INTRODUCTION

A Semidesert with a Desert Heart

One late November night in 1980 I was flying over the state of Utah on my way back to California. I had an aisle seat, and since I believe that anyone who flies in an airplane and doesn't spend most of his time looking out the window wastes his money, I walked back to the rear door of the airplane and stood for a long time at the door's tiny aperture, squinting out at Utah.

Two days earlier, a fierce early blizzard had gone through the Rocky Mountain states. In its wake, the air was pellucid. The frozen fire of a winter's moon poured cold light on the desert below. Six inches away from the tip of my nose the temperature was, according to the pilot, minus sixty-five, and seven miles below it was four above zero. But here we were, two hundred highly inventive creatures safe and comfortable inside a fat winged cylinder racing toward the Great Basin of North America, dozing, drinking, chattering, oblivious to the frigid emptiness outside.

Emptiness. There was nothing down there on the earth—no towns, no light, no signs of civilization at all. Barren mountains rose duskily from the desert floor; isolated mesas and buttes broke the wind-haunted distance. You couldn't see much in the moonlight, but obviously there were no forests, no pastures, no lakes, no rivers; there was no fruited plain. I counted the minutes between clusters of lights. Six, eight, nine, eleven—going nine miles a minute, that was a lot of uninhabited distance in a crowded century, a lot of emptiness amid a civilization whose success was achieved on the pretension that natural obstacles do not exist.
Then the landscape heaved upward. We were crossing a high, thin cordillera of mountains, their tops already covered with snow. The Wasatch Range. As suddenly as the mountains appeared, they fell away, and a vast gridiron of lights appeared out of nowhere. It was clustered thickly under the aircraft and trailed off toward the south, erupting in ganglionic clots that winked and shimmered in the night. Salt Lake City, Orem, Draper, Provo: we were over most of the population of Utah.

That thin avenue of civilization pressed against the Wasatches, intimidated by a fierce desert on three sides, was a poignant sight. More startling than its existence was the fact that it had been there only 134 years, since Brigham Young led his band of social outcasts to the old bed of a drying desert sea and proclaimed, "This is the place!" Someone in that first group must have felt that Young had become unhinged by two thousand horribly arduous miles. Nonetheless, within hours of ending their ordeal, the Mormons were digging shovels into the earth beside the streams draining the Wasatch Range, leading canals into the surrounding desert which they would convert to fields that would nourish them. Without realizing it, they were laying the foundation of the most ambitious desert civilization the world has seen. In the New World, Indians had dabbled with irrigation, and the Spanish had improved their techniques, but the Mormons attacked the desert full-bore, flooded it, subverted its dreadful indifference—moralized it—until they had made a Mesopotamia in America between the valleys of the Green River and the middle Snake. Fifty-six years after the first earth was turned beside City Creek, the Mormons had six million acres under full or partial irrigation in several states. In that year—1902—the United States government launched its own irrigation program, based on Mormon experience, guided by Mormon laws, run largely by Mormons. The agency responsible for it, the U.S. Bureau of Reclamation, would build the highest and largest dams in the world on rivers few believed could be controlled—the Colorado, the Sacramento, the Columbia, the lower Snake—and run aqueducts for hundreds of miles across deserts and over mountains and through the Continental Divide in order to irrigate more millions of acres and provide water and power to a population equal to that of Italy. Thanks to irrigation, thanks to the Bureau—an agency few people know—states such as California, Arizona, and Idaho became populous and wealthy; millions settled in regions where nature, left alone, would have countenanced thousands at best; great valleys and hemispherical basins metamorphosed from desert blond to semitropic green.

On the other hand, what has it all amounted to?

Stare for a while at a LANDSAT photograph of the West, and you will see the answer: not all that much. Most of the West is still untrammeled, unirrigated, depopulated in the extreme. Modern Utah, where large-scale irrigation has been going on longer than anywhere else, has 3 percent of its land area under cultivation. California has twelve hundred major dams, the two biggest irrigation projects on earth, and more irrigated acreage than any other state, but its irrigated acreage is not much larger than Vermont. Except for the population centers of the Pacific Coast and the occasional desert metropolis—El Paso, Albuquerque, Tucson, Denver—you can drive a thousand miles in the West and encounter fewer towns than you would crossing New Hampshire. Westerners call what they have established out here a civilization, but it would be more accurate to call it a beachhead. And if history is any guide, the odds that we can sustain it would have to be regarded as low. Only one desert civilization, out of dozens that grew up in antiquity, has survived uninterrupted into modern times. And Egypt's approach to irrigation was fundamentally different from all the rest.

