President Carter's energy plan seeks to put the country on a coal economy by essentially doubling the production by 1985, a change from about 600 million tons produced in 1976 to over 1.2 billion tons a year by 1985, and 2 billion a year by the year 2000. This would be brought about by increased coal production, and the development of the breeder reactor, the horrendous technological difficulties being encountered in research on hydrogen fusion, and the lead time necessary to develop solar and other 'infinite' energy sources may extend this interim period for many years.

How Much Coal? Many figures are in print concerning the abundance of coal, and most indicate our supply in terms of hundreds of years. But how much mineable coal do we have? The U.S. Geological Survey estimates 3.97 trillion tons in the ground in the United States. This is a total estimate and is not offered as a mineable reserve figure. The U.S. Bureau of Mines estimates 454 billion tons of proven reserves which could be mined under present levels of technology and economics, and of which 137 billion tons could be taken by strip mining methods, and 297 billion tons by underground methods, then the reserve figure must be reduced by the amount of coal left in the mining operations, about 50 percent in underground and 75 percent in surface mining. What will be the demands for coal in a society whose populace increases exponentially? Dr. Robert Stefanko, Professor of Mining Engineering at Pennsylvania State University and author of a forthcoming book on U.S. coal mining practices states in their Earth and Mineral Sciences publication that demand will depend on a number of factors including oil and gas prices set by OPEC, the success and extent of domestic exploration for oil and gas and their subsequent production, and the success of synthetic fuel projects. In regard to the last he suggests that some commercial coal gasification plants may be in operation by 1985, but would not anticipate commercial liquefaction plants. He suggests another factor in coal demand, and one that could raise the coal reserve base, might come about if oil and gas prices reach the level that very expensive oil-to-gas coal could become competitive economically. He believes further, that the public should look at it (coal) as our energy salvation for the next 25 years, or even the next 50 years, but beyond that, an all-out consumption of coal will result in shortages of it, too.

He continues, "Thus the energy problem is hardly an 'either-or' proposition. We need multiple energy sources for the near future with coal dominant until the time when the infinite energy sources, whatever it may be - becomes available - if ever it does."

Despite the number of intangible factors, a relatively conservative estimate of the longevity of our coal supply by the best qualified to speak, places an even greater sense of urgency in the development of alternate energy sources. The full development of coal, our most abundant resource, appears inevitable because it is there, and despite the many environmental constraints.

The Sober Side That part of the Carter Energy Plan dealing with coal was not well received by much of the public, which was hardly other than that which was expected. It is likely that much of the feeling was centered around the immediately visible aspects - surface mining. The Carter Plan addresses itself to stringent environmental controls not only regarding the soil, but air and water as well, and the Plan leaves little doubt as to what will do the controlling.

Much of the misgivings come from inner circles of the Government. In a report of late September, a spokesman for the General Accounting Office (GAO), the investigative agency of Congress stated: "So many interrelated elements would have to work to double coal production by 1985 that (the agency) does not believe it could happen. Given all the physical, economic, environmental and public health considerations, it appears that producing and using even one billion ton per year by 1985 would be difficult." Though the GAO recognized that increased coal use in absolute terms will still be substantial by 1985, it notes that it considers that it takes too long for coal industry leaders to decide to dig new mines or open new strip mining areas for the Carter Energy Plan to have much impact by 1985.

Though Carter administration energy officials have insisted that new types of pollution control devices will make sharply increased production possible without great environmental sacrifices, the GAO believes that we cannot use one billion tons of coal in one year without harming the environment. However, the GAO recognized that, "We are relinquishing some of our environmental controls to reduce our energy imports and extend the life of our dwindling oil and gas reserves." Other critics of the coal energy plan, or at least of the timetable set forth, point to the seriously deteriorated state of the nation's railroad beds and the need for coal hopper cars for transportation. It is questioned that even if enough new mines open up, railroads would be unable to deliver the increased needs to market.

Testing the President's coal production timetable, which may not be sacrosanct to begin with, does not necessarily test the viability of a coal economy in terms of the long-range effects on the environment. Some scientists have worried of the consequences of increasing dependency on fossil fuels, especially coal, on world climate. A 2½ year study by a select panel
of scientists under the aegis of the National Academy of Science sounds warnings on the effects of increased carbon dioxide content in the atmosphere from the burning coal upon the earth, the carbon dioxide serving as a thermal blanket to retain the radiating heat. Roger Revelle, scientific advisor to the President and chairman of the panel, suggests the carbon dioxide content in the atmosphere will have risen 25 percent above the pre-Industrial Revolution level by the end of this century and will double by the end of the next century based on predicted increases in population and fuel consumption. The increase could radically disrupt food production on land and would impede circulation in the oceans by creating a "lid" of warm water - which directly affects the marine life near the surface. Revelle believes that early action is needed because it would take centuries for societies to adjust to the climate to narrow the uncertainties, and then a full generation shift to new energy sources if that, as expected, proves necessary.

A more tangible problem of the expanding need for coal, the report notes, is the quality of coal. Environmental controls on the sulfur content of coal are very restrictive. The requirement that all new coal-fired, power-generating stations be limited to 1.2 pounds of sulfur per million Btu's fired adds millions of dollars to installation costs for new power plants. The EPA indicates this measure is designed to relieve demand for low-sulfur coal by forcing plants burning "premium" low-sulfur coal to be lawfully capable of burning high-sulfur coal.

In the Coal Conversion Bill (part of the Carter Energy Plan) H.R. 8444 (with S. 977 due for Conference at the time of this writing) coal will be required as the major fuel in plants and fuel burning installations. Carter is proposing to force industries to switch to coal by barring any new utility plant from burning oil and gas. Many instances have been reported where oil plants, ironically, had converted from coal to the "cheaper" oil earlier. It may be the day later that their supply might be in jeopardy. Some plants, where their coal-firing capability had been retained, have reconverted to coal.

