

AWWA Mainstream



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March 1981

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Board Votes In New York's Lynch



W.O. Lynch

William O. Lynch of the New York Section was chosen AWWA vice president-elect at the Board of Directors meeting January 25.

Lynch is currently a partner in the consulting firm of Stearns & Wheeler, Engineers and Scientists, of Cazenovia, N.Y. Cazenovia is a village in upstate New York near Syracuse.

He is a past director of the New York Section and has served on AWWA's building fund committee and management school committee, as well as on numerous section committees.

Lynch has spent 11 years teaching at Cornell University in the department of sanitary engineering. His own account (continued on page 6)

Contaminants Spark Statewide Study

A short time ago, alarmingly high levels of cancer-causing dioxane were found by chance in the drinking water wells of Bedford, Mass. The town hired an engineering firm to track down the sources of contamination and is now suing the companies suspected of releasing chemicals near one of the (continued on page 12)

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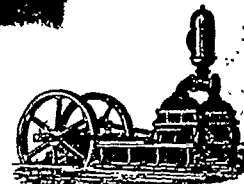
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Three advertisements from the first AWWA proceedings, published in 1887, illustrate the technology of the last century.

AWWA—March 29, 1881

Technology Changes, Goals Still Remain

It was on Mar. 29, 1881, that 22 waterworks men gathered in St. Louis to form an "association of western water works." The following year, representatives came from all parts of the country, making it a national organization.

In its first issue, published during this anniversary month, AWWA Mainstream salutes the birth of AWWA with excerpts from the proceedings of that formative meeting.

Proceedings of First Annual Meeting

Pursuant to a call issued by W.C. Stripe, secretary and superintendent, Keokuk Water Company, the following officers of water companies and those interested, met in convention:

W.C. Stripe, Keokuk, Iowa; H.G. Belcke, Peoria, Ill.; James Millard, Peoria, Ill.; M. Donohue, Davenport, Iowa; Alex. Miller, Davenport, Iowa; Ira A. Holly, Burlington, Iowa;

M.X. Chuse, Bloomington, Ill.; Charles A. Smith, St. Louis; J.H. Decker, Hannibal, Mo.; H.D. Wood, Hannibal, Mo.; J.G. Briggs, Terre Haute, Ind.; John W. Harrison, St. Louis; John Long, Louisville, Ky.; F.L. Kimball, St. Louis; Sylvester Watts, St. Louis; J.B. Quigley, Atchison, Kan.; Wm. H. Burnham, Batavia, Ill.; W.L. Cameron, Memphis, Tenn.; T.J. Rembert, C.E. Gray, St. Louis; Wm. Ratekin, Jacksonville, Ill.; and Col. J.T. Foster, Chicago.

At 10:30 a.m. the convention was called to order by Mr. Stripe, who gave a short statement of the causes leading to the call.

'Interchange of Views'

Col. Foster, on taking the chair, alluded pointedly and briefly to the business before the body and suggested that great benefit would ensue from an interchange of views on the subject of waterworks. These (continued on page 15)

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James B. Coulter (left), past director of the Chesapeake Section, and Section Chairman Harry C. Ways (right) join Governor Harry R. Hughes in proclaiming "Better water for People" Week in Maryland.

'Better Water' Week Cultivates Good Public Image

Better Water For People Week, the annual opportunity for utilities to seize the spotlight of good public opinion, is May 3-9 this year.

AWWA President Jerome B. Gilbert has urged members of the American Water Works Association everywhere to make a special effort in 1981—AWWA's centennial year—to emphasize the achievements of water supply.

Traditionally, the week has been an occasion for open house events, the one time during the year people are invited to come see for themselves how drinking water is produced and delivered to their homes.

Inevitably, for those utilities that care to make the point, the water system is a community's largest manufacturer; always in terms of weight (at 8.345 pounds per gallon or 1 kilogram per litre) and frequently in terms of volume. With equal inevitability, the public is unaware of this.

Employee Benefit

One of the biggest and least appreciated aspects of Better Water Week, according to AWWA, is the recognition it gives to employees of the water system. Given the opportunity to plan and conduct the event themselves, employees can create a program that not only presents the utility at its best, but allows its workers to take full credit for its success.

A booklet is available from AWWA headquarters to help plan and present an open house. Utility managers can write for a free copy from the Public Information Department.

ment, AWWA, 6666 W. Quincy Ave., Denver, Colo. 80235.

In addition, water systems are encouraged to turn local situations to their own advantage during the week. For instance if a drought is in progress, conservation displays and information are appropriate. Gardening or landscaping experts can be invited to lecture about proper watering techniques during the event, too.

Another idea is the sale of no-longer-needed equipment, such as old meters, hydrants, and valves. Many citizens find these items attractive, either for themselves or as gifts to friends. The sale also makes a good newspaper or television story, according to those who have tried it.

The May date for Better Water Week was chosen to allow utilities to involve school children more easily. Class tours during the week should be encouraged.

AWWA lists a number of handout materials—buttons, booklets, balloons, and the like—in its catalog. Also included are centennial materials, which can be ordered for employees.

The three-mile relay race is a "Better Water for People" Week event sponsored by Thornton, Colo.



Standards Council Approves Addendum

The AWWA Standards Council has approved the addendum to ANSI/AWWA C303-78, AWWA Standard for Reinforced Concrete Pressure Pipe—Steel Cylinder Type, Pretensioned for Water and Other Liquids. The addendum is listed as C303a-81.

The addendum was developed because section 2.6.2 of the standard limits to ASTM A675 the type of steel acceptable for spigot joint rings. Recently, manufacturers have experienced price and availability problems with ASTM A675 steel. C303a would allow the use of other steel materials in addition to A675 for spigot joint rings.

The addendum is identical to section 2.9.2 of ANSI/AWWA C301-79, AWWA Standard for Prestressed Concrete Pressure Pipe, Steel Cylinder Type, for Water and Other Liquids, and

adds materials listed by the American Society of Testing and Materials as A36; A283, grade A; A575, grades 1012 and 1015; A576, grades 1012 and 1015; A635; and A663, grade 50.

The publication of this information in AWWA *Mainstream* begins the 30-day appeal period for action on standards by the Standards Council. Copies of the addendum are available from the Secretary of the Standards Council, AWWA, 6666 W. Quincy Ave., Denver, Colo. 80235, at a cost of \$5 for each copy. These are prepublication copies; standards in final form will not be available for purchase until May.

Vol. 25 No. 3 March 1981

Mainstream

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AWWA utility members and municipal service subscribers are invited to call upon the association's Washington staff for advice, information, and assistance in dealing with federal agencies and programs. Please direct inquiries to C. Atkinson Jr., AWWA Deputy Executive Director—Government Affairs, 485 National Press Building, Washington, D.C. 22045; 202-628-8303.

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Insurance Required for Hazardous Waste Disposal

The US Environmental Protection Agency has established new regulations requiring businesses that profit from hazardous waste disposal to be prepared to pay for any mistakes they make.

Such companies have until mid-1981 to purchase liability insurance, establish trust funds or bonds, and otherwise ensure that their disposal sites can be shut down safely and then be inspected periodically for 30 years after closure.

Among these USEPA regulations is one of particular interest to water suppliers. Every facility having the potential to pollute ground-water must buy additional liability insurance of at least \$3 million per occurrence of such pollution.

Other waste-disposal regulations cover insurance requirements and location standards regarding fires, explosives, earthquakes, and floods. Only the hazardous waste operations of state or federal governments are exempt from the rules.

Safety Tip

The National Safety Council says that speed is the principal error in fatal accidents.

'NOVA' Takes on Water Issues of the '80s

An hour of television devoted to water is one measure of public awareness. The subjects of trihalomethanes, leaky water pipes, groundwater contamination, and water policy have moved out of the water closet and onto the screen.

The TV program could not resolve the controversy surrounding many issues in the water industry, but it did introduce the public to the complexity of the issues.

A public television program, entitled "The Water Crisis," examined a number of problems besetting the US water industry in 1980. The program began by saying "engineering has been America's traditional solution to its water worries" and ended the hour by implying the need for a national water policy.

"Crisis" was produced by station WBGH in Boston. It was aired November 25 on the Public Broadcasting Service's "NOVA" series.

Harris Hits THMs

During "The Water Crisis," the subject of trihalomethanes (THMs) came up as Robert Harris was discussing the possibilities of recycling sewage for drinking water purposes.

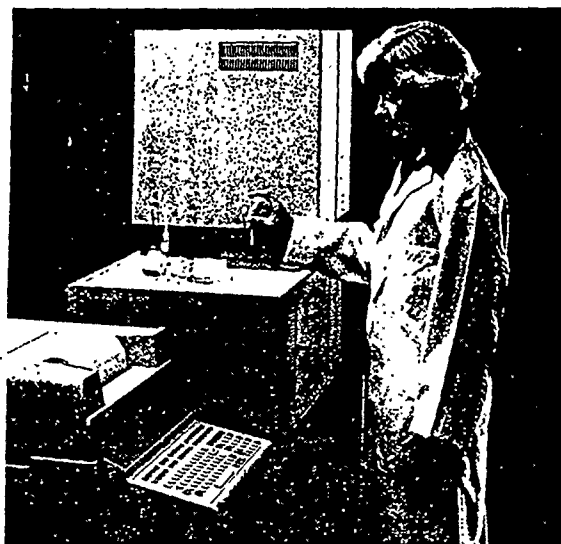
Harris, as many AWWA members are aware, is one of the more outspoken members of the Council on Environmental Quality.

The narrator then mentioned the 1972 study of New Orleans' drinking water that linked it to an increased risk of cancer. THMs and their connection to the chlorination aspect of water treatment were explained.

Said Harris, "The biggest problem in encouraging that water treatment companies reduce their problem from chlorine is convincing them that there is a problem to begin with, that there is a health threat associated with the use of chlorine."

AWWA's Viewpoint Missing

When contacted, the writer-producer-director Sari Sapir said there were "technical reasons" for not using interviews on screen opposing the opinions of Bob Harris. She did interview Jerry Gilbert, members of the Water Resources Council, and US Environmental Protection Agency officials "who are in the middle."



With the development in the late '60s of the gas chromatograph (pictured above) came the ability to detect organic contaminants in water—like the dioxane found in Bedford's wells.

None of those interviews made the program's final cut.

However, a toxicologist from the Harvard Medical School, Rudy Jaeger, was asked about current contaminant levels imposed by US Environmental Protection Agency regulations: "There seem to be no accepted ways to determine safe levels for carcinogenic chemicals. It would seem better to say that there are ways of deciding what might be acceptable risk; that's a governmental process, a governmental job. And then

after it is known that a risk exists, it's up to the public to decide whether the risk is acceptable...I think it's hard to know what is a safe level, and I'm speaking as a professional."

"NOVA" traveled to Bedford, Mass., to look at drinking water contamination unrelated to THMs.

In Bedford, chemical contamination of aquifers by nearby industries had closed three of the town's eight wells. (continued on page 13)

Carbon Symposium Slated for March 30

Michael J. McGuire of the Metropolitan Water District of Southern California and Irwin H. Suffet of Drexel University have organized a symposium on activated carbon adsorption for the national American Chemical Society meeting in Atlanta, Ga., beginning March 30.

The symposium, "Treatment of Water by Granular Activated Carbon," cosponsored by AWWA with support from the US Environmental Protection Agency's Office of Water Supply, is scheduled as part of the ACS conference.

McGuire said the purpose of the session is to bring together recognized experts in the activated carbon field who will present papers and participate in discussions to expand on the existing body of information.

The symposium will include question-and-answer and panel discussion periods, and McGuire said conference proceedings would be published to provide wide dissemination of the information presented.

While a proposed granular activated carbon (GAC) treatment regulation has been withdrawn and is undergoing a reevaluation, McGuire said, the use of GAC for drinking water treatment is being seriously considered by many utilities. The regulation is scheduled by the USEPA for reproposal in 1981 or 1982.