If you begin at the Pacific rim and move inland, you will find large cities, many towns, and prosperous-looking farms until you cross the Sierra Nevada and the Cascades, which block the seasonal weather fronts moving in from the Pacific and wring out their moisture in snows and drenching rains. On the east side of the Sierra-Cascade crest, moisture drops immediately—from as much as 150 inches of precipitation on the western slope to as little as four inches on the eastern—and it doesn't increase much, except at higher elevations, until you have crossed the hundredth meridian, which bisects the Dakotas and Nebraska and Kansas down to Abilene, Texas, and divides the country into its two most significant halves—the one receiving at least twenty inches of precipitation a year, the other generally receiving less. Any place with less than twenty inches of rainfall is hostile terrain to a farmer depending solely on the sky, and a place that receives seven inches or less—as Phoenix, El Paso, and Reno do—is arguably no place to inhabit at all. Everything depends on the manipulation of water—on capturing it behind dams, storing it, and rerouting it in concrete rivers over distances of hundreds of miles. Were it not for a century and a half of messianic effort toward that end, the West as we know it would not exist.

The word "messianic" is not used casually. Confronted by the desert, the first thing Americans want to do is change it. People say that
they “love” the desert, but few of them love it enough to live there. I mean in the real desert, not in a make-believe city like Phoenix with exotic palms and golf-course lawns and a five-hundred-foot fountain and an artificial surf. Most people “love” the desert by driving through it in air-conditioned cars, “experiencing” its grandeur. That may be some kind of experience, but it is living in a fool’s paradise. To really experience the desert you have to march right into its white bowl of sky and shape-contorting heat with your mind on your canteen as if it were your last gallon of gas and you were being chased by a carload of escaped murderers. You have to imagine what it would be like to drink blood from a lizard or, in the grip of dementia, claw bare-handed through sand and rock for the vestigial moisture beneath a dry wash.

Trees, because of their moisture requirements, are our physiological counterparts in the kingdom of plants. Throughout most of the West they begin to appear high on mountainsides, usually at five or six thousand feet, or else they huddle like cows along occasional streambeds. Higher up the rain falls, but the soil is miserable, the weather is extreme, and human efforts are under siege. Lower down, in the valleys and on the plains, the weather, the soil, and the terrain are more welcoming, but it is almost invariably too dry. A drought lasting three weeks can terrorize an eastern farmer; a drought of five months is, to a California farmer, a normal state of affairs. (The lettuce farmers of the Imperial Valley don’t even like rain; it is so hot in the summer it wilts the leaves.) The Napa Valley of California receives as much Godwater—a term for rain in the arid West—as Illinois, but almost all of it falls from November to March; a weather front between May and September rates as much press attention as a meteor shower. In Nevada you see rainclouds, formed by orographic updrafts over the mountains, almost every day. But rainclouds in the desert seldom mean rain, because the heat reflected off the earth and the ravenous dryness can vaporize a shower in midair, leaving the blackest-looking cumulonimbus trailing a few pathetic ribbons of moisture that disappear before reaching the ground. And if rain does manage to fall to earth, there is nothing to hold it, so it races off in evanescent brown torrents, evaporating, running to nowhere.

One does not really conquer a place like this. One inhabits it like an occupying army and makes, at best, an uneasy truce with it. New England was completely forested in 1620 and nearly deforested 150 years later; Arkansas saw nine million acres of marsh and swamp forest converted to farms. Through such Promethean effort, the eastern half of the continent was radically made over, for better or worse. The West never can be. The only way to make the region over is to irrigate it. But there is too little water to begin with, and water in rivers is phenomenally expensive to move. And even if you succeeded in moving every drop, it wouldn’t make much of a difference. John Wesley Powell, the first person who clearly understood this, figured that if you evenly distributed all the surface water flowing between the Columbia River and the Gulf of Mexico, you would still have a desert almost indistinguishable from the one that is there today. Powell failed to appreciate the vast amount of water sitting in underground aquifers, a legacy of the Ice Ages and their glacial melt, but even this water, which has turned the western plains and large portions of California and Arizona green, will be mostly gone within a hundred years—a resource squandered as quickly as oil.

