



# The Hydrogeologist

NEWSLETTER OF THE HYDROGEOLOGY DIVISION OF THE GEOLOGICAL SOCIETY OF AMERICA, APRIL 1986

## MESSAGE FROM THE CHAIRMAN:

*Bill Bark*

DEAR COLLEAGUES:

If you have been debating whether or not to go to the San Antonio meeting, debate no longer! The 1986 meeting is a must because this is the the most hydrogeologically oriented meeting we have ever had. It features five symposia, two or more sessions of volunteered papers and the poster sessions, two field trips, our first Short Course, Birdsall Distinguished Lecturer, and our first business-social hour with the International Association of Hydrogeologists. Also, this will be the first time that we have sponsored a symposium in cooperation with the IAH. All of this on the banks of the delightfully enchanting San Antonio River!

The Program Committee and organizers have have all done a superb job in organizing this program for us. Let this letter be the first official thank-you to all of them.

We are greatly saddened by the death of Wendall Marine at far too young an age. The symposium that he was organizing with Keros Cartwright will be dedicated to his memory.

Now is the time to be writing your abstract for the oral or poster presentation that must be received at GSA Headquarters by Friday, June 13. Poster sessions continue to increase their effectiveness as a media for scientific communications, not only at GSA but at other national and international meetings.

Shlomo Neuman has accepted the honor and responsibility of being our Birdsall Distinguished Lecturer for the academic year 1986-1987. However, because of the late start for Lenny Konikow, he has agreed to fulfill some his commitments during the fall semester. Therefore, for the first time we will have two simultaneous Distinguished Lecturers. If you would like to have the Birdsall Distinguished Lecturer visit your institution next fall, please write to me or Lenny and we will attempt to make the necessary arrangements. As usual, there are more invitations than we can accept, and we try to accommodate the greatest number with the least amount of travel expense.

On Tuesday night, we will have a reception for the Division's awardees; Distinguished Service Awardees (3), Birdsall Lecturers (2), and the Meinzer Award (1 plus possible coauthors).

As agreed to at the Orlando meeting, we are making the Ad Hoc Committee on Publications that was so effectively chaired by Harold Meisler into a permanent committee. Steve Wheatcraft has agreed to serve on the committee along with Dave Stephenson and Allen Agnew. In addition to establishing new by-laws for the committee, they will be developing a publications program centered primarily on special papers. We hope that within the next several years, we will have generated a series of special papers on significant topics of hydrogeology. Charlie Kreitler's paper on the hydrogeology of sedimentary basins will be the first of this series. If you would like to assume the responsibility of preparing a special paper, please contact Steve Wheatcraft or me.

The Division's contribution to DNAG "Hydrogeology of North America" with the active participation of nearly 100 members of the Division is on schedule and will be published in 1987.

A new Ad Hoc Committee on History of Hydrogeology is being chaired by Noel Krothe. The by-laws are now being prepared and one of the primary functions of the Committee will be to organize symposia on historical development of concepts of hydrogeology and the scientists who developed them. We will have a symposia on the history of hydrogeology for the Centennial Celebration of the GSA in Denver 1988. We hope to develop a library of video-taped interviews with the founders of hydrogeology who are still with us. John Bredehoeft has already made a 2-hour video-taped interview with C. V. Theis and we have plans for more. Excerpts from these video tapes will be shown during some of our meetings. If you have an interest in serving on this Committee or participating in any of the historical activities, please let Noel or me know.

Now is the time to be thinking about symposia for the Phoenix meeting in 1987 and the Centennial Celebration in Denver, 1988. If you would be willing to take on the responsibility of organizing a symposia, please contact Wayne Pettyjohn for the Phoenix meeting and Jack Sharp for the Centennial meeting. Also, we need field trips for the Centennial meeting in Denver.

In closing, I want to thank all of the Committees who are taking care of your interests, and I am sure you will be pleased with the results of their work.

The 1985 Annual Business Meeting of the Hydrogeology Division of The Geological Society of America was called to order by Chairman, Grover Emrich, at 1420 hours, Tuesday, October 29, 1985, in the Orange Room, Marriott Hotel, Orlando, Florida. Forty-one members attended.

Emrich began the meeting by asking for any corrections or additions to the minutes of the 1984 Business Meeting as published in the fall newsletter. One wording change was noted by the Secretary regarding the 1985 dues change so that it would read that the change is "now" in effect. With no other corrections, Warren Wood made a motion to approve the minutes. The motion was seconded and passed.

