

DRY STATISTICS

BY
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The average is the mid-point of a group of related values. But sometimes the extremes are vastly more important than the averages.

Dry Statistics by Donald C. Brooks
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California was on its side. Bob Arlin frowned at the illuminated flood control. Map that covered the wall above the master control center. Conditions throughout the State were growing progressively more severe.

Outside, the water pelted against the building. It had been raining continuously for several days now, and from the reports it was the same all up and down the valley. Rain that pounded, and scoured, and flew in savage gusts, and lashed wildly at the windows.

“Boy! We’re really going to get it this time. There are a dozen places we might have floods. We might even lose the Delta!” Arlin tried to ignore his assistant’s comment. Larry Mearman’s tone carried a hint of sardonic pleasure, as if he were looking forward to a major calamity.

Arlin ran his fingers through his thin sandy hair in annoyance, then tried to concentrate on the map. Every few minutes he had to check the progress of the storm, and give advice or instructions if his staff were having trouble.

On the chart, northern California was on his left, and the south was on his right. The Sacramento and San Joaquin Rivers came together from left and right, joined at the Delta in the center of the map, then flowed down and out to sea through San Francisco Bay. Colored lights along the rivers indicated the status of the storm—yellow for caution, and first public news release; orange for danger, and a more detailed public warning; and red for flood, and for evacuation and rescue missions.

Behind him, the teletype began to chatter. New reports were coming in from some of the outlying areas. Arlin watched as his staff read the data, then entered the changes on the map. A few more lights winked from yellow to bright orange. So far, there were no red areas.

“Come on, come on,” Larry Mearman coaxed.

“All right, take it easy,” Arline cautioned. “We’re here to prevent floods, not to try and make them happen.”

“Yeah, yeah. But I’ve got a pool. Whoever guesses closest to the number of miles of flooding wins the pool.”

Bob Arlin grimaced. Mearman, as usual, was like a ghoul. The man was tall and gaunt, and his face was cast in a permanent scowl, as if he were always sneering.

“You’d better hope there aren’t any miles of flooding,” Arlin countered. “You know what the politicians will say—that it was our fault. It doesn’t matter what happens, or what the real explanation is. Those damned politicians always look for someone else to blame instead of themselves. That means that they’ll be after us.

“What you’d better do is get back on that computer and check these flood routing figures again. We’ve got to be absolutely sure of our facts before we give out any evacuation notices.”

“Yeah, but it’s a no-win situation,” Mearman objected. “If we put out a notice and there isn’t a flood, then they’ll be on our back for making people move unnecessarily. But if there is a flood, then we’ll be blamed for that.”

“We can’t help that. All we can do is try to give people proper warning,” Arlin tried to cut off the debate. It was useless to argue with Mearman. He seemed to take perverse pleasure in seeing other people’s misfortunes.

Arlin turned his attention away from his assistant and glanced around quickly at the dozen people who staffed the Weather Center. The crew had been on duty continuously for several days now, alternating in 12-hour shifts. The air in the office was hot and muggy, and the place was getting to be a cross between a sweat-filled locker room and a political convention center.

His own people were handling one set of phones, getting reports from all up and down the valley. Another set was for the press, who kept barging in and out, with lights, and cameras, and tape recorders, and an endless barrage of questions. The radio was used for communication with the field crews, who were guarding the safety of the levees.

Bob Arlin nodded at his team quickly in encouragement. They were doing the best they could, trying to cope with the flood of anxious calls. So far, the map showed only a scattering of orange—danger—along the river, with the condition fading into yellow on the fringes of the valley, and toward the south.

But this was threatening to become a hell of a big storm, he reflected grimly. If things went wrong there might be flooding that would cause a tremendous amount of damage. Which meant that sooner or later the politicians and the press would be after him for a statement. He'd have to make sure that the reporters didn't get near Mearman. There was no telling what kind of inappropriate comments he might make.

Also, he'd better get an independent check on those flood routing figures, in case Mearman got carried away with his thirst for disaster.

He moved down the aisle to speak to one of the young engineers. "Dolores, will you come in my office, please?"

Back in his own area, Arlin sank in his chair, then leaned back, took off his glasses, and mopped his forehead wearily. He'd already warned his wife not to expect to see too much of him for the next few days. He'd have to spend most of his time here, and conserve his energy and pace himself to hold on as long as the storm continued.

He could still hear the rain drumming against the windows. The sky outside was dark, with the seething clouds making an artificial mid-day gloom. Suddenly the pall was broken by a flickering stab of lightning. In a few seconds the thunder arrived, a long, reverberating roll of tumbling sound.

As the noise subsided, the slim raven-haired young woman came in his office. She looked distraught, as if momentarily overwhelmed by the intensity of the storm. She sat down across from him, and fidgeted nervously with her fingers.

"I was just talking to Jim Carleton, up at Corning," Dolores began uneasily. "He says they're having an extremely heavy cloudburst, and there's no way to hold the runoff. He's afraid they're going to have some flooding!"

Arlin made a mental translation of her comment. What she meant was that *she* was afraid they were going to have some flooding. Dolores Valenzia had good intentions, but this was her first exposure to a really major crisis. He had to hope she'd keep her nerve.

"What else did you learn from Carleton?"

"He's just gotten some reports in from the back country," Dolores continued guardedly. She seemed to be trying to keep herself under control. "The rain's even heavier than it was this morning. The storm is low, downstream of the mountains, so they won't get any holdback from the forest. And they don't have any flood control reservoirs in the lower area, so it will be direct runoff into the river, and then on down to us."

"Is there any way we can measure it? What flow is he putting in the river?"

"He's not sure. The river is still rising. The gauge is up to 14 feet, but that's not too meaningful. There's no telling what it will be when it all gets in the river."

"We need to make some estimates," Arlin explained. "We need a high and a low, and we need the timing. We've got to work this in with the flows from all the other areas."

Dolores suddenly looked more troubled. "Oh, that reminds me. He was calling from Corning. They've got the same thing at Red Bluff, and at Willows and Colusa. It's been raining one day right after another. The clouds come in just above the rooftops, and they suddenly open up and the water's right there immediately. The whole west side of the valley seems to be getting completely flooded."

She seemed to be growing more uneasy, and more unsure of herself, as she presented the information. “The worst problem is in the Delta. There are all those channels and islands, and some of the levees are in very bad condition. High water could break through there very easily.

“I know some of the people down there—we’re in the Farm Association together—and I’ve seen their problem. If that area is flooded, hundreds of people might be killed. We’ve got to try and save them!” She sat in nervous excitement across the desk from him, and her features were strained in tension.

Arlin thought about her quickly. Dolores Valenzia was a descendent of one of the oldest California families. She’d grown up on their farm, so it was natural for her to be concerned about other farmers. Later, she’d become an engineer. But for some reason she had a reticence—perhaps due to an ancestral cultural reserve, or perhaps merely due to inexperience—that kept her from using her knowledge and training most effectively. But overshadowing that handicap was her intelligence, and her unquestioned sincerity.

She’d been through a few minor storms the past two or three years, but nothing as huge as this. One of his jobs as supervisor—if he could afford the time for it in this storm—was to involve her in a major crisis, both to advance her training, and to help build up her confidence.

“You’re right,” Arlin nodded quickly in agreement. “We have to prevent any flooding. I’ve got some ideas I want to check, but I’m going to need some assistance. I know that you’re deeply concerned, so I particularly wanted to have you help me. Can you interrupt what you’re doing now?”

“Oh. Yes, of course! I’d be glad to help you.”

“Fine. I knew I could count on you.” He smiled warmly in encouragement. He wanted to find a way to help her bloom.

“The first thing is to get all those runoff figures organized.” Arlin continued carefully. “Larry’s been running a check on the computer, but I’d like you to make an independent review for me. This storm is developing into a major hazard, but before we put out any flood notices we need to be absolutely sure of our information.

“So I’d like you to recheck all the flood routing figures thoroughly. From what you’ve said, the storm is coming in over the Coast Range on a broad front. As soon as it gets past the mountains, it seems to be dropping right down on the valley, and it’s letting go immediately. That means we’re going to have crests from several tributaries hitting us all together. We’ve got to see if the channels can handle it, and if the levees will hold.

“You’ve been through the procedure before. Keep running different alternatives on the computer so we can test the river’s sensitivity to different flows.”

“I’ve already been doing that,” Dolores answered quickly. She brushed her dark hair away from her face nervously. Her brown eyes looked troubled, and her slim face had an intense expression of concern. “It looks very bad. The river is already very high from all the rain in the mountains the last several days. There’s been enough time for a lot of that water to run off and get in the river.

“Now, the storm in in the valley will add more water to the peak that’s already in the channel. I’m worried about the farms along the river, and in the Delta. The levees might fail in a number of different places.”

“That’s exactly what we need to study. See if you can pinpoint the worst locations. Where will we have the failures? We’ll want to put out some flood advisories so people can be prepared to evacuate the danger areas.”

“But isn’t there some way to stop it?” Dolores persisted anxiously. She sat stiffly in front of his desk—impassioned.

“So what are the alternatives?” Arlin repeated calmly. “Run some simulations on the computer. See where the levees might fail first, then see what that will do in bleeding off part of the flow. Will failure in the upper part of the valley help protect the people in the Delta? Or vice-versa?”

Dolores looked dismayed at the prospect. “But we can’t just let them fail!” she protested. “We’re supposed to protect the environment. We’re supposed to prevent floods not sit back and let them happen.”

“We do try to prevent them,” Arlin corrected. “But it looks like this one is getting out of control. And don’t take it too personally. We’re not creating the flood—nature is creating it.

“Of course, the politicians aided and abetted it by not building enough flood control storage reservoirs when the engineers requested it. The consequences of that inaction are more or less inevitable. Our job is to protect both the public and the environment from the impact of what’s happening now. I want you to find the best solution for me. How can we prevent any flooding? Or if there is flooding, how can we minimize the damage?”

Dolores rose and stood silently for a moment. Her slender body was taut with anxiety, and her hands were clenched in tension. A frown of thought and uncertainty played nervously across her face as she tried to absorb the seriousness of her assignment.

“While you’re working on that, I’ll have some of the other people get in touch with the field crews,” Arlin continued. “We have to keep everyone fully informed of the hazards. If you find any danger spots, then the men can get out there and try to build up the levees with sand bags. We’ll do everything we can to try and prevent any damage.”