At first, no one listened to Powell when he said the overwhelming portion of the West could never be transformed. People figured that when the region was settled, rainfall would magically increase, that it would “follow the plow.” In the late 1800s, such theories amounted to Biblical dogma. When they proved catastrophically wrong, Powell’s irrigation ideas were finally embraced and pursued with near fanaticism, until the most gigantic dams were being built on the most minuscule foundations of economic rationality and need. Greening the desert became a kind of Christian ideal. In May of 1957, a very distinguished Texas historian, Walter Prescott Webb, wrote an article for Harper’s entitled “The American West, Perpetual Mirage,” in which he called the West “a semidesert with a desert heart” and said it had too dark a soul to be truly converted. The greatest national folly we could commit, Webb argued, would be to exhaust the Treasury trying to make over the West in the image of Illinois—a folly which, by then, had taken on the appearance of national policy. The editors of Harper’s were soon up to their knees in a flood of vitriolic mail from westerners condemning Webb as an infidel, a heretic, a doomsayer.

Desert, semidesert, call it what you will. The point is that despite heroic efforts and many billions of dollars, all we have managed to do in the arid West is turn a Missouri-size section green—and that conversion has been wrought mainly with nonrenewable groundwater. But a goal of many westerners and of their federal archangels, the Bureau of Reclamation and Corps of Engineers, has long been to double, triple, quadruple the amount of desert that has been civilized and farmed, and now these same people say that the future of a hungry world depends on it, even if it means importing water from as far away as Alaska. What they seem not to understand is how difficult it will be just to hang on to the beachhead they have made. Such a surfeit of ambition stems, of course, from the remarkable record of success
we have had in reclaiming the American desert. But the same could have been said about any number of desert civilizations throughout history— Assyria, Carthage, Mesopotamia; the Inca, the Aztec, the Ho-hokam— before they collapsed.

And it may not even have been drought that did them in. It may have been salt.

The Colorado River rises high in the Rockies, a trickle of frigid snowmelt bubbling down the west face of Longs Peak, and begins its fifteen-hundred-mile, twelve-thousand-foot descent to the Gulf of California. Up there, amid mountain fastnesses, its waters are sweet. The river swells quickly, taking in the runoff of most of western Colorado, and before long becomes a substantial torrent churning violently through red canyons down the long west slope of the range. Not far from Utah, at the threshold of the Great Basin, the rapids die into ripples and the Colorado River becomes, for a stretch of forty miles, calm and sedate. It has entered the Grand Valley, a small oasis of orchards and cows looking utterly out of place in a landscape where it appears to have rained once, about a half million years ago. The oasis is man-made and depends entirely on the river. Canals divert a good share of the flow and spread it over fields, and when the water percolates through the soil and returns to the river it passes through thick deposits of mineral salts, a common phenomenon in the West. As the water leaves the river, its salinity content is around two hundred parts per million; when it returns, the salinity content is sixty-five hundred parts per million.

The Colorado takes in the Gunnison River, whose waters have also filtered repeatedly through irrigated, saline earth, and disappears into the canyonlands of Utah. Near the northernmost tentacle of Lake Powell, where the river backs up for nearly two hundred miles behind Glen Canyon Dam, it receives its major tributary, the Green River. The land along the upper Green is heavily irrigated, and so is the land beside its two major tributaries, the Yampa and the White. Some of their tributaries, which come out of the Piceance Basin, are saltier than the ocean. In Lake Powell, the water spreads, exposing vast surface acreage to the sun, which evaporates several feet each year, leaving all the salts behind. Released by Glen Canyon Dam, the Colorado takes in the Little Colorado, Kanab Creek, the Muddy, and one of the more mis-named rivers on earth, the Virgin. It pools again in Lake Mead, again in Lake Mohave, and again in Lake Havasu; it takes in the Gila River and its oft-used tributaries, the Salt and the Verde, all turbid with alkaline leachate. A third of its flow then goes to California, where some of it irrigates the Imperial Valley and the rest allows Los Angeles and San Diego to exist. By then, the water is so salty that restaurants often serve it with a slice of lemon. If you pour it on certain plants, they will die.

