

The Washington Spectator®

Tristram Coffin, Editor

(ISSN: 0145-160X)

March 15, 1985

© 1985 The Public Concern Foundation, Inc.

Volume 11, No. 6

Looking Ahead: The American Water Crisis

Archaeologists digging in the Libyan desert find a sobering omen for the American West. Beneath the drifting sands is an irrigation system, one that brought water to some 3,000 farming settlements and made the area the Roman Empire's breadbasket in the time of Nero.

The *London Times* describes an "elaborate system of small walls built to channel water into the silt-rich cultivatable floors of the wadis [water-courses]. The Roman-Libyans exploited what rainfall there was by studying local characteristics—how the topography determined where and how precipitation collected." In this area, now stony and barren, grew barley, olives, pomegranates and possibly vines.

The findings dispute an old theory—that north Africa once had a wetter climate and then the rain belt moved north across the Mediterranean. The *London Times* says that new evidence shows that the irrigation technique used in what is now Libya "is probably of great antiquity, perhaps three to four thousand years."

The "fertile crescent" of the Middle East, now semi-desert, was heavily irrigated in Biblical times. During the rule of the Pharaohs and Ptolemies, water of the Nile was carried to large areas that now are little more than desert.

Today, the American Southwest is the most heavily irrigated area in the world, transforming a desert into a veritable garden of Eden.

The omen is: heavy irrigation may destroy the land by salt seepage and wipe out societies that grow up around the man-made oases. This is not an academic point. Three years ago, Senator William Armstrong (R-Colo.) warned: "The 1,400-mile Colorado River is the lifeblood of 17 million people, from Denver to San Diego. This river has made America's western desert bloom; in fact, 1.5 million acres of prime farmland are irrigated by it today.

"And yet, this magnificent river is being slowly poisoned as its waters become more and more saline; that is, adulterated by dissolved solids. Salinity is caused by two things: salt loading—which comes from contact with the very saline western soils and salty mineral springs—and by salt concentration, which is caused by evaporation and the increasing use of the river in the seven states it serves.

"At its headwaters, the Colorado River has less than 50 milligrams of salt in every liter of water; at Imperial Dam near the Mexican border, the number leaps to over 800 milligrams, an increase of more than 1,600%. At the turn of the century, this will reach a staggering 1,200 milligrams per liter. (The EPA's maximum safe-level for drinking water is 500 milligrams.)

"The salt load of 10 million tons annually which enters Lake Mead adversely affects more than 10 million people and one million acres of irrigated land."

THE "INSIDIOUS" PROBLEM—This is but one look at a staggering and "insidious" problem, one that could radically alter American life styles in a generation, drastically cutting food production, raising household costs and injuring health.

Senator Dennis DeConcini (D-Ariz.) explained to the National Press Club recently: "What's happening to water in America is more than an occasional accident, or even a series of isolated problems. The problem is more insidious than that. We are not running out of water, or even destroying it in the military sense. Water in America is steadily and too quickly becoming unusable.

"Water is becoming unusable because a lot of it is being contaminated, both above and below the ground. Water is also becoming unusable because delivery systems are old and falling apart, especially in the West, and because they can't be built fast enough to keep up with population shifts in the Sunbelt states."

The crisis is not just in the West. A study by the Army Corps of Engineers finds that population growth is dangerously increasing salt levels in the giant Chesapeake Bay. The "consumptive loss" of fresh water, by drawing fresh water from the tributaries, will rise from 500 million gallons a day to more than 2.5 billion by 2020.

The giant Ogallala aquifer, the largest underwater reserve of fresh water in the world, is being depleted so rapidly by agriculture that some areas may reach the end of their water by 2,000 and others by 2020.

The Story of Irrigation

"In culture after culture, from Sumeria to New Mexico, massive irrigation of arid lands follows a familiar pattern. First, there is prosperity, and the culture expands. But rather quickly the mineral salts in the irrigation water increase the salinity of the soil, and food production drops. Farmers try to wash the salts out with even more water, and while there is some success, ground water levels rise, surrounding vegetation changes, and soil erodes away. Cities and pueblos are abandoned, and civilizations which once flourished by irrigation vanish."

—*Christian Science Monitor*

Groundwater contamination has been found in every state and affects such cities as Little Rock, New Haven, Springfield, Ill., Pittsburgh, and Newark. Excessive leakage and water-main breakage has plagued major cities such as Boston, Houston and St. Louis.

There is even a bizarre note: A giant sinkhole, more than 1,000 feet in diameter and 170 feet wide, opened up in Winter Park, Fla., gulping a house, camper and six expensive foreign cars. Sinkholes often result when underground water levels drop and the ground above becomes weak.