“Mr. Arlin?” Bob turned around as Dolores departed. Another engineer was waiting with another flood-related problem. He braced himself for the question. How different from a few short weeks ago.

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The sun blazed down unmercifully. Bob Arlin pulled his collar open wearily, and tried to get a breath of air against his body. The drought was in its second withering year, and was causing a State-wide disaster. The lakes were dry, the streams were dry, the land was parched, the air was parched—and in the Weather Center the crew’s nerves were frizzled from their continual struggle with the crisis.

“Say, Bob.” Arlin turned. His assistant was entering with what was probably another drought-related problem.

“I just had a call from Director Crandall’s office. Some Senator’s on the warpath.” Larry Mearman reported the matter scornfully. He had a perpetual scowl, and a biting, sarcastic manner. His clothes were stained with runnels of perspiration.

Arlin grimaced in resignation. “O.K. What is it this time?”

“Mr. Crandall wants some more water released from the reservoirs. He says the Senator claims his farmers’ trees are dying.”

“We can’t help that,” Arlin answered sharply, “and Crandall knows it. We don’t control any reservoirs—we’re just keeping records. Besides, all the government reservoirs are almost empty. There’s a little more water in some of the private ones, but we don’t control them. If Crandall or this Senator wants the water, let them be the ones to steal it.”

“Do you want to say that to Mr. Crandall? That will really get you crosswise with him.” Mearman stood smirking, almost gloating at Bob Arlin’s problem.

“Nuts.” Arlin grumbled to himself. This heat wave was making him lose his temper. He’d have to be on guard to control his private opinions. Director Crandall was a weak-kneed

coward. He wouldn't stand up to the politicians, but passed them right on to him. He mopped the rivulets of water off his forehead, then took a sip of lukewarm coffee.

"It was politicians like this Senator who got us into this trouble in the first place," Arlin complained. "They got scared off by the environmentalists and refused to build the needed projects so we haven't been able to store enough water to carry us through the drought. Now that there's a disaster, they want to find someone besides themselves to blame."

Arlin pushed the cup aside in disgust. "So what are we supposed to do about it?" His private thought was to let the politicians sweat for a while.

"Mr. Crandall wants you to call him back. You'd better find some way to keep peace with him, or he'll be after your hide."

"Yeah, I know." Arlin ran his fingers through his hair in annoyance as he reviewed that prospect privately. Larry Mearman wouldn't really be disturbed if Crandall fired Arlin, since Mearman was bucking for the Weather Controller's job for himself. Ever since Arlin had made a casual remark some months ago about an early retirement, and moving to the foothills with his wife, his assistant had been acting a little more furtive and insubordinate, buttering up to Crandall to try and curry favor.

Arlin scowled in disgust. The two of them knew too many ways of causing trouble. "O.K. I'll talk to him," he conceded. He wiped his forehead again impatiently, then called to his secretary. "Karen, will you get Mr. Crandall?" In a moment she put through the call.

"Hello, Mr. Crandall? This is Bob Arlin. What's this about some Senator?"

"Oh, Mr. Arlin. I'm glad you called. Senator Hinton was here this afternoon, and he'll be sending someone over to talk to you. He says it's vital that we deliver some more water to the farmers in his area. I want you to see what you can do for him. The Senator is Chairman of our Committee in the Legislature."

"I'm aware of that." Arlin was also aware that he'd just been made the fall guy.

"Yes, of course. Hmm, well—you know, because of the seriousness of the drought, they're considering some reorganization bills for our department. We want to make sure they act favorably, and report the Governor's bill out of Committee. I'm sure you understand our position."

"That's right. I fully appreciate it. But do you, and does Senator Hinton, and does the Committee, understand that no one can do anything that is physically impossible? If the reservoirs are empty, there's absolutely no way anyone can provide them any water."

"Yes, well—that is, if you talk to him, I'm sure you can find some way to help him." Crandall's voice carried a suggestion of a question, as if he were pleading for Arlin to somehow make the statement true. "I just wanted you to know the importance of it. The Governor wants his reorganization bill adopted."

"I understand," Arlin sighed. "We want things organized his way, not the opposition's way. O.K. I'll talk to him."

"Now be careful," Crandall cautioned. "Senator Hinton's in a spot where he can do us a lot of harm if he's not handled cautiously."

"So what's he going to do?" Arlin responded sharply. His patience was wearing thin. "Making trouble isn't going to produce a bit more water."

"Oh! That's no way to talk. Senator Hinton is in a crucial position. It's imperative that we keep him satisfied."

Imperative, hell, Arlin thought angrily. Nothing's imperative except to survive this heat. "I said I'd talk to him," he answered wearily. "Don't worry. I can handle it." He hung up the phone in disgust.

Damn, Arlin said to himself bitterly. That phony. He doesn't know the first thing about what we're doing. He keeps playing those political games, as if all that nonsense had some value. All the talk in the world wouldn't produce any water if there weren't any rain.

Mearman stood eavesdropping on the call sardonically. "Senator Hinton, eh? I understand he's planning to run for Governor. If you don't keep him pacified, then he'll reorganize this job right out from under us. He'll have Mr. Crandall's job as well."

Bob Arlin nodded glumly. There was another signal in Mearman's last comment. He wouldn't hesitate to connive with Crandall to throw Arlin to the wolves in order to save his own position.

Arlin was torn between two conflicting reactions. It was the politician's continual preoccupation with stupidity like this that sometimes made him want to retire in disgust. They were always empire building instead of trying to solve the basic problems. On the other hand, he couldn't retire because he didn't want Crandall and Mearman to have the satisfaction of his departure. But more importantly, someone had to attempt to keep things working. Someone had to find a way to solve this crisis.

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II

The lightning flashed outside the office. As Bob Arlin looked up, the thunder exploded violently, jarring the building, and causing the lights to dim and flicker. The noise crackled and rumbled, echoing around the city in the dark space below the clouds. Drenching rain squalls and surging wind gusts beat heavily at the windows.

“Boy! That was close.” Arlin turned. Larry was holding a sheaf of papers.

“Do you want to see this? There’s a good chance I’ll win my pool. There are more than a dozen places we might have floods.” He spread the papers out on the desk. His face had the trace of a smirk, as if he enjoyed presenting trouble.

“O.K. What do you have?” Arlin braced himself to take it calmly. Mearman tended to over-react, to paint the darkest picture.

“You can just go down the valley,” Mearman began. “Every stream is flooding. On the west side, running into the Sacramento River, there’s Clear Creek, Cottonwood Creek, Stony Creek, etcetera. That whole area’s been getting a cloudburst.” His hand swept across the figures imperiously. His tone had a tinge of glee.

“It’s the same on the east side. All of those streams are draining the floor of the valley, and they’re putting their water right in the river.

“A little further east and south you have the rivers coming out of the Sierras—the Feather River, the American, and the others. Some of them have big dams that are holding back the flow from the mountains. But this storm is mostly on the valley floor, so we’re getting a big runoff from the area below the reservoirs. It’s all piling up here in Sacramento. We’re certain to get flooded!”

Arlin tried to ignore Mearman’s gristly enthusiasm. He turned to the large map of California on his wall. “The Sacramento River is about 200 miles long from Shasta Reservoir down to the Delta,” he said thoughtfully. “Normally, the flow takes about five days to go that distance. Have you worked out the timing on all these tributaries? When will the flood peaks get here? And are they bunched, or scattered?”

“No, I haven’t checked that. Besides, it doesn’t matter. We’re going to have a wipeout any way you figure it.”

Arlin frowned. Mearman was always cutting corners. He’d better see how the independent check was coming on these figures. He wheeled around to call out the doorway. “Dolores, will you come here a minute?”

Mearman grinned as the young woman came in the office.

Bob Arlin spoke up calmly. “Do you have any results yet from your flow analysis?”

Dolores Valenzia looked uncertain. “Yes, but it’s not clear yet. There’s a lot of diversity on the different streams. It’s going to be close in several places, but I can’t be positive about any levee failures. It depends on how long this storm continues. If it stops tonight, we might make it through safely. But if we have another day of rain, we could have a flood in two or three locations.”

“Haw, you’ve missed it,” Mearman said sarcastically. “Either your volumes are too low, or our velocity is too high, or something. My figures show flows overtopping the levees in several areas.”

“No, that can’t be,” Dolores objected. She brushed her dark hair from her face in annoyance. Her brown eyes were filled with concern. “I’ve been over it carefully. The program was tested out by simulating all the flows we had last winter.”

“Yeah, but those storms were all a lot smaller than this one. You haven’t scaled it up correctly.”

"I've allowed for that." Dolores' tone was sharper. Larry's perpetual criticism seemed to be getting to her. "With the increased flow, the river is at a higher stage than normal, and the water's moving almost twice as fast as usual. That may be just enough advantage to keep the flow within the channels."

Bob Arlin broke in to stop the argument. He was pleased that Dolores didn't seem as worried as she'd been a little earlier. "Then maybe it depends on how long this storm continues. Let's take a look at the weather forecast."

He led the way to the corner of the main work room where they had the satellite image view screen. He switched it on and studied it a moment.

It was a big storm. There were clouds over the whole north coast area, and up over Oregon and Washington, and for several hundred miles out to sea. The storm didn't seem to think out until it got up off the coast of Canada.

He turned to Dolores. "When was this picture taken?"

"Two or three hours ago. We'll get an update on it in a few hours when the satellite orbit swings over this area again."

"What's the wind speed? How fast is this storm moving?"

"About 30 to 40 miles per hour."

"That fast? Then in ten hours it will move 300 to 400 miles. Will that get it past us?"

"Not a chance," Mearman cut in. "It's a thousand miles from here up to the end of that storm. And more clouds are probably building up to follow the first ones."

"The distance is less than that," Dolores corrected. "It's already moved a hundred miles since they took this image. Besides, the main storm is moving steadily eastward, and it's rotating slowly like a pinwheel. The thin cloud layers between the arms of the storm might open up a little wider. There might be rifts in the storm."

"Don't always be so Pollyanna about it," Mearman objected. "You keep trying to wish the problem away. When are you going to learn it won't go away? We're going to have a flood, so just make up your mind about it."

"Well, it hasn't happened yet," Arlin interjected in annoyance. He turned back to Dolores. "Then say it will take about 20 hours for the storm to move eight or nine hundred miles. Will that be too long for us?"

