exist that make parenting easier and more fun. What does that have to do with being a geologist or one's professional career? A lot. Office time is frequently disturbed and unproductive when people are having difficult times with their kids. Investing time in learning better parenting is a favor you do not only for your kids, but it reaps benefits for your colleagues, your boss, and your company. One sage said, "You are unlikely to be a bad parent and a good boss."

Books I recommend on this subject include:

*P.E.T. (Parent Effectiveness Training)*, Thomas Gordon, 2000

*STEP (Systematic Training for Effective Parenting)*, D.

Dinkmeyer and G. D. McKay, 1997  
*Between Parent and Child*, H. G. Ginott, 2003  
*Siblings Without Rivalry*, Adele Faber and Elaine Mazlish, 1998

## Saying you are sorry

One of the hardest things to learn is to say “I’m sorry.” Yet, it is an incredibly valuable skill in working with people. Just saying, “I’m sorry,” quickly, without eye contact, to get it done so you can walk away from a situation, doesn’t hack it. This type of apology does not generate forgiveness, understanding, or a better relationship with a colleague (or a family member). Specifically, if you can learn to look the other person in the eye and say, “I’m really sorry that I (blank, blank, blank). I imagine you felt (blank, blank, blank) because I did this. I will take these steps (blank, blank, blank) to assure this will not happen again.” This kind of apology is really tough...but most effective. You must show someone you have wronged that you are taking responsibility for what happened, you understand how he or she felt, and you are taking steps to prevent it from happening again.

## Mirror, mirror on the wall

There is so much truth to the old adage that we dislike most of all those characteristics in other people that we dislike in ourselves. It is one of life’s basic tenets. When you find yourself intensely disliking someone in your office, treat this like a gift. You’re being shown the mirror. Look and learn.

## Survivors of dysfunctional families

Some of us have come from dysfunctional families. Dysfunctional was a ‘90s buzzword, but unfortunately it’s also true. Many people—like myself—have had alcoholic parents or grandparents, or parents who were just poor communicators, or we may have had the misfortune of having been abused as children. “Abused,” a lot of people say, “What is that? I had good discipline from my parents and I turned out just fine. I don’t understand all this brouhaha about abuse.”

Well, just one small illustration. I have a friend who grew up in a little Texas city. She was a beautiful, popular girl, a cheerleader, ran with the “in” crowd and was fun, intelligent, well dressed, and dynamic. You would never have guessed that her life at home was hell. Her father and two brothers sexually abused her. Her mother was manic depressive who eventually committed suicide, as did one of the two brothers. The problem is that you almost never know when your best friend, your minister, your boss, your spouse even (maybe even you?) has suffered abuse. You never know when someone in your office, on your staff, or across the table from you has been severely damaged from abuse.

Must you understand this? No. Are you a better person and a more effective colleague or leader if you do understand? Yes. If I cannot envision, if I cannot empathize, if I cannot even fathom someone’s life who has experienced this, then I cannot effectively work with him or her or motivate that person to work.

You might be thinking, “Oh, the chances of my acquaintances being such a victim is so low, I don’t need to consider it.” Wrong. Out of ten people in your office, one or two have had alcoholic parents (they are at risk for alcoholism); two to three may have been abused. Two others may have had a parent with a mood disorder, often depression.

Verbal abuse leaves its scars, too, and it’s more evenly distributed among both male and female children. Persons who are loud, insensitive, and aggressive, and in positions of authority may represent—unknowingly—highly intimidating images to their employees and colleagues. Kurt Vonnegut said it best: “Damnit, people, you’ve gotta be kind.”

Does this mean that a colleague can be excused for poor performance because he or she was abused as a child? No. No. No. We are all obligated to grow up, take charge of our lives, and go forward, including victims of abuse and crime. However, we are also all part of a society that can provide help, support, and encouragement for someone’s growth and maturing process. Knowing and expecting that the people in your life may have had experiences that were more difficult than your own means that you might be able to encourage and facilitate growth for them.

Some books I recommend are:  
*A Workbook for Healing (Adult Children of Alcoholics)*,  
 Patty McConnell, 1986  
*The Truth Will Set You Free*, Alice Miller, 2002)  
*Changing Course: Healing from Loss, Abandonment,  
 and Fear*, Claudia Black, 2002

## Helping

As a supervisor, colleague, or friend, when you observe someone having a particularly difficult time, consider suggesting that he or she seek professional counseling. I have done this and have experienced both the best and the worst reactions. The best was that the individuals thought about it, did it, and then came around and thanked me for giving them that push that resulted greatly improving their lives. A couple of other people said, “Mind your own business” or “I resent you suggesting such a thing,” and our relationship deteriorated. Frankly, our relationship was deteriorating anyway, because I was tired of dealing with their poor mental health! When you are tempted to have a conversation to encourage someone to seek help, say to yourself, “What have I got to lose?” If the answer is friendship or respect or admiration, then ask yourself if it is worth that risk. Usually it is.

## Denial

I would venture to generalize that everyone has some denial in his or her system. Denial about overeating, denial about childhood abuse, denial about being arrogant, denial about drinking too much, denial about being too abrupt, denial about being lonely, denial about having power, denial about being attractive... the list is endless. My experience with it is that no one will change these characteristics until living with them becomes more painful than living without them. Reading about denial

only leads people to recognize what their friends and acquaintances deny, never what we deny ourselves. Only discomfort and pain get people to look into the things in their lives that they are denying. Sometimes when I see a friend in a great deal of pain, I think, “Oh great! Maybe this person is getting close to dealing with their problem!”

## Overcoming the victim syndrome

Tune in to your conversations with your colleagues. Are you always complaining or whining? Are you always thinking “If only...then life would be bearable” (if only my job were more exciting, if only my pay were better, if only I could lose 40 pounds, if only I were appreciated, if only I hadn’t been mistreated as a child, etc.). As long as we think or say things like this, we are acting out the life of a victim, and, surprisingly, enjoying being one. And this is likely to lead us into many situations that really prove how awful life is for us. What a dreadful way to live!

Try listening to your complaints, and then add “...and this is what I am doing about this...!” ...and I’ve decided to take these steps to change this...” Start by carrying out some small, symbolic act that represents such a corrective change—like an overweight geologist friend of mine who resolved to control his food intake, and immediately went out, bought a Big Mac and french fries, took them home and dug a hole in his flower bed where he buried them!

Take charge of your life; don’t give the power of your happiness to the boss you work for, the company you work for, or anyone else. Keep the power. Make yourself

responsible for your life—and for your career.

### **Some general personal growth books—for men and women alike—include:**

*Passages*, Gail Sheehy, 1996

*The Road Less Traveled*, M. Scott Peck, 1998

*Your Perfect Right*, R. E. Alberti and M. L. Emmons, 2001

*When I Say No, I Feel Guilty*, M. Smith, 1975

*I’m OK, You’re OK*, T.A. Harris, 1976

*Inner Work*, Robert A. Johnson, 1989

*Seasons in a Man’s Life*, D.A. Levinson, 1986

*Necessary Losses*, Judith Viorst, 1998

*King, Warrior, Magician, Lover*, Robert Moore and Douglas Gillette, 1991

*The Family Crucible*, A.Y. Napier and C.A. Whitaker, 1978

*Transitions: Making Sense of Life’s Changes*, William Bridges, 2004.

*How to Be an Adult*, David Richo, 1991

## Conclusions

When we stop learning new geologic techniques and new technology in our field, and when we stop applying that knowledge to our studies and prospecting we become obsolete and ineffective as geologists. Likewise, when we are no longer learning about ourselves, when we are no longer learning about life and people, we become obsolete in relationships and ineffective in society. “Growth is the only sign of life.” □

## CHANGING EMPLOYERS

Samuel H. Peppiatt

Most geologists, more than once during their careers, will change employers. Although many different reasons exist for making such a change, we can perhaps classify them into three main groups.

### Termination, Lay-Off, or Early Retirement

Any time your departure is involuntary, you, as well as your family, will feel some negative effects. Expect them, and be understanding - but not indulgent - with yourself, and be patient with your family. Do not panic. Do not be reluctant to seek responsible counseling. Talk with your professional associates. Take careful stock of your situation, your talents, and your shortcomings. Proceed with your search in an organized way. Try to set a desired date for making a decision, particularly if you contemplate having the luxury of more than one offer to evaluate. Comparative job decisions are preferable to serial ones! Remember that thousands of excellent professionals, at some time in their respective careers, have lost their jobs! Try to learn from your experience. After all, most of your peers report that such separations are usually blessings in disguise. Figure out what your goals should be, formulate a realistic plan for achieving them, and the specific steps you should now undertake. Then, proceed - energetically, realistically, and positively.