THE SOLUTIONS IGNORED—Fortunately, there are solutions. They are drastic and expensive: curtail irrigation projects, enforce strict conservation, prohibit the use of toxic chemicals on farms

and in factories, build modern water purification systems, and beef up research on removing salt from sea water. The cost and pressure from lobbies have simply passed on the problem to the next generation, when remedial measures may be too late. It is much easier and politically palatable to pour money into military adventure.

For example, President Lyndon Johnson had ready to go a \$20 billion program to restore water and sewage plants. When he decided to escalate the Vietnam war, he abruptly cancelled the water program. The irony will not be lost on historians.

Today, the Reagan Administration, while asking \$25 billion for research on a Star Wars program that many scientists say won't work, has ignored the emerging water crisis. One is reminded of Shelley's lines:

"My name is Ozymandias, king of kings:
Look on my works, ye Mighty, and despair!"
Nothing beside remains. Round the decay
Of that colossal wreck, boundless and bare
The lone and level sands stretch far away.

SOME WATER FACTS—A look at the facts is useful. Some 4.2 trillion gallons of water reach the U.S. in the form of rain or snow every year. About 92% of this evaporates immediately or runs off, unused, into the oceans. We withdraw some 400 billion gallons per day to irrigate, power and bathe America; 65% comes from freshwater sources such as lakes, rivers, marshes, reservoirs, springs; 20% from underground aquifers; and 15% from saltwater sources, such as inland seas.

About 83% of water consumed is used in farming, 8% in manufacturing, 7% in homes, and 1% each for power and on public lands. It takes 14,935 gallons of water to grow a bushel of wheat; 60,000 gallons to produce a ton of steel.

The sole source of drinking water for half of all Americans is underground water and, states former Interior Secretary Stewart Udall, "at least half of this is either contaminated or threatened with contamination," undermining health. The pollution is from farm runoff of pesticides and herbicides, industrial chemicals, sewage and salt.

In 1950, the U.S. took 12 trillion gallons of water from the ground; by 1980 the figure more than doubled and is still going up. Each day, 21 billion more gallons of water flow out of water resources than flow in from rain, snow melt and water return.

The water problem by areas is reported by Worldwatch Institute:

Colorado River Basin—"Yearly consumption exceeds renewable supply by 5%, creating a water deficit. The Colorado River is increasingly salty. Water tables have fallen precipitously in areas of Phoenix and Tucson."

(A study by the *Detroit Free Press* found that "waste and artificially low prices for water are the real problem in Arizona. It's not just the swimming pools, man-made lakes, unmeted sprinklers for lawns, particularly in Phoenix, and enormous fountains, including the biggest one in the world, which shoots water upward at 7,000 gallons a minute at the Fountain Hills desert development.

"It is also, in fact, agriculture, which uses 90% of consumed water. About three-fourths of it is in Central Arizona for crops whose production the government is limiting because of overproduction. Many Arizona farmers use the water on inferior land to grow such crops as sorghum and alfalfa that require large amounts of water. The rest of us are paying for it.")

"The Ogallala, a fossil aquifer that supplies most of the region's irrigation water, is diminishing; over a large area of the southern plains, the aquifer is already half depleted."

Coastal areas—"Intrusion of sea water from heavy pumping of coastal aquifers threatens to contaminate drinking water with salt."

Central Valley of California and Houston-Galveston area—"Groundwater pumping has caused compaction of aquifers and subsidence of land surface, damaging buildings, streets, pipes and wells."

California—"Waters from Owens Valley and Mono Basin have been diverted to supply southern water users. Owens Lake has dried up, and Mono Lake's surface area has shrunk by a third."

THE IRRIGATION DEBATE—As the rivalry between town and country for water grows more intense, a debate over widespread irrigation has come into the open.

Irrigation does expand acreage and produce bigger yields. However, Senator Dave Durenberger (R-Minn.) comments, "It makes no sense to spend billions of Federal dollars to irrigate semi-arid lands and then spend billions more to buy the crops because there are no markets." The *Washington Monthly* reports that "an array of tax breaks and farm subsidies" underwrites plowing and irrigating lands "ill-suited for crops. . . . Federal policy encourages enormous waste by providing water for irrigation at prices that cover as little as 2% of costs."

A General Accounting Office study finds that more than 50% of the irrigation water is wasted. Water is evaporated out of irrigation canals at a rate sometimes as high as 50%. Many large-scale irrigators use the huge center-pivot rigs that spray water into the air, instead of drip irrigation developed by Israel to save water.