"It depends on the intensity of the storm. If it keeps on as severe as this, we won't be able to keep it in the channel. But this has been unusually heavy rainfall, with general cloudbursts over the whole area for the past two days. It would be very unusual if the rest of the storm is as bad as this."

"Nuts. I'm putting my money on a flood," Larry scoffed. "We've got to be prepared for the worst. You keep looking for some miracle to save you. Well, it just isn't going to happen. This could turn into the greatest disaster you've ever seen."

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The drought was building up to a disaster, Bob Arlin reflected grimly. Everywhere he turned there were stories of mounting fiascos in the valley.

The area was always hot in summer, but this year was a record, with day after day of hot, oppressive, almost unbearable conditions. The temperature was bad enough, but the lack of water was an even more serious problem. The farmers were facing ruin, and the politicians were in a panic.

"Mr. Arlin," his secretary interrupted, "can you see a reporter? He's anxious to do a story about the drought."

Arlin grumbled, then mopped his forehead wearily. This would probably be another frustrating interruption, like his recent talk with Crandall. He waved Mearman out of his office. "Yeah, all right," he conceded with annoyance. "Send him in."

The reporter looked lean and hungry. He was young and thin, with dark wild hair, a beaked nose, and an overgrown walrus mustache. His faded clothes were rumpled, and spotted with perspiration.

"Mr. Arlin, I'm Bill Greenwood. I want to ask you some questions about your Weather Center, and about this drought. Do you have some time?"

"Yeah, sit down. Arlin moved the papers to one side of his desk, and sat back to field the questions. Over the years he'd become resigned to their procedures.

Greenwood placed his notebook on the edge of the table, leaned forward intently, and began to fire his questions. "First, how long has this Center been in operation?"

"Under its present name of Weather Center, about five years," Arlin answered. "Before that it was the Drought Center, and before that the Flood Control Center. I don't know how far back that goes. It used to be active only in the winter, when floods were a problem. Later, it became a year-round information center."

"And what kind of information are you concerned with?" Floods and droughts, of course, but anything else?"

"Well, as the name says, weather. Any aspect of the weather that could affect the economy, or the State's activities. Weather is particularly important for agriculture. The farmers want to know the obvious things, like the prospects for hot spells, or cold spells, or wet periods, or dry periods. With reliable advance information they can do a better job of planning their farming operations and reduce the chance of losses.

"The power companies are interested in the weather too. They want to be able to predict the snow pack, and the stream flow, so they can determine how much hydroelectric power they can generate. With that, they can figure out how much expensive imported oil they will need to buy to meet the rest of their load. That's a particularly serious problem right now with this drought."

In fact, it was more than a problem, Arlin reflected grimly, it had become a severe personal hardship. Because of the power shortage the air conditioner had been off for several weeks, which just heightened the misery from the heat wave. There were even a few people who couldn't stand it, and who had been forced to stay at home.

"Our job is to act as a central clearing point for all kinds of State-wide weather and climate data," Arlin continued carefully. "Besides that, if it ever rains again, we'll have the flood control responsibility. And now, of course, we're coordinating all the drought information and activities."

"But more than that," Bill Greenwood challenged, "With this drought, you're in charge of accounting for all the water. That almost makes you a czar. There have been a lot of complaints about your activities. You're building up a whole bureaucracy." Greenwood sat forward intently, as if it were a personal accusation. His forehead glistened in the heat, and his wild hair, beaked nose and heavy mustache gave him a fierce, aggressive appearance.

"I'm building up a bureaucracy?" Arlin repeated the criticism in astonishment. "Hell, I'm the one guy who's trying to stop that nonsense. There are too many bureaucrats in this business now. They don't know what they're doing, and they're all giving conflicting orders."

He combed his fingers through his hair in annoyance. What was the matter with this reporter? He didn't seem to know the first thing about this office.

Arlin tried to control himself. "I think I know why you're getting complaints," he added more calmly. "That's natural. People always like to complain about the weather. And they're more disturbed than ever now with this drought, and with this heat wave. But they're

all wrong when they complain as if we're responsible for it. We don't create any weather, or even have any way to change it.

"And I'm not a czar. I don't even want to be a czar. Our job is just to coordinate information, and make it available to the public. We don't really control anything."

"But there's that old saying that knowledge is power. Your office controls some of the most important data in the State. Misuse of that data could cause irreparable harm. If one person has access to data that is not available to another, then the first one could make a tremendous profit, and the second one might be bankrupt."

"That's exaggerating things a bit," Arlin objected. "Our information is published daily. Everyone has access to it. We can't control who uses it, and who doesn't."

"That may apply to the data that's published, but what about the things that aren't published? What about your working files? What about some of your office studies that may not have been completed? What's to prevent you from making some special analysis and then keeping it for your friends instead of making it available to the public? How do we know that you're not completely defrauding the general public?"

"That's utter nonsense," Arlin complained in protest. "You could dream up all kinds of horrible examples—a thousand and one other possibilities—but none of them would be real. None would be true. We don't have any secret studies. You'll just have to take my word for it. I don't know any way to prove it."

Greenwood rubbed his mustache briskly, then shifted his position to begin another question. "What's this about reorganization?" he persisted sharply. "Isn't that intended to insure full public access to your data?"

"That's one of the things that's being said," Arlin conceded. "But that doesn't really mean anything. There's full public disclosure now. The reorganization is really a political issue—which agency will be able to get political control of this Center? It's some more of this damned bureaucratic empire building."

"Look," Arlin continued in exasperation. "The way it is now, we're in the Department of Public Resources. And we want to keep it that way. We serve the public. The other proposal is to transfer us to the Department of Agriculture. I suppose the theory would be that the farmers would have better access to information from us. Presumably, although the proponents don't say this, other segments of the public won't be as fortunate as the farmers. The farmers would get the material first, and everyone else would get it later."

"To me, it's an argument over nothing," Arlin stated. "I'm going to put out our information as best I can no matter where we might be on a table of organization."

"Well, for the sake of discussion, let's say that you're doing a proper job," Bill Greenwood argued. "But what about your successor? Wouldn't reorganization help insure that no matter who held the position, the data would be released properly to the public?"

"No, I don't buy that," Arlin disagreed. "That's irrelevant. The most important thing is the character of the individual, not the table of organization. An incompetent person can foul up even with the best of organizations."

"O.K. Then how about your staff? What kind of people do you have? Who might be in charge later if you should leave? The public wants to know if this organization can be trusted."

Bob Arlin grimaced, then wiped the perspiration from his forehead. "Look," he complained. "This outfit is called the Department of Dry Statistics. It's kind of a Siberia in the engineering profession. Nobody wants to work here, because it's considered a dull job, just compiling reams and reams of dry statistics. Temperature, and rainfall, and stream runoff, and reservoir storage, and so on and so forth."

"Some of my people are holdovers—engineers who had enough seniority that they weren't laid off a few years ago when we had a big reduction. Some of the others are

newcomers, including a few women who had a hard time getting accepted in any of the other offices.

“If you’re looking for some paragon of a disinterested public servant—forget it. We just have people—as good and as bad as people in any other department. If you want someone really outstanding, you’re going to have to glamorize the position, and give it greater status, so you can attract the most qualified and competent people.

“If you reorganize things, and then give it to some politician to run, then heaven help you. You’ll have the greatest mess you’ve ever seen.”

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III

Bob Arlin switched off the satellite image view screen. "All right. This is a big storm, and we can't predict exactly when it will end. And we can't help things standing here. Larry, you and Dolores had better get back on your computers. Let's keep our analyses up to the minute. Let me know if you find anything critical."

He moved back across the office, then stopped in front of the master control center. The illuminated wall map showed the latest status of the storm. Orange danger lights glowed in a swath a hundred miles long through the center of the valley north of Sacramento. Hour by hour the water was rising in the channel.

Outside, the storm was growing progressively more severe. Rain flooded against the windows, and the lightning flickered beneath the clouds.

"Well, are we going to have a flood?"

Arlin turned. It was Bill Greenwood again. Ever since his first drought interview a few weeks ago, the reporter had almost become a regular fixture. He still looked like a wild man, with his crazy hair and walrus mustache, and had grown even more severe and caustic.

"What's the latest on this storm?" Greenwood demanded. "How much damage are we in for? How long is it going to last? And what have you been holding out on me?"

Bob Arlin frowned. It was almost impossible to stop Greenwood's barrage of annoying questions. The best thing to do was to get him out of this central area, and out of Mearman's reach.

He tried to plea for a truce. "How about a cup of coffee?" Arlin offered. He steered Greenwood to the service counter, poured two cups, then led the way back to his cluttered office.

They passed Dolores returning to her computer station. Greenwood's eyes followed her slender form appreciatively.

"You like that Chicano chick?" Mearman's leering voice caught the reporter by surprise. "Give me a good write-up in your paper, and I'll see if I can fix you up with her."

"That's enough!" Bob Arlin cut into Mearman's remarks forcefully. "Try to show some respect for other people." He closed the door abruptly, to cut off the chance of any further sarcastic comments.

Greenwood looked quizzically at the exchange as he moved into Arlin's office. He dropped into a chair, put his feet on the table, and stroked his mustache thoughtfully. "What was that all about?"

"Aw, bad manners and bad character," Arlin answered gruffly. "He's about the worst kind of example of a man who won't give women an equal opportunity. Dolores is an engineer, and smarter than he is, so he has to demonstrate his supposed superiority by always criticizing her, and running her down. But fortunately, everyone else here is on her side."

"Why don't you kick him out?"

"No, I can't. He's got a lot of seniority on her." Arlin made a production of stirring his coffee, and blowing on it until it was cool enough to drink. This was a poor way to start an interview, he reflected grimly, particularly with an aggressive prying reporter.

"Tell me about the girl," Greenwood prompted. "It's unusual for a Mexican girl to be an engineering, isn't it?"

"She's not Mexican," Bob corrected. "Spanish. Dolores Valenzia. She's an original Californian."

"Oh? Tell me about her."

"I can't. She's extremely reticent. She likes to keep her family background to herself."

Bill Greenwood rubbed his mustache. "O.K. Then how about off the record? You've made me curious."