The collected papers of the 1978 symposium in Miami Beach, Fla., have formed a baseline body of knowledge in activated carbon applications to drinking water treatment. Two volumes, entitled "Acti- (continued on page 13)

Washington Report

Washington Report is prepared by the AWWA Government Affairs Office to inform AWWA members about federal programs and legislative and regulatory actions related to the water industry. Inquiries should be directed to AWWA Government Affairs Office, 485 National Press Bldg., Washington, D.C. 20045; telephone 202-628-8303.

The Administration

In a memorandum dated Jan. 29, 1981, the President postponed for 60 days regulations scheduled to become effective during that period, as well as the promulgation of final rules. Emergency regulations and regulations subject to short-term deadlines were not postponed, nor were any deadlines that would conflict with statutory or judicial deadlines.

The President has appointed a task force on regulatory relief. It is chaired by Vice President George Bush, who has indicated that federal regulations should be introduced only if there is a compelling need and only after adequate consideration of alternative approaches and cost-benefit impacts.

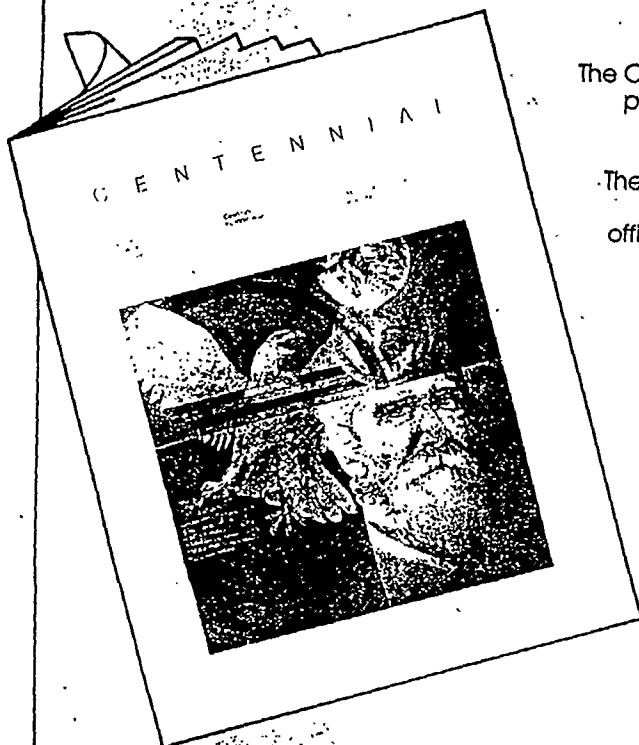
Congress

Regulatory reform is a principal concern of Congress also. The first bill introduced in the House, H.R. 1, addresses this issue. There are several others including H.R. 746, an omnibus regulatory reform bill, which is similar to one that succeeded in the House Judiciary Committee last September but did not pass prior to adjournment.

Congress is also concerned about the economy and probably will support many of the President's budget-cutting efforts. The first test was Congress' reluctant approval of the President's request to increase the federal debt ceiling by \$50 billion to \$985 billion. Budget cuts are anticipated across the board.

On the environmental legislative front, major revisions to the Clean Water Act will be recommended by a report of the House Public Works Oversight Committee. Senator John Chafee also is aiming his Environmental Pollution Sub- (continued on page 6)

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Waterworks Relic From 1830s Unearthed in Cincinnati

There is nothing remarkable about buildings hundreds or thousands of years old being abandoned, covered over, and forgotten and then accidentally unearthed centuries later. But only 150 years ago in one of the largest cities in the United States?

It may have looked like a medieval bastion, but the structure unearthed by bulldozers was part of Cincinnati's original waterworks.

At the time the discovery was reported in the *Cincinnati Post* (December 1977), a gray stone structure 50 by 90 feet (15 by 27 metres) and a series of underground tunnels had been excavated. City officials were searching old files and photos for clues as to what part of the old waterworks was uncovered.



AWWA Centennial

They do know that Cincinnati's first waterworks was completed in 1821. The system consisted of a series of pumps that raised water from the Ohio River to a tank. From there, similar pumps moved the water to a hillside reservoir. The pumps were powered by horses or oxen on a treadmill.

It also is known that the original wooden buildings and pipes were destroyed by fire in 1831. A new works was constructed on the site, and the city purchased it for \$300,000 in 1839. This plant was operated by the city until 1907, when two new plants were built.

Officials could find no dates on the old structure, which had been covered by heaps of rubble. All that was found in the ruins was three empty wine bottles and a Mason jar.



Bulldozers clearing land for a park in 1977 uncovered this gray stone structure, once a pumping station that brought water from the Ohio River.

City engineers conjectured that the original pumping station was below the present water level of the river and that the structure must have served as a holding operation before water was pumped through the tunnels up to the reservoir on the hillside.

The Ohio River now has a

minimum operating level of 25 ft (7.6 m), but before the first dams were built in the 1920s, the river had an average depth of about 8 ft (2.4 m).

The land where the rock and stone structure was uncovered was being cleared by the Cincinnati Recreation Department for a park and playground.

Hard-Working Membership Chairmen Focus Efforts on EMGM

Rich Lane, Manager of Section Services



It's nice to see that most of you are not letting up because the end of EMGM is in sight. As I've said before, that only gives us a new starting point. Most sections are still vigorously seeking out new members either through individual efforts or direct mail campaigns.

Our section membership committee chairmen surely are among the hardest working individuals in AWWA. Usually overworked, they can always use some assistance. Hope you'll help them by doing your bit too. Licking stamps, stapling fliers, calling up some past due members.

Speaking of hard-working chairmen, Steve Gordon (New England) ordered our membership display board for

use at a meeting of suppliers in Maine. When he's through with it, he'll send it on to Ron Middleton in Indiana for use at a meeting.

Dave Stoddart (Atlantic-Canada) and Pete Johnson (Chesapeake) personally visit municipalities and utilities and talk to mayors and superintendents about joining AWWA and leave an application with them.

Gordon Smith (British Columbia) has budgeted for a \$25-a-month recruiting prize and \$100, \$50, \$35 prizes in an annual contest. Herb Evans (Virginia) is putting together a direct mail campaign.

Did somebody say, "Direct mail?" Ken Drury (Florida) and Mel Hook (Pennsylvania) both have strong direct mail campaigns going on right now. Apps from their campaigns come across my desk every day. My secretary asked me today, "Who are those guys?"

Welcome aboard to recently appointed membership chairmen Dar Soder (Nebraska), Floyd Wicks (Ohio), Cleo Kron (Iowa), Wendell Evensen (Intermountain), Pat Henry (Arizona), Herb Evans (Virginia), Austin Pate (Kentucky-Tennessee),

Tony Suratt (North Central), and Al Hamlett (Southwest).

I am putting together a membership chairman's procedure manual (as I can get to it) that will be helpful to new and seasoned chairmen. I anticipate having it ready for distribution immediately following the meeting of the national membership committee in mid-March. Duties, responsibilities, monthly reports, retention efforts, and how to do a direct mail campaign will all be covered. It should be a good one.

Regional section officers' meetings start up again this month with the Puerto Rico Section hosting New England, Pennsylvania, and Chesapeake March 5-6. What I wouldn't give to go to that meeting. Paul Schulte is the only staff person going. He'll pay.

On April 23-24 the Iowa Section is hosting a meeting of Illinois, Kansas, Missouri, Wisconsin, and South Dakota. A big one. Both Paul and I will travel to that one.

Two more are scheduled for next fall. Florida is hosting Southwest, Alabama-Mississippi, and Southeast in Orlando. New York is hosting Connecticut, New Jersey

Quebec, and Atlantic-Canada.

The regional meetings are invaluable training and learning sessions for Section officers. As a member of AWWA, there are many ways in which you can serve your section and offer your assistance to the administration of the association's goals and objectives. Ask your section secretary how you may serve. Or call me and I'll put you in touch with your section officers.

So, stay in touch. Give me a call. I can talk sports, swap jokes, compare weather, and slip in some business all on one dime. There's my phone now. Gotta go.

These members have recruited at least five new members during the EMGM campaign to earn their AWWA centennial tie pin or necklace charm.

winners to date: 640

Section	Recipient
Arizona	H.E. Mowry
Chesapeake	J.R. Woods
Montana	W.P. Weakley
Pennsylvania	D.T. Burr
Texas	Albert Breaux
Virginia	W.H. Payne
West Virginia	J.L. Green

Groundwater Monitoring

Public awareness of just what an aquifer is seems to be on the rise. So is concern over what kinds of things might be seeping into them, as well as how much water is being taken out of them.

A water professional in today's political climate might be able to use a new handbook, entitled *Groundwater Monitoring*, put out by General Electric Company.

Authored by Lorne G. Everett, the handbook is described as "a cost-effective, generic methodology for monitoring the quality of groundwater." It was chosen by the US Environmental Protection Agency as the basis for its guidelines for coal strip-mining and oil-shale tracts.

Groundwater Monitoring shows state-of-the-art monitoring methodologies in a step-by-step format that includes estimates of capital expenses and operating costs. It also contains groundwater pollution case histories and site-specific examples of how the reader can put the book's material to work.

The term "handbook," however, is somewhat misleading. The 529-page volume costs \$150 (\$185 outside the United States). Ordering information can be obtained from General Electric Company, Business Growth Services, 120 Erie Blvd., Dept. 551, Schenectady, NY 12305.

LYNCH ELECTED: (continued from page 1)

democratic credentials were earned at the Massachusetts Institute of Technology and the New Jersey Institute of Technology.

He will take office at the close of the the 1981 Annual Centennial Conference in St. Louis, June 7-11. At the same time, the other elected officers in the succession for the Association presidency will take new offices.

The advancement of these two officers was also confirmed at the January meeting. K.J. Miller, current president-elect, will become president in June; J.H. Stacha, now vice president will move to the office of president-elect. J.B. Gilbert, currently president, will become immediate past president. T.J. Blair III, treasurer, is in the second year of a three-year term.

WASHINGTON REPORT: (continued from page 3)

committee at this law and plans to hold hearings around the country to investigate problems with the construction grants program.

The House Energy and Commerce Committee, formerly the Interstate and Foreign Commerce Committee, chaired by Rep. John Dingell (D-Mich.), announced the members of the subcommittee responsible for the Safe Drinking Water Act. Democratic members of the Health and Environment Subcommittee, still chaired by Rep. Henry Waxman (D-Calif.), include Reps. Florio (N.J.), Gramm (Texas), Leland (Texas), Luken (Ohio), Mikulski (Md.), Moffett (Conn.), Scheuer (N.Y.), Shelby (Ala.), Walgren (Pa.), and Wyden (Ore.).

Republican subcommittee members are Reps. Madigan (Ill.), Benedict (W.V.), Bliley (Va.), Brown (Ohio), Danne-meyer (Calif.), Ritter (Pa.), and Whittaker (Kan.).

Transition

President Reagan has nominated Anne McGill Gorsuch, a Colorado attorney, as administrator of the US Environmental Protection Agency.

Gorsuch, 38, is a former state legislator who gained prominence during her four years at the statehouse as a leader of the new young conservatives in Colorado Republican politics.

She is best known for her work on criminal sentencing laws, which brought her recognition from colleagues and reporters as the outstanding freshman legislator in 1977. Gorsuch also was active on the legislative committee responsible for major industrial and automobile pollution legislation.

EPA'S Groundwater Protection Strategy

In response to USEPA's request for written comments and public testimony, Cliff Atkinson Jr. presented AWWA's views on the proposed groundwater strategy at a public meeting in Washington, D.C. in late January. The association complimented USEPA on its strategy-developing process and the representative nature of the

strategy. AWWA noted that programs of this nature can be better accomplished at state or watershed or local levels and that the proper federal role is broad policy guidance, research, and technical assistance.