The distribution of low-sulfur and high-sulfur coal is also paradoxical in that the more abundantly produced (50 percent) high-sulfur coal occurs in the populated and industrial Midwest and East, whereas the coal produced for 15 Western states (20 percent) is low-sulfur. This anomaly had placed a premium on low-sulfur coal. It is difficult to determine by geography, but it is estimated that the low-sulfur coal of the West will find its way to the highly populated and industrialized Midwest and East, but only 88 to 90 percent of the western coal will remain in the West. The matter of distribution of low-sulfur coal will become even more difficult as growing demands of a coal economy will bring about increasing emphasis on quantity. This means increasing use of run-of-the-mine coal which must either be run through some desulfurization process or controlled after combustion by stack gas scrubbers or the former line in the experimental phase presently. Some coal is reported to respond poorly to scrubbing procedures. For example, the U.S. Environmental Protection Agency operating under the Clean Air Act gave warning to Ohio officials that they were delinquent in meeting sulfur dioxide standards and warned that Ohio industry must either switch to low-sulfur coal or use stack-gas scrubbers, an ominous message to some 14,000 people who mine Ohio's coal. As scrubbers apparently have had reliability and cleanup record with Ohio's coal, and the alternative was unthinkable, state officials arranged a third alternative - the "New Power" option - and installed a "fluidized-bed" with stack-gas scrubbing, beginning with four commercial boilers, the first due to begin next year.

The Brighter Side The general public is mostly unaware of the extent of research in coal technology carried on by the government, industrial and university facilities prior to their rather sudden awareness of the energy crisis around 1973. The Clean Energy Message to Congress in 1971 reviled research activities and the Office of Coal Research, Department of Interior was given a mandate for action "to provide means for utilizing our indigenous energy resources in forms that would not cause harm to the environment." The Agency has supported the development of pilot plants in a variety of coal technological programs including coal liquefaction, coal gasification and direct consumption of coal.

The recent emphasis on coal use and the quality of our environment has served as an impetus coupled with the ongoing need for energy to bring the momentum to a coal energy base. The Ohio example might be considered a crash program in a way. The fluidized-bed concept, though researched for nearly 20 years, has awakened and presumably has good potential to have reached the stage of commercial experimentalization. According to pilot plant reports to Congress, research, which basically consists of agitating an admixture of pulverized coal and limestone/dolomite by air forced upward through a basal perforated plate in a fluidized bed, has a number of assets: any rank or quality coal can be used; the relatively low burning temperature yields lower nitrous-oxide emissions; the inert limestone; and recoverable by-products - lime for use as a soil nutrient and free sulfur. Though Utopian in sound, there obviously is a giant step from Pilot plant to commercial production.

The MHD (magneto-hydrodynamic) combustion method, which pertains basically to the ionization of superheated coal with energy converted directly into electricity by a strong magnetic field promises to be reported recently to the pilot plant studies at the University of Tennessee Space Institute. The process reportedly operated on high-sulfur coal with 95 percent removal of the sulfur without the use of scrubbers. Further, trial runs indicate a 55 percent efficiency compared to about 30-35 percent for a medium to coal-fired plants with scrubbers. The MHD installations are for possible commercial application by 1985 or 1990.

Recent legislation in Washington could prove of consequence to increased production of coal. The Surface Mining Control and Reclamation Act of 1977 (see reference to this Act in the September issue of the AFGS President's Report) could be as strong (at least according to its stated purpose) in assuring coal supply essential to the nation's energy requirements as it is in insuring protection of the public's interest through control of surface mining operations. The Coal Slurry Pipeline bill, H.R. 1609, postponed on June 27 to the second session of Congress (it would delay approval by heavy lobbying by the railroads) would provide an important dimension to our coal transmission capacity and capability. The lack of coal hopper cars to handle increasing coal supply and the disrepair of the railroad beds in this country places some urgency on the adoption of this bill. On the other hand, the Ohio Coal and Ohio Railway, the nation's leading coal carrier (mostly in the Appalachian region), has reportedly ordered 35,000 new coal cars starting in 1980. Let it not be said, however, that the major legislative activity regarding coal is the Black Lung Benefits Reform bill, H.R. 4544, scheduled for continued meeting of Conferences on October 17, 19, and 21.

So things are looking up in the area of coal, at least the major state to a strong movement are readily recognized and major steps are being taken hopefully to overcome them. Certainly coal alone is no panacea to our energy needs, nor is it even in the short-range view; and it is yet to be seen if an aroused environmentally-conscious society will accept massive uses of coal for an extended period. Yet, they may have to.

The Editor

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CONCERNING LEGISLATION
Colorado Section Speaks Out on H.R. 8444

(The Colorado Section sent out their essentially the same letter to Congressmen Haskell, Wirth, Metcalfe, Rinaldo, Marks, Loken and Long, and to all members of the Senate Finance Committee - the Colorado Resources Committee, and House Interstate and Foreign Commerce Committee)

The Honorable Henry M. Jackson, Chairman
Energy Natural Resources Committee
3106 Dirksen Senate Office Building
Washington, DC 20510
Dear Senator Jackson:

The Executive Committee of the Colorado Section of

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the Association of Professional Geological Scientists (APGS), representing 400 geological scientists in Colorado, believes that theenergy bill recently passed by the United States House of Representatives (HR8444) is unsound. For the following reasons in particular, it will be restrictive and counter productive if enacted.

1. It ignores economic and scientific facts including information generated by other respected agencies of the United States Government, including, among others, the U. S. G. S., ENDA (Noppes Study), and GAO.

2. The bill is first and foremost a revenue (tax) measure, not an energy conservation measure, and is designed to support the expensive domestic oil programs the Carter Administration is proposing. As passed by the House, the bill comes with an enormous price tag for consumers. The Heritage Foundation estimates the magnitude of the tax which would result from enactment of the President's plan, largely endorsed by the White House, would total $137,000,000,000 over an eight year period - an additional tax of $5,400 per family. Tax dollars extracted from industry and sent to Washington means fewer productive jobs in Colorado.

3. The proposed wellhead tax on crude oil is counterproductive. It raises prices to the consumer without providing any incentives to producers. Taxes should be on profit, not on gross processes, as in the latter case, no consideration is given to costs of production.

4. In particular, the bill ignores the need for vast amounts of capital for basic exploration for oil and gas. This need is not accurately revealed in current gross drilling statistics which are expected to be significantly up over 1976. It is not even measured accurately by the increase in net productive wells drilled. (Est. 11,038 in 1971, 5,254 in 1976, but still far short of 16,000 wells drilled in the peak year of 1956 when there were no price controls.)