Along the Gila River in Arizona, the last tributary of the Colorado, is a small agricultural basin which Spaniards and Indians tried to irrigate as early as the sixteenth century. It has poor drainage—the soil is underlain by impermeable clays—so the irrigation water rose right up to the root zones of the crops. With each irrigation, it became saltier, and before long everything that was planted died. The Spaniards finally left, and the desert took the basin back; for a quarter of a millennium, it remained desert. Then, in the 1940s, the Bureau of Reclamation reclaimed it again, building the Welton-Mohawk Project and adding an expensive drainage system to collect the sumpwater and carry it away. Just above the Mexican border, the drain empties into the Colorado River.

In 1963, the Bureau closed the gates of Glen Canyon Dam. As Lake Powell filled, the flow of fresh water below it was greatly reduced. At the same time, the Welton-Mohawk drain was pouring water with a salinity content of sixty-three hundred parts per million directly into the Colorado. The salinity of the river—what was left of it—soared to fifteen hundred parts per million at the Mexican border. The most important agricultural region in all of Mexico lies right below the border, utterly dependent on the Colorado River; we were giving the farmers slow liquid death to pour over their fields.

The Mexicans complained bitterly, to no avail. By treaty, we had promised them a million and a half acre-feet of water. But we hadn't promised them usable water. By 1973, Mexico was in a state of apoplexy. The ruin of its irrigated agricultural lands along the lower Colorado was the biggest issue in the campaign of presidential candidate Luis Echeverría, who was elected by a wide margin in that year. Still, the United States continued to do nothing. But 1973 also saw the arrival of OPEC. Some new geologic soundings in the Bay of Campeche indicated that Mexico might soon become one of the greatest oil-exporting nations in the world. When Echeverría threatened to drag the United States before the World Court at The Hague, Richard Nixon sent his negotiators down to work out a salinity-control treaty. It was signed within a few months.

Once we agreed to give Mexico water of tolerable quality, we had to decide how to do it. Congress's solution was to authorize a desali-
nation plant ten times larger than any in existence that will clean up the Colorado River just as it enters Mexico. What it will cost nobody knows; the official estimate in 1985 was $300 million, not counting the 40,000 kilowatts of electricity required to run it. Having done that, Congress wrote what amounts to a blank check for a welter of engineered solutions farther upriver, whose exact nature is still under debate. Those could cost another $600 million, probably more. One could easily achieve the same results by buying out the few thousand acres of alkaline and poorly drained land that contribute most to the problem, but there, once again, one runs up against the holiness of the blooming desert. Western Congressmen, in the 1970s, were perfectly willing to watch New York City collapse when it was threatened with bankruptcy and financial ruin. After all, New York was a profligate and sinful place and probably deserved such a fate. But they were not willing to see one acre of irrigated land succumb to the forces of nature, regardless of cost. So they authorized probably $1 billion worth of engineered solutions to the Colorado salinity problem in order that a few hundred upstream farmers could go on irrigating and poisoning the river. The Yuma Plant will remove the Colorado's salt—actually just enough of it to fulfill our treaty obligations to Mexico—at a cost of around $300 per acre-foot of water. The upriver irrigators buy the same amount from the Bureau for three dollars and fifty cents.