Synthetic Organic Compounds

USEPA had indicated that in the near future, it will publish an Advance Notice of Proposed Rulemaking concerning maximum levels for organic contaminants, primarily solvents. Subsequent to the ANPRM, USEPA will hold a series of workshops to be used as the basis for the proposed regulations. In order to provide constructive suggestions during the process of regulation development, AWWA President J.B. Gilbert has established an ad hoc committee chaired by Ken Shull, vice president of the Philadelphia Suburban Water Company. The committee will provide recommendations and guidance to the Technical and Professional and Water Utility councils and to the Executive Committee of AWWA and will meet with EPA representatives to provide assistance to assure an effective regulatory process.

Voluntary Standards

As previously reported, procedures published by the US Department of Commerce establish requirements for standards-setting bodies to meet if they desire federal support or participation.

AWWA filed a written statement opposing the regulations as originally proposed by DOC. More recently, in a letter to the executive director of the President's task force on regulatory relief, AWWA requested that implementation of final procedures be deferred pending review by the task force and noted that the current system has been shown to be working satisfactorily without federal involvement.

In response to the President's executive order, the DOC has postponed the effective date of these regulations until Mar. 30, 1981.

NDWAC

The March meeting of the

National Drinking Water Advisory Council had been postponed pending approval of five new members. The federal hiring freeze is currently blocking these appointments. USEPA is appealing on the grounds that the council is mandated by the Safe Drinking Water Act and, therefore, not subject to the executive order.

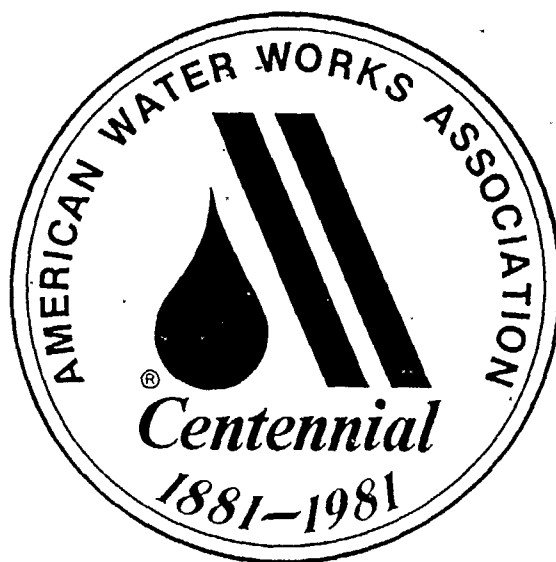
Wilderness Study Policy

The US Bureau of Land Management published its draft wilderness study policy in the Dec. 19, 1981, *Federal Register*. The draft proposes nine criteria for the review of lands for wilderness designation. Draft regulations are meant to supplement BLM's land use planning system and aid state and local BLM field offices in the inventory process and final recommendations.

Construction Grants

In an effort to improve the construction grants program, USEPA conducted workshops in November and invited experts from across the nation to attend. Recommendations from participants included delegation of the program to the states, leaving USEPA with a role of review of those programs implemented at the state level; separation of small from large communities in the grants process; use of water quality as a primary basis for establishing project priority; simplification of the grant process; development of wastewater facilities that communities can operate without federal involvement; and more effective management to assure compliance with permit conditions.

USEPA's efforts to date have resulted in publishing of the "1990 Preliminary Draft Strategy for Municipal Wastewater Treatment." Public review of this document will assist USEPA in developing its final strategy. Comments should be submitted to Myrna Hurd, Associate Administrator for Water and Waste Management, USEPA, (WH-556), 401 M. St. S.W., Washington, D.C. 20460. Meetings concerning this strategy will be held during March; information can be obtained by calling 202-755-6026.



American Water Works Association
Annual Conference and Exposition

June 7-11, 1981

Cervantes Convention Center
St. Louis, Missouri

THEME: Another Century of Better
Water Quality and Service

AWWA Returns to St. Louis for Centennial Conference

The international conference of AWWA will return to its birthplace in 1981 when the worldwide organization will meet in St. Louis, June 7-11, to celebrate its centennial.

Headquarters of the week-long meeting will be the new \$30 million Cervantes St. Louis Convention Center covering four square blocks in downtown St. Louis in the midst of a new 16-block Convention Plaza development containing hotels, shops, restaurants, entertainment areas, and a number parking garages. The Convention Center is within walking distance of the Mississippi Riverfront, the famous Gateway Arch, and Busch Memorial Stadium.

As early as 1879, some thoughts and correspondence about a meeting of "western water works administrators" were circulated, but it was finally formalized two years later.

On Mar. 29, 1881, when there were fewer than 1000 public water supplies and but a few rudimentary water treatment plants in the United States, 22 men gathered in Engineers' Hall at Washington University, which at the time was on the riverfront in St. Louis, to organize an "American Water Works Association."

The purpose of the organization, as stated in the preamble to its first constitution adopted on Mar. 30, 1881, was "for the exchange of information per-

taining to the management of waterworks, for the mutual advancement of consumers and water companies, and for the purpose of securing economy and uniformity in the operation of waterworks."

The 20 individual and four manufacturer members who were enrolled by the end of that first convention thus formed the vanguard of what was to become the largest group of organized professional water supply people in the world.

It was not until 1910 that AWWA membership reached the 1000 mark, and it took another 14 years before that number had doubled. Today, the association's membership is more than 32 000 and about 10 000 are utility executives.

In the early years, AWWA members assembled only once each year to exchange information and discuss the progress of the industry. Records of the technical papers presented, and manufacturers' products exhibited, and business conducted at these annual meetings were published in a single volume of proceedings.

By the time AWWA membership had grown to more than 1000 however, a need was recognized for breaking up these meetings into separate discussion groups on specialized topics. Thus, in 1913, it was proposed that the association establish topical divisions

(continued on page 11)

Preconference Seminar Programs

Sunday, June 7

S1 • COAGULATION AND FILTRATION: BACK TO THE BASICS

Water Quality Division

Moderator: C.H. Tate

1. INTRODUCTION—C.H. TATE
2. INITIAL MIXING—A. AMIRTHARAJAH
3. COAGULATION—J.K. EDZWALD
4. FLOCCULATION—R.D. LETTERMAN
5. FILTRATION—J.L. CLEASBY
6. COAGULANT SELECTION USING JAR TESTS—J.E. SINGLEY
7. DETERMINING AND OPTIMIZING G—D.A. CORNWELL
8. DESIGN CONSIDERATIONS IN FILTRATION—B.G. STONE
9. LOW DOSAGE TREATMENT FOR DIRECT FILTRATION—H.E. HUDSON

S2 • ORGANIC CHEMICAL CONTAMINANTS IN GROUNDWATER: TRANSPORT AND REMOVAL

Research T&P Committee and Resources Division

Moderators: F.A. DiGiano, D.W. Miller

1. FUNDAMENTALS OF GROUNDWATER FLOW

2. BASIC CONCEPTS OF TRANSPORT OF ORGANIC CONTAMINANTS THROUGH GROUNDWATER
3. MANAGEMENT ALTERNATIVES FOR GROUNDWATER CONTAMINATION PROBLEMS
4. NATURE OF ORGANIC CONTAMINANTS IN GROUNDWATER AND TREATMENT APPROACHES
5. ADSORPTION AS A TREATMENT PROCESS
6. AIR STRIPPING AS A TREATMENT PROCESS
7. CASE STUDIES IN REMOVAL OF ORGANIC CHEMICAL CONTAMINANTS FROM GROUNDWATER

S3 • SMALL WATER SYSTEM PROBLEMS

Water Quality Division

Moderator: R.G. McCall

1. OPERATOR TRAINING (Panel Discussion)—HUGH HANSON, M.H. THOMPSON, R.W. LEIDHOLDT
2. OVERVIEW OF SMALL SYSTEMS WATER TREATMENT STUDIES—T.J. SORG
3. INSTITUTIONAL ALTERNATIVES (Panel Discussion)—R.K. JOHNSON, R.M. CLARK, J.D. CLISE
4. MARKET STUDY ON SMALL WATER TREATMENT PLANTS—J.C. CLARK JR.
5. FUNDING (Panel Discussion)—GLEN BENNETT, J.M. GASTON, R.L. WUBBENA
6. REACTION AND STRATEGY (Panel Discussion)—V.J. KIMM, IRA MARKWOOD, R.R. LAMSON

Technical Program

Monday, June 8—Morning

- 1 • **ANOTHER CENTURY OF BETTER WATER QUALITY AND SERVICE**
General Session
Chairman: J.B. Gilbert
Vice Chairmen: K.J. Miller, J.H. Stacha, W.O. Lynch, D.K. Shine, T.J. Blair III, D.B. Preston
 1. INVOCATION
 2. WELCOME
 3. OPENING REMARKS—J.B. GILBERT
 4. AWARDS
 5. KEYNOTE ADDRESS

Monday, June 8—Afternoon

- 2 • **ENVIRONMENTAL CONSIDERATIONS AND OTHER DELAYS**
Distribution Division
Chairman: P.E. Pilgreen
Vice Chairman: D.E. Jackson
 1. NEGOTIATING FOR INSTREAM WATER—D.J. CHRISTIANO
 2. ENVIRONMENTAL AND REGULATORY CHESSE GAME—R.L. WUBBENA
 3. PERMIT PROGRAM AS IT AFFECTS NAVIGABLE WATERS—G.R. ROBERTSON
 4. INSTALLATION PROBLEMS AND SPECIAL TECHNIQUES OF LARGE STEEL MAINS—S.T. FLETCHER
 5. INNOVATIVE DESIGN TO OVERCOME REGULATORY CONSTRAINTS ON A WATER STORAGE FACILITY—R.C. HAVEN
- 3 • **MANAGEMENT CHALLENGES OF THE '80s: PEOPLE AND THE MANAGEMENT PROCESS**
Management Division
Cochairmen: C.A. Froman Jr., K.W. Peltz
 1. EVOLUTION OF MANAGEMENT AND ORGANIZATIONS—H.J. GRAESER
 2. CHANGING ATTITUDES AND MANAGEMENT STYLES—R. BAREFIELD
 3. COMMUNICATION AND RELATIONSHIPS WITH CUSTOMERS—KAY KUTCHINS
 4. THE REGIONALIZATION PROCESS—C.R. MORRIS
- 4 • **INTERACTIVE DEVELOPMENT OF SURFACE AND GROUNDWATER SUPPLIES (Panel Discussion)**
Resources Division
Cochairmen: F.M. McGowan, W.R. Inhoffe
 1. GEORGE PINDER
 2. G.M. HANSLER
 3. D.W. MILLER
- 5 • **WATER QUALITY: PAST, PRESENT AND FUTURE (Panel Discussion)**
Water Quality Division
Chairman: J.M. Symons
Vice Chairman: J.E. Singley
 1. ABEL WOLMAN
 2. G.E. SYMONS
 3. H.E. HUDSON JR.
 4. C.H. TATE
 5. V.J. KIMM
- 6 • **RESEARCH 1**
Research T&P Committee
Chairman: P.L. McCarty
Cochairmen: P.R. Cairo
 1. APPLICATION OF POLYMERS FOR WATER PLANT SLUDGE CONDITIONING—J.T. NOVAK, MOHAMMAD PIROOZFARD

2. INTERACTION OF HYDROLYZABLE METAL AND CATIONIC POLYELECTROLYTE COAGULANTS—R.D. LETTERMAN, P. SRICHAVOENCHAIRIT
3. SOFTENING SLUDGE TREATMENT: STATE-OF-THE-ART—D.A. CORNWELL
4. WATER CLARIFICATION AND DECOLORIZATION WITH THE USE OF REGENERABLE MAGNETIC PARTICLES—W.G.C. RAPER, N.J. ANDERSON, B.A. BOLTO, D.R. DIXON, L.O. KOLARIK, A.J. PRIESTLEY, D.E. WEISS, N.V. BLESING, P.R. NADEBAUM
5. THE MECHANICS OF AIR SCOUR DURING FILTER BACKWASH—A. AMIRTHARAJAH, R.J. MORRISON, S.R. HOLNBECK
6. HEURISTIC MODEL FOR WATER NETWORK DESIGN—T.A. RIDGIK, D.T. LAURIA