Arlin frowned. He didn't want to embarrass Dolores, but then, her history was intriguing. "O.K.," he conceded. "Off the record, if you promise not to use it." As Greenwood nodded, Arlin settled back to sip his coffee, and tried to recall Dolores' story. Behind him, lightning flashed outside the windows, and thunder rumbled ominously in the distance.

"It started with Hermillo Valenzia," Arlin began slowly. "He was her ancestor—one of the first Spanish settlers to come to California. Father Serra and Captain Portola founded the first mission in San Diego. But they just had a small group of priests and soldiers. Later, Colonel de Anza led the first party of about 200 civilian colonists from Sonora up through Arizona.

"They crossed the Colorado River at Yuma at about Christmas in 1775, and then crossed the desert into Southern California. Eventually, a few of them got to the future location of San Francisco. They must have walked about 2,000 miles.

"Hermillo Valenzia was a small boy with de Anza's party. He was in the first group who founded San Francisco. Later, he settled up in the Napa Valley, and planted grapes that he got from Spain. I think the Valenzia Farm is the last remnant of a Spanish Rancho that is still in its original ownership. They've had it almost 200 years."

"Valenzia Farms?" Greenwood repeated. "Is that the Valenzia Winery?"

"That's right. They have some of the oldest and finest vineyards."

"Hey, no wonder she doesn't want to be called a Chicana. If we had such a thing as a landed aristocracy in this country, then I suppose that she'd be at the top of the list. But what's she doing here?"

"There are a number of reasons. The men in her family run the farm. There wasn't much for her to do there, but she wanted to get into something related to their interests. Farms need water, so she became a civil engineer to get involved with supplying water.

"Then her family has this tradition about protecting their land, and the protection of the environment, so she got into flood control work as a way to help protect the land. It's a very deep thing with her. I don't find this kind of motivation with many other engineers."

Greenwood sat down his coffee and reached for his notebook. "That's a human interest story that would make a good feature column. Do you mind if I talk to her? I'd like to get some more of the details."

"No," Arlin objected. "That was off the record—remember? She's extremely reticent. She likes to keep her background to herself. She wants to make it on her own—to be a success as an engineer through her own efforts, not through her connections with her family."

"O.K. Then maybe I could do it another way. I could describe the daily activities of the people here in your Weather Center. This storm, and the possibility of a serious flood, has got everybody worried. I could do a special article on your work. As a girl, it would be more interesting to the public to learn what she does than to read about a man."

"I guess that would be all right," Arlin agreed. "But don't interrupt her now. She's making flood routing studies to see if there's a chance of any damage."

"Yes, you'd better fill me in on that," Greenwood demanded. He suddenly became sterner. "That's really why I'm here. What are you doing to prevent a flood?" He turned to a fresh sheet in his notebook, frowned intently and sat forward as Arlin began to explain their flood control procedures.

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Bob Arlin paused in his explanation of his drought control procedures, and took time out to mop his forehead. The dry hot air was almost stifling. And as if he drought weren't

enough, there was also a power shortage, so the building's air conditioner had been off for several weeks. It was hard to tell which was worse—to keep the dry, stale air inside the office, or to open the windows and let in the suffocating fumes from outside the building.

And as if the heat weren't enough, he was being badgered by a reporter who had come here on some kind of crusade, and was asking probing questions.

Arlin turned away from Bill Greenwood a moment to call wearily to his secretary. "Karen, have you heard anything from Senator Hinton's office? Mr. Crandall said he was sending someone over."

"No, nothing yet," she answered. Then she grimaced as someone passed her station.

"Say, Bob." It was Mearman. He stuck his head in the door, taking advantage of the interruption with the reporter. "Can you come look at the screen a moment? We've got a new image. It looks like we've got some fires."

Arlin sighed. If it weren't for the new trouble, he'd almost be thankful for Mearman's interruption. Greenwood's manner was getting more and more annoying. Arlin stood up and pulled his damp shirt away from his back, then motioned to Greenwood reluctantly. "You might as well see this, too. You'll probably want the story."

Mearman led them to the corner with the satellite image view screen. "Look at this. We've got some good ones." His tone seemed to suggest that the fires were some kind of blessing.

"It's so dry this year that everything's completely withered. The forests are like dry tinder. The rangers were worried to death about fires, so they closed a lot of areas. But that didn't help them. Now, the place is really burning." As he spoke, his voice had a suggestion of sardonic pleasure, as if to imply that the fires were somehow the fault of the rangers, and that they were being repaid for the excesses of their vigil.

He pointed eagerly to several scattered smudges on the view screen. "Smoke clouds. There are a couple big ones up here, and another down south. It looks like there might be some more smaller fires in the Coast Ranges. You can see the smoke trails are thin where they start, and then become larger as the wind blows the smoke clouds over a broader area."

"O.K.," Bob Arlin sighed. "Add one more problem to our list of troubles. We're almost out of water. The farmers have lost most of their crops. The ranchers have lost their cattle. The utilities have lost their hydropower. The resort areas have lost their business. Now, the parks are losing their forests."

Bill Greenwood stood studying the illuminated image. With the light reflecting off the perspiration on his forehead, and with his wild mass of hair and huge drooping mustache, he looked almost barbaric in the glare. "How big a fire is this?" he demanded. "Is that smoke blowing clear out over the ocean?"

Arlin studied the picture. "No. That's not from our fires. The wind is normally in the other direction. It blows inland from the sea, not outwards it.

"It looks like that's coming from Hawaii," Arlin suggested. "Maybe it's one of their volcanoes. Some of them have been threatening to erupt for a number of years."

"Yes, I remember seeing something about that," Greenwood acknowledged. "Is one erupting now?"

"I haven't heard. This looks like something's venting fumes and ash. I've never seen a smoke cloud as big as this before."

"Why haven't we heard about these fires earlier?" Bill Greenwood challenged, suddenly returning to the subject. "What have you been hiding? Is this another case where you've been covering up the data?"

"It's not another case—there aren't any cases," Arlin protested in annoyance. "This is the first we've heard about any fires."

“He turned to Mearman. “Where’s the previous satellite image? Let’s see what that shows.”

Larry Mearman drew a photocopy out of the files. “It’s clear. These fires all started within the last six hours.”

“How do you know that?” Greenwood’s wild manner made him a constant irritant.

“The satellites are in orbits spaced so that we get only four images a day,” Arlin explained patiently. “There are two passes in daylight, and two at night. There weren’t any fires this morning.”

“Mr. Arlin?” His secretary was calling for his attention. “Senator Hinton is here now. Do you wish to see him?”

“Oh, hell. I wasn’t expecting him. I thought he was going to send one of his aides.” He frowned, then turned to Greenwood. “Excuse me. I’ll have to leave you here to talk to Mr. Mearman.”

He glanced at his assistant apprehensively. “Larry, you’d better start putting out some news releases about the locations of these fires, and of the areas that might be affected by drifting ashes, and by the smoke clouds. There’ll be a lot of general damage from this. We have to warn the public. Call the radio and TV stations.

“Then maybe you can help Mr. Greenwood work up a story. Give him all the background that might be needed. I want him to be fully satisfied that we’re giving everything to the public, and that we’re not hiding anything.” Arlin wiped his forehead impatiently as he moved back to his own area.

Senator Hinton was waiting in Arlin’s office. The man was in his mid-forties, tall, dark-haired, aggressive. He was dressed in an expensive, well-tailored light blue suit. The light color set off an impressive tan on his weathered face. It also matched the pale blue of his eyes—eyes that were alive with power and probing for information. He looked forceful, prosperous, successful—a man who was used to command, a man who demanded results.

“Are you Mr. Arlin?” I’m Maynard Hinton. Mr. Crandall suggested that I talk to you.” Hinton held out a lean, well-muscled hand. His voice was firm and self-assured. He seemed to be immune to the effects of the heat.

“Yes, I’m Arlin. Won’t you sit down?” Bob moved around to his own side of the desk. This was going to be another damned waste of time, he thought bitterly, playing nursemaid to a politician. The man looked like an actor, and had a reputation for being overpowering.

“As you may know, I represent an area in the Central Valley,” Hinton began abruptly. “It’s an extremely important agricultural area. And I hardly need to tell you that water is a life and death matter to the farmers this year.” His lean face was firm-set, and his blue eyes had a cold expression.

Arlin nodded. As expected, his visitor was off and running.

“To come to the point, I’m here to get some water. In our area, the reservoirs are almost empty. I want to find out what reservoirs in the State still have some water, and then find some way to get it.”

Arlin tried to keep from being overwhelmed by the attack. “All right, I can help you with the first one,” he answered guardedly. “We’re a central records unit for all kinds of State-wide data. We have a current listing on all the reservoirs.”

He turned to the wall map. “Your area’s down here by Fresno. The only reservoirs of any possible interest would be those on the streams that drain into the Central Valley. I can get a print-out on them.

“But I can tell you in advance, there’s not much water left in any of them. And there’s competition for that water all up and down the valley. Every area is like yours. They’re all

short, and they're all after more water. If you want to get any, you'll have to work that out with the Water Rights Adjudication Board."

"I know that. But we have the area with the most valuable fruit trees. There are hundreds of thousands of acres of them, and they're extremely important. They produce most of the fruit for the entire country. We have to do everything possible to save them. We may even have to sacrifice the annual field crops in order to save the permanent orchards."

Bob Arlin grimaced. Hinton was just robbing Peter to pay Paul. He was just taking water from one area that needed it to give it to another. But he'd better not get into a fight about it. He tried to pull his damp clothes away from his back.

Senator Hinton gestured at the wall map. "How about the groundwater?" he demanded. "Do you have records of that, and of available pumping capacity? The farmers are going to have to mine the basins."

"No, we don't have that. There are too many private wells to try to keep track of them all. It's not like with the surface reservoirs, where there are only a limited number, and under State surveillance.

"Besides," Arlin added, "there's not much more you can do with wells. All the existing ones are in full use, and the contractors are working overtime trying to drill as many new ones as possible. The problem is, with the reservoirs empty, there's no water to release to generate electric power, so we've got a power shortage, too. That's why the air conditioning isn't working, and why so many lights are off. It's doubtful if you could get electric power to operate any new wells even if you could drill them."

"I'm aware of all that," Hinton answered coldly. "But it goes even further. Since the power companies are short of hydropower, they have to generate power by burning oil. And the oil has to be bought from foreign countries. And since the price of oil is so high, that leads to a very serious outflow of capital, and to an unequal balance of payments.