A truer measure of the need for exploration capital is seen by a view of seismic activity in the U. S. (see attached article from the Oil and Gas Journal, May 3, 1976 and March, 1977 SBO Survey). These data show that the current level of seismic crew employment is averaging 283 crews per month or 3,420 crew-months per year. While this is above the all-time low of 2,600 crew-months for 1970, it is only 37% of the peak 8,700 crew-months reached in 1953, again when there were no price controls.

To translate the difference between 3,420 and 8,700 crew-months into dollars of annual budget at today's prices, multiply the monthly cost of a modern seismic crew (est. $187,500/mon) by (8,700 - 3,420). This figure is further adjusted to reflect the increased consumption today (2.16 times the consumption in 1953), then an additional annual expenditure for seismic work in the United States of 3 billion dollars could be justified. This money is not available because of price controls and taxes, and its loss will be felt in lower oil and gas production over the next 5 to 25 years. Seismic expenditures are a relatively small part of the costs of exploration for and development of our national energy resources. There is no justification for counter productive measures such as gross production taxes and price controls, all of which discourage exploration and development.

The APGS favors conservation of natural resources and preservation of the environment. We oppose HR 8444 because it promotes energy waste and consequently impedes environmental preservation. In our view, the most effective mechanism for conserving energy is price, uncontrolled except by market forces. The efficiency of the marketplace provides incentives and benefits both to consumers and producers.

HR 8444 will be an economic disaster if passed. It will burden producers with an expensive, cumbersome maze of bureaus and bureaucrats and will place the bill for this folly squarely in the lap of the consumer.

Specifically, we ask that in the United States Senate, you vote for and use your influence to pass an energy bill which will:

1. Place control of the Department of Energy in the hands of competent managers whose decisions must be approved by a panel consisting of a significant number of qualified scientists (including among others, geologists and engineers) including representatives from industry. Facts upon which decisions are made should be exposed to public review. (To date, it would appear that Mr. Schlesinger has displayed an arrogant disregard for scientific data.)

2. Reduce the proposed budget of $10.6 billion for the Department of Energy. This budget figure is equivalent to $3.00 per barrel for all domestic crude oil produced last year and approximates the value of all domestic gas production in 1976 at the average interstate price.

3. Remove all gross production type taxes as are proposed in HR 8444 as they are counterproductive.

4. Accelerate the period in which all price controls on oil and gas will be removed. Start by removing price controls on gasoline immediately.

5. Do not use the energy program as a means to generate tax revenues.

6. Recognize the need and efficiency of the incentive system so that all Americans may live freer and more productive lives.

The Executive Committee, Colorado Section, APGS urges that you give support to our six specific recommendations in the creation of a workable energy bill which will offer the greatest long term benefits for all Americans. We will appreciate hearing of your views on these specific points and will gladly work with you or your staff to help create a better bill than the one proposed by the President and essentially adopted by the House of Representatives. We thank you for your time and attention.

EXECUTIVE COMMITTEE
\n\n/s/ John Pruitt
Secretary

Earthquake Hazards Reduction Act of 1977

The September 9 Congressional Record-House carries the preceedings of the House debate on bill HR 6683 - to revise the hazards of earthquakes. The bill was passed 229-125 and sent to the Senate in lieu of S. 126, the Senate version.

Jim Hamersley, APGS counselor in Washington, calls attention to the numerous references during the debate, especially those of Representative Hollenbach, to the earlier testimony of Father James Skehan this summer before the House Subcommittee on Science Research and Technology (see July issue of PG). This offers additional encouragement as to the effectiveness of APGS testimony in Washington.

APGS Public Affairs Committee Active during GSA Meeting in Seattle

(Latter from R. T. Chew III to Executive Committees of APGS and NMGS)

Dear Fellow Geoscientists:

The Public Affairs Committee of the Association of Professional Geological Scientists, is following through on its mandate to the Association message concerning fuel and mineral supply problems, and the APGS Code of Ethics (copy enclosed) to the public in a more pragmatic fashion than has been done in the past.
Public Affairs Committee Chairman, Father Jim Skehan, assigned me to pursue this activity. After a meeting with Dr. Graham, it was decided at the suggestion of the NAGT Executive Committee that a joint meeting of the Executive Committees of APGS and NAGT be held at the SSA meeting in Seattle to discuss the matter. Dr. Skehan and Grover Murray have endorsed the meeting on the APGS side.

This, then, is a call for such a meeting. I do not have a definite place or time yet but have requested a room at the Seattle Center for 9 a.m., November 8th with that afternoon as an alternate. You will be informed via a second communique of the exact time and location. I hope to have some suggestions for definite discussion areas in the second communique also.

Please let me know if you will be able to attend the meeting, I would welcome any ideas that you might have too.

See you in Seattle!

Yours very truly,

/s/ R. T. Chow II, Asst. Director, Geology Division, Bendix Fielding Eng. Corp. Member APGS Public Affairs Committee

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(The following letter is from President Jack Taylor to the Secretary of Interior indicating APGS concerns regarding the replacement of the Director of the USGS. Additional expressions of concern from APGS members, especially those who may have some direct lines of communication could be helpful.)

Mr. Cecil Andrus
Secretary of Interior
Washington, DC

Dear Mr. Andrus:

The critical nature of the present and future mineral supply in these United States directs even more need to fill the replacement for Dr. Vincent McKelvey as Director of the USGS, with a person who has had experience or has been closely associated with mineral deposit definition, characteristics, and supply. The public interest, and indeed the strategic position of this country, depends on accurate definition and administration of potential mineral reserves and supply in this country as you have already so well recognized, by your public statements. This is especially so considering the large amount of Federal lands that carry much of the future mineral supply of the country.

We understand that you are following the time honored procedure in asking the National Academy of Sciences for their recommendations. This procedure has certainly delivered up excellent directors in the past, and we trust will continue to do so now and in the future. We are hopeful, however, that you will direct a strong selection process to candidates who can fill the qualifications mentioned above. The APGS will certainly always stand ready to aid in this effort in any manner that you desire.

Yours very truly,

/s/ John A. Taylor, President

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Idaho Group Speaks Out for Long Range Minerals Policy

(The following is excerpted from a recent article by Joyon Carpenter appearing in "Context", a University of Idaho publication)

Without prompt, foresighted planning by the United States, Soviet Russia may ultimately gain an economic stranglehold over America in sales of vital mineral resources and oil, a trio of University of Idaho professors believe.