Tuesday, June 9—Morning

- 7 • **BUILDING FOR THE FUTURE**
Distribution Division
Chairman: K.D. Duke
Vice Chairman: J.H. Wilson
 1. SPECIAL DESIGN CONSIDERATIONS ON THE DIEMER PIPELINE PROJECT—J.J. KINCAID, D.C. SCHROEDER
 2. BREAK HISTORY SURVEY TO PROVIDE BASIS FOR MAIN REPLACEMENT—D.K. O'DAY
 3. STATISTICAL SAMPLING TECHNIQUES FOR CONTROLLING ACCURACY OF SMALL WATER METERS—PENCHIH TAO
 4. CASE HISTORY OF ASBESTOS-CEMENT PIPE VINYL LINING—R.S. WOODHULL
 5. AGING WATER SYSTEMS: BOSTON'S APPROACH TO THE PROBLEM—J.P. SULLIVAN
- 8 • **MANAGEMENT CHALLENGES OF THE '80s: MANAGING PERFORMANCE**
Management Division
Cochairmen: C.E. Woods, W.H. Abbott Jr.
 1. IMPROVED PRODUCTIVITY THROUGH WORK MEASUREMENT—R.C. PARSONS
 2. MANAGEMENT, INFORMATION, AND COMPUTERS—R.B. CARSON
 3. OPERATING AND FINANCIAL REPORTING SYSTEMS—W.J. HUELSMAN
 4. PLANNED MAINTENANCE MANAGEMENT—C.M. BURNEY
- 9 • **WATER RIGHTS CONTROVERSIES**
Resources Division
Chairman: F.G. Honeycutt
 1. HIGH PLAINS-OGALLALA AQUIFER SERVES MANY MASTERS—JOE MOORE
 2. EASTERN STATES TRY TO SHARE WATER—W.C. WRIGHT, RONNA COHEN
 3. WYOMING WATER IS SPLIT, 60% AND 40%—G.W. FASSETT
 4. EAST (RIPARIAN) VERSUS WEST (APPROPRIATIVE): HAS THE TWAIN MET?—T.A. CAHILL
- 10 • **CURRENT CONCERNS IN WATER QUALITY**
Water Quality Division
Chairman: A.F. Hess
Vice Chairman: N.J. Davoust
 1. CONTROL ALTERNATES FOR VOLATILE ORGANIC CONTAMINANTS—JOHN DYKSEN, A.F. HESS
 2. COMMUNITY WATER SUPPLY SURVEY: SAMPLING AND ANALYSIS FOR PURGEABLE ORGANICS AND TOTAL ORGANIC CARBON—H.J. BRASS
 3. PROCESS CONSIDERATIONS IN RECYCLING PREFORMED FLOCS TO THE COAGULATION-FLOCCULATION PROCESS—K.B. GUPTA, R.K. HAM
 4. COSTS AND BENEFITS OF DRINKING WATER TREATMENT—R.M. CLARK, R.A. DEININGER
 5. MEETING THE OBSCURE STANDARDS THAT WERE—R.E. ZEGERS, MELFORD DAHL
 6. TRANSFORMING CONCEPTS INTO DESIGNS: THE DENVER REUSE PROJECT—S.W. WORK

11 • UNIVERSITY FORUM 1

Chairman: J.T. Novak

Vice Chairman: J.F. Ferguson

1. CHEMICAL MODELING OF COPPER CORROSION USING ELECTROCHEMICAL TECHNIQUES—R.D. HILBURN
2. A WATER CONSERVATION STUDY IN A WATER-RICH STATE—JEFFREY LUTZ, ERIC THARP, J.T. NOVAK, J.T. O'CONNOR
3. FERRIC CHLORIDE AND ALUM AS SINGLE AND DUAL COAGULANTS—P.N. JOHNSON, A. AMIRTHARAJAH
4. EFFECT OF SOLUTION CHEMISTRY ON COAGULATION WITH HYDROLYZED Al (III)—S.G. VANDERBROOK
5. PILOT DIRECT FILTRATION AND CARBON ADSORPTION TREATMENT OF HIGH-SOLIDS RIVER WATER—THOMAS GAVIN
6. RELATIONSHIPS BETWEEN STANDARD PLATE COUNTS AND OTHER PARAMETERS IN WATER DISTRIBUTION SYSTEMS—M.A. GOSHSKO, H.A. MINNICH, W.O. PIPES, R.R. CHRISTIAN

Tuesday, June 9—Afternoon**12 • SMALL WATER UTILITY OPERATIONS AND DESIGN (Panel Discussion)**

Engineering & Construction T&P Committee

Chairman: G.H. Abplanalp

Vice Chairman: J.L. Cobb

1. VIEWED BY OWNER—J.A. WADE JR.
2. VIEWED BY DESIGN ENGINEER—L.S. WOLFE
3. VIEWED BY STATE REGULATORY AGENCY—W.A. KELLEY
4. VIEWED BY EPA—J.W. HOFFBUHR

13 • BETTER WATER QUALITY AND SERVICE THROUGH TRAINING (Panel Discussion)

Education T&P Committee

Cochairmen: J.W. Hoffbuhr, M.J. McGuire

1. TEXAS SECTION—KAY KUTCHINS
2. ROCKY MOUNTAIN SECTION—C.A. LANCASTER
3. MICHIGAN SECTION—J. VAN DEWEGE
4. CALIFORNIA SECTION—M.J. MCGUIRE
5. ILLINOIS SECTION—D.C. RENNER
6. AWWA—R.W. LEIDHOLDT

14 • STANDARDS COUNCIL

Chairman: J.H. Robinson

Vice Chairman: G.L. Laverty

15 • INTERNATIONAL AFFAIRS 1

Chairman: F.W. Montanari

Vice Chairman: E.A. Merryfield

1. RURAL WATER SUPPLY IN PUERTO RICO—J.J. MAYOL
2. REDUCING THE COST AND TIME OF FEASIBILITY AND MASTER PLAN STUDIES IN DEVELOPING COUNTRIES—H.R. SHIPMAN
3. ESTABLISHMENT OF WATER UTILITY INSTITUTIONS IN DEVELOPING COUNTRIES—L.A. FRANCIS
4. WOMEN, WATER, AND THE DECADE—MARY ELMENDORF

16 • UNIVERSITY FORUM 2

Chairman: J.K. Edzwald

Vice Chairman: W.R. Knocke

1. SEASONAL EVALUATION OF ORGANICS REMOVAL AT A CONVENTIONAL WATER TREATMENT PLANT—BENJAMIN GONG, J.K. EDZWALD
2. DIRECT FILTRATION OF STREAMBORNE GLACIAL SILT—M.D. ROSS
3. APPLICATION OF ION EXCHANGE AND ULTRAFILTRATION FOR COLOR REMOVAL FROM GROUNDWATER—KEITH LOWERY, G.F. MITCHELL, D.O. HILL
4. AN EVALUATION OF AERATION METHODS FOR THE

REMOVAL OF VOLATILE ORGANIC

CONTAMINANTS—M.A. GOERS, S.A. HUBBS

5. FORMATION AND REMOVAL OF BROMOFORM DURING DESALINATION—NING-WU CHANG, P.C. SINGER
6. GRANULAR ACTIVATED CARBON PRETREATMENT FOR THE REMOVAL OF TRIHALOMETHANE PRECURSORS—K.B.B. CARTER, R.C. HOEHN
7. OZONATION OF A MUNICIPAL GROUNDWATER SUPPLY TO REDUCE IRON, MANGANESE, AND TRIHALOMETHANE FORMATION—R.A. STOEHNER, D.A. ROLLAG

Wednesday, June 10—Morning**17 • EARLY BIRD**

Management Division

Chairman: H.W. Becker

1. HIDDEN COSTS OF ACCIDENTS—R.P. VAN DYKE

18 • ANOTHER CENTURY OF IMPROVED OPERATION (Operator's Forum)

Education T&P Committee

Chairman: R.F. Layton

1. OUTFLOW AND THE OPERATOR
2. WATER METER BASICS—M.E. YOUNG
3. TIPS ON PUMP MAINTENANCE—E.E. ARASMITH
4. SAFETY AND TRAFFIC ROUTING—R.L. BEST
5. CROSS-CONNECTIONS: THEIR IMPORTANCE AND CONTROL—D.C. ANDERSON

19 • SECTION OFFICERS' FORUM

Moderator: A.W. Jorgenson

1. POST EMGM AND WHERE WE GO FROM HERE—R.S. LANE
2. DEVELOPING A PROCEDURE MANUAL FOR INCOMING OFFICERS AND COMMITTEE CHAIRMEN—J.E. KEMPER
3. THE NEW OPERATOR TRAINING PROGRAM AND AWWA SEMINAR PACKAGES—B.D. HASKINS
4. TIPS ON CONFERENCE REGISTRATION—R.E. UHLENBURG
5. PLANNING A JOINT SECTION CONFERENCE—R.L. WUBBENA, G. MILLS
6. DISCUSSION

20 • INTERNATIONAL AFFAIRS 2

Chairman: W.W. Aultman

Vice Chairman: W.E. McQueeney

1. WATER SUPPLY FOR RIYADH, SAUDI ARABIA: DESALTING—ISAM JAMJOM, ADOLF FEIZLMAYR
2. WATER IN A HURRY FOR THE OIL FROM COAL SASOL 2 PROJECT, SOUTH AFRICA—W.S. LEGGE
3. NEW EXPERIENCES OF A EUROPEAN SURFACE WATER TREATMENT SYSTEM, ESPECIALLY IN REMOVAL OF ORGANICS—MAARTEN SCHALEKAMP
4. DESIGN CONCEPTS IN WATER TREATMENT IN FRANCE—M.R. RAPINAT

21 • WATER UTILITY COUNCIL

Chairman: W.H. Miller

1. INTRODUCTION—J.B. GILBERT
2. OVERVIEW OF THE WATER UTILITY COUNCIL—W.H. MILLER
3. WASHINGTON ACTIVITY—CLIFF ATKINSON JR.
4. EPA'S DRINKING WATER PROGRAM
5. SOLVING WATER UTILITY PROBLEMS TODAY (Panel Discussion)

22 • RESEARCH 2

Research T&P Committee

Chairman: V.L. Snoeyink

Cochairman: P.D. Foley

1. REMOVAL OF ORGANICS FROM WATER BY AERATION—P.R. WOOD, JACK DeMARCO, F.W. CURTIS JR., H.J. HARVEEN, R.F. LANG
2. INTRODUCTORY STUDY OF THE BIODEGRADATION OF THE CHLORINATED METHANE, ETHANE, AND

(continued on page 10)

(continued from page 9)

- ETHENE COMPOUNDS—R.F. LANG, P.R. WOOD, F.A. PARSONS, JACK DEMARCO, H.J. HARWEEN, I.L. PAYAN, L.M. MEYER, M.C. RUIZ, E.D. RAVELO
3. BIODEGRADATION OF TRACE ORGANICS BY BIOFILMS ON POROUS MEDIA—RICHARD STRATTON, EUN NAMKUNG, B.E. RITTMANN
 4. REMOVAL OF SOLUBLE ORGANIC CONTAMINANTS BY LIME-SODA SOFTENING—S.J. RANDTKE, C.E. THIEL, M.Y. LIAO, C.N. YAMAYA, D.E. JOHNSON
 5. EFFECTS OF CALCIUM ON THE SPECIATION, ADSORPTION, AND REMOVAL OF FULVIC ACIDS—B.A. DEMPSEY, C.R. O'MELIA