### Purposefully Locating a Better Opportunity

At some point in their careers, most professionals perceive their career progress as being blocked or unacceptably delayed. A few find themselves in employment situations that are untenable for personal or professional reasons. In either of these circumstances, you are advised to undertake a deliberate (and often confidential) search for another position. Some likely leads can be found through the professional and trade journals and your own professional network. Prepare a clear, succinct, accurate resume that sets forth your pertinent experience, talents, and assignments or

positions. Locate at least three knowledgeable, recognized geologists who can recommend you. The more respected they are, the better.

In your interviews, you should convey clearly what your primary accomplishments have been with your previous and current employers, what your goals are for your next professional posting, and what your long-term career goals are. Recognize what your employer has done in support of your efforts. Discuss these points openly with your potential new employer when leaving a previous position, as well as with your close circle of friends before seeking or accepting new employment.

Most new employers do not want you to burn your bridges with a former employer. For this reason and your own professional ethic, it is important not to criticize your previous employer without justification.

Understanding the work environment in which you perform best, and knowing the type and magnitude of resources you must have to do your job effectively are important points you should address before changing employers.

Take credit where due, but do not exaggerate your accomplishments. A good reputation can be just as important as a good track record.

Focus your efforts. Be an expert in your area of work. Remember, to be successful you need to have something that someone else wants.

In professional circles (but unfortunately not in academia), it is generally considered unprofessional to feign the seeking of alternative employment merely for purposes of coercing your present employer to promote you or increase your salary. Clearly, this motivation reflects badly on your employer, but also on your own standards, and word quickly gets around!

The same holds true for "job hoppers," although the decline in the oil business has eliminated much of that. Recognize that any legitimate employer must have your services for several years before your professional presence is profitable. At any time, patience and perspective is good counsel for anyone contemplating a voluntary job change. Above all, try not to bail out unless you have a parachute and a landing place in view!

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*Sam Peppiatt graduated from Kansas State University in January 1958 with a B.S. in geology (honors), receiving the W.A. Tarr award. While he was a student, he worked two summers with the U.S. Geological Survey in the uranium fields of southeastern Utah. He began his professional career with Pan American Petroleum as a petroleum geologist in 1958, but was laid off in 1959 during major cutbacks within the industry. From 1959 to 1971 he held various positions with Texaco, working primarily in northern Texas, the ArkLaTex region, the Gulf Coast, and offshore Gulf of Mexico. During 1971-1974, Sam worked in international exploration for Texaco, taking new concessions. From 1974-1979 he opened and built a Gulf Coast office for Ladd Petroleum. In 1979 he started and built Horizon Exploration Company, proving up significant production. In 1991 he became partner and owner of Chambers Oil and Gas, exploring and buying production. He is currently serving on the advisory board of DPA of AAPG. He is a past-district representative of AIPG, past-executive committeeman of the Houston Geological Society, and a member of TIPRO, IPAA, and various geological societies.*

## **Unexpected Personal Changes and/or Windfalls**

Life is filled with uncertainty. Sometimes accidents, family tragedies, or simple good luck may place an opportunity or choice at your doorstep. In such circumstances, try to take as much time as possible for deliberation, evaluation, and counsel. Seek as much information as you can. Pay attention to your instincts about people. Get all details in writing. Remember there's no such thing as a free lunch – if a deal looks too good to be true, it probably is just that!

Another class of job change arises from ethical reasons. No one who has ever witnessed or experienced a situation, such as someone in your firm asking you to misrepresent technical information, can fail to

acknowledge the terrible bind in which the professional employee is placed – the choice between maintaining a secure financial position and honoring one's ethical or moral principles. The first rule here is to discuss the situation with several experienced friends whose confidence can be relied on absolutely. Get their input. Don't overreact, but if it becomes clear that you are being asked to do something unethical or illegal (or to condone it) you have only one alternative – register your objections forthrightly (but privately) to your supervisors, with notice of your intention to resign if the situation is not corrected immediately and permanently. If you do not receive satisfaction, you must resign as promised, without apology. No other legitimate choice will preserve your most precious commodity – your professional integrity. □

**“I was looking for a job when I found this job  
and I can always go find another one.”**

# FROM CORPORATE EMPLOYEE TO CONSULTANT GEOLOGIST

William E. Diggs

At some stage in their careers, many geologists make the purposeful decision to become consultants. Other geologists – reacting to job loss with no alternative employment – may slip and slide into such decisions by default. Regardless of how this decision is motivated, most geologists fail to plan for what lies ahead. Such planning is essential! One must rely on good plans and hard work to furnish the bread and butter, with hope that good luck will furnish the bonus.

Begin your planning with a full description of what you understand is meant by the term “consultant.” Commonly, we hear geologists call themselves an “independent” or “independent consultant.” Here, use of the word “independent” probably derives from a desire to be perceived as free thinkers. However, you are cautioned that many in the business community regard this term as descriptive of someone with financial security and who is potentially a competitor. Furthermore, such labels can be misleading in that no one can be truly independent when his livelihood depends on the vagaries of one or more clients. Hence, you may or may not want to be regarded in such a light. Perhaps “consultant geologist” or “geological consultant” would define your function more accurately. Obviously, in a state requiring registration you probably will want to use the appropriate title as set forth in the enabling act. Members of the Division of Professional Affairs of AAPG, who restrict their services to the oil industry, might select the title “certified petroleum geologist.” The choice is yours – think about it!

Now that you have decided what to call yourself, proceed to write down details of your individual plans. Your planning should be unique and reflect your individual talents and circumstances. Your completed plan should cover three broad areas of concern: business, professional, and personal. These are interconnected and you must provide the emphasis as your unique situation dictates. The following outline of business, professional, and personal planning segments should be tailored to your particular case. Some factors may be ignored and others, known only to yourself, will have to be added or emphasized. Once again the choice is yours – but think about it!

## Business Plan

Let’s face it, the biggest hurdle most geologists face when going it alone is financial staying power. Above all, you must maintain a sustaining cash flow. Obviously, if you have sufficient personal capital, monthly income from other sources or, better yet, a retainer that will keep you in business for the initial one to two years of private practice, you stand a good chance of making it as a consultant. This amount of start-up time is necessary for most consultant geologists to build up a client base that will be sustaining on a long-term basis. If you work under a retainer agreement, with a fixed monthly or annual fee plus override, be very cautious how you evaluate the value of that override. Remember that those future rewards to you ultimately depend on discretionary drilling dollars spent by someone else on prospects you have generated.

Decide early on whether you are going to be a consultant to others or a prospect generator. Selling prospects is a feast or famine business, and is not recommended for those with limited cash flow, the faint-hearted, or those adverse to rejection. You may sell one prospect for a handsome finder’s fee plus override to the first company you show it to, whereas the next prospect may never sell or take more than a year to sell, which, if you are relying on that next finder’s fee to stay in business, may as well never be sold. Remember, cash flow is king! Furthermore, if you combine consultation work with prospect generation, you must avoid conflicts of interest at all cost. To do this combination of efforts generally requires you to consult in one specific geographic area and generate your prospects in another area. If you have any doubts about conflicting with a client’s interest, discuss your concerns with that client. Avoid, like the plague, even a *perception* of conflict!

Regardless of your financial condition when you begin a consulting practice, your first priority should be to prepare a budget that realistically looks at both projected income and expenses. Remember, you are now on your own! Explore the advantages and disadvantages of incorporation; look at the aspects of liability, taxation, and

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**Bill Diggs** was born July 1, 1931, in Fredericksburg, Virginia. He earned his bachelor’s and master’s degrees in geology from Virginia Polytechnic Institute at Blacksburg, Virginia. He began his professional career as a surface geologist in the Arkoma basin with The Carter Oil Company in late 1954. He continued with Carter from 1960-1962 doing subsurface work. He then became a consultant geologist in Fort Smith, Arkansas, in 1962, continuing there until 1968. Diggs then became exploration manager for Alliance Oil Development, Melbourne, Australia, from 1968 to 1974. From 1974 to 1983 he worked for several local exploration companies. He claims to have seen the downturn coming and decided to head for the safe harbor of employment with ONEOK Exploration Company. As vice president of exploration, he reports that life is still kind to him, but regards the upcoming age of 65 as another opportunity to go on his own again.

insurance; consider the cost of office, telephone, and equipment; and make allowances for any geotech or secretarial help you might need. If you are operating on a tight budget, consider associating with others to share expenses. Alternatively, you may be able to barter two or three days of your consulting time each month to a small operator in exchange for office space, secretarial help, or answering services. You can find many ways to help control overhead costs. Consider talking to successful consultant peers in your area and ask them directly for suggestions that would help reduce or minimize expenses.