Dr. Maynard Miller, dean of the UI College of Mines, says much of the world's known metal and petroleum reserves are in Siberia. "With 65 percent of the total oil in the polar basin lying on the north Siberian coast, when the Alaskan oil is depleted in about 30 years, I see the possibility of a pipeline across the Bering Sea from Siberia with the United States paying for Russian oil," he predicted.

Dr. Peter Siems, UT economic geologist, and Dr. William Green, UI mining engineer, agreed. They also are concerned about possible Soviet domination of the mineral supply.

"Not only does Soviet Russia have a direct control with the Siberian reserves," they pointed out, "but there is an indirect influence with communist interest in so-called Third World countries such as some African nations which also have large supplies of vital mineral ores."

Miller said the United States, with its Alaskan resources, has access to only 13 percent of the oil in the Arctic basin. Canada controls the remaining 25 percent of reserves not under Russian control.

According to Miller, rich areas of mineral resources in the sub-arctic and even above the Arctic Circle in North America are yet to be explored so that plans may be made for their judicious use.

"Planners should guard against allowing these mineral rich areas to be set aside in a manner which would not ultimately allow mining or exploration of economically needed minerals," he suggested. "S. planners aren't careful, we can strangle ourselves with the present, relatively uncoordinated and ineffectual mining policy in which doesn't take fully into account the total, long-range needs of our nation."

Alaska and Canada are facing pressure for the same kind of legislation which has affected Idaho, by setting aside large tracts of land for recreation and wilderness use with little regard to its mineral potential, the mines dean said.

Miller warned that with approaching shortages of mineral and petroleum resources, such legislation, although having some environmental merit, must still be carefully designed.

"It must allow use of the most needed of these resources with care being taken not to despoil the area being developed," he remarked. "The important concept here is the development of a viable balance between effective resource development and essential conservation management."

Green, the mining engineer, noted that between 1968 and 1974, the United States went from having 17 percent of its Federal lands excluded from mineral exploration and development under mining laws to having 67 percent of the public lands areas now certified to mining. His current proposals that essentially withdrew it from exploration.

Siems, who is working under a U. S. Bureau of Mines grant to catalogue the known mineral resources on the African continent south of the Arabic speaking countries, said the nation is dependent on Zambia for chrome. He expressed concern over the effect recent South African political developments may have on America's ability to continue to purchase needed ores at reasonable prices from Rhodesia and other South African countries.

Ferro-chromite is essential in the manufacture of stainless steel and is also essential to our nuclear power industry, Siems explained.

"The U. S. depends almost entirely on imports for its supplies of alumina, magnesium, tungsten, chromium and tin," the economic geologist pointed out. "All of these come from areas where politics could influence sales to the U. S."

"Economic fragility of mineral commodities and resources leads to uncertainty," he added, "and does nothing to help the United States prepare to meet the looming supply shortages of the 1990's."

He and Green said the very real possibility exists that situation similar to the OPEC - Organization of Petroleum Exporting Countries - pricing cartel for oil will develop in the minerals market. Green reported some meetings he already have been conducted on the possibility of price controls among some producers of alumina and copper.

All three mining experts agreed that the differences
between the American free enterprise system and the Russian economic system would cause some aspects of American mineral development to work at a disadvantage.

Under our free enterprise system, marginal deposits are not utilized until the price becomes high enough to make their recovery economically feasible, they explained. "The Russian government, however, subsidizes mining of low-grade ores in order to avoid having to purchase the needed material outside their country.

"In the U. S., such ore would, of course, not be worked until it could be done so profitably," they said. "The vigor of the free enterprise system, however, may enable this country to make greater advances technologically, thus making it feasible sooner to use low-grade ores."

According to Green, the fact that known U. S. mineral reserves are being depleted isn't as alarming as it may seem to those unknowledgeable with mineral resources.

"Indoubtedly, there are many mineral deposits in this country which haven't yet been found. In addition, as the price of ore goes up, known deposits not now included in the stated reserves will become economically feasible for use and will be added to the known reserves."

Because technological advances and new discoveries will increase the stated reserves, Miller noted that it is important to explore every possible avenue of domestic supply for vital minerals.

"This is vital," he stressed, "if this country is to remain strong and, in an eventual situation of economic coercion, not be forced to pay inordinately high prices for foreign supplies."

"What the American public doesn't fully realize is that we didn't run out of oil in 1973, we just ran out of cheap oil," Miller explained. He said prices rose because of the pressure of overseas producers caused by the lack of strength of the nation's domestic supplies.

"Similarly," he said, "in the early 1980's, we must be prepared to face the reality of the end of cheap ores in the metals commodities market unless we judiciously continue to discover and develop our own new supplies for the future."

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STATE SECTION NEWS

Colorado

October 7, 1977

Mr. C. E. Prouty
4690 Kingwood Drive
Okeham, MI 48864

RE: News Items, Colorado Section APGS

Dear Mr. Prouty:

In response to your request of September 14, 1977, I am enclosing items concerning recent activities of the Public Information Committee and the Policy Papers Committee of the Colorado Section.

In 1976 the Executive Committee of the Colorado Section authorized the preparation of Policy Papers on the following eight topics:

1. Ground Water in Colorado
2. Nuclear Power Generation in Colorado
3. Colorado Mineral Resources
4. Geothermal Energy In Colorado
5. Land Use in Colorado
6. Colorado Oil and Gas Resources
7. Colorado Oil Shale Resources
8. Colorado Coal Resources

Papers on the first four topics have been completed and approved by the Executive Committee; copies are enclosed.

The formation of the Policy Papers Committee occurred as a direct result of the apparent lack of professional technical input into many public decisions of importance to citizens of Colorado. The Executive Committee of the Colorado Section believed that the public interest would be served if competent professional specialists prepared policy statements on each of the above issues and the statements were widely disseminated for public consumption.

Members of the Policy Papers Committee are Jim Nuhum, (Chairman), Jay Thompson, John Reid, Will Owens, Blair Roberts, Cliff Noite, Frank Mesaros, and Max Bergendahl.