Wednesday, June 10—Afternoon

23 • POTPOURRI

Distribution Division

Chairman: J.M. Rasberry

Vice Chairman: G.O. Muller

- 1a. AUTOMATION AND INSTRUMENTATION: M2 MANUAL—J.R. DANER
- 1b. AUTOMATION AND INSTRUMENTATION: INTERFACE OF INSTRUMENTATION WITH SWITCH GEAR—A.O. BYRNIE
- 1c. AUTOMATION AND INSTRUMENTATION: MASTER METERING—H.D. GILMAN
2. TANK INSPECTION, CLEANING, AND MAINTENANCE—M.L. BOWDEN
3. WORK MANAGEMENT STANDARDS—D.L. TIPPIN, G.M. BARRON
4. A PRACTICAL CORROSION CONTROL PROGRAM FOR WATER DISTRICTS—D.M. WATERS
5. MAINTENANCE OF VALVES AND HYDRANTS—B.W. FRANKLIN

24 • MANAGEMENT CHALLENGES OF THE '80s: MANAGING IN A CHANGING ECONOMY

Management Division

Cochairmen: L.J. Hash, R.L. Lee

1. ENERGY MANAGEMENT: THREE WAYS TO WIN—E.A. PERSSON
2. WATER USE MANAGEMENT—F.P. GRIFFITH
3. MANAGEMENT'S OBLIGATIONS IN THE REGULATORY PROCESS—C.A. BUESCHER
4. FINANCIAL MANAGEMENT—G.S. SALEBA

25 • MATERIAL SPILLS HAZARDOUS TO WATER SUPPLY

Resources Division

Chairman: C. H. Thompson

Vice Chairman: R.P. McHugh

1. EAST BAY MUD HAS THE PLAN—K.B. STINSON
2. SOME HAZARDOUS TIMES—C.H. THOMPSON, W.C. WESTGARTH
3. SUPERFUND: WHAT?

26 • POTPOURRI

Water Quality Division

Chairman: E.W. Bailey

Vice Chairman: H.E. Pearson

1. INTERRELATIONSHIP OF BACTERIAL COUNTS WITH OTHER FINISHED WATER QUALITY PARAMETERS WITHIN DISTRIBUTION SYSTEMS—J.K. REILLY, J.F. KIPPIN
2. BACTERIAL COLONIZATION OF WATER DISTRIBUTION SYSTEMS—B.H. OLSON
3. CORROSION CONTROL WITHIN WATER DISTRIBUTION SYSTEMS—J.J. COSTELLO
4. ORGANICS REDUCTION BY RIVERBANK INFILTRATION AT LOUISVILLE—S.A. HUBBS
5. EFFECTIVENESS OF POWDERED AND GRANULAR ACTIVATED CARBON FOR REMOVAL OF ORGANIC CONTAMINANTS AT NIAGARA FALLS, N.Y.—J.R. WESTENDORF, D.R. WEISS, D.L. BADOREK, LARRY SKLARSKI
6. RESPONSE OF A LOCAL HEALTH DEPARTMENT TO THE PRESENCE OF ORGANICS IN THE DRINKING WATER SUPPLY, NASSAU COUNTY, LONG ISLAND, N.Y.—G.E. DONOHUE

27 • RESEARCH 3

Research T&P Committee

Chairman: C.R. O'Melia

Cochairman: P.L. McCarty

1. DESORPTION OF COMPOUNDS DURING OPERATION OF GAC ADSORPTION SYSTEMS—W.E. THACKER, V.L. SNOEYINK, J.C. CRITTENDEN
2. MICROBIAL ACTIVITY ON GRANULAR ACTIVATED CARBON: AN ASSESSMENT—F.A. DIGIANO
3. GAC PERFORMANCE CRITERIA FOR ORGANIC CARBON REMOVAL—P.V. ROBERTS, R.S. SUMMERS
4. PRELIMINARY DESIGN OF LEAST-COST FIXED-BED ADSORPTION SYSTEMS—J.C. CRITTENDEN, METIN ARI, M.C. LEE
5. REMOVAL OF CARBON TETRACHLORIDE FROM WATER BY ACTIVATED CARBON—W.J. WEBER JR., MASSOUD PIRBAZARI

Thursday, June 11—Morning

28 • HELEN WEREN'T NO SAINT

Distribution and Resources Divisions

Chairman: J.A. Roller

1. REPORT ON EARLY WARNING SYSTEM—CARL GOEBEL
2. MUD FLOW PROBLEMS—L.V. INMAN
3. FALLOUT PROBLEMS—ROGER JAMES
4. PUBLIC HEALTH CONSIDERATIONS—D.K. SANDER, K.J. MERRY
5. H-DAY PLUS ONE YEAR—D.M. THOMAS

29 • HEALTH EFFECTS OF DRINKING WATER (Miniseminar)

Water Quality Division

Chairman: J.E. Courchene

Vice Chairman: R.G. McCall

1. INTRODUCTION TO EPIDEMIOLOGY—G.F. CRAUN
2. INTRODUCTION TO TOXICOLOGY—R.A. NEAL
3. ETIOLOGY OF CARCINOGENESIS—R.A. NEAL
4. WATER QUALITY AND CARDIOVASCULAR DISEASE—NATHANIEL REVIS
5. WATERBORNE INTESTINAL DISEASE—G.F. CRAUN
6. TOXICOLOGICAL PROBLEMS ASSOCIATED WITH ALTERNATIVE METHODS OF DISINFECTION—R.J. BULL

30 • WATER TREATMENT DESIGN: PAST, PRESENT, AND FUTURE

Engineering & Construction T&P Committee

Cochairmen: R. Goulding, J.V. Miner

1. EFFECTS OF GOVERNMENT REGULATION—A.R. HAMMER
2. PRETREATMENT PROCESSES—J.D. GRIFFITH
3. FILTRATION PROCESSES—C.B. HAGAR, D.B. ELDER
4. DISINFECTION PROCESSES—R.R. TRUSSELL
5. WATER SYSTEM CONSTRUCTION—C.N. BOHRER

31 • RESEARCH 4

Research T&P Committee

Chairman: B.G. Stone

Cochairman: R.H. Taylor

1. COMPARISON OF THE DPD-COLORIMETRIC, DPD-STEADIFAC, AND FACTS TEST PROCEDURES FOR FREE CHLORINE RESIDUAL ANALYSES—W.J. COOPER, N.M. ROSCHER
2. IMPACT OF WATER TREATMENT ALTERNATIVES ON MICROBIAL BARRIERS—E.E. GELDREICH
3. A PREDICTIVE MODEL FOR CHLOROFORM FORMATION FROM HUMIC ACID—B.A. ENGERHOLM, G.L. AMY
4. DIFFUSION OF ORGANICS FROM SOLVENT-BONDED PLASTIC PIPES USED FOR POTABLE WATER PLUMBING—K.D. REICH, A.R. TRUSSELL, FONG-YI LIEU, L.Y.C. LEONG, R.R. TRUSSELL
5. DISCUSSION ON RESEARCH FOUNDATION FUNDING—J.F. MANWARING

Unaccustomed as You Are to Public Speaking...

At one time or another, almost everyone is asked to speak in front of a group.

Whether it be an oral dissertation for college credit, a technical presentation for AWWA, or a local Boy Scout meeting, the experience can be frightening. But it does not have to be.

Following are several hints to help you put together a better program so you can relax and enjoy yourself.

Probably the single most important criterion is to know the subject. If all the research is complete, you should feel comfortable with the topic. Devote some time to rehearsing the presentation and to developing thorough answers to any possible questions, especially in a panel discussion. Chances are you will not be caught off guard; however, do not hesitate to admit not knowing the answer to a specific question; maybe another speaker or someone in the audience can help out.

Knowing the subject eliminates the necessity of reading word for word. Eye contact, ad-libbing, a clear distinguishable voice, and a little humor set much better with an audience than the droning monotone of someone with his nose stuck in his notes.

A good speaker highlights key points and repeats them if necessary. Be concise; emphasize the main points, and stick to your time limit—an audience can only absorb so much.

Utilize visual aids to clarify your message and stimulate audience interest. Remember though, that slides need the same care in preparation as the commentary. Illustrations in textbooks do not necessarily lend themselves to slide projection. Once the slides are in the right format a good rule of thumb to follow is: If a 2 x 2 in. slide is readable without a magnifier, people in the rear seats probably can read them on the screen.

Another hint concerning audiovisuals—check them personally. If you leave this job to others, slides get out of order, equipment refuses to work, and charts wander off.

Public speaking can be rewarding if you are confident of your presentation. In turn, the audience will be receptive to the speech. So speak up and enjoy!

AWWA RETURNS FOR ANNIVERSARY: (continued from page 7)

to consider matters of special interest. The first such division was the Chemical and Bacteriological Division (now the Water Quality Division), formed in 1913. At present, AWWA has four functional divisions—Water Quality, Resources, Distribution, and Management.

An important step forward in the expansion of association activity was the formation in

1914 of its first regional section, the New York-New Jersey Section.

The Missouri Section was organized and first met in October of 1946 in Columbia, Mo. During the 1968 section meeting in St. Louis, a plaque was dedicated at Washington University memorializing the founding of AWWA on the campus and naming the 22 men who started it all.

Banquet Wednesday, Luncheon Thursday

This year AWWA has changed the schedule for the centennial conference to include a special scientific luncheon to close the annual event on Thursday. The luncheon costs \$10.

The annual banquet will be on Wednesday night with the traditional passing of the gavel.



AWWA ANNUAL CONFERENCE AND EXPOSITION ADVANCE REGISTRATION FORM

June 7-11, 1981 St. Louis, Missouri

- Mail the completed form with payment to AWWA Conference, 6666 W. Quincy Ave., Denver, Co 80235 no later than May 25, 1981.
- The special rates below apply to registration received by June 1.
- On-site registration rates are 10% higher.
- Your registration will be acknowledged by AWWA.
- Cancellations or transfers will be accepted until the Conference starts.
- Registrant and spouse should register on the same form.
- Sunday Seminar registration should be made on this same form. Lunch is included.

Type of Registration

	Sun-Thurs	Ladies	One Day Student	Exhibit Area Only
Member	\$100	\$70	\$30	Sun One Day \$4
Nonmember	\$130	\$100	\$50	Wed Day \$4
Includes				
Technical sessions	•	•	•	•
General sessions	•	•	•	•
Exhibits	•	•	•	•
Social functions	•	•	•	•
Banquet (Wednesday)	•	•	•	•
Ladies events	•	•	•	•
Ladies rendezvous	•	•	•	•

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ADVANCE REGISTRATION

(Circle One)

Member

Nonmember

Are you a member of AWWA?

Yes ☐ No ☐

(Member No.)

Is your company a member of AWWA?

Yes ☐ No ☐

(Employees of a member company qualify for member rates.)

OCCUPATION (circle one)

A Water Utility

B Contractor

C Consultant

D Manufacturer Exhibiting

E Manufacturer Not Exhibiting

F Manufacturer's Representative

G Distributor

H Educator

I Research Lab

J Government-Federal

K Government-State

L Government-Local

M Student

N Other

Make check payable to AWWA in U.S. funds

Personal check

Company check

Date

Mail to: AWWA Conference, 6666 W. Quincy Ave., Denver, CO. 80235

Technical Sessions & Exhibits

Sun-Thurs - with banquet

- without banquet

One Day - Monday only

- Tuesday only

- Wednesday only

Student (college or university)

Ladies Program - with banquet

- without banquet

Exhibit Area Only

Sun - Wed

One Day - Monday exhibit only

- Tuesday exhibit only

- Wednesday exhibit only

Extra Banquet Tickets @ \$30 ea

Facility Tour

Scientific Luncheon (Thurs)

Conference Proceedings

Sunday Seminars

Small water system problems

Coagulation & filtration - back to the basics

Organic chemical contaminants in groundwater

TOTAL

\$

\$

Council Combines Policy Statements on Aid for Construction

The Technical and Professional Council and the Water Utility Council have reviewed the policy statement on Governmental Assistance for Water Utility Construction that was adopted by the Board of Directors on May 8, 1977.

As a result of this review, two distinct approaches became apparent. An ad hoc committee of the General Policy Council reviewed these two approaches and decided to publish, for member comment, the statement listed below.