For example, Prudential Insurance Company bought 23,000 acres in northwest Indiana and installed 50 center-pivot rigs. "At the end of last year's growing season, Prudential was consuming about 1.25 billion gallons a year on this project" from underground aquifers. "Since 1983, drinking water in the area has been heavily contaminated with sulfur; the taste and odor are so noxious that the water is not potable." (*The Progressive*)

"A hugely disproportionate share of the Federal irrigation program's benefits go to corporations running farms as large as 20,000 acres." (*Washington Post*) For example, in the San Joaquin Valley of California, water is provided for land owned by Getty Oil, Tenneco West and J.G. Boswell, a huge cotton corporation.

• The water from Federal projects costs so little, comments the *Washington Monthly*, that farmers find it cheaper to use than to save water. In California's Wetlands reclamation district—where the average farm is 2,400 acres and produces profits of half a million dollars a year—the Federal government is charging \$10 per acre-foot. In neighboring areas, water on the free market may cost 100 times that amount. In South Dakota, users pay \$3.10 an acre-foot for water that actually costs \$131.50 to produce.

The Washington Spectator® & BETWEEN THE LINES

Copyright © 1985 The Public Concern Foundation, Ralph E. Shikes, President

Editorial Advisors: Tristram Coffin, Gloria Emerson, Ralph E. Shikes, Kurt Vonnegut, Alden Whitman.

Address subscription correspondence to P.O. Box 442
Merrifield, VA 22116
703/691-1271

Address editorial correspondence to P.O. Box 70023
Washington, D.C. 20088

The *Washington Spectator* (ISSN 0145-160X) is published the 1st and 15th of each month (except July 15 and December 15) by the Public Concern Foundation, 9208 Christopher Street, Fairfax, VA 22031 for \$10 per year. Second-Class postage paid at Fairfax, VA.

Your dues payment to The Public Concern Foundation is used entirely to forward the task of sharing information and stimulating discussion. Your \$10 dues are used for publishing the *Washington Spectator* and sponsoring research, symposia and other Foundation activities. The *Spectator* is available only to members of the Foundation.

The *Spectator* is available on microfilm from University Microfilms International, 300 North Zeeb Road, Ann Arbor, MI 48106.

THE OGALLALA AQUIFER—The real tragedy of the irrigation splurge is that it is using up water that is vitally needed for future generations. The depletion of the Ogallala aquifer is a case in point. Three years ago, *Time* reported, "The Ogallala aquifer, the vast underground reservoir of water that transformed much of the Great Plains into one of the richest agricultural areas of the world, is being sucked dry."

The aquifer stretches from South Dakota through Nebraska, where two-thirds of its water lies, to Wyoming, Colorado, Kansas, Oklahoma, New Mexico and Texas. "For the past three decades, farmers have pumped water out of the Ogallala as if it were inexhaustible. Nowadays, they disperse it prodigally through huge center-pivot irrigation sprinklers, which moisten circular swaths a quarter-mile in diameter. The annual overdraft—the amount of water not replenished—is nearly equal to the flow of the Colorado River."

A report by a Boston engineering firm, Camp, Dresser & McKee, estimates that by the year 2020 some 5.1 million acres of irrigated land will dry up. Some believe the report is too optimistic.

The effect on the national economy could be severe. Nearly 12% of our cotton, corn, grain, sorghum and wheat is watered by the Ogallala. Almost half the nation's beef cattle are fattened on high plains feedlots. In Texas alone, 70,000 water wells have been dug into the aquifer. Parts of the Panhandle have already used up more than half the water in the portion of the aquifer beneath them.

Farm manager Jim Bell admits, "We know we're losing our water. We've just got to learn to use it less—and better."

CALIFORNIA'S WATER CRISIS—Farther to the west, southern California is in the middle of a water crisis. The still-growing megapolises of Los Angeles and San Diego and the rich San Joaquin Valley that grows everything from oranges to cotton must import water from distances of hundreds of miles.

But that water will be reduced this year because of a Supreme Court decision, turning more water from the Colorado River to Arizona. At the same time:

- A new state population estimate says that by 2010 the California population will jump 10 million, from 23.8 million in 1980 to 34.4 million. This increase will mean an additional 3.5 million acre-feet of water needed yearly, mostly for urban areas.

- "In the San Joaquin Valley, groundwater overdrafts in excess of 2 million acre-feet a year have reduced underground aquifers in some areas to critical levels. Perhaps a million acres of farmland could go out of production without new surface water." (*Los Angeles Times*)

- *The Economist* reports: "The impure waste waters discharged into marshes and rivers from the western slopes of California's fruitful Central Valley" means that farming "may have to be abandoned." Water runoff with pesticides and such natural chemicals as selenium are accumulating in "unprecedented proportions."