The Treasurer's report followed. As of September 30, 1985, the Division balance was \$3837.78. The Birdsall Appropriated Fund balance was \$10,564.42 of which \$10,000.00 is restricted. There were 1336 members in the Division as of September 30, 1985; an increase of 364 since last year.

A moment of silence was observed for Francis A. Kohout, George W. White, J. Stewart Williams, and Charles W. Carlston; affiliates who had passed away during the year.

Garman announced the results of the election of officers for 1986. A total of 193 ballots were returned. The 1986 Management Board will be: Bill Back, Chairman; Wayne Pettyjohn, First Vice-Chairman; and Jack Sharp, Second Vice-Chairman. Phyllis Garman will serve as Secretary-Treasurer for the second year of a two-year term and Grover Emrich, Past Chairman.

Charles Kreidler, Distinguished Birdsall Lecturer for 1985-86, was asked to comment on his lecture tour. He said that there are strong programs in hydrogeology across the U.S. with some emphasis on regional aspects. He enjoyed the opportunity to meet and talk with students and faculty and related some of the variety in receptions.

Leonard Konikow who is with the U.S. Geological Survey in Reston, is the Birdsall Distinguished Lecturer for 1986.

A report on the 1986 San Antonio meeting was presented by Jack Sharp, co-chairman for the program with Pat Domenico. Two field trips are scheduled. The pre-meeting trip will be on the Hydrogeology of the Edwards Aquifer in San Antonio; led by Weldon Hammond and Bob McClay. A post-meeting trip on the Geologic and Geomorphic History of the Edwards Aquifer will be led by Pat Abbot and Chuck Woodruff.

Three symposia have been proposed. The Division will sponsor one proposed by Charles Kreidler on "The Hydrogeology of Deep Sedimentary Basins." The others will be submitted for "at-large." They are: "Advances in Hydrogeology from Study of Contaminant Plumes" by Keros Cartwright and Wendell Marine; and "Carbonate Aquifer Analysis" co-sponsored with I.A.H., by Larry Doyle, Jerry Meyer, Bob McClay, and Dennis Woodward.

Also proposed for the San Antonio meeting is a short course submitted by Frank Schwartz and Leslie Smith. Schwartz briefly described the course as a one-day overview of contaminant hydrogeology with emphasis on geochemical reactions and simple models.

Chairman Emrich asked for comments from members on the idea of future short courses in hydrogeology at the annual meetings. A recent request from GSA had addressed this question. A generally favorable response was acknowledged.

The 1987 meeting is to be held in Phoenix. Wayne Pettyjohn will be Division Chairman for that meeting. In his absence Emrich asked that any proposals and ideas for that meeting be submitted to Pettyjohn any time now.

In 1988 the meeting will be the Centennial Celebration for GSA and be held in Denver. Harry Tourtelot, Chairman for field trips for the Centennial, announced some of the preliminary plans for the occasion. Preliminary plans are underway. He emphasized that there are no geographic limitations. Proposed types of trips are "Down the River with Powell, Again," and "Along a Part of the 40th Parallel with King." Contributions to field-trip plans are invited from GSA Divisions and Affiliated Societies as early as possible.

In addition, Tourtelot announced that the International Geological Congress will meet in the United States in 1989 and a series of field trips will be needed then.

Emrich then asked for Committee reports.

Joe Rosenshein gave an update on the Decade of North American Geology (DNAG) Volume. The hydrogeology volume committee members/authors met in June to formalize the draft manuscript. Work has progressed well. The volume is expected to be published in 1987.

Tom Holzer, co-editor of The Hydrogeologist with Heidi Horten, emphasized the need for members to send in news. The editors plan to add a "Current Issues" column. Anyone interested in writing a column should contact them.

Emrich praised the editors for the good job during the past year, including the printing of two issues.

A call for volunteers to serve on committees was made. Members may respond to Bill Back or Grover Emrich. In addition, suggestions from the membership for nominees for either the Distinguished Service Award or the O.E. Meinzer Award, should be submitted to the respective committee chairmen or the Division Chairman. Members are also urged to submit names to the Nominating Committee for Division officers.

The following reports from the Division Sections were given:

Northeast--(Chairmen not present). Emrich reported that a hydrogeology symposium on "Organics in Ground Water" was successfully conducted in Lancaster with a very good attendance. Another symposium is planned for the spring on "Siting for Hazardous Wastes."

Southeast--(meeting with South-Central). Don Jordan said that they did not have as much success in promoting a program on hydrogeology. Some discussion followed. Recommendation was to deal with program chairmen directly with symposium outline prepared.