The new statement combines the 1977 statement on Governmental Assistance for Water Utility Construction with the policy statement on Administration of Government-Aided Water Utility Construction Projects adopted by the Board of Directors on Jan. 28, 1978. The only change in wording is contained in the first sentence where the phrase "undesirable in that they destroy the financial" now reads "undesirable in that they adversely affect the financial."

A further change also was considered and is offered for member consideration and comment. In this case, the phrase "undesirable in that they destroy the financial" would be revised to read "undesirable if they adversely affect the financial." Board approval of the statement as listed below, would be accompanied by a request for the withdrawal of the 1978 policy

statement on Administration of Government-Aided Water Utility Construction Projects.

Before the General Policy Council may take action and send a recommendation to the AWWA Board of Directors, the policy statement must be presented to the membership for comment. Any comments should be sent to P.A. Schulte, Deputy Executive Director, AWWA, 6666 W. Quincy Ave., Denver, Colo. 80235, by Apr. 30, 1981.

Governmental Assistance For Water Utility Construction

The American Water Works Association, (AWWA) believes that governmental grants to aid water utilities in the construction of necessary facilities are undesirable in that they adversely affect the financial and managerial independence necessary to self-sustained business-like operations.

Recognizing, however, the unforeseen heavy burdens that will be placed upon some utilities, small and large, by the requirements of PL 92-500 and 93-523, the Association agrees that financial assistance may, in some instances, be necessary to permit timely compliance with the laws. In such cases, where utilities find it impossible to attract private capital,

without incurring burdensome and unreasonable rates, the Association believes that governmental assistance furnished in the form of loans with deferred principal payments and minimal interest rates that will permit utilities to phase in the rate increases required to pay back the loans on a reasonable schedule or guaranteed loans by private lenders, as provided by PL 93-523, is the best means of providing this assistance. Inasmuch as many of the utilities in critical situations will be privately or investor owned, it is particularly important that such loans be available to them as well as to community-owned systems.

AWWA believes that construction of water utility facilities that are to be funded in whole or in part with governmental assistance can be best accomplished under a concept including: preparation of complete plans, specifications, and bidding documents by the owner or an independent firm retained by the owner; invitation, receipt, and analysis of competitive bids for the construction award of the construction contract on the basis of the best bid; and inspection of the construction for compliance with the plans and speci-

cations by the owner or his representative.

When a governmental agency offers a water utility financial assistance, AWWA strongly believes the conditions of the assistance should not interfere with this concept. This requires that:

1. The water utility administer the construction project in accordance with its own established or existing statutory procedures and not be required to institute new or different procedures simply for the convenience of the government agency, provided that the conditions of the financial assistance are met and fiscal integrity is maintained.

2. If the water utility does not have qualified personnel experience in the design and construction of water utility facilities available, a consulting engineering firm experienced in this field be retained.

3. Selection of a consulting engineering firm be based primarily on qualifications; selection solely on the basis of price is not in the public's best interest.

4. The construction to be performed be specifically defined by complete plans and specifications subject to review by the agency as to adequacy and for conformance to the purpose of the financial assistance.

5. The construction contractor be selected on the basis of a competitive bid procedure conforming to the law in the jurisdiction where the project is constructed and in accordance with the water utility's normal procedures, including prequalification of contractors where this is practiced.

6. Surveillance and inspection of the construction be provided by the water utility and/or its engineers to the extent necessary to insure conformance with the construction contract provisions.

7. The water utility be allowed to select equipment, operate the facility, and maintain a rate structure, which best serve the interest of the public whom it serves.

8. Regular, monthly progress payments or progress drafts be provided to facilitate the orderly financing of the project.

¹See the AWWA policy statement on Government-Supported Projects Material and Equipment Selection adopted by the Board of Directors on Jan. 22, 1976, and reaffirmed Jan. 25, 1981.

CONTAMINATION IN MASSACHUSETTS: (continued from page 1)

town's water supply aquifers.

The ensuing public concern sparked an investigation of every public water supply well in Massachusetts by the State Department of Environmental Quality Engineering. About half completed, the two-year study is looking for 13 volatile halogenated compounds that the US Environmental Protection Agency has yet to establish maximum contaminant levels (MCLs) for.

So far, the results are encouraging. About 800 wells have been tested since the study began. Only three wells were found to be contaminated above the Suggested No Adverse Response Levels (SNARLs) set by the USEPA for the volatile halogenated compounds.

However, the three contaminated wells were not in use at the time. They had been placed on stand-by status because quality problems had already been identified.

The waters in the investigation were analyzed by gas chromatograph and mass spectrometer methods. Paul Watson, DEQE sanitary engineer, said "by far the majority of the groundwater sources have not given anything detectable by this method of analysis...this doesn't mean to say we don't find anything at all...in some cases there are traces, but the chemicals found are below the EPA guidelines."

The *Boston Globe* reports, however, that two suburban communities north of the city with higher-than-

average rates are scrutinizing their drinking water as the culprit.

In Acton, Mass., the town itself is sponsoring a long-range study of its high rate of birth defects. Officials are attempting to find out if contaminated drinking water is the cause.

And an epidemiological study is underway in Woburn, Mass. A recent state public health department study showed that deaths from cancer in that city increased 17 percent between 1974 and 1978.

Said Watson, "Two wells in Woburn were found to exceed the federal contaminant guidelines and were closed. The remaining water supply is free contamination."

Training Statement Relssued

The AWWA Technical and Professional Council has approved unanimously the reaffirmation of the policy statement on Employee Training.

The statement recommends that every utility develop and support training programs for all its employees, which include funds and time for attendance at schools, conferences, and seminars. Recognizing the technological complexity of the water industry as well as the rapid expansion of scientific knowledge in the field, AWWA recommends employee training to ensure competent and skilled personnel for the operation of water supply facilities.

The next step in the approval of a policy statement is submission to the AWWA General Policy Council. Before the GPC may take action and send a recommendation to the AWWA Board of Directors, actions on policy statements must be presented to the AWWA membership for comment. The policy statement on Employee Training is published below. Any comments should be sent to P.A. Schulte, Deputy Executive Director, AWWA, 6666 W. Quincy Ave., Denver, Colo. 80235, by Apr. 30, 1981.

Employee Training

The American Water

Works Association recommends that every water utility establish a training program for all employees. The association further urges that each water utility allocate adequate funds in its annual budget and support a vigorous training program to include formal training lessons, attendance at educational and scientific conferences, specialty schools, and seminars, as well as employee time spent in training.

Because of the unique responsibility of the water utility industry to the public health, safety, and convenience, it is essential that managers, supervisors, and operations personnel possess certain specialized skills. The continuing complexity of the biological, chemical, and technological problems facing the industry, as well as the massive capital investment in facilities, demands increased and continuing education to ensure competent and efficient operation of these facilities. The association further subscribes to the principle that the training be based on equal opportunity of all water utility employees without regard to race, color, religion, sex, national origin, or age, with the goal of providing quality water service to meet the public demand.

CARBON SYMPOSIUM: (continued from page 3)

vated Carbon Adsorption of Organics From the Aqueous Phase," were published in 1980 by Ann Arbor Science Publishers, Inc.

Manuscripts from these books were used extensively in the recently published National Academy of Sciences evaluation of activated carbon treatment. Since September 1978, significant progress has been made in both theoretical and practical aspects of GAC treatment, and the upcoming conference will document this progress.

The conference is of interest to water supply professionals, utilities, government agencies, consulting firms, equipment manufacturing, universities, research laboratories, and industry.

McGuire said the symposium would cover topics ranging from applied theory to

engineering design and economic evaluation. At least one half-day session will be devoted to each of six major topics including carbon adsorption theory, structure and surface effects, modeling and adsorption interactions, biological effects, pilot and large-scale studies, and design and economic factors.

The final conference program and registration information appear in the February 16 issue of *Chemical and Engineering News*. Because of a cooperative agreement with ACS, members of AWWA may register at the conference as though they were members of ACS. Registration forms should be marked "AWWA member" to receive the lower rate of \$65 for preregistrants.

More information is available from McGuire at 714-593-7474.

'NOVA' TAKES ON WATER: (continued from page 3)

The town is now suing the companies suspected of releasing the chemicals.

Dioxane was one of the litigation-causing chemicals found in Bedford's water. Only recently has it been determined to be a carcinogen, and no maximum contaminant level has yet been established for it in drinking water.

Harvard's Rudy Jaeger spoke to the evolving concept of just what "pure" water is:

"As state laboratories and other governmental agencies start getting sophisticated equipment, like gas chromatographs and mass spectrometers, they're beginning to find things that they never found before...water is no longer considered pure by a bacteriological analysis but now needs to have this sophisticated GC mass spectral fingerprint on it."

Western Water Subsidized

Another interview of particular interest to water suppliers dealt with Boston's antiquated and leaking water mains.

Brent Blackwelder of the Environmental Policy Center—a national public interest group—cited a nationwide survey of water and power rates to point up what he believes is a misallocation of federal water monies. The "shocking results" of the National Wildlife Foundation study found that people in the Northeast pay more for their water and power than people in the West. And that federal funds for water projects (most of which are in the South and West), in effect, end up subsidizing the water bills of consumers in the South and West.

Said Blackwelder, "It's an outrageous situation, and the only way it's going to stop is for the people in the Northeast to insist that their members don't support that kind of pork barrel and for them to insist that dramatic changes be made in the way federal dollars on the water resources are spent."

Politics of Scarcity

"Water Crisis" also took a rather cursory look at the complex water management policies of California. As the number one agricultural state in the union, the Golden State is critically dependent on its water supply.

In what could be a harbinger for other arid western states and their water-rich neighbors to the east, "NOVA" reported that the California legislature recently approved construction of the water-transferring Peripheral Canal. This occurred only after a 15-year battle between relatively water-rich northern California and the thirsty, rapidly growing southern part.

Opposition to the canal project came primarily from farmers in the San Joaquin-Sacramento river delta. The new Peripheral Canal would bypass it entirely.

This means delta farmers would lose some of the natural flushing action of the river water as it passes through the delta. It now acts as a natural barrier to the salty water of nearby San Francisco Bay.

Some conservationists and farmers want to use the canal water to replenish aquifers in the San Joaquin valley, where years of overpumping have reduced supplies to alarmingly low levels. Farther south, cities are also depending on the canal's water for their continued growth.

Orange County Reuse

"NOVA" also spotlighted futuristic water reuse in the planned community of Irvine Ranch, located in suburban Orange County south of Los Angeles. The television program studied an irrigation system where nearly all public and private irrigation is accomplished with the community's own sewage plant effluent.

This innovative community also pumps highly treated sewage effluent into aquifers acting as barriers to coastal seawater that would otherwise seep in. It was estimated that after three months, the recharge water from these aquifers is probably drawn up for consumption by various Orange County communities.

PBS headquarters in Washington, D.C., estimated that 1.6 million people in the United States watched "The Water Crisis" its first time out. Most stations air "NOVA" segments at least twice, and PBS sells the programs to more than 20 foreign countries.

A transcript of "The Water Crisis" can be obtained by sending \$3 to WGBH Transcripts, 125 Western Ave., Boston, MA 02134.

Education & Training

A Schedule of Courses for the Water Industry

Information to be included in Education & Training must be received at least two months in advance of the start of the school or the closing date for course registration. Complete details should be sent to the Director of Education, AWWA, or the Editor, *AWWA Mainstream*, 6666 W. Quincy Ave., Denver, CO 80235. The earlier that the material is received, the more often it may be included in Education & Training. Further information about any AWWA course can be obtained from the Training Programs Coordinator at the above address or by telephone, 303-794-7711. Those courses sponsored by AWWA or its sections are marked with the AWWA logo. AWWA's endorsement is given only to courses sponsored by the association and its sections.

ARIZONA

AWWA Customer Service Seminar, Phoenix, Apr. 1. Contact Training Programs Coordinator, telephone 303-794-7711, ext. 290.