GROUND WATER POLLUTION—The *New York Times*, in its series on "Water in America," stated: "Contamination of ground water in this nation represents a problem of . . . potentially vast magnitude." An EPA official told the *Times*, "We are slipping into a whole new set of concerns having to do with the contamination of both ground and surface water with organic industrial chemicals, some of which are known or believed to cause cancer."

The House Committee on Government Operations reported that toxic poisons in ground water "in several areas of the country has reached alarming proportions." For example, on Long Island, "where 100% of the population is dependent on ground water, 36 public water supplies and dozens of private wells have been closed because of synthetic organic chemical contamination. The water supplies for nearly two million Long Island residents have been affected."

The use of synthetic chemicals since WW II is a major problem. "In recent years, it has become clear that these chemicals have made

their way into the nation's water supply through agricultural runoff of pesticides and herbicides, industrial discharge into lakes and rivers and, perhaps more serious in the view of public health experts, into ground water from toxic waste dumps and landfills, storage lagoons and treating ponds." (*New York Times*)

The Economist adds: "In the countryside, two-thirds of the populace are said to be drinking well water that probably contains more bacteria and trace elements than they would care to know about. More than a quarter of these wells have a level of infection that would close a public beach if it were found there. In Phoenix, Arizona, where the aquifer is being steadily depleted by overdrawing, a state hydrologist has described the water supply as contaminated."

The Washington Post reports that the leakage of radioactive materials from the giant Rocky Flats nuclear weapons plant has "left a plutonium blanket on the bottom of the city's [Bloomfield, Colo.] 40-acre Great Western Reservoir." Five EPA studies show that heavy chlorination of drinking water may cause "chemical compounds linked to increased risk of bladder, colon and intestinal cancer."

The New York Times found that "cancer-producing agents enter the Mississippi—and virtually every other river system in the country—from industries that discharge their wastes directly, from rain that washes agricultural poisons into natural stream runoffs, and from accidental oil spills."

SOME ANSWERS—Worldwatch Institute says that it is essential to raise "irrigation efficiencies" by 10%. This can be done by using "drip or trickle irrigation systems that supply water and fertilizer directly onto or below the soil." Experiments with drip irrigation in the Negev Desert show per hectare yields of increases up to 80% over wasteful sprinkler systems.

In desert areas of the Southwest, the heavy irrigation may give way gradually to greenhouse farming, which uses less water and produces higher yields. New growth forests and orchards could protect soil from drying out and act as rain forests.

The use of toxic chemicals in both farming and industry will have to be severely curtailed if America's drinking water is to be protected.

This is a greater threat to American well-being and prosperity than any external force. It deserves priority action by the Administration and Congress.

Spectator Reprints (Postage Included)

1 to 5 copies, 50¢ each; 6 to 10 copies, 40¢ each; 11 to 25 copies, 30¢ each; 26 to 50 copies, 25¢ each. For larger quantities, write to Merrifield address below.

Are You Reading Someone Else's *Spectator*?

If you are borrowing the *Spectator* from a friend, why not consider the convenience of having your own copy arrive twice a month? A full year's subscription is only \$10 for 22 issues of insightful, on-the-spot commentary by Tristram Coffin. Mr. Coffin draws on thirty years' experience covering the Washington scene and adds his sensitive perception of the issues that will affect our country's future.

Spectator subscriptions are available only to members of the Public Concern Foundation.

Use the convenient membership order form below.

One-year membership (\$10)

(Including 22 issues of the *Washington Spectator*)

Name _____

Address _____

City/State _____ Zip _____

Please make check payable to the Public Concern Foundation.

Mail to: Public Concern Foundation

P.O. Box 442

Merrifield, VA 22116

FYI, Items of Interest from *Spectator* Files

• Ruby Morris, who lives on a hill in Braxton County, West Virginia, is a true friend of nature and the farmer. She collects "old time" vegetable seeds, many of which are no longer on the market. She explains to *Goldenseal*, a West Virginia magazine; "I collect seeds from everybody. If I go to somebody's house and they've got any age on them, I start inquiring about seeds. Sometimes I really come up with some good ones, like the Blue River squash pumpkins that I hadn't seen since I was little. I got a-hold of it last year just in a bunch of seeds that a neighbor woman gave me to get rid of. "One type of seed, for Thousand-to-One beans, hasn't been on the market for 100 years.