"And to overcome *that* problem, we have to export more products to other countries. And our best export product is food. And to produce food, we need water. Which brings me back full circle."

Hinton turned directly to confront Arlin. His blue eyes were an icy challenge. "So how can I get some water? Either I get more water, or I'm going to turn this administration upside down!"

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IV

The rain against the windows was a buffeting, flooding torrent. Bob Arlin turned away from the reporter a moment to glance uneasily at the downpour. The lightning and thunder were becoming progressively more severe, with a nerve-wracking bombardment that seemed to be focusing on their office.

He waited for the noise to slacken off a little, and then called through the doorway. "Dolores, will you come here a minute?"

The young woman turned her computer calculations over to one of the other flood analysts, and entered Arlin's office. She stood in front of his desk, looking in uncertainty from Arlin to his visitor. She held a group of papers.

"This is Bill Greenwood," Arlin explained. "He's a reporter. And this is Dolores Valenzia." He motioned to a chair. Greenwood shifted slightly to keep her in his view.

"I'm sorry, but I have to interrupt our work for a while," Arlin continued. "Mr. Greenwood is doing a story on the kind of work we do in this office. I've given him all the technical material—like what we do in recording weather data, and in preparing flood control studies, and so on.

"But he's trying to get another viewpoint on it—something a little broader. Maybe something a little more general, like how we're part of the environmental protection effort."

Dolores looked back at him somewhat hesitantly. Her brown eyes were troubled, giving an intense expression to her delicately sculptured features. "I'm not sure what you want," she answered. She glanced fleetingly in the direction of the reporter, who was keeping his gaze on her, and then looked back to Arlin.

"I thought you might want the latest report on the storm," she said cautiously. "Conditions are getting more severe, and I was about ready to report to you." She gestured at her papers.

"Fine. Let's have that, then. I'm sure Mr. Greenwood will want that for his story."

Dolores looked uneasy. "I'm afraid it may be getting out of control," she said apprehensively. "There's an electrical storm that's moving south with the main part of the cloudburst. They've been having intense lightning storms, and local flooding, in several areas. This has caused the water to rise a lot faster than I'd expected."

"Are there any danger areas?"

"Yes," she answered hesitantly. "It looks like there's a surge building up in the middle of the valley. There's a whole string of orange lights on the map now. The levees there can probably hold it, but I'm not so sure about those in the Delta. Some of them might give way when the flood surge hits them. Those levees are on peat soil that's been subsiding, and some of them aren't too stable."

Arlin decided to test her. "Then what do you recommend?"

Dolores paused, as if drawing strength for her decision. "I think we'd better start spilling out on both sides of the Sacramento River," she said cautiously. "To the west into the Colusa Drain, and east into Butte Basin. That will trim the peak off the surge. I was worried that we might have to do that eventually, but I didn't think it would happen so soon."

"Well, that's no catastrophe," Arlin responded. "But what you're saying is that we should have a controlled flood. How do you justify that? I thought you wanted to prevent any flooding." He kept pressuring her, to see if she could handle it.

Dolores flinched. "On balance, it's probably the best thing," she answered hesitantly, "in the sense that a flood in the central area is less critical than further downstream. The worst place would be in the Delta. We'd never be able to recover the islands once we lose them."

“Do you have any proof we’ll lose them?”

“No, not proof, exactly. All we have is our computer simulations. They show a pretty high risk of damage. Also, I thought about what you said. We have to take a chance on a small loss in the hope that we can avoid a worse one.”

“Can I ask something?” Greenwood cut in. “What are these channels she mentioned?” He’d been observing Dolores carefully.

“They’re for emergencies,” Arlin answered. He smiled briefly to himself. Greenwood’s caustic manner had suddenly vanished now that he was talking with Dolores.

“The Butte Basin is a lowlands swamp and wildlife area,” Arlin explained. “The farmers aren’t allowed to have any buildings in those areas because they have to expect being flooded every so often. That’s standard procedure when there’s a severe storm. It may cause a mess to their crops, but when the flood is over the water will drain back out again. There may not be any permanent damage.”

“What happens to that water?” Greenwood demanded. “Where does it go?”

“Those are old river channels. The Sacramento River has moved back and forth all over the floor of the valley in the course of its history. That’s what built up all the good alluvial soil. Those different channels braid back and forth into one another. The water from these two will get back in the main river several miles downstream of where it left it.”

“But isn’t that still upstream of us? Won’t that just cause a greater chance of a flood here later?”

“Not necessarily. The water will move more slowly there than in the river. It’s not a regular, well-maintained channel, so it’ll be delayed. We’ll have to hope that when it does return to the river, the flow there will be low enough so the channel will be able to handle it.”

Greenwood scribbled rapidly in his notebook. Arlin turned back to Dolores. “Let me see your results.” He reviewed her calculations carefully, then nodded and passed them back.

“Fine,” he agreed. “That’s a good analysis. You’ve reached the right decision. Tell Karen to have the radio operators give the orders to the field crews. Also, they should put out some warning notices to the people near those channels.”

Dolores suddenly looked relieved. She rose abruptly and ducked out of the room.

In her absence Greenwood worked rapidly to finish his notes. The noise of the rain was a drumming staccato on the windows. A rumble of thunder was a muted accent in the distance.

Greenwood smiled warmly as Dolores returned. “Thanks. I’m glad to get all that. It’s good background. Can you think of anything else?”

Dolores paused. “No, not at the moment. We’ll have to keep things under continual observation. All the field crews are on the alert, and they’re in constant touch with us by radio. The main thing now is to watch the progress of this wave front, and this electrical storm. We won’t be safe until it’s over.”

Arlin spoke up. “The storm’s moving pretty fast. They’ve already had the worst of it up in the valley, and now it’s moving through Sacramento. We’re doing everything we can. We’ll just have to wait it out.”

He turned to hold Dolores’ attention. “In the meantime, maybe we can give Mr. Greenwood some of the broader background—like how we fit in to the environmental protection movement.

“Here’s where I thought you might be able to help. You’ve been to college much more recently than I have, and have studied some of these new concepts about ecology. It occurred to me that you might be able to explain that better than I could.”

Dolores looked back in question, as if uneasy at being put on the spot again. Her fingers moved nervously, smoothing her skirt, brushing a strand of hair away from her forehead. “I’m not sure what you want,” she answered. “I had a lot of different things in

college. Most of them were about engineering, but some were on the environment and general science, and of course some were on the other requirements like English and so on. And I was also interested in California's history."

She glanced at Greenwood questioningly. "But really, I learned most of the fundamental things about the environment at home. I grew up on a farm, and protecting the environment was one of the most basic things our family always had to consider. That's why I wanted to become an engineer. We have to continuously protect ourselves—protect the productivity of our land, protect our water supply, try to prevent soil erosion, and so forth.

"And I'm sure that most farmers are just as concerned with these problems as we are. Farmers pride themselves on being the original conservationists and environmentalists."

Dolores paused, looking at Arlin as if she hoped she hadn't said the wrong thing, or too much, or be heading in the wrong direction. He nodded in encouragement.

"Of course, farmers are on the front of the environmental battleground in another sense as well," she continued more confidently. "Living close to the soil as they must, farmers are the first ones to feel the effects of changes in the environment. And not only changes caused by human activities, but changes brought about by nature as well. For example, the farmers along the river who are being flooded now are obviously going to have a problem.

"The fact is that natural changes in the environment can be much more devastating than those caused by most human activities. Here in California, for example, we had a natural environmental catastrophe a hundred years ago that changed the whole course of history!"

Greenwood looked up from his notebook. "Oh? Do you mean the San Francisco earthquake?"

"No. That just wrecked a city, and it was rebuilt later. We had something much more severe before that that wiped out a whole type of civilization. I'm referring to the original Spanish mission and rancho culture. Do you know what caused the end of that society?" Her question was to Greenwood.

"Well, the Americans moved west about a hundred years ago and more or less overwhelmed the Spanish and Mexican inhabitants. I guess it was the gold rush of 1849 that started it. The U.S. acquired California from the Mexicans about that time."

"Yes, those things happened, but they didn't cause the death of the Spanish culture. It was the weather that did it—a series of devastating droughts."

Dolores was gradually becoming more forceful. Her voice was now firmer and more positive, and her usual reticence had been forgotten. Arlin suddenly realized that a deep vein had been uncovered—a deep feeling for her ancestral history.

"The Spanish rancho system was a pastoral type of society," Dolores continued, speaking to Bill Greenwood. "In Southern California, and along the coast up as far as San Francisco, the main activity was raising cattle. Farming wasn't a significant commercial activity, and the small gardens and orchards they had at that time barely produced enough food to supply the ranchos.

"To feed their animals, they depended entirely on the grass that grew every year following the rains. And since a lot of land was required to support the herds, the communities were small and scattered. The people lived a very slow-paced type of existence on their ranchos.

"But this was a very precarious society, since it depended so totally on the weather. This culture only lasted less than a hundred years."

A flash of lightning interrupted her story, causing the lights to flicker briefly. Thunder rumbled and echoed between the buildings. The rain was a steady torrent.

Bob Arlin glanced at Greenwood, who had flinched slightly at the disturbance. The reporter was now busy writing again, trying to record Dolores' comments. She waited until there was a calmer moment, and then resumed her story.

"There were several severe droughts in the 1850s and 1860s," Dolores continued slowly. "They dried up the grass, and dried up the water supply, so that thousands of cattle died of thirst and starvation. In 1856 and 57, over a hundred thousand cattle were lost in Los Angeles County alone. The drought of 1862 to 1864 was even more severe, and resulted in even greater losses. The cattle had to be sold before they died. In Santa Barbara, sixty thousand cattle went for only 37 cents a head.

"These droughts were what ruined the ranchos. The herds were lost, so the whole economic base of the rancho system was destroyed. The people were bankrupt. It was this situation that gave the Americans the opportunity to take over. They bought the ruined ranchos at a fraction of their normal value, or loaned money in return for control of the properties. In some cases they married into the Spanish families.

"The course of California's history might have been quite different if the original Spanish owners had remained in control of the land. It was a change in the environment that destroyed that original society, and led to an entirely different culture."

Bob Arlin was puzzled. "Then how did your ranch survive? I thought the Valenzia Farm was one of the original Spanish Ranchos."