Formation of the Public Information Committee was authorized by the Executive Committee in 1977. The aim of the Public Information Committee is to provide both policy makers and the public with sound technical information on important specific issues (such as the energy bill now before Congress) in the hope that intelligent decisions might be made. The officers of the committee are complimentary to those of the Policy Papers Committee which deals with the issues in a more general way.

Members of the Public Information Committee are Al Saterdal, Al Witt, Bill Newton, Jack Parker, Jay Thompson, Cliff Noite and John Pruett. Saterdal is the chairman. The Committee has taken a vigorous stand against President Carter's energy bill and has forwarded position statements under the signature of the Executive Committee of the Colorado Section to Representative Wirth and Senator Haskell of Colorado. These statements were also sent to the Chairman of the Senate Finance (Long) and Energy and Natural Resources (Jackson) Committees, copies were sent to all other members of both committees. Copies of the statements sent to Mr. Wirth were sent to Representatives Tom Lukens, Ralph Metcalfe, Matthew Rinaldo, Marc Marks, all members of the House Interstate and Foreign Commerce Committees. Copies of the statements sent to Messrs. Wirth, Haskell, Long and Jackson are enclosed.

If I can be of any further assistance, please do not hesitate to call.

Very truly yours,

/s/ John D. Pruitt
Secretary-Treasurer
Colorado Section APGS

POSITION PAPER
COLORADO SECTION OF APGS
GROUND WATER IN COLORADO

BACKGROUND

Ground water in Colorado is now controlled largely by principles of surface water rights. The principles of ecology and hydrogeology need to be made an integral part of the administration of water resources for optimum use of our ground water resources.

Water is involved in nearly all geological processes and is a primary factor to be considered by the geological scientist. From erosion control and flood plain analysis to oil field flooding and development of drinking water supplies, the geological scientist in involved with water and its behavior under natural and man-made environments. Ground water which is related to the surface water drainage system is currently administered by the Colorado State Engineer under surface water principles. Further understanding of the geological aspects of such ground water is needed to establish optimum development of the resource.

IMPORTANCE TO COLORADO

There are currently more than 82,000 registered water wells in Colorado of which more than half furnish water solely for domestic use. Thousands of these wells supply water in areas where no surface water is available. Considering the total population of Colorado, it is obvious that a great many families have a close and personal dependence on ground water. Nearly 20,000 irrigation wells provide water to produce food, many of which are located in areas devoid of surface water. It is estimated that ground water now accounts for 20 percent to 25 percent of Colorado's total water usage, and the fraction is certain to increase. Most communities in the state depend on ground water to some extent and for many, it represents the only source of water.

Ground water is currently being mined from aquifers
in some parts of eastern Colorado; i.e., more water is being pumped from the aquifers than is being naturally recharged to them. Recent estimates indicate that a rough balance prevails between ground water production and recharge in most other parts of the state.

**RECOMMENDED POLICY**

1. Regulations governing water resource development should include geological understanding as well as engineering principles and legal counseling.

2. The collection and preservation of ground water geological information should be done by geological scientists adequately trained and experienced in ground water geology.

3. There is a need for better geological understanding and geological management of ground water resources.

4. Current statutes which are complex, ambiguous and confusing, with respect to state agency jurisdiction over ground water matters need to be simplified with greater delegation of authority to the role of the Colorado Geological Survey. The Colorado Geological Survey should be designated the State's ground water investigative agency and the State Engineer the State's ground water regulatory agency.

5. The value of ground water storage, which provides vast quantities of water supplies in dry periods, must be considered in administration of surface water rights.

**POSITION PAPER**

**COLORADO SECTION, AGS**

**NUCLEAR POWER GENERATION IN COLORADO**

**BACKGROUND**

Colorado has been an important producer of uranium for more than thirty years. Even earlier, some of the same deposits produced radium for experimental and medical uses and vanadium for use in steel-making. The first discovery of uranium ore in Colorado was in the Central City district, in 1878. Colorado also has large deposits of thorium, which may in the future become valuable as nuclear raw material. Currently and historically, Colorado ranks about fourth among the forty states in production of uranium, with Colorado production equaled by much electrical energy as we use, but electrical energy is transported across state lines both into and out of the state. We are dependent on neighboring states for help in meeting some of our peak loads, and in turn we help other states when we have excess power available.

**IMPORTANCE TO COLORADO**

Colorado has one nuclear power plant, the Fort St. Vrain plant near Platteville in Weld County. It is an important part of the electrical energy supply in Colorado, however, because the power requirements of this area are modest compared with those of the large population centers and industrial centers of the United States. This is a small power plant, rated at 330 megawatts of electrical output, and accounts for about nine percent of Colorado's total generating capacity. Fort St. Vrain is the only nuclear power plant either operating or under construction in the Rocky Mountain area.

Two areas in Colorado, the Front Range urban region and the Grand Junction area, are important centers for scientific and commercial utilization of nuclear energy. There are significant uranium mining and milling centers in western and central Colorado, and developing new areas in the northeastern part of the state.

Although the quantity of nuclear waste materials is relatively small now, it is certain to grow. Waste materials will be derived from many sources, both natural and nuclear power generation and their disposal will probably be a geological problem. This problem, if approached sensibly, can be satisfactorily solved. A knowledge of the geological nature of nuclear waste disposal sites can form the basis for safe isolation of these substances.

**RECOMMENDED POLICY**

Solid agreement exists that America's energy requirements will necessitate continued accelerated utilization of Colorado's extensive uranium resources. Colorado Section AGS encourages the state legislature to create a political environment favorable for its development. The manner in which this exploration and development occurs is of profound importance to many aspects of Colorado's natural, cultural and economic environments. Proper and timely appreciation and application of geologic principles is fundamental to these tasks.

Colorado's legislative and regulatory agencies are urged to recognize the basic and essential place held by geology in the utilization of our nuclear resources and to advocate and promote nuclear development in full harmony with geologic principles.