## Professional Plan

The change from corporate employment to self employment can be both a physical and emotional shock to any professional. A geologist is fortunate to start his or her consulting career with benefit of a retainer or specific work contract that pays reasonable base compensation for the first 6 months, because this gives a marginal amount of time to become acclimated to work outside the more structured corporate environment. Other geologists, who have become consultants because of unexpected job loss with no alternative employment opportunity, are presented with more immediate problems. Regardless of what precipitated your decision to consult, you must now think of everything from office coffee supplies to services previously furnished by corporate specialists or a company research lab.

Take inventory of your past training and experiences and be very honest with yourself as to your individual strengths and weaknesses. If your past experience became specialized, you may find it beneficial to hone some of your old geological skills. A comfortable working knowledge of geophysics, electric log analysis, and decision and risk analysis will serve you well in your new role. If you are in the oil, gas, or mining industries, begin learning something about the relevant legal documentation, i.e., oil and gas leases, joint venture agreements, joint operating agreements, farm-outs, and so forth.

If you are an environmental consultant, training in the use of satellite imagery, hydrology, or some basic law courses could be of benefit. One essential caution here – do not hesitate to admit to a client that you are not expert in a particular matter that is critical to that client's best interest.

The consultant geologist can lead a lonely professional life. Confidentiality must be maintained! Your peers down the hall are gone! You miss the encouragement from your old mentor! Your prospect has just been rejected for the fortieth time! Where is your back-up? Replace some of this loss and overcome this rejection by networking. Become more active in local geological societies and business or professional organizations related to your particular area of expertise. Be outgoing – get involved in your profession and in your community! You never know where the next prospect will be sold or the next retainer will be negotiated. Whoever has the most snares out is most likely to catch the rabbit!

There are several fundamental keys to success in the consulting business. Most people would agree on *competence*, *dedication*, and *integrity*. Here are three others you may not have thought about: *contacts* (which must be nurtured to be maintained), *confidence* (contagious so long as it is not construed as dogmatism), and *responsiveness* (the successful consultant, above all, must be responsive to his client). No one said the consultant geologist would have it easy, but this life of consulting can be very rewarding and satisfying both professionally and financially. If you believe you have what it takes, go for it!

## Personal Plan

When embarking on your consulting career recognize that there will be added stress on you and on your spouse, as well as on your children. The best way to minimize such stress is to openly discuss your plans with all of your family. Work as a team with common objectives. Have periodic talks with family members to make sure that frayed nerves do not lead to short circuits. Most successful consultants find it necessary to put in much more than 40 hours per week. To be successful, this means that your use of time must be much more efficient and disciplined in both your professional life and personal life. Be sure your family understands this. But your good health and the health of your family require time for weekly relaxation and an annual vacation. Remember, you may find that next consulting job while watching your child perform at a school sporting event, or sell your old dog-eared deal while relaxing at the beach with your spouse or friends over a long weekend.

Think, plan, network, believe in yourself and just do it!!!! ☐

**“Whatever you’re contemplating, it will probably take twice as long to accomplish and cost twice as much as you originally figured.”**

## IV. LATER STAGES OF THE PROFESSIONAL CAREER

What a fascinating career it has been – and promises to be for some time to come! Still, you have developed some other interests and goals (as well as a few aches and pains!), and now it's time to begin thinking about the process of winding down your work load and addressing some other priorities. Retirement is on the horizon. Congratulations!

Some of your DPA (Division of Professional Affairs) colleagues, a bunch of “old hands” (older than you!), have some counsel for you to think about. And, of course, you have reached the point where you know that the wise man or woman profits from the experience (i.e., mistakes) of others. Too soon old, too late smart! Here goes!

Retirement: Preparations and Reflections . . . . . J. Fred Clement and Mark A. Clement

Planning for Retirement . . . . . Robert D. Cowdery



# RETIREMENT: PREPARATIONS AND REFLECTIONS

J. Fred Clement and Mark A. Clement

## Introduction

So you're going to retire! What are you going to do? Suppose it gets boring? What if you get sick? Do you have any dependents? Suddenly, it's not so simple!

Maybe you won't be retiring for another 30 years. If so, you're fortunate. You still have time to plan your retirement, but you had best start now. If you wait until you are 40 or 45 years of age, you probably will find it much more difficult to achieve the same objectives. Whether you anticipate retirement in 30 days or 30 years, the following material is intended to stimulate the desire to learn more about your individual retirement situation. *Start planning today!*

- Desirable environment (an adjustable personal choice involving you and your dependents),
- Psychological acceptance of a different daily routine (a personal choice),
- Involvement in those things that give you a sense of personal satisfaction (a personal choice),
- Inquisitiveness to prevent boredom from dominating your life (your problem - inquisitiveness must come from within),
- Placing the needs of others before your own (only you can do this), and
- Agreement within your household as to the family retirement objectives.

## What is Retirement?

"Retirement" is defined in *Webster's Standard Dictionary* as the state of being withdrawn from one's position or occupation. The definition does not address any financial requirements or other mitigating factors. Use of this term usually implies adequate financial security. If you state that you are retired, most people will assume that you have no financial problems whatsoever, because if you did you would still be working! The fact that you have retired from a large company and receive monthly retirement benefits, including an annuity check and insurance coverage, means only that you have retired from their employment. You have not retired from all work, whatever the type.

Enjoyable (considered a synonym for successful by many) retirement is greatly influenced by

- Good health (as experienced by you and your dependents),
- Adequate income (varies greatly with each household),

## What is a Retiree?

The criteria for a retiree assume that you have adequate income to address your living expenses and, by choice, are no longer working for monetary compensation. If you are involved in working for money part-time, you are semiretired, or possibly not retired at all. We place retirees in two categories: (1) those who were consultants (independents) and (2) company retirees (company, bank, school, government, etc.) who retire with an employee's benefits package. A person whose job is terminated (forcibly retired, if you prefer) when that person is age 45 to 55, and who does not receive a regular monthly annuity income is not considered herein to be a retiree (exceptions to this are special cases, such as a medical retiree). This person must continue to work for financial security.

### Consultant/independent retirees

Most consultants or independents, rather than retiring at a specific age of 60 or 65, tend to gradually reduce

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**J. Fred Clement** has over 45 years of experience in exploration geology. He started with Carter Oil Company (subsequently Exxon) in 1948 as a surface geologist in the Rocky Mountain area. In 1950 he was transferred to Shreveport, Louisiana, where he was first introduced to biostratigraphy, a discipline he followed for more than 30 years throughout 11 states and the Gulf of Mexico. After retirement in 1980, he began a "second career" in Dallas, Texas, as a consultant in paleontology and biostratigraphy. J. Fred teaches several AAPG short courses in biostratigraphy. He has been active in professional publication, being the lead biostratigrapher in the SEPM's Integrated Stratigraphic Analysis, Gulf of Mexico (1987-1989). He is a Life Member of AAPG, which he joined in 1952.

**Mark A. Clement**, a consultant geologist, in Dallas, Texas, has over 45 years of experience as a geologist. His first professional job was with Sun Oil Company in 1952 as a petroleum geologist. His 18-year employment with Sun progressed from research geologist, to explorationist, to regional stratigrapher, to regional economic analyst. In 1970, he left Sun and moved to Dallas as vice president of exploration for Cascade United Corporation. In 1972, he opened an office as an exploration and consultant geologist. He has consulted both nationally and internationally, principally in the areas of exploration, development, and production purchasing. In 1989, he and two other geologists started Petroleum Logistics Corporation, a computer software company that addresses PC database management programs for geologists, geophysicists, and engineers. Mark has been active professionally, holding office in various local geological societies, as well as the AAPG. He presently is a member of the continuing education committees of both the AAPG and the DPA.

their workload, thereby phasing out their regimented activity. Many of these people may never fully retire until forced to do so by physical limitations. Continuing their businesses, at a less demanding pace, is enjoyable to most of them. Although gainful employment may no longer be necessary, they continue in their professional posture because they enjoy it and the many friendships and associations they have developed over the years. Also, there are many fringe benefits, such as professional awareness and satisfaction, tax benefits, and sudden business opportunities derived from the professional associations that come with many types of “semi-retired consulting.” In contrast to a company retiree, the average consultant must select and develop his or her own retirement benefits package.