Dolores suddenly looked startled, as if unaware that she'd led to her own situation. "It is," she answered guardedly. "But we were far enough north, up in the Napa Valley north of San Francisco, so that we escaped the worst effects of the drought that hit Southern California. And we didn't have many cattle, we had vineyards and orchards. The drought caused us to lose our crops, but not the permanent trees and vines. That was what saved us. We were able to get a crop the following year, and carry on, but the cattlemen had no way to recover."

Bob Arlin nodded. "Now I understand why you're so concerned with the environment. Your family got its baptism of fire from the weather over a century ago. You were one of the few who survived."

He sat back to consider the story more carefully, and then looked thoughtfully at Bill Greenwood.

"I'd never been aware of that history before," he commented. "But in a way, it has a bearing on what we're trying to do here. Let's see if I can explain it."

In a moment he began to develop the point with the reporter. "The environmental movement has a number of different aspects. It includes protection of wildlife, preventing pollution, protecting the ocean environment, and so on. Our office doesn't exactly do any of those things—there are other agencies for them—but we're involved in what might be considered the opposite side of the coin.

"Those agencies were created to protect the environment against the acts of the public. We're involved in protecting the public against the extremes of the environment. Miss Valenzia just described one example of what can happen.

"Right now we're trying to protect the public against the threat of a flood. A couple months ago it was the drought, and then a rash of fires. More generally, we're a central focal point for all types of information about weather and natural catastrophes that could have an effect on the public. We're sort of an unofficial Public Protection Agency."

Dolores picked up the theme. "That's right. The environment really has to be considered from a holistic point of view. The most fundamental concept of ecology is that everything in nature is related to everything else. Everything's in a delicate balance. Humanity both affects, and is affected by, the environment.

“And that illustrates the point of our operation here,” Dolores said with emphasis. “Our job is to help preserve the delicate balance between people and nature. We can’t permit people to damage the environment, but neither can we permit the environment to damage humanity. Our particular role here is to try to minimize the adverse effects of the environment on human activities.”

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The drought was having an adverse effect on almost everyone’s activities. Bob Arlin squirmed uncomfortably in the heat, and tried to dry his forehead. In fact, he was faced with two kinds of heat, he reflected grimly. The stifling, oppressive, parched atmosphere created by the drought, which was affecting everyone in the State, and the ominous political pressure being applied by Senator Hinton, which now was direct right at himself.

Bob Arlin steeled himself for the coming battle. The politician faced him across the table, a powerful Committee Chairman who had barely started to apply his pressure. The man was here for water. So—

“Let me try to explain things,” Arlin began. “This computer print-out lists all the reservoirs in the Central Valley, and gives their present storage contents compared to their full capacity. You can see they’re all down to less than 20 percent.” And for once, he had figures that really were dry statistics, he mused wryly to himself.

“All right, we’re going to have to use this water,” Hinton stated forcefully. “The Governor wasn’t getting anything done, so I’ve been talking to the Army. We can use their emergency pipeline facilities. We can fly in pipe from depots all over the country. We’ll get an emergency water supply from these reservoirs to the areas that have the orchards.

“And we’ll use tank trucks, and tank cars on the railroads. We have to move this water as fast as we can, and as far as we can.”

“You can’t possibly get enough water that way for any kind of normal irrigation,” Arlin objected vainly. “And besides, you’re just taking water away from other areas that need it. You’ll have to get approval for that from the control board.”

“I know that. But we may have to sacrifice the field crops so we can save the permanent orchards. With the trees, and water next year, we’ll be back in business. But if we lose the orchards, then we’ll be shut down for at least five years while we tear out the dead trees, plant new ones, and wait for them to grow large enough to bear fruit. And that will require a tremendous new capital investment. The farmers won’t be able to raise the cash themselves—they’ll all be bankrupt—so the government will have to step in and help them.

“Or if we don’t replant the trees, then we’ll be without that fruit production forever. That would be a major catastrophe—much worse than merely losing field crops for a single year—because we’d lose a crop that’s vital to both the national and international markets.”

Senator Hinton’s voice was sharp with concern. His sun-browned face had a hard look of determination. “That’s why we’re interested in this drought in my Committee,” he continued sternly. “We want some special regulation for the best use of this water, and we want to provide an emergency fund to help the farmers who are in financial trouble.

“We can afford some special appropriations for this, because it’s for the benefit of the whole economy. We have to accept a small loss so we can avoid a worse one.”

Arlin nodded his understanding of the problem. But something else was puzzling. Why was Hinton explaining all this to him? The situation was obvious, and had already been thoroughly covered in the papers. Arlin wiped his forehead again, and pulled his sweat-drenched clothes away from his body. He noticed jealously that Hinton didn’t seem to be affected by the heat—his suit was still crisp and cool.

“I was talking to Mr. Crandall a little earlier about some of these problems,” Hinton continued, “but I didn’t seem to get through to him. He’s got a knee-jerk reaction against the

farmers, and the bigger they are the more he hates them. He and the Governor keep fiddling with this farm labor situation instead of worrying about food production. He hardly seems to know the score about what's really going on.

"And that disturbs me. Water, and agriculture, and the economy are too important to be left in the hands of the usual incompetent bureaucrats.

"So that's really why I've come here. I want to get a better understanding of what this operation is all about. There's a reorganization bill for your Public Resources Department that's being considered by my Committee. I want to know what's best for the long range good of agriculture. Is this office serving any useful purpose, or should it be abolished?

Bob Arlin tried to shift his mental gears rapidly to try to keep up with Hinton. He suddenly recalled one other pertinent bit of information. Hinton had announced his intention to run for Governor. The claim that there was incompetence in government could easily be blown up to become a major political issue.

"So what's your question?" Arlin prompted guardedly. "Do you want to know what we do here, or do you want me to comment on the reorganization?"

Hinton's blue eyes probed firmly. "I want a fresh viewpoint. I've heard the regular administration propaganda line for so long I've already got it memorized. I want to hear if anyone's got any better ideas. Is there anybody in this bureaucracy who's doing any creative thinking?"

Arlin tried to control his expression. He'd never been asked such a loaded, wide-open question. He could really let himself go, and have some fun with this—and probably get tossed out of his job on his ear—or he could play it safe and dumb, and parrot the party line.

Arlin grinned. "That sounds like a contradiction in terms. The usual connotation of a bureaucracy is that it's a place where thinking isn't wanted. You just repeat the same routine over and over, year after year. You're asking for something that's almost a matter of heresy."

Hinton returned a faint smile. "Well, I've finally found someone with a spark of life. You're the first one to be that perceptive." He took out a pack of cigarettes, offered it across the table, then when Arlin declined he took one himself, lit up, and flew a studied plume of smoke. He seemed oblivious to the heat.

"So what's your theory on reorganization? Hinton prodded sternly. "Let me hear some heresy."

"It doesn't make a bit of difference," Arlin answered. "I just got through saying the same thing to a reporter about an hour ago. Performance depends more on people than it does on organization. If you want outstanding performance, you have to have an atmosphere that attracts and stimulates the most knowledgeable, resourceful, and inventive people. You want people who are positively motivated—who are able to provide leadership, and have the courage and energy to attack big problems. You won't get anywhere with all the negative thinking they've had around here the last few years.

"That's why we're in all this trouble now, with energy shortages, food shortages, and so on. We've had too many years of negative leadership under the previous administrations. We were told we weren't going to make an effort to meet positive goals, and solve our problems. Instead, we were told to reduce our expectations, to think small, and to cut our budgets.

"Those policies were introduced several years ago, so that now, even with different administrations, we're still suffering from those programs. The legacy of the father is passed on to the later generations."

"There's starting to be a significant reaction to all that," Hinton responded firmly. "The public wants action. They want these problems solved. The whole spirit of America is that we're problem solvers.

“There may have been a few things that were done before that were valuable, such as getting us to re-examine our policies. But it turned out to be the usual case of throwing away the baby with the bathwater. Instead of a balanced review, the extremists were given control of things, and they proceeded to wreck the country.

“So I want you and everyone else to know something,” Senator Hinton stated bluntly. A sharp edge was back in his voice. “I’m on a campaign to root all the obstructionists out of this government. And I’m starting with this office. Either prove the value of your existence, or I’m going to abolish this whole organization.”

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Suddenly there was a blinding explosion of lightning. The blast of electrical discharge seemed to jar the entire building. The lights were knocked out. And the reverberation of the thunderclap passed away, there was a numbing silence in the partially darkened office.

Bob Arlin tried to recover from the shock, and moved cautiously to his doorway. "Someone check out the window," he instructed. "Are all the lights out, or is it just ours?"

Larry Mearman peered through the fury of the storm. "Everything's out. The lightning must have hit the city's power system."

Arlin glanced quickly around the office. Everyone looked stunned. The lights and communication equipment in the control center were out of commission. The staff rose slowly from their desks and moved to cluster at the windows. Dolores and Bill Greenwood threaded their way across the room to join them.

In a minute a few lights flickered back to life. The operation map loomed brightly in the shadows, with glaring red lights calling attention to the flood zone.

"That must be the emergency generator in the basement," Larry called. "The lights are still off across the street."

"You're lucky to have your own power," Bill Greenwood commented. "Why is that?"

"For just exactly this reason," Arlin answered. He paced quickly over to the control center. "This Weather Center has to stay in operation through all kinds of emergencies. Particularly with a flood, we have to stay on duty so we can keep in contact with the field crews, and with the National Guard, and keep providing information to the public."

The men and women returned to their desks and resumed their contacts on the radio. Larry Mearman turned away from the window and joined them at the control station. "Well, now isn't this cozy," he said sardonically. "The city's facing a flood, and there's no power to operate the emergency safety facilities. I'm going to win my pool yet."

Bob Arlin grimaced as he reacted to the comment. "That may be more serious than you think. There are a lot of low areas here in Sacramento—some of the older river channels. Normally, the water from the storm drains can discharge directly into the river.

"But when there's a flood, the water level in the river can be higher than in the storm drains. The water won't drain out naturally, it has to be pumped out. So if the power is off for very long, we are going to have some local flooding. The field crews will have to check that carefully."

Arlin made a note to issue some instructions. But first, he wanted a report from Mearman. "What's the latest on the flood?" he demanded. "How high is the water?"

"Pretty high, Larry answered almost gleefully. "There's less than a foot below the top of the levee here in town, and the level's still rising. There's sure to be some trouble when the flood surge gets here."