**COLORADO MINERAL RESOURCES**

**BACKGROUND**

Colorado's mineral wealth has been historically prominent. The lure of gold was instrumental in the early settlement of the territory, and frenzied activity reigned during the period 1858-1867 in the newly discovered gold fields of Central City, Leadville, and Galena. Later exploration outlined a mineralized zone that extended from the San Juan Mountains northeastward to Jasperon, and from there the Colorado Mineral Belt came discoveries that have made Colorado the chief source of the Free World's molybdenum and a substantial producer of lead, zinc, copper and precious metals. Extensive exploration for deep, buried ore deposits is still in progress in this area, but over-regulation by state and federal agencies results in multiple application activities and prolonged delays. Even though the public is acutely aware of our dependence on foreign sources for energy and even though repeated warnings have been issued of an impending mineral crisis, the prevailing attitude is oblivious to the need to encourage domestic exploration. At present we import all of our manganese, niobium, sheet mica, and strontium, more than 90 percent of our chrome, manganese, cobalt, lead, tantalum, germanium, or more of our platinum group metals, bismuth, fluorine, aluminum, and asbestos, and more than 70 percent of our tin, nickel and mercury.

**IMPORTANCE TO COLORADO**

Statewide mineral industry data for 1975* show the value of output as follows:

**Metallurgical Minerals (includes uranium)**

$245,522,034

**Non-Metallurgical Minerals (excludes coal)**

$75,226,199


More than 10,000 individuals are employed in the production phases of mining, not counting those employed in petroleum. Colorado will continue to be in the future, as it has in the past, heavily dependent on its active mineral industry.

**RECOMMENDED POLICY**

The Colorado Section of AGS believes that the public welfare can be well-served by a healthy and viable domestic mining industry in Colorado that will not unnecessarily disturb the environment and will restore mined land to a useful condition. To achieve this the following policy is recommended:

1. Increased cooperation and communication between the U.S. Forest Service and Bureau of Reclamation and the Colorado Department of Natural Resources to coordinate and simplify their regulations so that mining and exploration can be processed quickly and efficiently.

2. Improve Colorado's unique and valuable facilities and capabilities in energy, mineral and geological education.

3. Adopt a public policy that Colorado is a source of vitally needed minerals, and that modern mining can be compatible with environmental goals.
Florida

President M. K. Zellers reports that the Florida Section held its Annual Meeting on September 12, 1977 at Barlow, Florida. Mr. Charles Hendry, State Geologist, spoke on the on-going evaluation by the State Phosphate Reclamation of practices and costs.

The Section intends to aggressively pursue the enactment of a registration law for geologists in the State during the coming legislative session. The bill is in the stage of final revisions prior to its filing. Officers announced for 1978 were: Daniel P. Spangler, President; John W. Sweeney, Vice President; and James Eades, Secretary-Treasurer.

Indiana-Illinois

The Section held its fall annual meeting October 14-15, 1977 at the Argonne National Laboratory, Argonne, IL. Stanley Murdock, President of the Section and R. W. Minar, Publicity Chairman, have sent information on the meeting. The technical meeting consisted of a panel discussion with the theme "Future Role of Geoscientists in Energy Resource Development". The speakers were as follows:

Wyman Harrison (APGS) Assistant Director, Energy and Environmental Systems Division, Argonne National Laboratory gave the welcoming statement, introduced and overviewed the panel session.

Robert Bates (APGS) Professor Emeritus, Department of Geology, Ohio State University: "The University Perspective".

George Helim, Head Geotechnical Division, Sargent and Lundy Consulting Engineers, Chicago: "The Consulting Firm Perspective".

Meridith Ostrom (APGS) Director, Wisconsin Geological Survey, Madison: "The State Government Perspective".

Robert Major, Manager, Marketing Research, AMAX Coal Company, Indianapolis: "The Energy-Industry Perspective".

The participants had an opportunity to visit research projects in progress at the Laboratory, a number of which are energy related.

LOUISIANA

A. J. Gaudin, President of the Louisiana Section reported on their September 10, 1977 meeting in Lafayette. New officers for 1978 were elected:

President - James J. Deutmeyer (Arco)
Vice President - Peter G. Gray (Stone Oil Company Secretary-Treasurer - Albert J. Trappenberg (APGS)
Editor - Douglas H. Gardner (Arco)
Screening Committee Chairman - Donald C. Keen
Directors - Vito Goutas, A. J. Gaudin, C. Lane Sartor
National Delegates to the convention in San Antonio - A. J. Gaudin, John Fatheree or an alternate.

In other business, it was resolved that the Louisiana Section would write a position paper (against) divestiture of vertical and/or horizontal, to be presented at the National Advisory Committee Meeting December 1. The second action - that the Louisiana Section attempt, in conjunction with the Louisiana SIFES Section, to write a model bill that we could live with in the event that some individual or group initiated legislative action and we had to react to it. This model bill is not to pass in the legislative hopper. Ninety-five percent of the membership who answered the poll in this matter voted to have such a bill ready as an alternate to any that might be presented by any other group[s]. The Louisiana Section of APGS is split 50-50 on registration.

The theme of the technical meeting was "The Effects of National and State Legislation on the Oil and Gas Industry". The following were speakers:

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Copies of this letter were sent to the following:
Honorable Russell B. Long; Honorable David C. Te tren; Mr. Jack Taylor, President APGS; Mr. Jack Camplone, President Lafayette Geological Society; C. K. Prouty, APGS Editor; News Director KLFY-TV, Lafayette, Louisiana; Honorable J. Bennett Johnston; Honorable John C. Breaux; Mr. A. J. Gaudin, President APGS Louisiana Section; Mr. Roy Kappel, Editor Lafayette Geological Society; Oil Editor, The Daily Advertiser; News Director KLFY-TV, Lafayette, Louisiana.

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Michigan

In a letter to Section membership, President Jeffrey C. Sutherland reviewed the proceedings of the section thus far for 1977, including the Executive Committee meeting of September 9, 1977. The usual problems that beset a section in its organizational year were solved, including the Executive Committee's concern over the membership, and letters of introduction to governmental and other officials in Michigan and Washington, and to begin reviewing Michigan legislation and controversial issues in general. The drive for membership apparently has fallen short of expectations. One initiative in recruiting centers around the APGS requirement for "prior membership in an AGI Member Society". A fair percentage of Michigan geologists do not meet that prerequisite. Petroleum geologists and academicians almost automatically meet this requirement. Though membership drives will concentrate on these groups, the problem of enrollment of otherwise qualified geologists who do not happen to belong to an AGI Member Society remain a deterrent to membership expansion.