Nowhere is the salinity problem more serious than in the San Joaquin Valley of California, the most productive farming region in the entire world. There you have a shallow and impermeable clay layer, the residual bottom of an ancient sea, underlying a million or so acres of fabulously profitable land. During their irrigation season, temperatures in the valley fluctuate between 90 and 110 degrees; the good water evaporates as if the sky were a sponge, the junk water goes down, and the problem gets worse and worse. Very little of the water seeps through the Corcoran Clay, so it rises back up into the root zones—in places, the clay is only a few feet down—waterlogs the land, and kills the crops. A few thousand acres have already gone out of production—you can see the salt on the ground like a dusting of snow. In the next few decades, as irrigation continues, that figure is expected to increase almost exponentially. To build a drainage system for the valley—a giant network of underground pipes and surface canals that would intercept the junk water and carry it off—could cost as much as a small country's GNP. In 1985, the Secretary of the Interior put forth a figure of $5 billion for the Westlands region, and Westlands is only half the problem. Where would the drainwater go? The Westlands' drainwater, temporarily stored in a huge sump which was christened a wildlife preserve, has been killing thousands of migrating waterfowl; the water contains not just salts but selenium, pesticides, and God knows what else. There is one logical terminus: San Francisco Bay. As far as northern Californians are concerned, the farmers stole all this water from them; now they want to ship it back full of crud.

As is the case with most western states, California's very existence is premised on epic liberties taken with water—mostly water that fell as rain on the north and was diverted to the south, thus precipitating the state's longest-running political wars. With the exception of a few of the rivers draining the remote North Coast, virtually every drop of water in the state is put to some economic use before being allowed to return to the sea. Very little of this water is used by people, however. Most of it is used for irrigation—80 percent of it, to be exact. That is a low percentage, by western standards. In Arizona, 87 percent of the water consumed goes to irrigation; in Colorado and New Mexico, the figure is almost as high. In Kansas, Nevada, Nebraska, North Dakota, South Dakota, and Idaho—in all of those states, irrigation accounts for nearly all of the water that is consumptively used.

By the late 1970s, there were 1,251 major reservoirs in California, and every significant river—save one—had been dammed at least once. The Stanislaus River is dammed fourteen times on its short run to the sea. California has some of the biggest reservoirs in the country; its rivers, seasonally swollen by the huge Sierra snowpack, carry ten times the runoff of Colorado's. And yet all of those rivers and reservoirs satisfy only 60 percent of the demand. The rest of the water comes from under the ground. The rivers are infinitely renewable, at least until the reservoirs silt up or the climate changes. But a lot of the water being pumped out of the ground is as nonrenewable as oil.

Early in the century, before the federal government got into the business of building dams, most of the water used for irrigation in California was groundwater. The farmers in the Central Valley (which comprises both the Sacramento and the San Joaquin) pumped it out so relentlessly that by the 1930s the state's biggest industry was threatened with collapse. The growers, by then, had such a stranglehold on the legislature that they convinced it, in the depths of the Depression, to authorize a huge water project—by far the largest in the world—to rescue them from their own greed. When the bonds to finance the project could not be sold, Franklin Delano Roosevelt picked up the unfinished task. Today, the Central Valley Project is still the most mind-boggling public works project on five continents, and in the 1960s the state built its own project, nearly as large. Together, the California Water Project and the Central Valley Project have captured
enough water to supply eight cities the size of New York. But the projects brought into production far more land than they had water to supply, so the growers had to supplement their surface water with tens of thousands of wells. As a result, the groundwater overdraft, instead of being alleviated, has gotten worse.

In the San Joaquin Valley, pumping now exceeds natural replenishment by more than half a trillion gallons a year. By the end of the century it could rise to a trillion gallons—a mining operation that, in sheer volume, beggars the exhaustion of oil. How long it can go on, no one knows. It depends on a lot of things, such as the price of food and the cost of energy and the question whether, as carbon dioxide changes the world’s climate, California will become drier. (It is expected to become much drier.) But it is one reason you hear talk about redirecting the Eel and the Klamath and the Columbia and, someday, the Yukon River.

The problem in California is that there is absolutely no regulation over groundwater pumping, and, from the looks of things, there won’t be any for many years to come. The farmers loathe the idea, and in California “the farmers” are the likes of Exxon, Tenneco, and Getty Oil. Out on the high plains, the problem is of a different nature. There, the pumping of groundwater is regulated. But the states have all decided to regulate their groundwater out of existence.