"And what about further upstream? A while ago we started releasing water into the Colusa rain and in Butte Basin. What's happening now?"

Mearman grinned at Greenwood. "The flood's moved further south. The water's reached the end of the Butte Basin, and is flowing out through the Sutter-Butte By-pass. Water's also spilling over the Tisdale Weir. Those are both on the east side of the river. Those flows are then merging and moving further downstream through the Sutter By-pass."

Bill Greenwood interrupted. "Is that another one of those braided channels?"

"That's right," Arlin answered. "It cuts across to the southeast from the Sacramento to the Feather River. But it will just dump the water back in the Sacramento again, because the two rivers join only a few miles downstream from where the Sutter By-pass terminates."

"Then what's the next step? Are there any more of these braided channels?"

Arlin moved to gesture at the control map. "Yes. But first we pick up the flow of the Feather River, which has already been augmented by the Yuba and Bear Rivers." His hands stimulated the water flowing southwest out of the Sierras.

"Then all of this flow joins the Sacramento River at the beginning of the Yolo By-pass. That's just above Sacramento here, and goes to the west. Then along the north edge of town, the American River comes in from the east and joins the Sacramento. Below that, there's a diversion to the west to the Sacramento Ship Channel, which then joins the Yolo By-pass."

"It's a three ring circus," Mearman added scornfully. "Everywhere you look, there's another channel that's being flooded. Just wait until that flood surge gets here!" He leered at Dolores smugly. "I told you this would happen."

She looked back sharply. "Those are all controlled wasteways," she objected. "I was allowing for flows in those areas eventually. What I'm really concerned about is the farmland beyond those channels. There are extensive orchards, and lots of homes and buildings. If the flood gets in there, it could do a tremendous amount of damage."

Dolores turned to Greenwood. "The worst place of all is in the Delta. That area has the richest soil in the whole valley. It was originally a peat swamp that was reclaimed back in the last century. The land is cut up into a lot of islands, and they're protected by levees. But because of the being farmed for so many years, the soil behind the levees is now from 10 to 20 feet below sea level.

"If the flood gets through any of those embankments, then the islands might be ruined. And if sea water gets in from San Francisco Bay, and the salt gets into the soil, it will be impossible to salvage anything. The islands will be lost forever. We've got to try and save them."

"So what do you expect us to do?" Larry challenged mockingly. "Do you want us to go down and work on the levees? That's stupid. We couldn't even get there."

"That's enough," Bob Arlin cut in. He turned to explain things to Bill Greenwood. "The Delta's being watched by some special field crews. The farmers are all out working with them, and if we need more manpower, we can get the National Guard."

"That's not all you're going to need," Mearman added. "Do you remember those fires we had last summer? That cleared off a lot of trees and vegetation. Now, the rain's washing all the ashes, and debris, and top soil away and sweeping it in the river. I've had reports of mud flows, and there's a lot of big stuff—tree trunks and so on—that's being carried along with the flood. We're going to have a major clean-up problem when this is over."

"All right, we'll handle that when the time comes," Arlin answered. "That's not the end of the world." He combed his fingers through his hair in annoyance.

"You'd better get on the radio," he suggested to Mearman. "Start checking with the field crews. Warn the about possible flooding here in town due to the power failure. Then see if there are any late reports from any of the outlying areas."

As Mearman resumed his duties, Arlin tried to review the problems quickly. Things were starting to go to pieces. The main operations map now showed a swath of red areas for 50 miles north of Sacramento, and warning had been issued about the chance of flows getting out of the by-pass channels. He could hardly afford to spend any more time now with the reporter.

"How much more do you need?" he asked abruptly. "Did you get enough background for your story?"

Bill Greenwood seemed to ignore the urgency. He flipped back through his notes. "This California history is good information," he said to Dolores. "But I want to make sure I understand these ideas of yours, so I can explain them to the public."

Dolores spoke up quickly. “Since you’re still on background, let me add one more thing. A while ago I mentioned the holistic concept. Everything is related to everything else. Let me say a little more about that.”

She looked quickly at Bob Arlin, to see if he had any comment. Bob frowned impatiently, but then relented and nodded briefly in encouragement. Here was a chance for Dolores to express herself, to explain some of her own ideas. He drew Greenwood and Dolores a few steps away from the control center so as not to distract the others.

“The statement that everything is related to everything else is a truism,” Dolores began. “But it’s so broad that there isn’t any way to understand it effectively. You need to find a more tangible way to see the idea. Maybe I can give you an example by talking about these floods.”

She paused while there was another crash of thunder. The wind shrieked outside the building, and the rain was a drenching torrent. “Floods,” Dolores repeated apprehensively, almost in awe of the storm.

“Floods have been an indispensable part of all of humankind’s history. The ancient civilizations in Egypt along the Nile, the ones in Persia along the Tigris and Euphrates, in China along the Yellow and Yangtze Rivers—every one of them was intimately related to floods. In each case an agricultural civilization was created in the river valley where they had the floods. The floods brought silt, which made fertile soil for their crops, and the floods also brought water for irrigation. In fact, the creation of those civilizations could almost be said to have depended on those floods.”

As she spoke, Dolores gradually grew more impassioned, as if she had been storing up her emotions and now was drawing on them to help express her theories.

“Even here in California, in the Central Valley, floods have had a profound effect. The best farms are along the rivers, and in the Delta, because floods in the past built up these wonderfully fertile areas. Now, the land is so intensively cultivated, and the economy so highly developed and wealthy, that uncontrolled floods could cause tremendous damage.

“The point is, we live in a delicate balance with nature. We exist because of the consequences of past floods, yet we live in peril of future floods. Everything is related to everything else.”

Dolores momentarily, as if suddenly becoming self-conscious at the vigor of her statement. Bob Arlin smiled again in encouragement. The reporter was marking his notebook rapidly, making extensive comments. Behind them, the men were busy at the control board.

When Greenwood had caught up with her, Dolores resumed her comments. “Years ago it used to be said that the proper study of mankind is man,” she continued more calmly. “A much better statement now would be to use a holistic approach and say that the proper study of mankind is man in the environment.

“Because that’s what the real-world situation really is. Man is an extremely complex organism, and exists amid a vast complexity of social, political, economic, biologic and environmental systems. And every one of these systems is related to every other one in ways that are extremely complicated.

“No single part of this complex can be given exclusive preference over any other,” Dolores stated. “We can’t be concerned solely with any narrow and limited concept, we have to be concerned with the total environment as it interrelates with man.

“We can’t permit a change in the environment to destroy us, the way the early Californians were destroyed. No matter what may happen in the future, we have to use our ingenuity to cope with the environment so as to guarantee that our civilization will survive.”

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The drought was a critical survival problem. Bob Arlin rubbed his fingers through his hair in frustration once again. In fact, it was a double problem.

The drought was an environmental problem, creating Statewide havoc, and Senator Hinton was a political problem. He was here to turn this operation upside down, or to reorganize it out of existence.

Arlin wiped his forehead as he reviewed the hazards quickly. He had to find a way to block Hinton's threat. And to do that he had to find some way to solve the basic problems.

Senator Hinton's efforts, though they might be valuable in helping to preserve the orchards, weren't really going to prevent widespread financial losses. Nor were they going to prevent any problems when the next droughts came in the future. He had to get the Senator's attention back on that issue, and away from the question of reorganization.

"A few minutes ago you said you were interested in the long range problems of agriculture," Arlin resumed. "It would seem that finding ways to overcome the effects of repeated droughts is really the critical issue. Reorganization is a much less important matter."

Senator Hinton answered carefully. "Go ahead. Let me hear your ideas." He still seemed to be able to ignore the heat. His face was firm, and his cold blue eyes were alert, reading Arlin's expression.

"Droughts are a part of the natural environment," Bob Arlin continued seriously. "We've always had them. They seem to recur about every 25 to 30 years. There was a severe drought at the beginning of the century that got Los Angeles building its first aqueduct from the Sierras. There was a critical time in the late 1920s and early 30s that's been called the seven year dry period. That caused so much damage that it led to the authorization of the State and Federal water projects.

"Then we had droughts again in the 1950s, and in the late 1970s. That one didn't last as long as before, but the worst year was the driest year of record. Now, we're into another bad one that seems even hotter than before." As he spoke, Arlin tried to pull his damp shirt away from his back.

"The trouble is, we're never faced up to the problem fully," Arlin continued. "Years ago, everyone took droughts for granted, and assumed that the farmers would have a bad year every so often, and that they had to learn to accept it. It wasn't realized that agribusiness would turn into a major institution, and that drought losses could have international repercussions."

"So what's your point?" Senator Hinton looked impatient, as if this were all familiar.

"It's this," Bob Arlin answered. "We have to get our priorities right. You know this, but you have to make other politicians realize that droughts don't affect just the farmers. There are only a few tens of thousands of them, and by themselves they're no longer a significant voting bloc in California. Most of the voting population is in the cities.

"Instead of relating droughts only to farmers, the politicians have to learn that droughts affect just about every aspect of the economy. If the farmers lose money, then that affects the level of business and employment in the cities, and the price of food for the public. In fact, droughts affect almost everything in the country, and even around the world.

"Preventing droughts has to be viewed in the largest possible context. You have to attack droughts from that point of view, not from the limited view of merely helping farmers."

Bob Arlin tried to keep Hinton from interrupting. So far, he was just speaking in generalities. To make any headway, he'd have to be specific.

"Not a few minutes ago you mentioned that your Committee is considering emergency legislation to help the farmers through this crisis," Arlin continued forcefully. "That's a typical illustration of what's wrong. You always wait until there's a catastrophe,

and then you have to take emergency action. You don't consider things from a long-range point of view, and then plan a long-range program."

"Excuse me." There was a sound from the doorway. Bill Greenwood stood there, with Mearman hovering anxiously behind his shoulder. Bob Arlin grimaced at the intrusion. As usual, Mearman had found a way to foul things up, even though inadvertently. He must have finished giving Greenwood that news story about the fires, Arlin reflected grimly.

"Senator Hinton, I'm sorry to disturb you," Greenwood began, "but I thought you might be getting ready to leave. Could you answer a few questions before you go?"

Hinton looked up in annoyance. His attention on Arlin's discussion had been abruptly interrupted. "Oh, it's you," he complained. "When is your paper going to quote me accurately? Every time I talk to you, you twist it around to make it sound the opposite of what I intended."