### **Company retirees**

Most geoscientists who work for companies in the United States tend to view “normal” retirement age as about 60. Early retirement at age 55 (reduced annuity payments) usually is a possibility. Age 60 is used because this is the age at which many company personnel first have the option to stop coming to work every day, thereby becoming eligible for monthly annuity checks, company-furnished medical insurance, life insurance, and other benefits. These benefits can create strong financial independence, often eliminating any pressing need for additional income. The economic position for these geoscientists is further enhanced by their eligibility for Social Security (annuity) coverage at age 62, and Medicare at age 65. Some retirees never seek employment again. A second group of workers is employed by other companies, and a third group enters a completely different field of work. The second and third groups really have not yet retired. Finally, a fourth group joins the ranks of part-time or full-time consultants (sometimes working for the same company from which they retired).

### **Retirement Planning Considerations**

Planning for retirement isn’t just a single step. The right beginning is important, but proper planning is a continuing process. The average length of time enjoyed as a retiree is approximately 20 years. A variety of factors influences both the quality and living style of your retirement. Recognizing these factors is an essential part of retirement planning. Personnel representatives can assist company employees in selecting the various options of the company retirement plan. If you are a consultant, you need to address everything. Seek help – adequate guidance is available from various insurance companies, banks, brokerage concerns, and financial consultants. The most difficult decision is choosing the person or group to counsel you. Talk to friends. Interview several retirees or potential retirees. Compare your results. Review your findings with your spouse. Make a file of the data. Review it periodically to bring yourself up to date.

### **Who**

Who is involved in your retirement? If you are married, you and your spouse should plan your retirement. If you encounter medical retirement at a certain age, who feels the impact? In some cases, you may need to provide for changes as your family (or extended family) expands,

and then reduces in size as various individuals come of age and leave home.

### **What**

What type of retirement are you envisioning? Will your life be busy, energetic, mobile, quiet, or settled? What living style do you realistically anticipate? What will be the quality of life you (and your spouse) look forward to at this time? What of your community involvement? Volunteer opportunities abound for senior citizens. Will your circle of friends be restricted, stay the same, be expanded, or of necessity be changed? What about your interests and activities, and your spouse’s interests and activities? What about sports, travel, and entertainment? The planning stage is the time to recognize and resolve potential family conflicts. Plan together to enjoy what you have worked toward over your lifetime!

### **Where**

The physical, psychological, and economic aspects of where you live during retirement will have some of the greatest impact on your happiness and comfort in all of your retirement years. Plan for it!

Formulate a flexible housing plan for the future. Many housing arrangements are available to seniors. You may elect to live at home or move into a residential complex. You may prefer a retirement community that has a variety of available living styles. Most seniors prefer to live at home as long as they are physically capable. They should consider the potential for making home modifications that may eventually be required to meet their changing physical needs. The home may need better lighting, a downstairs bedroom, wider doors to the bathroom for a wheelchair, ramps to get in and out of the house, and safety exits.

Access to medical facilities and nursing care often become increasingly important with advancing age. If you or a dependent have or anticipate such a need, include such requirements in any retirement plans involving relocation.

Do you want to move your home to a different city? Consider renting a place for several months on a trial basis to determine how everyone involved likes it before making a final commitment. Sharing your thoughts about location *before* the decision day arrives will make it easier on everyone.

### **When**

Usually, retirement age is at the discretion of the individual after he or she has reached the minimum age dictated by the person’s specific retirement plan and his or her ability to meet its provisions. You should be well versed with your plan by the time you are 30. Review it closely (with updates) at a minimum of 5-year intervals.

### **Why**

You may experience company-induced early retirement. The primary difference between this and personal election is that company-induced retirement usually involves taking a reduced annuity. You might defer the starting date to a later age so that your annual payments are larger, but this would leave you with a temporary vacuum in revenue. Also, check your medical coverage in

this situation. You may need supplemental coverage.

If your employer terminates your position prior to attaining financial security, you will probably have to seek reemployment. Do you have vested tenure in the prior company's benefits plan that will accrue to you at retirement? This can be important, even if you initiate the company termination. Long before you leave a company, you should find out what benefits you will carry with you. If you find new employment, the retirement benefits from the old company can bolster the retirement benefit package from the new company. If you consult, you still have some reduced retirement benefits from the prior company. Of course, the transition to consulting will create a new ball game for you on your retirement planning.

Medical retirement may be of two types, job related or non-job related. Company policies regarding job-related medical retirement vary greatly. They may carry an extended lifetime award, or lump-sum compensation, or nothing. Personnel representatives can clarify your options. Non-job related medical retirement is a broader subject. Some companies may have policies in which your benefits may be influenced by length of service. Consider your options in this type of adverse condition. A consultant or independent has to address personal insurance for this or any eventuality.

## Funding Your Retirement

Cash flow developed through financial planning is the answer. The first item to address is to ask yourself if you can really afford to fully retire. The way to do this is to construct a cash flow model.

Make a list of your projected average monthly retirement expenses, including food, housing (don't forget repairs), clothing, insurance, federal withholding tax (estimated tax), some estimate for unexpected expenses, and anything else you or your spouse (if you have one) can think of. Start with expenses required for the desired standard of living (this is likely to be higher than you think!). Then, make a list of your projected monthly revenue, including prorated amounts from stocks, etc. Be realistic and keep these estimates toward their lower limits. Subtract the expenses from the revenue. The difference is your net cash flow, which hopefully, will be positive. This is a fundamental model that should give you some kind of an idea whether you can consider being fully retired - or if you will need to work at least part-time.

However, don't stop now - make a similar cash flow model for your expense/revenue position for 5 years after your retirement, as well as ten years, and even 15 years.

This sounds like a lot of work. It can be, but in retirement, you have to understand that now, *you own the company*. You may have a prior company's benefits package, but that may cover only part of the picture. That package may not provide 100% of your anticipated standard of living revenue or cover 100% of the type of medical coverage you desire. If you have a debilitating medical illness, you (or your spouse) may no longer be fully covered by the protective mantle of your former company.

You can hire this planning done; however, doing it

yourself gives you a better feel for achieving your objective. Creating this model is a simple task with a small personal computer (PC). If you are not familiar with a PC, locate a friend who has one. Most PC hackers are delighted to help someone trying to learn to use a PC. You will be surprised at how easy it is. If you have already retired, you probably have the time. If you have quite a few years before retirement, PC familiarity can be a bonus. Use the PC to develop retirement planning economic models. Once you have estimated projected expenses, you can model your revenues to balance your cash flow for a realistic economic retirement objective.

Evaluate your projected retirement revenue. Is there a diversified source of your revenue? How long will it last? Do you have a Keogh or IRA plan? If you have a company retirement plan, familiarize yourself with its various options. Strive for a safe, predictable income during your retirement years. Try to protect your assets from inflation and taxes.

Could you get by on 75% of your projected retirement income? Be honest with yourself. What about 50%? You might be surprised. If you and your spouse are 65, you would draw social security (subject to earned income limitations in the 65-70 age bracket). Remember, your income tax would probably be reduced. You have an increased general tax deduction at age 65. Many states give increased property tax deductions at age 65. You are presently subject to tax on up to 85% of your Social Security.

Hopefully, you will have excess income. What will you do with it? One choice is to place it in a savings account. This approach will probably minimize your return and eliminate any protection against inflation. The alternative is to invest in annuities, stocks, bonds, etc. If you are already familiar with the alternative routes, select your course. If you are not familiar with the options and wish to pursue these alternatives, you should (1) get professional help, (2) go slowly, (3) study what you have done in the past - both your failures and successes, (4) don't endanger your retirement capital base, and (5) don't financially overextend yourself.

## Planning for the Declining Years

Unpleasant as it may seem, families should discuss how to handle someone's long-term illness or death. There is no guarantee that you or your spouse will not require extensive nursing care prior to death. What happens if the other person is too aged to care for the infirm? What if the noninfirm individual dies? Much confusion, pain, and loss can be avoided with a little planning, including arrangements that will protect your financial independence even during a prolonged nursing home stay. You must have frankness and foresight to protect any accumulated assets from taxes, medical meltdown, and nursing home expenses. One must consider these three broad areas.