The section is following with interest the progress of three bills in various stages of progress before the Michigan legislature. Senate Bill 692 referred to the Committee on Conservation pertains to land resources and provides procedures whereby cities, townships, counties, and local and regional planning commissions and land resource programs provide mechanisms for cooperation between local units of government; and to provide for the designation of essential land areas by local governments and local and regional planning commissions in cooperation with the State and to provide for the regulation of certain land uses therein. H.B. 4189 is a State Land Use Bill to provide mechanisms for cooperation between local units of government; and to provide for the designation of essential land areas by local governments and regional planning commissions in cooperation with the State and to provide for the designation of certain land uses. H.B. 4329, Wetlands Bill, provides for the use, management and protection of wetlands; an inventory of wetlands; and to prescribe penalties.

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Missouri

J. Hadley Williams, President of the Missouri Section, indicates that the Section held a meeting in the St. Louis area September 30- October 1, in conjunction with the Association of Missouri Geologists. The two-day meeting included visits to the LaSalle Gas Storage Facility and some new road cuts through folded and faulted bedrock in the southwestern St. Louis region.

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Oregon

Though Oregon does not have an organized section, S. M. Faroqui, APGS, has contacted the Executive Director reporting that APGS members in Oregon have played a key role in support of a registration law for geologists in Oregon, approved July 21, 1977.

An announcement to geologists in Oregon follows:

Oregon has a geologists registration law as of July 23, 1977. Following appointment of the board, applications forms will become available.

The registration act contains an engineering geology specialty and the board will entertain requests for additional specialties.

A grandfather clause will be in effect for one
However, during the 1973 General Session of the Legislative Committee (VALC) was instructed to conduct a study of licensees. Four hearings, with the result that the VALC recommended the creation of a commission to review all bills for regulation passed (April 8, 1974) creating the Virginia Commission for Professional and Occupational Regulation.

We presented our proposed bill for 1975 to the Commission in the fall of 1974 and were denied permission to introduce it to the legislature. We were opposed by the engineers.

We proceeded to prepare our bill for submittal in the 1976 session. It appeared before the Commission during the fall of 1975. The Commission was agreeable and we proceeded with the bill. However, in the first week of December, 1975 the pedologists (soil scientists) opposed our bill. They were able to stop us by appealing to Mason Carbaugh, a member of the Commission and also the Secretary of Agriculture. Mr. Carbaugh influenced the members of the Commission and their support was withdrawn. We did not submit a bill in 1976.

By 1976, we were able to iron out all our difficulties with the engineers, pedologists and geophysicists. A mutually agreeable resolution, between geologists and engineers was prepared, the geophysicists and pedologists were exempted.

Finally S.B. 763 was prepared by Statutory Research and Drafting and was introduced by Brault on February 9, 1977. It was then referred to the Committee on General Laws. We defended the bill at a hearing and it was subsequently voted out of committee by an 8 to 4 vote in the Senate and passed by a good majority. We had then prepared it for submittal to the House. Delegate Dimonstein presented it to the House; it was referred to the House Committee on General Law, voted out of committee and then defeated on the House floor.

Defeat is generally conceded to have been due to the fact that the majority of the House were against any additional regulation. They did not appear to consider the actual reasons for or merits of our bill. Only individual contacts with commitments obtained prior to the Legislative Session will be successful for the future in overcoming this.

West Virginia

Peter Leasing, President of the West Virginia Section, has sent the tentative agenda for their annual meeting on October 28 held in Morgantown:

- Ben Wilmoth: Water for Flood Victims in Southern West Virginia
- Carl Smith: The Federal Strip Mine Law
- Tom Heinings: Archeology and Geology
- Bill Hanfield: Soil Conservation Service Activities

The proceedings of the L. C. White Memorial Symposium on "Geologic Hazards and Land Use" sponsored by the AGS with the West Virginia Geological Survey and the Association of Engineering Geologists as co-hosts. (See July issue of FGS) are to be published as a L. C. White Memorial Symposium Volume.

MEETINGS AND CONFERENCES

Financing Oil and Gas Ventures

New York University, School of Continuing Education, Division of Career and Professional Development will offer two-day seminars on this topic in Houston, December 5-6, 1977; in New York, January 26-27, 1978; and in Denver, March 6-7, 1978. The seminar is designed for anyone directly or indirectly engaged in financing the search for oil and gas, including company exploration executives, independent producers, geologists, and lawyers. The instructor is Thad W. Thomas, President of Energy Concepts International. For more details, a seminar outline and comprehensive brochure, contact the above at 360 Lexington Avenue, New York, NY 10017.
AAPG-SEG-X School in Petroleum Exploration

AAPG and SEG are offering a course in Petroleum Exploration in San Diego, California, December 6-16, 1977. All aspects of petroleum exploration are on the agenda to be covered by 18 lectures. The fee will be $750.00 and limited to 65 participants. For additional information, contact Judy Goliasinski, AAPG, Box 979, Tulsa, OK 74101.

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Exploration Geology for Geophysicists

The sixth annual presentation of Exploration Geology for Geophysicists, a short course sponsored by the University of Houston Geology Foundation, will be held from January 3-17, 1978 at the Houston Marriott Hotel. Professor Eugene V. Venklin (APG), Department of Geology is the course coordinator.

Although designed especially for geophysicists who have not had the opportunity to develop or maintain a solid background in geology, the course may serve also as a refresher for geologists. All aspects of geology that concern the occurrence of gas and oil are considered, with emphasis on how it is actually applied to exploration for these resources. The lecturers were carefully selected to obtain the most appropriate combination of current knowledge and experience in the field. The material was prepared toward practical applications, and proven ability to present their material in a clear and lively manner.

The course fee is $750.00 which includes a large book of lecture notes, reprints, and other hand-out materials, and a two-day field trip to the Houston area over the first weekend. An innovation this year is a Seminar on Petroleum Exploration Econometrics presented by Jan L. Arps immediately following the course, on January 18-19, 1978 for an additional charge of $125.00.

For a descriptive brochure with application form, and for additional information, write to Dr. Carl E. Norman, Department of Geology, University of Houston, Houston, TX 77004 (telephone 713-749-3870).

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Engineering Foundation Meeting on Subsidence

The Engineering Foundation will hold a meeting on Evaluation and Prediction of Subsidence at Pensacola Beach, Florida, January 15-29, 1978. For information, contact the Foundation at 345 East 47th Street, New York, NY 10017.