AWWA Water Loss Reduction Seminar, Phoenix, May 22. Contact Training Programs Coordinator, telephone 303-794-7711, ext. 290.

ARKANSAS

Water Flow Monitoring Workshop, Little Rock, Apr. 3. Fee \$175; preregistration required. Contact Carl F. Buettner Workshops, 9501 Pinespray, Box 8656, St. Louis, MO 63126; telephone 314-842-3737.

BRITISH COLUMBIA

19th B.C. Water and Waste School, Vancouver, May 11-15. Contact B.C. Caine, 1515 Blanshard St., Victoria, BC V8W 3C8; telephone 604-387-3494.

CALIFORNIA

AWWA California-Nevada Section Seminar on Water Sampling, Los Angeles, Mar. 25; Fairfield, May 7. Fee: members, \$10; non-members, \$15. Contact J. Hosland, 1228 S. Bundy Dr., Los Angeles, CA 90025; telephone 213-473-1460.

Fundamentals of Groundwater Management, Berkeley, May 6-7. Fee \$320. Contact D.K. Todd, Resource Seminars, 2914 Domingo Ave., Berkeley, CA 94705; telephone 415-841-2091.

Varian Instrument Group Training: Basic Gas Chromatography, Mar. 23-25. Fee \$275. Contact Varian Instrument Group, Training Dept., 2700 Mitchell Dr., Walnut Creek, CA 94598; telephone 415-939-2400, ext. 365.

Reservoir Systems Analysis Using Computer Program HEC-5, Davis, Mar. 30-Apr. 3. Contact University Extension, Univ. of California, Davis, CA 95616; telephone 916-752-0880.

AWWA Cost of Service Seminar, Los Angeles, May 11. Con-

tact Training Programs Coordinator, telephone 303-794-7711, ext. 290.

COLORADO

AWWA Customer Service Seminar, Denver, Mar. 31. Contact Training Programs Coordinator, telephone 303-794-7711, ext. 290.

AWWA Water Loss Reduction Seminar, Denver, May 20. Contact Training Programs Coordinator, telephone 303-794-7711, ext. 290.

CONNECTICUT

AWWA Water Loss Reduction Seminar, May 8. Contact Training Programs Coordinator, telephone 303-794-7711, ext. 290.

DISTRICT OF COLUMBIA

22nd Institute on Federal Funding, Washington, Mar. 31-Apr. 2. Contact D.E. Smith, National Graduate Univ., 1101 N. Highland St., Arlington, VA 22201; telephone 703-527-4800.

FLORIDA

Water Flow Monitoring Workshop, Jacksonville, Mar. 4; Tampa, Mar. 6. Fee \$175. Contact Carl F. Buettner Workshops, 9501 Pinespray, Box 8656, St. Louis, MO 63126; telephone 314-842-3737.

AWWA Water Loss Reduction Seminar, West Palm Beach, Mar. 18; Orlando, Mar. 20. Contact Training Programs Coordinator, telephone 303-794-7711, ext. 290.

GEORGIA

Georgia Water and Waste Water Institute, Carrollton: Advanced Surface Water, Mar. 24-27; Basic Surface Water, Mar. 30-Apr. 3; Filtration Workshop, Apr. 14-16; Basic Groundwater, Apr. 21-24; Water Lab 1 (Chem. & Bact.), May 11-15; Water Lab 2 (Bact. only), May 19-22; Basic Surface Water, May 26-29; Water Lab 1 (Chem. & Bact.), Jun. 8-12. Contact GWWI, West Georgia College, Carrollton, GA 30118; telephone 404-834-1468.

Water Flow Monitoring Workshop, Atlanta, Mar. 2. Fee \$175; preregistration required. Contact Carl F. Buettner Workshops, 9501 Pinespray, Box 8656, St. Louis, MO 63126; telephone 314-842-3737.

ILLINOIS

AWWA Illinois Section Seminars: Distribution Maintenance, Edwardsville, Mar. 22; Water Quality, Rolling Meadows, Mar. 29; Chemical Feed, Princeton, May 6. Contact Don Renner, 33 S. Arlington Heights Rd., Arlington Heights, IL 60005; telephone 312-253-2340.

Water Flow Monitoring Workshop, Chicago, Apr. 21. Fee \$175; preregistration required. Contact Carl F. Buettner Workshops, 9501 Pinespray, Box 8656, St. Louis, MO 63126; telephone 314-842-3737.

INDIANA

Water Flow Monitoring Workshop, Indianapolis, Apr. 13. Fee \$175; preregistration required. Contact Carl F. Buettner Workshops, 9501 Pinespray, Box 8656, St. Louis, MO 63126; telephone 314-842-3737.

AWWA Customer Service Seminar, Indianapolis, Apr. 13. Contact Training Programs Coordinator, telephone 303-794-7711, ext. 290.

IOWA

Water Flow Monitoring Workshop, Des Moines, Apr. 29. Fee \$175; preregistration required. Contact Carl F. Buettner Workshops, 9501 Pinespray, Box 8656, St. Louis, MO 63126; telephone 314-842-3737.

KANSAS

Water Flow Monitoring Workshop, Wichita, Apr. 9. Fee \$175; preregistration required. Contact Carl F. Buettner Workshops, 9501 Pinespray, Box 8656, St. Louis, MO 63126; telephone 314-842-3737.

KENTUCKY

AWWA Cross Connection Control Seminar, Bowling Green, Apr. 27. Contact Training Programs Coordinator, telephone 303-794-7711, ext. 290.

Water Flow Monitoring Workshop, Lexington, Apr. 16. Fee \$175; preregistration required. Contact Carl F. Buettner Workshops, 9501 Pinespray, Box 8656, St. Louis, MO 63126; telephone 314-842-3737.

LOUISIANA

Water Flow Monitoring Workshop, New Orleans, Mar. 19. Fee \$175; preregistration required. Contact Carl F. Buettner Workshops, 9501 Pinespray, Box 8656, St. Louis, MO 63126; telephone 314-842-3737.

MARYLAND

AWWA Chlorination Seminar, Baltimore, May 11-12. Contact Training Programs Coordinator, telephone 303-794-7711, ext. 290.

MICHIGAN

AWWA Safety Seminar, Ann Arbor, May 20. Contact Training Programs Coordinator, telephone 303-794-7711, ext. 290.

MINNESOTA

Water Flow Monitoring Workshop, Minneapolis, Apr. 27. Fee \$175; preregistration required. Contact Carl F. Buettner Workshops, 9501 Pinespray, Box 8656, St. Louis, MO 63126; telephone 314-842-3737.

AWWA Water Utility Management Institute, Minneapolis, May 3-8. Fee \$275. Contact J.M. Kroll, 355 Nolte Center, 315 Pillsbury Dr. S.E., Minneapolis, MN 55455; telephone 612-373-3685.

AWWA Customer Service Seminar, Bloomington, May 6. Contact Training Programs Coordinator, telephone 303-794-7711, ext. 290.

MISSOURI

Water Flow Monitoring Workshop, Jefferson City, Apr. 7. Fee \$175; preregistration required. Contact Carl F. Buettner Workshops, 9501 Pinespray, Box 8656, St. Louis, MO 63126; telephone 314-842-3737.

Water & Wastewater Technical School, Neosho: Cross Connection Workshop, Mar. 31-Apr. 2; fee \$125.

Electricity & Instrumentation Apr. 14-16; fee \$125. Pump Operation & Maintenance, Apr. 27-May 1; fee \$125. Basic Treatment for Water Plants, May 13-15; fee \$125. Advanced Treatment for Water Plants, May 18-20; fee \$125. Swimming Pool Operation & Maintenance, May 21-22; fee \$100. Math & Safety Seminar for Water Plants, Jun. 11-12; fee \$100. Water Certification Review & Exam—C&D, Jun. 15-19; fee \$175. Contact Short Course Coordinator, Water & Wastewater Technical School, Dwr. 370, Neosho, MO 64850; telephone 417-451-2786, ext. 33.

AWWA Safety Seminar, Kansas City, Apr. 15. Contact Training Programs Coordinator, telephone 303-794-7711, ext. 290.

NEBRASKA

Water Flow Monitoring Workshop, Omaha, May 1. Fee \$175; preregistration required. Contact Carl F. Buettner Workshops, 9501 Pinespray, Box 8656, St. Louis, MO 63126; telephone 314-842-3737.

NEVADA

Advanced Wastewater Treatment Processes Design, Lake Tahoe, Apr. 13-17. Contact P.A. Krenkel, Water Resources Center, Desert Research Inst. Box 60220, Reno, NV 89506; telephone 702-673-7361.

NEW YORK

Polytechnic Institute of New York Short Courses in Water, Brooklyn: Grade A Including Filtration, Apr. 27-May 8; fee \$350. Laboratory Procedures, Feb. 23-28; fee \$176. Contact W.T. Ingram, 7 North Dr., Whitestone, NY 11357.

OHIO

Finnigan Institute, Cincinnati: GC/MS for Managers, Mar. 23-25; fee \$450. Basic Atomic Absorption, Mar. 30-Apr. 3; fee \$750. Contact Nancy Kranitz, Finnigan Inst., 11 Triangle Park Dr., Cincinnati, OH 45246; telephone 513-772-5500.

OKLAHOMA

Water Flow Monitoring Workshop, Oklahoma City, Mar. 30. Fee \$175; preregistration required. Contact Carl F. Buettner Workshops, 9501 Pinespray, Box 8656, St. Louis, MO 63126; telephone 314-842-3737.

OREGON

AWWA Water Loss Reduction Seminar, Portland, Apr. 7. Contact Training Programs Coordinator, telephone 303-794-7711, ext. 290.

PENNSYLVANIA

AWWA Water Loss Reduction Seminar: Philadelphia, May 4; Pittsburgh, May 6. Contact Training Programs Coordinator, telephone 303-794-7711, ext. 290.

AWWA Chlorination Seminar, Harrisburg, Jun. 1-2. Contact Training Programs Coordinator, telephone 303-794-7711, ext. 290.

SOUTH CAROLINA

AWWA Safety Seminar, Greenville, May 5. Contact Training Programs Coordinator, telephone 303-794-7711, ext. 290.

TEXAS

AWWA Customer Service Seminar: Arlington, Apr. 8. Contact Training Programs Coordinator, telephone 303-794-7711, ext. 290.

Fundamentals of Groundwater Quality Protection, Houston, Mar. 23-24. Fee \$380. Contact R.M. Miller, American Ecology Services, Inc., 127 E. 59th St., New York, NY 10022; telephone 212-371-1620.

AWWA Water Loss Reduction Seminar: San Antonio, May 18. Contact Training Programs Coordinator, telephone 303-794-7711, ext. 290.

AWWA Water Utility Management Institute, Arlington, Apr. 5-10. Fee \$275. Contact L. Glasser, Univ. of Texas at Arlington, Arlington, TX 76016; telephone 817-273-2531.

Water Flow Monitoring Workshop, Houston, Mar. 17; Dallas, Apr. 1. Fee \$175; preregistration required. Contact Carl F. Buettner Workshops, 9501 Pinespray, Box 8656, St. Louis, MO 63126; telephone 314-842-3737.

UTAH

AWWA Intermountain Seminars: Safety, Logan, Apr. 22. Operator Certification, Orem, May 2. Contact Larry Scanlan, Bureau of Public Water Supplies, Box 2500, Salt Lake City, UT 84110; telephone 801-533-4207.

WASHINGTON

Using Lab Data to Control Water & Wastewater Processes: Yakima, Apr. 14-16; Lynnwood, May 12-14; Wenatchee, May 19-21. Contact Washington Envir. Training Resource Center, 12401 S.E. 320th St., Auburn, WA 98002; telephone 206-833-9111.

Small Water Systems, Centralia, Apr. 7-9. Contact Washington Envir. Training Resource Center, 12401 S.E. 320th St., Auburn, WA 98002; telephone 206-833-9111, ext. 369.