(1) Create mechanisms directing how your money and health concerns should be managed if you (or your spouse) can't handle them. This involves advance directives, such as a durable power of attorney or a living will, documents that put someone else in charge if you

are incapacitated. *Beware*: these papers bestow broad powers and should be given only to your most trusted family member, friend, or adviser. A durable power of attorney for financial management lets a designee handle your routine financial affairs, such as paying bills; it can also cover investments. Financial institutions may balk at accepting the document if it is more than 30 days old, but language that holds the institution harmless in the event of a lawsuit can smooth the way.

(2) Set up your finances to cope with the possibility of a long-term stay in a nursing home. Most Americans don't pass through a nursing home before they die. Inability to afford the services may well have a great influence on this. But if you do go to a nursing home, Medicare doesn't cover the cost, which is about \$25,000 to \$50,000 annually. Medicaid will pay for long-term nursing home care, but tight restrictions on income exclude the middle-class elderly, so old people must spend their assets to qualify. Check the requirements.

(3) Figure out if you need a will, living trust, or other legal instrument to safely pass property on to your heirs while minimizing the tax bite.

## Additional Aspects of Retirement

### Togetherness

Formerly you were away from your home and your spouse for at least ten hours a day, 5 days a week, probably more. Perhaps you had a secretary who protected you from minor everyday interruptions in your routine. Your spouse has established a separate daily routine, be it at home or at work. Suddenly, you may now be home 24 hours a day and 7 days a week. If your spouse also is at home, how will you react to this new togetherness? Undoubtedly you will both want to contribute to the retirement transition effort from habit, or affection, or a combination of both. From a positive standpoint, it might be a great experience; however, your retirement may have a great impact on your spouse's daily routine. You should develop a proper balance. We each need our own space - and the time to enjoy it.

### New responsibilities

If your spouse will continue to work at a regular job, the transition may be easier. However, because of your new free time, responsibilities at home may need to be redefined. You would be wise to discuss your changing roles with your spouse *before* you retire. You may find yourself developing a new, more fulfilling partnership with your spouse - in any case, things will be different!

### Family security

Retirement planning should be concerned with your financial future as well as that of any dependents. If you retire married at 60, and die at 61, some company plans will cover your spouse fully for only 5 years. Remember that your spouse may outlive you. Statistically, women live longer than men. Plan for this possibility. Most annuities can be adjusted to provide for a spouse in the event of your untimely death; *however, you, the employee, must request it*. Discuss your personal plan with your company personnel director or your annuity insurance agent.

### Medical insurance coverage

What will happen if you or your spouse has a prolonged illness? One would presume that you will have medical insurance covering yourself (and your spouse and family). Your company insurance may not cover everything or be limited if you die. Address your age at retirement. At age 65, you have Medicare and reduced medical insurance coverage (important to a consultant). However, if you are 62 and your spouse is several years younger, you need to address the burden of higher medical coverage costs for a longer period of time. Unless medical coverage is provided by your previous employer, you are looking at appreciable expense. If your spouse is working, you may be covered under his or her company policy. If your spouse doesn't work and needs coverage as well, you may be looking at a potentially long period in which you will be paying insurance rates that appear to be rising at a rapid rate. Review your medical coverage for both basic coverage and supplemental coverage.

### Dealing with work withdrawal

Some retirees find themselves depressed and come to realize that our American culture tends to make us identify our personal self-worth with our work. Indeed, we have been at work for most of our lives, and work has provided a framework and discipline around which our lives have been lived. Whether this is good isn't really the point - the goal is to achieve a fulfilling lifestyle during retirement!

### Reentering the professional work field

For many people, retirement has become a major goal in life. Regardless of whether it is a major goal, when retirement finally materializes it often does so almost instantaneously, and many people find that they were not fully prepared for it. This lack of preparedness can surface in many ways, but usually expresses itself as insufficient income or the lack of sufficient personal challenges throughout the day, resulting in boredom. If you have adequate income and an enjoyable, satisfying daily routine, or just like the slower life, you have our congratulations and best wishes for full enjoyment of your retirement. If, for one of the cited reasons, you discover that full retirement is not for you, you probably will begin to search for new challenges. The most natural development is that you become a consultant, either full or part-time, in your particular geoscience. If you have any thoughts doing this at retirement, prepare for the eventuality by building a network of contacts for future job leads that may interest you. Even if you never use them, these contacts will still be a great moral support if you have any doubts concerning your future retirement activities. And you may find a great bonus in such a list if you are given involuntary retirement.

The advantage that the older person has is *professional experience* - standards, perspective, judgment, and technique. We tend to undervalue our experience, sometimes ignoring our best assets, and pursue unrelated objectives. Your level of technical competence is an extremely important consideration. If you have been relying on technical support for the answers to your questions and have not remained current with

developments in your field, the move from management into some technical consulting areas will likely require up-to-date techniques. Acquiring this knowledge may be a formidable task. Your competitors will be skilled at these techniques. You may have to relearn some basic technical applications, a task requiring both personal commitment and time. You no longer have unlimited company support. The further afield you go, the more potentially difficult the transition.

If you enjoyed your previous field of employment and wish to continue in it, you have an excellent opportunity to discover what real job motivation and satisfaction is all about. Monetary remuneration may no longer be a primary objective. The psychological benefits derived from professional associations and challenges may now become the most important rewards of your work. Your competitors may complain that you charge less and/or work more on a particular job (bid) because you are “subsidized” by your annuities. But you worked very hard for many years to achieve this position. It’s your leverage. Exploit it! Hopefully, you will find that the satisfaction is worth even more than the dollars.

## Some Thoughts on Retirement

### It’s a wide-open world

Many people find the over-50 years to be their most satisfying. Free of constraints of child rearing, older adults finally have the time, self-confidence, and financial security to successfully pursue interests such as sports, travel, and even second careers. Be open to change

For people who stay open to change and personal growth throughout their lives, the mature years can prove to be unexpectedly rewarding.

### Discovering new interests

Developing vital, challenging activities that you can take up when you retire is vital, especially for people who, after years of work, have grown tired of their jobs. Your regular job consumed 40-plus hours a week. Commuting and travel added to your schedule. When you retire, you are retired 24 hours a day, 7 days a week. Some retirees can’t find enough enjoyable activities to fill their time. Many, if not all, of their close friends do not have the time to help fill a day, because they are still working for a living. Having looked forward to retirement, such retirees suddenly find themselves with too much time on their hands. Psychological side-effects may develop and lead to depression or even illness. As an earth scientist, you

developed intellectual and analytical skills. Meet the challenge – bring your skills into play. Focus on finding things you enjoy doing. Some possible solutions are (1) find new employment (either for pay or as a civic volunteer) or (2) find new hobbies, additional friends, groups with similar interests, etc. Start this process long before retirement day!

### The volunteer

You may discover a fulfilling new career as a volunteer in civic or charitable work. Many cities in the United States have Retired Senior Volunteer Programs (RSVP) or similar activities that can place senior individuals with community organizations and nonprofit agencies. Participating seniors often agree that volunteer programs are among the most rewarding experiences of their lives.

### New skills

The more you learn, the more you will be able to do. In your retired life, you may develop new skills on which to capitalize.

### Grandchildren

The theme most often heard from other people is the joy associated with grandchildren, or just children in general. All the pressures involved with primary parenting can be shrugged off, and a new role of confidante, or nurturing conspirator, or wise counselor can be fully relished.

### Wisdom

Try to become wise(r). Wisdom isn’t part of the biological process of aging. You don’t have to grow wise as you grow old, but you can work toward it. Concentrate on your listening ability, understanding, and sympathy. Enjoy life’s pleasures. Recognize sorrows and mistakes, but keep moving forward. Many younger adult groups will honor your wisdom.

### Changing values

Many people find great security in the knowledge, gained through aging, of what their moral values are and what is valuable in life. As seniors, they grow more confident of their values and more tolerant of differences.

### Smell the roses

Take the time to enjoy the simple things of life; find pleasure in simple things. Enjoy sitting, reading, and walking in the woods. Enjoy the feeling of comfort derived from quiet and simple activities. *Take the time to smell the roses.* You deserve it. Have a great retirement! □

**“There’s no such thing as a free lunch.”**

## PLANNING FOR RETIREMENT

Robert D. Cowdery

When should you commence planning for our retirement: 50? 55? 60?