The vanishing groundwater in Texas, Kansas, Colorado, Oklahoma, New Mexico, and Nebraska is all part of the Ogallala aquifer, which holds two distinctions: one of being the largest discrete aquifer in the world, the other of being the fastest-disappearing aquifer in the world. The rate of withdrawal over natural replenishment is now roughly equivalent to the flow of the Colorado River. This was the region called the Dust Bowl, the one devastated by the Great Drought; that was back before anyone knew there was so much water underfoot, and before the invention of the centrifugal pump. The prospect that a region so plagued by catastrophe could become rich and fertile was far too tantalizing to resist; the more irrigation, everyone thought, the better. The states knew the groundwater couldn’t last forever (even if the farmers thought it would), so, like the Saudis with their oil, they had to decide how long to make it last. A reasonable period, they decided, was twenty-five to fifty years.

“What are you going to do with all that water?” asks Felix Sparks, the former head of the Colorado Water Conservation Board. “Are you just going to leave it in the ground?” Not necessarily, one could reply, but fifty years or a little longer is an awfully short period in which to exhaust the providence of half a million years, to consume as much nonrenewable water as there is in Lake Huron. “Well,” says Sparks, “when we use it up, we’ll just have to get more water from somewhere else.”

Stephen Reynolds, Sparks’s former counterpart in New Mexico—as state engineer, the man in charge of water, he may have been the most powerful person in the state—sends much the same thing: “We made a conscious decision to mine out our share of the Ogallala in a period of twenty-five to forty years.” In the portions of New Mexico that overlie the Ogallala, according to Reynolds, some farmers withdraw as much as five feet of water a year, while nature puts back a quarter of an inch. What will happen to the economy of Reynolds’s state when its major agricultural region turns to dust? “Agriculture uses about 90 percent of our water, and produces around 20 percent of the state’s income, so it wouldn’t necessarily be a knockout economic blow,” he answers. “Of course, you are talking about drastic changes in the whole life and culture of a very big region encompassing seven states.

“One on the other hand,” says Reynolds, half-hopefully, “we may decide as a matter of national policy that all this agriculture is too important to lose. We can always decide to build some more water projects.”

More water projects. During the first and only term of his presidency, Jimmy Carter decided that the age of water projects had come to a deserved end. As a result, he drafted a “hit list” on which were a couple of dozen big dams and irrigation projects, east and west, which he vowed not to fund. Carter was merely stunned by the reaction from the East; he was blown over backward by the reaction from the West. Of about two hundred western members of Congress, there weren’t more than a dozen who dared to support him. One of the projects would return five cents in economic benefits for every taxpayer dollar invested; one offered irrigation farmers subsidies worth more than $1 million each; another, a huge dam on a middling California river, would cost more than Hoover, Shasta, Glen Canyon, Bonneville, and Grand Coulee combined. But Carter’s hit list had as much to do with his one-term presidency as Iran.

Like millions of easterners who wonder how such projects get built, Jimmy Carter had never spent much time in the West. He had never driven across the country and watched the landscape turn from green to brown at the hundredth meridian, the threshold of what was once called the Great American Desert—but which is still wet compared to the vast ultramontane basins beyond. In southern Louisiana, water is the central fact of existence, and a whole culture and set of values
have grown up around it. In the West, lack of water is the central fact of existence, and a whole culture and set of values have grown up around it. In the East, to "waste" water is to consume it needlessly or excessively. In the West, to waste water is not to consume it—to let it flow unimpeded and undiverted down rivers. Use of water is, by definition, "beneficial" use—the term is right in the law—even if it goes to Fountain Hills, Arizona, and is shot five hundred feet into 115-degree skies; even if it is sold, at vastly subsidized rates, to farmers irrigating crops in the desert which their counterparts in Mississippi or Arkansas are, at that very moment, being paid not to grow. To easterners, "conservation" of water usually means protecting rivers from development; in the West, it means building dams.

More water projects. In the West, nearly everyone is for them. Politicians of every stripe have sacrificed their most sacred principles on the altar of water development. Barry Goldwater, scourge of welfare and champion of free enterprise, was a lifelong supporter of the Central Arizona Project, which comes as close to socialism as anything this country has ever done (the main difference being that those who are subsidized are well-off, even rich). Former Governor Jerry Brown of California attended the funeral of E.F. Schumacher, the English economist who wrote Small Is Beautiful, then flew back home to lobby for a water project that would cost more than it did to put a man on the moon. Alan Cranston, once the leading liberal in the U.S. Senate, the champion of the poor and the oppressed, successfully lobbied to legalize illegal sales of subsidized water to giant corporate farms, thus denying water—and farms—to thousands of the poor and oppressed.