North-Central--Lon Reudisili reported plans for the April meeting to have a half-day symposium on "Hydrogeology of Glacial Terrains" and a half-day for open papers in hydrogeology.

Rocky Mountain--Ken Kolm announced a call for papers.

Cordilleran--Al Leonard said that Marty Stout has organized a symposium on "The Hydrogeology of the Los Angeles Basin" for their meeting.



John Cherry accepting the 1986 Oscar E. Meinzer Award.



Phil LaMoreaux offering congratulations to Joe Poland, 1986 co-winner Distinguished Service Award, and Joe's wife, Eleanor.

Mark Stewart, Program Chairman for the Orlando Meeting, reported on the program arrangements at Orlando. Fifty-five abstracts were received with only a 15% rejection rate, which was below the average for all papers. There are two oral sessions, 18 posters in one poster session, one symposium, and one cooperative forum. A pre-meeting field trip on sinkholes was led by Barry Beck and a post-meeting trip in the phosphate area to be led by Jack Hickey and John Vecchioli was scheduled. An appreciation for the hard work and success of the effort was expressed by Chairman Emrich and the members present. John Vecchioli reported on the symposium on the Multiple Use of Aquifers. Each paper will be 30 minutes. A discussion period will follow after all papers are presented.

Keros Cartwright, co-chairman with Paul Seaber for the Committee on Hydrostratigraphic Units, reported that the committee met most of the day before to work on the draft Code. The North American Commission on Stratigraphic Nomenclature has been encouraging. They will accept a proposal document to review and vote upon. It will then be published in a neutral journal (AAPG) as a note. Vote to accept or reject would be after comments are received. The whole process will take about a year and conclude at about the time of the Phoenix meeting. Considerable discussion followed with emphasis on comments to the Commission on the Code. Draft copies will be made available to Division members from Paul Seaber.

Grover Emrich pointed out that the Hydrostratigraphic Nomenclature Committee had completed its appointed term although more work is required. Charles Kreitler made a motion to have the Committee reappointed for two more years with the same members. George Davis seconded the motion. It was passed unanimously.

Discussion followed to add Jim Miller to the Committee. He will be officially appointed by the next Chairman.

The report from the Ad Hoc Committee on Publications (Harold Meisler, Chairman, David Stephenson, and Allan Agnew) was given by George Davis. The charge given to the committee was threefold:

- (1) Is there a need for a new outlet for hydrogeology publications?
- (2) If such a need exists, are there sufficient papers available of such quality that we would recommend beginning a hydrogeology publication?
- (3) Is there a desire on the part of the Hydrogeology Division to sponsor and be responsible for such a publication series?

The Committee's recommendation was: there is a need to bring together and preserve one comprehensive document of work devoted to single topics such as would be covered at a symposium. A series of symposium volumes published over the years would constitute a major source of hydrogeologic information. Publication of symposium volumes, the committee hopes, would encourage high quality presentations at GSA meetings as well as foster greater participation by positioned hydrogeologists in scientific literature. It seemed self-evident to the Ad Hoc Committee that publication of proceedings of important symposia enhances the contributions of the Hydrogeology Division and the Geological Society of America to the science of hydrogeology.

Discussion of the Committee's recommendation followed. A need for single topic publications was acknowledged, but there was little support for a journal type of publication. Accordingly, the Hydrogeology Division will take steps to initiate publication of proceedings of symposia held at national meetings and special conferences and possibly those held at regional meetings. For this purpose, a standing Committee on Publications, including a publications chairman, should be selected. A possible candidate for initial publication includes the symposium, "Hydrogeology of Deep Sedimentary Basins" submitted for the 1986 San Antonio meeting.

At the conclusion of the report a great deal of discussion followed. Kreitler agreed that his proposed symposium would be a good possibility for a publication and he would support using it if appropriate notice were given. Some meetings already require written papers. Vecchioli had received mixed feelings on the subject from his speakers. Back felt that the goals expressed were contradictory and that it would be more appropriate and preferable to publish special symposia rather than regular meetings. Holzer and Rosenshein pointed out that speakers must be forewarned and papers must be reviewed prior to the symposium if publications are to be timely. Upchurch proposed looking at procedures that other societies follow. Cartwright said that experience shows that there should be a focus on a specific problem. After further discussion, George Davis made a motion that the Hydrogeology Division take steps to initiate publication of proceedings of symposia held at national



meetings and possibly those held at regional meetings. For that purpose a standing Committee on Publications, including a Publications Chairman, should be selected. The motion was seconded by Holzer.