The answer has to be none of the above. To insure a successful and happy retirement, you should initiate planning *from the day you enter the workforce*. I cannot emphasize planning enough, because it is the key (along with its corollary, goal setting) to those anticipated golden years. By the way, golden years is not just a shopworn cliché. Recent studies have indicated that people in their 60s and 70s consider this period to be happiest time of their lives, contrary to the drop-off in enjoyment that most people anticipate. Another myth being destroyed is that most people retire to a life of sharply reduced material welfare, if not outright poverty. The fact is that people 65 and older are now the most affluent age group in the United States!

In looking ahead toward retirement, what are some of the questions that you need to address? A partial list would include these questions.

- Should you set goals?
- When is the optimum time to retire?
- Should your retirement from the profession be complete or a change in direction?
- Where should you retire?
- What financial planning should you initiate prior to retirement?
- Where may help be obtained for financial planning?
- What type of health insurance do you need?
- How should your financial mix change as you near retirement and after retirement?
- Will you be able to live on a restricted budget?
- What about part-time employment?
- What will you do with increased leisure time?
- Should you travel?
- What is the value of AARP, Senior Citizen Discounts, etc.?
- Should you engage in volunteerism?

### Should You Set Goals?

Experts in the field indicate that one of the biggest mistakes in retirement planning is not setting goals. The experts say “When you don’t know what you want, you are unlikely to obtain it.” Goal setting requires you to take action and forces you to deal with your needs in a realistic fashion. Most people desire two things from their retirement investments: safety for their savings and big returns to fund a comfortable lifestyle; however, there is an inherent conflict in these two objectives, so setting consistent goals will assist in reaching an acceptable accommodation.

### When Should You Retire?

Obviously, there isn’t a pat answer to this. As Howard Shank states in his book, *Managing Retirement*, your mother didn’t raise you to retire! Certainly you shouldn’t retire until you are financially able to sustain an adequate and enjoyable lifestyle. Just as important, you shouldn’t retire until you have reached those goals you have set for yourself within your profession, if they are still obtainable. However, even though the work ethic is still beating strong, you shouldn’t continue past the point that deteriorating health restricts your enjoyment of the rewards of your labor.

If you have trouble even considering retirement, the experts advise you to start thinking about what you would like to do with your new-found free time. Do such things as send for a brochure from a retirement or resort community. This type of activity will motivate you to become serious about retirement planning.

Because conditions have changed within the country, the industry, and the profession, early retirement has become almost the rule rather than the exception. This, coupled with an increasing life span, necessitates even more planning for retirement than in the past. These conditions also may remove the choice of timing for retirement from the individual. Currently, we are at a point where the average American worker will spend 19 years of his or her life in retirement, and by the year 2000, the number is projected to be 25 years. Now you can see why I place so much emphasis on planning.

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**Bob Cowdery** entered the oil industry with the premise “that if he didn’t like it after two years he would change direction and enter another field.” Forty-four years later he is still in the business. With 2 years of major company experience, he left to join a small independent, Petroleum, Inc., where he served in many capacities from junior geologist to president. One of the attractions at Petroleum, Inc. was the exposure to interests in 250-plus tests per year and the opportunity to be involved in such exciting events as the oil discovery of Adena (D-J basin), the discovery of the Sherwood field (Williston basin), multiwell development programs in the Permian basin, and other discoveries. Bob has been very active in professional affairs at both the local and national levels, especially in AAPG’s Division of Professional Affairs, which he served as president in 1990-1991.

## Should Your Retirement From the Profession Be Complete?

The answer for most of you probably should be no. Why should you make a complete break from what you have been doing for the past 30, 40, or 50 years? Look around and you will note that some of the unhappiest people you know are those who attempt to fill their lives with golf, bridge, drinking, or some combination thereof. Earlier chapters in this book have dealt with the transition from a major company or an independent company to the consulting field. The same information and suggestions apply to someone retiring from a firm and entering the consulting field. Valuable in this regard is the publication by the SIPES Foundation of material from their February 1986 seminar, *The Business of Being a Petroleum Independent*.

But many of you already are consultants, either by choice or as a result of changing conditions within the industry, so the answer has to be somewhat altered. Once again – look around, and you will note that some of the happiest 80-year-olds you know are those who are still developing exploration prospects, albeit on a more limited basis than in the past. They still have adequate leisure time for golf, travel, and other activities.

Now, if you are of the opinion that you still want to work, but wish to alter your course to engage in a different business, let's see what advice the experts have to offer. According to Samuel Small, who wrote *Starting a Business After 50*, the best businesses

- Provide security and independence;
- Use skills, expertise, and contacts;
- Entail flexible hours, limited travel, and light physical demands;
- Provide a chance to interact and contribute to the community;
- Require only a modest investment, one that doesn't deplete savings;
- Can be operated with a spouse or partner; and
- Fulfill a life-long ambition.

Small indicates several approaches: start your own business, buy an existing business, buy a franchise, or work at home. Each of these approaches has advantages and disadvantages, and you must plan for all of them.

## Where Should You Retire?

Contrary to popular belief, not all retirees pack their bags and head to Arizona, California, Florida, or wherever else they have dreamed about for years! A recent study by the Harvard-MIT Joint Center for Housing indicates that only 20% of those over age 65 have moved recently, and only 5% of the people in this age group contemplate a move in the next 5 years. Of course, there are situations that suggest a move to a different house: living in a house that is too large and costly to maintain, living in a neighborhood that is no longer safe or from which friends have left, or living in a house whose design limits accessibility.

However, if you are still determined to move and finances are a factor, take the advice of Diane Warner in her book *How to Have a Great Retirement on a Limited Budget*. She

lists those places easiest to live in under a tight budget: Fayetteville, Arkansas; Harrison, Arkansas; Benton County, Arkansas; Grand Lake, Oklahoma; Athens, Texas; Paris, Tennessee; Brownsville, Texas; Kerrville, Texas; and Murray, Kentucky.

One perceptive piece of advice that she gives is, "Don't move to a college town if you need part-time work; they are glutted with hungry college students looking for any type of work they can get." On the other hand, she does include some college towns in her list of locales most suited to obtaining part-time employment: Orlando, Florida; Phoenix, Arizona; West Palm Beach, Florida; Hollywood, Florida; San Diego, California; Austin, Texas; Las Vegas, Nevada; Miami, Florida; Fort Myers, Florida; San Antonio, Texas; Portsmouth, New Hampshire; Myrtle Beach, South Carolina; Carson City, Nevada; Salinas, California; and Colorado Springs, Colorado.

The area currently rated best, based on seven criteria (money matters, housing, climate, personal safety, services, working and leisure living), is Florida's Fort Myers-Cape Coral-Sanibel Island area.

If you are considering living outside of the United States, most retired expatriate United States citizens live in Canada, Mexico, Italy, Germany, Greece, the Philippines, Portugal, Ireland, Israel, and Spain.

## What Financial Planning Should You Initiate Prior to Retirement?

This is the toughest question to address for two basic reasons: (1) it is the most important question to consider, and (2) everyone's situation is different.

One statement is easy to make: *No matter at what stage in your career you are now, the sooner you initiate a financial plan, the better.*

Needless to say, the world is full of experts willing to offer advice, free and otherwise, on the subject. Some of the free or low-cost advice is found in newspaper columns, brokerage house publications, Money magazine, pamphlets, AARP publications, *The Better Retirement Report*, and particularly in a publication entitled *Bottom Line Personal*, published in New York. Because finances are such an important part of your retirement planning, it may be that you will wish to engage the services of a financial planner. But be sure he or she is knowledgeable and trustworthy – ask for references and check them out!

Some of the items you should consider in your financial planning for retirement are

- How much income you will need for a comfortable retirement;
- What part Social Security will play;
- Company and individual plans, i.e., 401 (k), IRA, Keogh, etc.;
- Mix of stocks, bonds, etc.;
- Annuities; and
- Estate planning.

How much income will you need for a comfortable lifestyle? Here are some figures to ponder. In 1992, if you established that you would need the equivalent of \$30,000 per year to retire at the age of 62 in 1999, with a 4% inflation rate and an 8% return on investment, then you

must have an income of \$44,407 per year. If you retire at 62 in 2004, you will need \$54,208 per year; at 62 in 2014, you will need \$79,975 per year; and at 62 in 2024, you will need \$118,383 per year. Respective projected Social Security income for those situations is \$21,093, \$25,664, \$37,988, and \$56,631.