In the West, it is said, water flows uphill toward money. And it literally does, as it leaps three thousand feet across the Tehachapi Mountains in gigantic siphons to slake the thirst of Los Angeles, as it is shoveled a thousand feet out of Colorado River canyons to water Phoenix and Palm Springs and the irrigated lands around them. It goes 444 miles (the distance from Boston to Washington) by aqueduct from the Feather River to south of L.A. It goes in man-made rivers, in siphons, in tunnels. In a hundred years, actually less, God's riverine handiwork in the West has been stood on its head. A number of rivers have been nearly dried up. One now flows backward. Some flow through mountains into other rivers' beds. There are huge reservoirs where there was once desert; there is desert, or cropland, where there were once huge shallow swamps and lakes.

It still isn't enough.
Romans were now saying that it wasn’t a matter of whether NAWAPA would be built, but when.

Perhaps they are right. Perhaps, despite the fifty thousand major dams we have built in America; despite the fact that federal irrigation has, for the most part, been a horribly bad investment in free-market terms; despite the fact that the number of free-flowing rivers that remain in the West can be counted on two hands; perhaps, despite all of this, the grand adventure of playing God with our waters will go on. Perhaps it will be consummated on a scale of which our forebears could scarcely dream. By encouraging millions of people to leave the frigid Northeast, we could save a lot of imported oil; by doubling our agricultural exports, we could pay for the oil we import today. As the ancient, leaking water systems and infrastructure of the great eastern cities continue to decay, we may see an East-West alliance develop: you give us our water projects, we’ll give you yours. Perhaps, in some future haunted by scarcity, the unthinkable may be thinkable after all.

In the West, of course, where water is concerned, logic and reason have never figured prominently in the scheme of things. As long as we maintain a civilization in a semidesert with a desert heart, the yearning to civilize more of it will always be there. It is an instinct that followed close on the heels of food, sleep, and sex, predating the Bible by thousands of years. The instinct, if nothing else, is bound to persist.

The lights of Salt Lake City began to fade, an evanescent shimmer on the rear horizon. A few more minutes and the landscape was again a black void. We were crossing the Great Basin, the arid heart of the American West. The pilot announced that the next glow of civilization would be Reno, some six hundred miles away. I remembered two things about Reno. The annual precipitation there is seven inches, an amount that Florida and Louisiana and Virginia have received in a day. But even though gambling and prostitution are legal around Reno, water metering, out of principle, was for a long time against the law.

The American West was explored by white men half a century before the first colonists set foot on Virginia’s beaches, but it went virtually uninhabited by whites for another three hundred years. In 1539, Don Francisco Vásquez de Coronado, a nobleman who had married rich and been appointed governor of Guadalajara by the Spanish king, set out on horseback from Mexico with a couple of hundred men, driving into the uncharted north. Coronado was a far kinder conquistador than his ruthless contemporaries Pizarro and De Soto, but he was equally obsessed with gold. His objective was a place called Cibola, seven cities where, legend had it, houses and streets were veneered with gold and silver. All he found, somewhere in northwestern Arizona, were some savage people living in earthen hovels, perhaps descendants of the great Hohokam culture, which had thrived in central Arizona until about 1400, when it mysteriously disappeared. Crestfallen, but afraid of disgracing the Spanish crown, Coronado pushed on. Tusayan, Cicuye, Tiguex, Quivira—no gold. His fruitless expedition took him from the baking desert canyons of south-central Arizona up to the cool ponderosa highlands of the Mogollon Rim, then down again into the vast, flat, treeless plains of West Texas and Oklahoma and Kansas. He returned, miraculously, a couple of years later, having lost half his men and some of his sanity when his horse stepped on his skull as he was exercising it. Since the climate of the American West is often compared, by those who don’t know better, with that of Spain, it is instructive to quote part of the letter...