Discussion followed that it would be more acceptable to not limit the committee to symposia. Davis agreed to accept a modification to his motion and that the Hydrogeology Division establish a permanent Publications Committee. The amended motion was seconded. With no further discussion, the motion was unanimously passed. Bill Back, 1986 chairman, will appoint the Committee Chairman and members and give them direction.

The next order of business was a GSA Council Report by Mel Schroeder, Division Council Representative. Schroeder related that after investigation, he found that the Birdsall Fund could not be added to without the Fund losing its identity. There had been discussion by Council to pool the monies of all sections; however, the amount would not be enough to work with. As a result, all the individual divisions are handling their own monies. The earnings from the monies are then available for Division use.

Schroeder further stated that through his association with Division members and sitting on the Management Board for two years, he has observed the Division to be a very active part of the Geological Society. The Society itself has been through a critical period. Investments and earnings are now out of a bad period and the organization's efficiency has improved. The healthy condition is a result of the past presidents who were competent, organization-minded, and stuck to the job. Reds Wolman, a Past President, was present and was acknowledged as one of those due part of the credit.

Emrich continued with other business. The first was a discussion relative to contributions to the Division in memory of former affiliates. Mrs. Charles Carlston had asked that contributions for Mr. Carlston be marked for the Meinzer Fund although such a fund does not exist. The Management Board had discussed adding those monies to the principal of the Birdsall Distinguished Lecturer Fund. Warren Wood made a motion to have memorial contributions added to the Birdsall Fund. It was seconded by John Moore. Discussion followed. This would have to be approved by GSA. Cartwright mentioned that contributed monies need to be recognized as to named memorials. Davis reminded the group that the Carlston monies was to a specific fund, and not as a memorial fund. After further discussions it was decided to check on appropriate procedures with the GSA Controller.

Frank Schwartz suggested that the Division set up a separate "Memorial" fund to generate an identifiable place for memorial contributions. Kreitler mentioned that the Birdsall Lecture Fund does not have very much to use right now. Holzer suggested that the "category" for the funds may solve that problem. Pat Domenico commented that a separate fund for memorials would not preclude its use for the Birdsall Lecturer. Jack Sharp felt that GSA may require minimum amounts for endowed funds, perhaps as much as \$5,000 to \$10,000. Back agreed and suggested that the question be checked into further with GSA as to alternatives.

The motion to have contributions to Carlston added to the Birdsall Fund was called and voted down 25 to 16. Bruce Hanshaw then made a motion to have the question of memorial funds be considered by the Management Board and have an action recommendation by the Board next year. It was seconded by Jack Sharp. The motion was carried unanimously.

New business items followed. Emrich announced that the International Geological Congress will meet in Washington, D.C., in 1989. There is a call for symposium topics; abstract deadline is January 15, 1986. John Moore said that I.A.H. has the major responsibility for hydrogeology field trips and symposia and would welcome any input from members of the Division. Anyone interested contact John or Bill Back.

Bruce Hanshaw, Secretary-General of the International Geological Congress, related that the first gathering of world-class geologists was in 1875. The next meeting was in 1878 in Paris. Since then the meetings have been at four-year intervals. The last one in the U.S. was in 1933. The 28th Congress will be hosted by U.S.A. There will be 5,000-8,000 participants. Many symposia and field trips will be offered and selected as lead time narrows. The U.S.G.S. is heavily involved and there is financial support from AAPG and GSA; however, there will be room for help from all geological organizations.

Additional new business, Emrich informed the group of an upcoming Penrose Conference, "Hydroscience of the Vadose Zone." Marty Mifflin of the Desert Research Institute is to be the convenor. Date to be determined.

Bill Back announced a call for papers on Engineering Geology as it relates to the Study, Preservation, and Protection of Ancient Works, Monuments, and Historical Sites. Inviting hydrogeologists to present papers on cities, erosion, etc. The conference is to be in August 1988 at the University of Tres, Greece.

With no further business, Grover Emrich summarized his year as Chairman as a good year with excellent cooperation from committees and members. He then turned over the chairmanship to Bill Back who acknowledged Emrich's successful term. Back adjourned the meeting at 1600 hours.

Grover Emrich, outgoing chairman, offering the wisdom of the ages to attentive Bill Back, incoming chairman.