Perhaps you will not need the equivalent of \$30,000 to live comfortably. Diane Warner (*How to Have a Great Retirement on a Limited Budget*) outlines monthly budgets, ranging from \$1,022 to \$2,318, for twelve couples.

### **Social Security**

Some additional comments are in order concerning Social Security. You should be aware that you stand to lose 20% of your total potential income if you start receiving Social Security at 62 rather than at 65. Each person must determine what fits his or her situation. Under current rules, retirees age 62-64 may make up to \$7,680 per year without lowering their benefits (this will probably change each year hence). They will lose \$2 for every \$1 they earn above that amount. If they are age 65-69, they may make as much as \$10,200 per year before losing benefits, and after age 70, none of their earnings are subject to a cut in benefits.

Every potential retiree should realize that Social Security is a pay-as-you-go proposition and, whereas in 1950 there were 15 wage earners for every recipient of Social Security, today there are only three wage earners per recipient. Today, it seems virtually certain that more affluent senior citizens (often those who have provided and planned most responsibly) should anticipate less than a full realization of Social Security benefits.

### **Company plans, 401 (k) Plans, IRAs, SEPs, and Keoghs**

The experts all agree that you should take full advantage of such plans as the 401 (k) if they are offered. Invest the greatest amount that your situation will tolerate, particularly if your company is matching all or a portion of your contribution. Make sure you are satisfied as to who controls the investments of the plan.

If you are not covered by a company pension or a 401 (k) plan, then you certainly should consider an IRA. Even if your earnings are such that you are not eligible for a deductible IRA, then you should consider a nondeductible plan, inasmuch as the earnings are not taxable until they are withdrawn.

For many consultants, Keogh or SEP plans are desirable because the contributions are not taxable until you withdraw the money.

### **Mix of stocks, bonds, etc.**

If you have excess money for additional investment, consider stocks and bonds. Financial planners suggest that if you are in the 20-30 age group, the mix should be 70% stocks and 30% bonds; the 30-50 group, 60% stocks and 40% bonds; 50-60 group, 40% stocks and 60% bonds and cash; 65 and older, 30% stocks and 70% bonds and cash.

### **Annuities**

Some financial planners tout annuities, other shy away from them. One of the advantages is that the income from annuities currently is tax deferred. Some disadvantages are that your money is essentially locked in, annuities do not

allow for future inflation, and as recent experience shows, insurance companies do sometimes fail.

### **Estate planning**

This portion of your financial planning receives perhaps the least attention, but is one of the most important portions. Estate taxes, which may run as high as 55%, are the highest tax in the United States. The experts indicate there are at least five ways to deal with the problem of keeping money in your family: wills and revocable trusts, irrevocable trusts, family limited partnerships, charitable trusts, and private foundations.

All of these approaches need the assistance of a reliable attorney, preferably one who is board certified in estate planning and probate law. In the case of a living trust, a couple may shelter up to \$1,200,000 of their net worth.

## **Where Help Be Obtained for Financial Planning?**

Many sources of help have been mentioned. Additional sources may be your broker, attorney, accountant, or banker.

## **What Type of Health Insurance Do You Need?**

If you retire before 65 and are ineligible for Medicare, you have several options open. If you have been employed by a company having group insurance, the company is required to include you in the group coverage for a minimum of 18 months. However, you will be required to pay for this coverage, unless provision is made otherwise. Your company may be willing to include you in their coverage past the required period. The AAPG insurance program has several types, including major medical, excess major medical, etc. Health insurance may be purchased through Blue Cross-Blue Shield and similar organizations. AARP provides health insurance with limited coverage at a low cost. Many local societies are involved in providing insurance through group plans.

When you reach 65 and are covered by Medicare, it is still advisable to purchase supplemental or "gap" insurance. Also you will need to purchase coverage for your spouse if he or she has not reached 65. If you have questions or doubts concerning what type of coverage you need, seek advice from your insurance agent or other knowledgeable individuals. And in any case, you should anticipate substantial changes in health insurance rates, coverage, and regulations during the next few years.

## **How Should Your Financial Mix Change as You Near Retirement and After Retirement?**

The experts advise that in your 50s and 60s you should keep some of your money in growth investments, such as equity mutual funds, but as you approach retirement you need to move your assets from riskier growth markets to fixed-income such as CDs, annuities, high-quality corporate bonds, or guaranteed bonds. By retirement, you should have most of your assets in fixed-income investments, or at least in solid, proven corporate stocks that may offset inflation.

If you receive a large lump-sum distribution from your employer, the experts advise that the wisest course is to reinvest it in another tax-deferred retirement account. But according to the Employee Benefit Research Institute, only about one person in ten does so. The younger you are when you receive such a distribution, the less likely you are to roll it over.

## Will You be Able to Live on a Restricted Budget?

If you find it necessary to live on less in your retirement years than during your working career, Diane Warner's *How to Have a Great Retirement on a Limited Budget* is for you. She indicates that you should prioritize your needs. Set up three columns: *Must Have*, *Want if Possible*, and *Doesn't Matter*. Then place your retirement wants in the column that fits your priority.

In her book, Ms. Warner provides valuable information on

- Shopping smart so little things don't add up to big bills;
- Eating a well-balanced diet on a well-balanced budget;
- Staying healthy to keep medical costs down; and
- Having fun without a lot of funds.

## What About Part-Time Employment?

Although the need for supplemental income commonly is the prime mover for obtaining part-time employment, there are additional legitimate reasons. As Howard Shank explains in his book *Managing Retirement*, retirement can involve a loss of status and a resultant blow to one's ego. Top-level corporate managers may be especially prone to this. Shank states that if good, hard, serious work was your idea of fun, then retirement is the opportunity of a lifetime!

There may be another reason. Your spouse may not want you underfoot at home. Spouses have established routines and their own lives to live. That old cliché "I married you for better or for worse, but not for lunch" contains a message that hits home - literally! A new outside part-time job may make you a more vital and interesting spouse.

## What Will You Do with Increased Leisure Time?

A recent survey by the Marriott Corporation indicates that hobbies, reading, sports, and watching TV are the top activities of retired people. What sports are adaptable to retirement? Certainly golf, but it may be at a public course rather than a club if your budget is limited. Tennis is also good for retirees, and, here again, public courts may be the answer. Bowling fits retirement, because your flexible schedule allows you to play during the day on weekdays and receive senior discount rates. Cross-country skiing, which carries a considerably lower price tag than the downhill variety, may be an option. If you are especially fit, downhill skiing may be attractive, particularly at those ski areas that offer reduced senior lift-ticket fees. Swimming, one of the best aerobic exercises, is also available at public pools. They may also have special classes available to senior citizens. Bicycling is a relatively inexpensive and

enjoyable sport.

A wide range of clubs are available to retirees, such as Toastmasters, barbershop singing, and service clubs (Kiwanis, Lion, Rotary, Optimist, Civitan, etc.).

You may want to use your additional free time to pursue hobbies such as painting, cooking, crafts, gardening, writing, genealogy, bird watching, and so on.

One of the best pursuits for retirees is continuing education, which comes in all forms. You may want to finish that degree that you never quite obtained during your working days. Such education doesn't have to be for credit. Some states allow auditing of any course at a state institution at no cost, if room in the class is available. Attending classes doesn't have to be formal. You may also want to attend seminars and lectures on topics of interest to you.

As this world becomes further immersed in the computer age, there is great opportunity for retirees to become proficient in the use of computers; and what a benefit if you learn to use software such as Andrew Tobias's *Managing Your Money* or any of the similar programs.

## Should You Travel?

This doesn't have to involve exotic and remote places. Your travel may be nothing more than short trips in your immediate area to places and attractions, such as state parks, battlefields, museums, historical monuments, and geologic phenomena that in the past you didn't have the time to visit.

A special category, adventure travel, is available to retirees and includes such offerings as being a cowboy for a week, archaeological vacations (many universities, state archaeological surveys, local archaeological societies, etc. invite participation by amateurs in site excavation), exploring in remote corners of the world, scuba diving vacations, white-water rafting (perhaps a float rip down the Colorado River), adventure hiking, mountain climbing, etc.

A retiree's flexible schedule makes low-cost out-of-season cruises a viable opportunity, and in many areas of the country, relatively low-cost rental rates for condos for extended periods are available in very scenic areas.