AWWA Customer Service Seminar, Yakima, Apr. 13. Contact Training Programs Coordinator, telephone 303-794-7711, ext. 290.

WISCONSIN

Water Flow Monitoring Workshop, Madison, Apr. 23. Fee \$175; preregistration required. Contact Carl F. Buettner Workshops, 9501 Pinespray, Box 8656, St. Louis, MO 63126; telephone 314-842-3737.

WYOMING

Basic Science Seminar for Water Utility Personnel: Gillette, Apr. 30; Jackson, Jun. 1; Powell, Jun. 4. Fee \$10. Contact Robert Champlin, Dept. of Civil & Architectural Engrg., Univ. of Wyoming, Box 3295, Univ. Sta., Laramie, WY 82071.

Groundwater & Wells: Gillette, May 1; Jackson, Jun. 2; Powell, Jun. 5. Fee \$10. Contact Robert Champlin, Dept. of Civil & Architectural Engrg., Univ. of Wyoming, Box 3295, Univ. Sta., Laramie, WY 82071.

10th Annual Rocky Mountain Groundwater Conference, Laramie, Apr. 30-May 2. Fee \$30. Contact Conferences & Institutes, Box 3274, Univ. Sta., Laramie, WY 82071.

Employment Information

The listings carried in this column are published free of charge and once only. Please include all relevant information when requesting a listing. Within reason, there is no word limit. AWWA reserves the right to refuse any request for a listing judged not to be sufficiently pertinent to the water supply field and reserves the right to edit all submissions. Listings are not accepted by telephone and are not written by the association. Although every attempt is made to place ads as soon as possible, there can be no guarantee that a listing will appear in a specific issue. A blind box number will be used for any position-available advertiser who requests one; blind box numbers will be used automatically for all positions wanted unless otherwise requested. In such cases, AWWA acts only as a clearinghouse, forwarding all replies unopened to the advertiser. In reply to any blind listing, write to AWWA in care of the code number appearing at the end of the listing. Make sure this code appears on the envelope. Address all correspondence to AWWA Employment Service, 6666 W. Quincy Ave., Denver, CO 80235.

Positions Available

PLANNER-ADMINISTRATOR for division head position with municipally owned water utility. Requires knowledge of planning, public finance, western water issues; BA in economics, liberal arts, or related field; and 3 years' relevant experience. Master's degree preferred. EOE. Apply to City of Thornton, 8992 N. Washington, Thornton, CO 80229.

PIPE SALES TERRITORY MANAGER for national manufacturer. Call on engineers, contractors, municipalities, distributors. Requires self-disciplined individual who can work without supervision. Utility engineering, construction, and sales experience preferred. Based in Houston. EOE. Send resume to Vice President-Sales, CAPCO Pipe Co., Inc., 1400 S. 20th St., Birmingham, AL 35255.

WATER OPERATIONS ENGINEER to oversee, direct, and administer construction, maintenance, and operation of all county water mains, pumping stations, and storage facilities. Requires BSCE and 2 years' experience in construction, maintenance, and operation of water systems, including 1 year supervisory experience. PE registration in Virginia or additional qualifying experience may substitute for education. Reply to Arlington County Personnel Dept., 2100 14th St. N., Arlington VA 22301; telephone 703-558-2167.

SPECIAL CONSULTANTS in small scale enterprise, appropriate technology, energy, agronomy, agricultural economy, horticulture, hydraulic engineering, agricultural engineering, public health, forestry, or livestock for assignment in Africa, Asia, and the Caribbean. Short-term (2-6 weeks) and long-term (1-3 years) assignments. Previous experience in country of assignment and language fluency preferred, but not always necessary. Academic achievement and experience required varies according to position. EOE. Send resume to Development Assistance Corp., 1415 11th St. N.W., Washington, DC 20001.

SUPERINTENDENT OF PUBLIC UTILITIES. Responsible for operation of water and wastewater treatment facilities. Must have class 2 certification in both water and waste. Send resume to Village Administrator, Village of Leipsic, 215 S. Belmont, Leipsic, OH 45856.

WATER-WASTEWATER SUPERINTENDENT. Requires BSCE with 4-6 years' experience, including at least 2 years in supervision. Responsible for operation and maintenance of deep-well supply, transmission, distribution, and wastewater collection and treatment. Requires ability to obtain Wyoming class 4 water and wastewater licenses and PE registration within 1 year. Supervision of 20 employees, O&M and capital budgets. Reports to director of public works. EOE. Send resume, with salary requirements to Personnel Office, City of Gillette, Box 3003, Gillette, WY 82716.

ENVIRONMENTAL HEALTH SCIENCE DIRECTOR to supervise all phases of laboratory and field operations in water quality control. Requires degree with courses in sanitary, chemistry, and microbiology; experience in management. Submit resume to Dr. E. Ferrand, Director, Dept. of Environmental Protection Science and Technology, 51 Astor Pl., New York, NY 10003.

WATER PRODUCTION AND TREATMENT PLANT OPERATOR for city of 87 000 to operate and perform preventive and corrective maintenance on wells, booster pumps, treatment and softening facilities, reservoirs. Must be able to operate and maintain mechanical and electrical equipment, read and interpret blueprints and electrical schematics. 2 years experience operation and maintenance of mechanical and electrical equipment or 1 year operation of water system facility desirable. EOE. Send resume by Mar. 31 to Personnel, City of Santa Monica, 1685 Main St., Santa Monica, CA 90401; telephone 213-395-5702.

WATER MANAGER for water district with 3100 services. Must be experienced in operations, engineering, construction, accounting, and business procedures and have 5 years' experience in supervision related to water management. Must be capable of obtaining Oregon water systems operator certificate. Send resume, salary requirements, availability to Water Commissioners, Box 25140, Portland, OR 97225.

CIVIL ENGINEER-DRAFTSMAN for growing consulting engineering firm specializing in design of linings and covers for water, wastewater, and pollution control facilities. Send resume to Hovater-Way Engineers, Inc., 23011 Moulton Pkwy., Suite F-5, Laguna Hills, CA 92653; telephone 714-830-4050.

ASSISTANT SANITARY ENGINEER to conduct public water supply program activities for the Monticello District Office of the New York State Department of Health. Must have BS in engineering accepted by New York State Education Department or ECPD and 1 year's experience in sanitary, environmental, or public health engineering. MS in one of these areas may substitute for experience. Send resume to Bob Lamiano, Office of Public Health Personnel, ECPD Bldg., Albany, NY 12237.

CIVIL-SANITARY ENGINEER. Project engineer with consulting engineering firm specializing in public works projects. 3-5 years' experience in water and wastewater facility planning and design required. Send resume to Mainiero, Smith & Assoc., Inc., 2225 E. Tahquitz-McCallum Way, Suite 4, Palm Springs, CA 92262.

OPERATION AND MAINTENANCE ENGINEERS with experience in O&M of irrigation and drainage systems to direct local counterpart staff of 35 000-acre irrigation system under rehabilitation in Dominican Republic. Must speak Spanish. Reply to Karen Wall, 1900 Point West Way, Suite 270, Sacramento, CA 95815; telephone 916-922-5481.

OPERATIONS MANAGER for investor-owned water utility serving more than 60 000 customers in Ohio. Opening for experienced technical and managerial professional at corporate headquarters near Youngstown, Ohio. Applicants should have engineering degree or equivalent, minimum of 7 years' experience in water supply, and knowledge of water treatment and distribution. Responsible for overall operations of the company and supervision and coordination of division managers in solving day-to-day problems. Ability to handle labor relations and training of technical personnel required. Send resume to P.F. Noran, Vice President-Engineering, Consumers Water Co., Box 599 DTS, Portland, ME 04112.

SUPERINTENDENT OF WATER DISTRIBUTION. Supervisory position involving planning, organizing, and directing city water distribution system. Activities include construction, repair, maintenance of water system components; organization, scheduling, and supervision of work; purchasing and control of work materials and equipment; review of substation pumping operations; preparation and maintaining maps and records; field inspection of maintenance and repair work. Requires thorough knowledge of municipal water system, repair and maintenance methods, and some civil engineering related to water treatment and pumping operations. Degree with coursework in civil engineering and water system construction preferred. Requires Illinois certification D or above. EOE. Send resume by Mar. 20 to Personnel Dept., City of Bloomington, 109 E. Olive St., Box 3157, Bloomington, IL 61701.

Positions Wanted

MECHANICAL ENGINEER seeking position in field of desalination or power plant engineering. 13 years of experience in power and water engineering, including erection, operation, maintenance of power stations and management of large desalination projects from concept to operation. 3/PW/1

CIVIL ENGINEER with 14 years' experience in design, construction, and operation of water systems with public water utility and consulting engineering firm. Registered FE in British Columbia and M.L.C.E. in United Kingdom. Desires to relocate in Minnesota-Wisconsin area with either a water utility or small engineering firm engaged in municipal work. Resume on request. 3/PW/2

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First prize winner Becky Willett of Medford, Wis., takes a global view of the world's water problems.

Dinh Tan of Hickory, N.C., wins second prize with a lively drawn poster that urges water conservation in the tropics.



and the public," she said.

"AWWA received a lot of good publicity and helped the educational process by providing teachers with materials in an area where few exist."

In her letter, international first prize winner Becky Willett said, "I think it's great the AWWA has been going for 100 years now, and I hope that our posters will help some people realize how necessary water conservation really is."

Gibson commented that, using public reaction to the contest as a "small, unofficial barometer," public concern

with the quality and quantity of water supply is quite high.

"The people I contacted seemed to accept the fact that the United States may soon face serious water shortages," she said. "They seemed receptive to any information that would help them do something about it."

The contest judges based their criteria on originality, theme and drawing. Fifty international and regional winners will appear in the centennial magazine, to be published in June.



L GOALS SURVIVE CENTURY OF TECHNOLOGICAL ADVANCE: (continued from page 1)

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water generated into steam, per pound of coal; 6. coal burned per day in pounds; and gave quite a detailed account of the working of the Lake Waterworks. Quite a number of questions were propounded by different members, which were satisfactorily answered. The committee on Subjects for Discussion having returned to the hall, they presented the following report:

List of Subjects for Discussion

List of Subjects for Discussion

1. Fuel—Per million gallons raised one foot high; firing; consumption of smoke; coal vs wood, corncoals, oil, or gas
2. Mains—Depth in the ground; iron, wood, or cement
3. Service Pipes—plain iron, varnished iron, galvanized iron, or lead
4. Rates, Motors, Meters, Water Closets, Fountains,

Bathrooms, Sprinkling

5. Waste—(The Committee called attention to this.)

6. Fire Hydrants; freezing, thawing

7. "Ellis Tables;" has anyone varified them?

8. Various Systems—direct pressure; stand-pipe reservoir and elevated reservoir

9. Why not make sleeves in two parts, with lugs and bolts, and thus obviate the necessity of taking up two lengths of pipe and three joints to repair a small break?

10. Work of plumbers

(Signed) W.C. Stripe, Chairman of Committee

On motion of H.D. Wood, the report of the committee was adopted.

J.W. Harrison, of the Shickle, Harrison & Howard Iron Co., extended an invitation to the convention to visit their cast iron pipe works.

On motion of Mr. Holly, those desiring to inspect the works were to meet there at 9 o'clock a.m., Wednesday.

President Foster here stated that the convention would not be bound exclusively to the subjects presented by the committee for discussion, but that all matters germane to the water supply might be fully discussed.

AWWA's First Slate of Officers, 1881-1882

President—Col. J.T. Foster, Chicago, Ill. (Union Stock Yards.)

Vice Presidents—W.C. Stripe, Keokuk, Iowa; Prof. Chas. A. Smith, St. Louis, Mo.

W.L. Cameron, Memphis, Tenn.; M.X. Chase, Bloomington, Ill.; J.G. Briggs, Terre Haute, Ind.

Secretary—J.H. Decker, Hannibal, Mo.

Treasurer—Horatio D. Wood, St. Louis, Mo.