Her interviewer remarked, "It seems to me those old-time seeds turn out to be the best ones." Ruby replied, "As far as I'm concerned, I don't really care about planting anything up-to-date."

Gerald Milnes in the same magazine says, "The seeds have been in our mountains as long as our people have. By way of knapsack, saddlebag, and wagon, early settlers brought them as a precious bit of their homeland. Saving the seed was the only way of assuring a continuance of their food supply."

• Two Colombian doctors have "borrowed an idea from the kangaroo to save the lives of hundreds of premature babies," reports *Development Forum*. Over the past four years, Drs. Edgar Rey and Hector Martinez of San Juan de Dios Hospital in Bogota have "bypassed high tech incubators by swaddling infants of 1.1 to 5.5 pounds in an upright position close to their mothers' breast and sent them home within two to twelve days.

"They have found that by packing an infant in the mother's 'pouch,' the child gets all the warmth, food and stimulation it needs for normal development and is able to continue its early life as an out-patient in the hospital's Mother-Child Institute."

Since the introduction of the "kangaroo method" in September 1979, survival rates for some of Colombia's most vulnerable newborns have risen from zero to 70%.

Dr. Rey says that the "bonding" of mother and child overcomes the "sensory deprivation" often suffered by incubator babies. He reports, "Packed against the mother's breast, the child hears the mother's voice and feels her heartbeat. The child is protected like a small marsupial."

• An alternative to chemical pesticides offers "the most promising crop protection strategy for the next 15 years," says the Office of Technology Assessment. This is by the use of bugs to kill bugs, known as "Integrated Pest Management."

As proof of the pudding, consider the Conservatory of Flowers at San Francisco's Golden Gate Park. In the old, bad days, every two weeks, the staff put on protective gear and sprayed the entire 30,000

square-foot glasshouse with insecticides. It didn't work; the bugs developed a genetic resistance.

So the park turned to the Bio-Integral Resource Center of Berkeley for help. This outfit introduced beneficial mites, wasps and beetles. *Environmental Action* reports, "The plants on display look better than ever. Insect outbreaks are now under control and the Conservatory has saved \$30,000 a month." Also, "worker morale has improved."

This same technique of using bugs to fight bugs has been pioneered by our friend A.P. Thomson, who raises delicious apples completely free of chemicals at Golden Acres Orchard, Front Royal, Va.

• Life in Washington Department: The *Washington Post's* fashion editor, Nina Hyde, turned investigative reporter to find out the real cost of Nancy Reagan's wardrobe for the "People's Inaugural." She called the designers and found that if the President's wife were an ordinary citizen, her bill would have come to "about \$46,000."

The story appeared at about the same time that 86-year-old Wilhelmina Franklin was found frozen to death on the grounds of D.C. Village, her wheelchair tipped over.

When Federal workers and their friends raised a howl about the President's proposal for a 5% cut for civil servants, the White House said soothingly that Reagan and top officials would take a 10% cut.

So, what happened? Over the New Year's holiday, the President signed an executive order that gave top officials, including the White House staff, Vice President and Cabinet members, a 3.5% pay raise for 1985.

• The *New York Times* says that Secretary of Defense Caspar Weinberger believes that the Star Wars plan he is supporting would have to be backed up by anti-aircraft radar installations and planes to protect North America from bombers. Former Defense Secretary James R. Schlesinger opines that this would cost a mere \$50 billion yearly.

Advertising Age notes the ultimate in advertising during the Reagan inaugural. For "the paltry sum of \$330,000" paid to the Republican National Committee, an advertiser could get a table for 10 at the gala, with a movie or TV star assigned to the table, a thank you from Frank Sinatra, and a 60-second spot on the telecast of the extravaganza.

• China, making a gargantuan effort to reduce its birth rate, has listed a male birth control pill among the top priority projects in the new five-year plan. The main hope is gossypol, which has rough side effects on one of five men tested.

The World Health Organization has withdrawn support from the gossypol research, but China's Dr. Liu Guozhen believes that if the potassium-related side effects can be overcome, gossypol may provide the answer.

The Washington Spectator
and
Between the Lines
P.O. Box. 442
Merrifield, VA 22116

Address Correction Requested

Second-Class
Postage Paid at
Fairfax, VA

ISSUE HIGHLIGHTS

• Looking Ahead: The American Water Crisis

Salt seepage destroys ancient civilizations

— page 1

About 83% of water used in agriculture,
8% in industry — page 2

Toxic poisons in ground water seen as
"alarming" — page 3

• FYI, Items of Interest from *Spectator* Files

— page 4

2151 2 86
UT LICA
RTS
RTS