## What is the Value of AARP, Senior Citizen Discounts, Etc.?

At the age of 50, you are eligible to join the American Association of Retired Persons (AARP) for a nominal fee. Membership will entitle you to many valuable discounts and other services. You will receive discounts at most motels when you show your AARP card. They sponsor a motoring plan administered by Amoco. Their great variety of investment programs are managed by Scudder. Besides their newsletter, they also publish the magazine *Modern Maturity*, containing useful information to retirees.

Many airlines, rental car agencies, and restaurants offer senior citizen discounts; however, you should be aware that the qualifying age may vary anywhere from 55 to 65 years. Many of the major hotel and motel chains have their own cards that offer advantages to seniors. In particular, Hilton Hotels has a Senior Honors Program you may join on an annual or lifetime basis; the program allows a savings of up

to 50% on many room rates and 20% in their associated restaurants.

## Should You Engage in Volunteerism?

What a tremendous opportunity for retirees! The range of volunteer activities is limitless. Not only will you be helping and enriching others, but you will derive a great deal of enjoyment and personal satisfaction from doing so. Some examples of volunteer activities include working for your church or synagogue, the Red Cross, the Salvation Army, the United Way, hospitals, nursing homes, and schools.

Because your professional career has involved work on behalf of local geological societies and national societies, such as AAPG, GSA, AIPG, SIPES, why not continue after retirement with service on committees, holding positions as officers, making presentations concerning the profession and industry to various groups such as schools and service clubs, which can continue to be a very rewarding experience.

If you have been apolitical during your career (as many of us have because of time constraints), then this may be the time to enter the political arena either as a candidate or a volunteer in a party organization.

However, a word of caution: be careful not to volunteer for so many activities that you find yourself under more stress and working harder than you did during your career, and thus not enjoying the benefits of retirement!

## Tips For the Retiree and the Potential Retiree

- Begin planning for your retirement immediately;
- Follow through on your plans;
- Obtain professional help with your financial planning if needed;
- Join AARP at age 50;
- Adopt a regimen of physical exercise compatible with your condition to aid in maintaining good health;

- Stay active in professional organizations;
- Volunteer for several activities that serve others, but do so in moderation;
- Maintain an office away from your home if you are financially able to do so (even if you are not professionally active); and
- Look at retirement as an opportunity, not a drag; you'll live longer and enjoy life more!

## Suggested Reading

### Books

- Shank, Howard, *Managing Retirement (A Guide to Weathering the Adjustments, Discovering the Opportunities and Enjoying the Freedoms ... Without Driving Your Wife Crazy in the Process)*, Contemporary Books, Inc., 180 North Michigan Avenue, Chicago, IL 60601, 1985, \$9.95.
- Small, Sammuel, *Starting a Business After 50*, Pilot Books, 103 Cooper Street, Babylon, NY 11702, \$3.95.
- Skousen, Mark and JoAnn, *High Finance On a Low Budget*, KCI Communications, Inc. 1101 King Street, Suite 400, Alexandria, VA 22314, 1987, \$19.95.
- Warner, Diane, *How to Have a Great Time on a Limited Budget*, Writer's Digest Books, 1507 Dana Avenue, Cincinnati, OH 45207, 1992, \$12.95.

### Newsletter

- Bottom Line Personal*, Boardroom Reports, New York. Published twice monthly. Subscription Service Center, Box 50379, Boulder, CO 80321-0379, \$39.95 per year.

### Videotapes

- Retirement Planning*, PBS Home Video, 47 minutes.
- How to Stretch Your Retirement Dollar*, NewsTeam Video, 40 minutes.
- Kiplinger's Guide to Retirement Security*, Conrad Productions, 55 minutes. □

**“Ah, the blessings of compound interest.”**

## V. PERSPECTIVE

But there's a lot more to a successful career than technical competence, careful planning, and hard work!

Ed Owen had a successful 50-year career as a first-class professional geologist and oil finder, first as an employee and later as a consultant. He also was a historian, bibliophile, philosopher, and respected teacher. Toward the end of his career, in 1965, he gave a thoughtful lecture, *Personal Factors in Professional Careers*, at his alma mater, the University of Kansas. It was filled with wisdom and compassion about the other aspect of career success, those elusive personal attributes and values that so affect our relationships with others and the way we live our lives. Later that year, his lecture was published in the AAPG *Bulletin*.

Ed died at age 85 in 1981. Everyone who knew him would have agreed that Ed Owen had an extremely successful and productive career and life.

Personal Factors in Professional Careers . . . . . Edgar W. Owen



## PERSONAL FACTORS IN PROFESSIONAL CAREERS

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 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 constructive 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

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*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.*

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 tightly 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 greatest 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 nonscientists; 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.

## Money Matters

Personal finances are an inescapable consideration for everybody. Granted a reasonable level of remuneration, this factor tends to become subordinate to the relative satisfaction derived from one's work and the happiness of personal relations amid which it is conducted. It has always seemed to me that career planning must be based on a careful estimate of the monetary requirements of the scale of living essential for the happiness of the individual and his family, and an appraisal of the financial prospects inherent in a course of action. Social security benefits and minimum wage scales are little comfort to the professional man. Unionization or any other form of collective bargaining would reduce him to the level of the less capable and deny to him the rewards due to special skills. Financial remuneration for routine services is responsive to conditions of supply and demand and productivity, and tends toward a fairly consistent level throughout an industry.

Individual salary bargaining sometimes affords a

temporary advantage, but has little effectiveness as a long-term policy. Sometimes it is unavoidable when individual employers lag substantially behind prevailing salary scales or when an unobtrusive employee may be overlooked for a protracted period. Commonly, the only recourse of an experienced man seems to be a change of employers. Men of superior ability, and a corresponding performance record, seldom remain long in obscurity. They always have been in short supply and always will be. In the long run, their financial rewards are usually appropriate, but even they have hazards that must be avoided. One is to concentrate in areas – either technical, economic, or geographical – in which productivity has relatively low intrinsic value. Another hazard is impatience for premature recognition, which often causes young men to change course just short of attaining an important objective. Also, even the most brilliant are subject to the danger of inertia, the principles of which were first demonstrated, you may remember, by experiments on falling bodies.

## Geological Venturing and Ethics

Oil and mining have been the most venturesome of all major industries, if we exclude war from the list and assume that space exploration has not yet attained major financial rank. The men engaged in these industries have always been distinguishable, to a degree, from those employed in less risky enterprises because they are a bit less formal and a bit more rugged than most. It is true that many of the pioneer features are now only legendary, but the older attitudes still have a strong influence. Even in the last century, when business piracy was quite respectable, the sanctity of oral agreements in the oil industry was almost universal. Partly because of the time element, hundreds of millions of dollars over the years have been committed orally.

During the last generation, American business has evolved more exacting ethical standards than the traditionally selfish morals of the market place. Without such a development, the growth of today's corporate giants would not have been permitted by an informed and dominant public. The leadership in this transformation has come from the oil industry, the first business area to be invaded by large numbers of college graduates educated in an idealistic atmosphere and dedicated to scientific discipline. These men, customarily performing the most productive functions of exploration and development, soon came to occupy many of the strategic managerial positions. As operational control of most big corporations passed from the original promoters and entrepreneurs into the hands of professional management, the ethics of these trained technical men became a dominant influence. Probably no individual has had a greater direct and indirect impact on American business practices than Wallace Pratt, one of Kansas University's most distinguished alumni, but there have been many others of great stature. It has become plainly evident that no corporation and no individual can afford ethical standards inferior to those prevailing in his industry or profession. Those standards have grown continually more strict, enforced not only by public opinion and the policeman, but also by the recognition of their bearing on self-interest. Over the long term, an

unequivocal reputation for integrity has proved more profitable than the possible returns from questionable deals or unconscionable policies. The occasional successful exceptions that seem to contradict the rule usually are more apparent than real and more ephemeral than the sharp operator anticipated. Perhaps our ethical climate will benefit more from a general recognition of this principle than it has from preachments directed toward ambidextrous and elastic consciences.

In our profession, integrity involves much more than financial honesty and general dependability. Creativity is the measure of our worth. The ideas that are our stock in trade seldom are generated spontaneously, but arise principally out of contributions by our fellows. I believe the most successful modern scientists have been most careful to give due credit to their assistants and co-workers. Failure to do so has halted many a promising career. Today's top executives in the oil companies did not get there by pushing people out of their way, but by advancing with the willing collaboration of many men.

## 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. □

**“Over a lifetime, self-interest is most effectively served by unselfishness.”**

# American Association of Petroleum Geologists Division of Professional Affairs



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