In this issue of The Hydrogeologist we are introducing a new feature that hopefully will become a regular part of our newsletter. The last decade has seen an explosion in the demands placed on hydrogeologists. New legislation, daily discoveries of ground-water contamination, belated recognition that land-use practices and old methods of underground storage of toxic and hazardous materials often had inadequate safeguards with respect to ground water, and the widespread use of numerical methods have changed our professional lives forever. In recognition of these rapidly moving events, we will be asking our members to provide for our newsletter brief statements on important issues and problems that professionally affect us.

Our first column is by Philip Cohen, Chief of the Water Resources Division of the U.S. Geological Survey. Mr. Cohen describes a new USGS program directed at providing timely information on water-quality trends in the United States to decision and policymakers.

THE U.S. GEOLOGICAL SURVEY'S PROPOSED NATIONAL WATER QUALITY ASSESSMENT PROGRAM  
by Philip Cohen, U.S. Geological Survey

The U.S. Geological Survey (USGS) is planning a National Water Quality Assessment Program. About \$2.5 million has been appropriated in Fiscal Year 1986 to plan the program, coordinate it with other Federal, State, and local water-resource agencies, and to begin limited pilot study efforts.

Preliminary plans call for a perennial program dealing with a wide range of water-quality issues including chemical contamination, sedimentation, acidification, eutropication, and acceptability for use. The purpose of the program is to significantly increase the understanding of the nature, extent, and trends in the water-quality conditions associated with these issues. This understanding of the resource is needed to improve the quality of decisions made about broad policies as well as about site-specific actions.

The program deals with surface water as well as ground water and is national in scope but organized by hydrologic units (aquifers and river basins), for which boundaries, hydrologic properties, and flow systems are already known. Organization into these discrete "study units" enables the program to provide an understanding of the causes of observed water-quality conditions in addition to national statistical summaries of conditions. This understanding of causes is vital if the program is to be useful to managers and policymakers at Federal, State, and local levels.

The program is to be conducted at the USGS District office level with teams in these offices focusing attention on each study unit for a multiyear period. The conduct of the studies at the District level facilitates close coordination with the Federal, interstate, State, and local agencies which have water-data programs and water management responsibilities in these areas. The specific plans for each unit will be developed in cooperation with all interested agencies. The studies will be designed to take maximum advantage of existing data-acquisition programs and knowledge of the area, and to be as relevant as possible to the information needs of the key agencies, consistent with the national program design.

The products of the program are the basic data (available to all through the USGS National Water Data Storage and Retrieval System (WATSTORE) and the EPA Water Quality Control Information System (STORET), and interpretive reports at three scales: national, study unit, and selected smaller areas. These reports will include descriptive (including statistical) information, as well as explanations of the observed water-quality conditions. Estimates of the relative impact of point versus non-point sources of pollution will be evaluated and trends over time will be assessed. In addition, statistical analyses will be carried out relating water-quality characteristics to the characteristics of the river basin or aquifer, such as geology, climate, land-use practices, waste disposal, and other factors thought to influence water quality. Such results will be extended to areas not sampled and will be used to formulate hypotheses about the causes of water-quality conditions. Finally, cause-and-effect investigations will be conducted in selected areas in each study unit. These investigations will involve the use of mathematical and conceptual models with an objective of evaluating the effect of proposed actions for addressing the specific issues.

Study units will be several thousand square miles in size and selected so that, in aggregate, they represent a large fraction of the Nation's water use, include major centers of population, and are widely distributed around the Nation. Several different data collection approaches will be employed. For ground water they include contamination probability mapping based on soils, hydrogeology, and land-use information; iterative search techniques leading to characterization of the study unit into zones designated as probably contaminated, vulnerable, and sheltered; intensive studies of probably contaminated zones; recharge path studies in vulnerable zones; and long-term low-frequency monitoring of ground water from wells and springs after this characterization has been completed.

It is useful to contrast this proposed assessment program with other kinds of assessment activities that have occurred in the past or that are presently under way. Some assessments are constrained to work only with existing data. This program will utilize, but not be limited to, existing data. Moreover, this assessment will be based on analyses of chemical, physical, and biological data rather than professional judgments or mathematical model output variables to summarize water quality. In addition, this assessment will be oriented towards multiple issues with data collection and interpretation geographically clustered, unlike some other assessments involve interpretation and communication of results by persons other than those who collect the data. In this assessment the development of interpretations and communication of findings will largely be done by those who collect the data. The design is based on the philosophy that closing the loop between collection and interpretation is the key to assuring that the data are of high quality and assuring that they lead to relevant and meaningful interpretations.

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