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Rocky Mountain Section - AAPG

The Rocky Mountain Section of the AAPG will hold its 27th Annual Meeting on March 19-22, 1978 in Salt Lake City, Utah. The theme of the meeting is “The Mountain West—Exploration Progression.” For more information, contact Howard R. Ritma, Utah Geological and Mineral Survey, 605 Black Hawk Way, Salt Lake City, Utah 84108.

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International Symposium on Remote Sensing of Environment

The Twelfth International Symposium of Remote Sensing of Environment will be held April 23-26, 1978 at the Philippine International Convention Center and the Philippine Plaza Hotel, Manila. Invited papers will be offered in geology and mineral resources, vegetation and soil resources, hydrology and water resources, ocean and marine resources, and others. A plenary session will be offered and a Call for Papers has been extended. Interested persons may submit a summary statement of a proposed presentation of 300-1000 words by December 1, 1977, and submit to Dr. Jerald J. Cook, Environmental Research Institute of Michigan, P. O. Box 8618, Ann Arbor, MI 48107 (telephone 313-994-1200).

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Forum of the Geology of Industrial Minerals

The fourteenth annual meeting of the Forum of the Geology of Industrial Minerals is to be held in Albany, New York, from May 4-6, 1978. Sponsoring organizations are the New York State Geological Survey, the New York State Department of Environmental Conservation, the New York State Department of Transportation, the State University of New York at Albany, Renesselaer Polytechnic Institute, the Empire State Concrete and Aggregate Producers Association, Inc., and Dunn Geoscience Corporation. The general theme is “The Geology of Industrial Minerals in the large scale.” Specific sub-themes are “Reserve Determinations and Selective Mining in Complex Geologic Regions,” and “Production of Industrial Minerals as Related to Regulatory Constraints.”

Mr. William E. Curtiliffe, (APG) as coordinator, has issued a call for papers. Those interested in presenting a paper at this meeting should send abstracts and a list of illustrations by December 1st, 1977 to Dunn Geoscience Corporation 5 Northway Lane North, Latham, NY 12110.

The papers will be published in a New York State Bulletin. The two-day technical meeting will be followed by a day-long field trip to portland cement, lightweight aggregate and coarse aggregate quarries exhibiting complex geology.

The Forum on the Geology of Industrial Minerals is an annual and informal meeting of geologists and operations personnel working in the field of non-metallic mineral resources. Future meetings are planned for Denver, Colorado (1979), Missouri (1980), and New Mexico (1981).

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RECENT PUBLICATIONS OF INTEREST

Exploration and Mining Geology — William C. Peters (John Wiley, Publ.) — Describes the up-to-date view of the geologists work in mineral discovery and mining, describing in detail the responsibilities and procedures followed in an exploration program.


Geology of Alternate Energy Resources in the Southcentral United States — Michael D. Campbell (Editor). Contains 5 chapters, and 430 citations on Uranium; 5 chapters and 350 citations on Lignite, and 5 chapters and 300 citations on Geocarpoosor Geothermal Energy, covers frontier exploration, trend exploration, development/utilization, environmental considerations, and selected bibliographies. Available from Houston Geological Society, 500 Main St. Suite B-1, Houston, TX 77002 ($15.00).

Symposium on Geology of the Cordilleran Ringkeline — J. Gilmore Hill, Editor (1978) The Cordilleran Ringkeline is a relatively untapped petroleum province. Technical Papers include stratigraphy and petroleum potential of principal Paleozoic, Mesozoic and Tertiary targets; structural geology of the Basin and Range province and Thrust belt geology; Oil fields in the Upper Valley and Pineview; geothermal resources; and a road log for central and northern Wasatch Mountains. A brochure may be obtained from the Rocky Mountain Association of Geologists 503 Colorado Building, 1615 California Street, Denver, CO 80202 (RMAG members $24.50, Non-RMAG members $27.00)

1977 Solar Energy and Research Directory — Ann Arbor Science Specialties, Inc. (June, 1977). This publication is for everyone interested in or working with this promising power source — of use to scientists, environmentalists, energy specialists, consultants, government, industry, universities and others. It has over 700 listings of manufacturers, design and construction firms, researchers, government-sponsored R&D Groups, energy conservationists and distributors. It covers the works, from Bio-Conversion to Total Systems. Ann Arbor Science Publishers, Inc. P. O. Box 1425, Ann Arbor, MI 48106 ($22.50).

Science and Technology of Oil Shale — T. F. Yan, Associate Professor of Chemical and Environmental Engineering, University of Southern California, Los Angeles, Editor. This is the first systematic monograph on this topic in the U. S. in 20 years. Contains the most up-to-date information and technology on the extraction of oil.
Recognition and Evaluation of Uraniferous Areas
UNITED papers and discussion of a technical committee of international geological experts who analyzed geological data in the hope of developing new prospecting ideas for uranium. Order form may be obtained from UNITUS, Box 433, Murray Hill Station, New York NY 100.6 ($21.00)

Geologic Factors in Land Use Planning - Colorado Geological Survey, Special Publication 8 - A collection of papers given by invited experts at the Governor's Third Conference on Environmental Geology. Topics include specific geologic hazards, mineral resources, pumped land reclamation, county case histories and legal problems related to geologic factors in land-use planning. Available from Colorado Geological Survey, 1313 Sherman Street, Room 715, Denver, CO 80203 ($14.00 prepaid)


Handbook of Mineral Law - Terry Mailey, MINC Publications (New, 1977) This is the first effort in many years to give a comprehensive treatment of mineral law in a single volume. All major aspects of mineral law are covered, requiring no prior knowledge of the subject; a practical reference for geologists, attorneys, prospectors, engineers, realtors and government resource managers whose work involves the acquisition and management of mineral resources. Available from MINC Publications, P. O. Box 1186, Boise, ID 83701 ($14.50)

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Professional Paragraphs

Among the 1977-1978 officers of the Association of American State Geologists, the AGS is represented by: Robert B. Erwin - West Virginia - President Elect; Daniel W. Miller, Jr. - Wyoming - Vice President; Robert R. Jordan - Delaware - Secretary-Treasurer; and Edwin A. Kohle - North Dakota - Editor.