"That's because you're in the limelight. Since you're planning to run for Governor, the editorial policy is to examine all your statements carefully. They're looking for contradictions, and for self-serving statements."

"Also, they're backing the present Governor," Hinton protested. "And that's to their discredit, and to the State's. He's not getting our problems solved. He's just drifting, and stalling, using the excuse that he's waiting for a consensus. All of that just demonstrates that he's totally lacking in leadership."

"For example, he hasn't done a thing to help agriculture in this drought. I've had to do that."

"Let me ask you a question about that," Greenwood interjected. His face was wet with perspiration, and his clothes were rumpled from the heat. "You've been doing a lot of talking lately about the problems of agriculture, and how you want to help the farmers. But isn't it true that you want to help yourself? Aren't you in the agricultural business?"

"Certainly. I've never denied that. I own the Golden Empire Cannery."

"But that's not all. What about El Dorado Foods? And I understand you have interests in several related areas. You're a part owner of a farm equipment company, a feed and grain company, a land investment company that specializes in farm properties, and so on."

"So what?" Hinton responded calmly. "I'm a successful businessman. I built much of that business myself. I know the problems of the whole agricultural industry, from the farm labor situation on through wholesale commodity marketing, finance, and overseas trade. In fact, that's how I came to be elected to office. The people I deal with know that I understand their problems, and they have confidence that I can represent their interests."

"But is it really their interests that you're concerned with, or is it your own?" Bill Greenwood challenged. His frizzled hair and glistening forehead made him appear almost menacing. "It's very easy and convenient for you to capitalize on this drought, and use it as an issue to advance your political career. It's the usual thing of political headline grabbing."

"In addition you have a direct monetary interest in any financial program for this drought. If the farmers can't produce a fruit crop this year because of lack of water, then there won't be anything for your cannery and other firms to process. Your companies are suffering from the drought, so any government assistance you can arrange for the farmers is really for your own benefit. You're just promoting another rip-off of the public."

"That's not true," Hinton objected vehemently. "There won't be any State aid directly to my companies. Any benefit to me will only come indirectly."

"There are tens of thousands of farmers who are having trouble," Hinton stated. "The assistance program is for them. There's only one of me, and I have enough capital resources so that I can afford to lose some business for one year. Of course it will hurt, but it won't break me. Compared to me, there are hundreds and hundreds of small farmers who might go bankrupt."

Suddenly another thought seemed to occur to Hinton. His blue eyes glinted in sudden challenge. "I suppose your paper is against my programs," he said carefully. "But have you really examined what that means?"

"If any of the farmers are forced out of business because of drought failures, then who's going to benefit from that? My land investment company holds several mortgages. If I call the loans for failure to repay, then I'll increase my holdings. If I were really as selfish and as greedy as your paper would like to suggest, I wouldn't be pushing these financial relief proposals. I'd let the farmers fail, so that I could become even richer.

"So which way do you want it? Do you want to support providing help for the farmers, with a little spill-over benefit for my companies, or do you want to hurt the farmers, and help me expand my business?"

Senator Hinton smiled in satisfaction at the reporter's predicament. "I'll let you take that one back to your editor to puzzle over. And I particularly want you to note something else that's even more important.

"How do you think I became a successful businessman? I know what I'm doing, what the problems are, and what the possibilities are. If there's any way to do it, I always try to arrange things so that I win no matter what happens. It only took me twenty years, starting from nothing to put together one of the largest agribusiness complexes in the valley. This is a very competitive field, and I've been very successful. I've kept costs under control, solved problems, and got things done.

"Now, I've moved on into public service. And I can promise you that I'll get something accomplished here as well."

He turned to glare at Arlin. "As I said before, I'm going to clear all the deadwood out of here, and get things working right around this Capital."

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VI

The sound of the phone was hardly audible over the crash of thunder. Bob Arlin picked up the receiver. "This is Arlin."

"Bob? This is Jim Carleton, up at Corning."

"Oh, Jim. I'm glad you called. How are things up in the valley?"

"It's terrible. There's no let-up in the storm. We've had two or three inches of rain today, and the same yesterday and the day before that. That's almost a third of a year's rain in three days. All of the channels are up to full capacity."

"What I called about was to give you the latest figures. Do you want to take them down?"

"First, let me ask if there are any problems?" Arlin strained to hear above the noise of the storm. The others gathered around to listen.

"It's wet as hell," the distant voice complained. "And all the channels are full. In fact, we're losing capacity because there's a big mud load with the water. It's filling up the channels. Since we lost so much brush and forest in the fires last summer, the rain is just eating away at the unprotected ground. We're getting severe erosion."

"And that's causing us to lose a lot of small structures—farm bridges, fences, country roads, and so on. There's a lot of junk being carried downstream by the water."

"Any lives lost yet?"

"No, not that we've heard. Everybody's immobilized. People will just have to stay put until this storm is over."

"It's the same here," Arlin added. "We're on emergency power, and the rest of the town's blacked out." A sudden flash of lightning contradicted his statement briefly, and thunder blanked out his words.

"Hold on," Arlin ordered after a moment. "I'll have one of the other men get the details. I'm tied up right now with all these problems." He signaled to one of the others.

Then Arlin turned back to Dolores. "You'd better get back to your analysis. We're just getting some new readings from Jim Carleton. You'll want to enter that data, and see what effect it will have on the other reaches of the river."

"I heard part of that," she answered in alarm. "If the channels are being filled with mud, then that's going to increase the chance of flooding! I'm afraid I hadn't allowed for that. With a given amount of water in the river, if the bottom is filled with mud, then that automatically raises the surface level."

"Do you know where there's the greatest chance of danger?"

"Well, that mud load will move more slowly than the water. Based on that, we might expect the levees to be overtopped in the upper reaches of the valley before we have any problems here. In fact, that may be what caused us to spill into the Colusa Drain and Butte Basin before I had expected it."

"Excuse me," Arlin turned. Senator Hinton was standing behind them. His raincoat was dripping water.

"Don't stop," the politician said. "I was over in the Capital when the power went out. I've had the feeling that we're in for a bad time, so I came over here to see your operation first hand. What are you doing to prevent a flood?"

"All we can," Arlin answered in annoyance. "We're monitoring conditions along the river, and we have mobile crews at the most critical locations. And the National Guard is on standby alert in case we need them. But we can't stop the rainfall. If it's going to flood, it's going to flood."

"How much of a safety factor is there?"

“There’s less than a foot here in Sacramento before the water gets to the top of the levee. There’s even less freeboard than that at some places further up the valley. Of course, all the by-pass channels are already flooded. There’s water all over the country.

“If you want the truth,” Arlin complained, “we’re suffering from the same problem we had last summer. There aren’t enough reservoirs. We didn’t have enough water storage capacity to carry us through the drought, and we don’t have enough now to protect us from these floods.”

Hinton frowned at the problems grimly. Then he glanced at the others, and nodded in recognition of Bill Greenwood. “I see you’ve come to get the story.”

“That’s right. I’ve been getting the background from Mr. Arlin and his staff.”

“Oh, excuse me,” Arlin interrupted. “Senator Hinton, this is Dolores Valenzia, one of our engineers.”

“It’s a pleasure to meet you, Miss Valenzia.” The Senator paused in thought.

“Valenzia? That name sounds familiar. Didn’t there used to be an Assemblyman named Valenzia?”

“Yes. He’s my uncle. He represented our area for many years.” Dolores brushed her dark hair away from her face quickly, as if suddenly surprised at being the center of attention.

“Now I remember,” Hinton smiled. “He had a fine reputation. He did a lot to help the farmers. He was from one of the pioneer families if I recall.”

“That’s right. As a farmer, he was trying to protect the agricultural environment long before that became fashionable with the public.”

“That’s what we’ve been talking about,” Bill Greenwood added. “Miss Valenzia has been giving us some background on that subject, and how she’s got the same objective here.”

Dolores frowned self-consciously. But her expression showed concern. “That’s right. The basic objective is to protect the environment. But this flood shows the futility of our efforts. The environment itself can cause a tremendously greater amount of damage than we can create with problems like pollution.

“In order to protect ourselves against these floods, we need projects to improve the levees along the rivers, and particularly in the Delta, where they’re in such bad condition. We also need more flood control reservoirs in the foothills. There have been many proposals for such projects, but they’ve all been stopped because of a narrow, misguided concern for preserving the natural environment.”

Dolores paused, as if surprised to find herself saying this to a politician. “The fact is, the environmental extremists are too inflexible,” she continued doggedly. “They’ve used the public’s concern for protecting the environment to stop almost everything—not only the things that are harmful, but the beneficial projects as well—things that are vitally needed.

“Their blind opposition has caused a tremendous amount of damage. All they seem to want is a state of total wilderness. We need a much more balanced program than that. We need to go ahead with the things that will really help the public.”

“It’s even worse than that,” Senator Hinton added critically. He seemed to respond to the theme. “A small minority of them is phonies. They’re using the environment as a smokescreen. What they really want is to wreck our whole economy. That’s why they’re block the good projects as well as the bad ones.”

There was a deafening blast of thunder that suddenly cut off the discussion. Lightning flickered behind the distant buildings.

Bill Greenwood grimaced, then flipped back through his notes. “This business about the environment,” he commented after a moment, speaking to Dolores. “I’ve been thinking about something.

"A while ago you said that the proper study of mankind is man in the environment. That's a change on Pope. That statement made me think of another well-known phrase—I think it comes from the Greek, Protagoras—'Man is the measure of all things'."

"That's good!" Dolores exclaimed. "That's exactly what I needed. That applies directly to the environmental question." She suddenly became more animated. In her enthusiasm she'd forgotten her usual shell of reticence.

"Our concern is to protect the environment," Dolores continued eagerly. "But when we say that, what do we really mean? Protect it compared to what? What is our standard of reference? By the same token, when we acknowledge that we depend on the environment for our livelihood, we're saying we have to use the environment. But what does that mean? What is the standard of measurement?"

"The answer has to be what you just said. Man is the standard of measurement. Considering the whole range of possibilities that is available to us, we have to measure every activity by the standard of how it will promote survival.

"We need to protect the environment, and protect all of its complexity and all its wonder, because the environment is necessary for our existence. We can't go on exploiting and destroying the environment the way we've done in the past, because eventually there won't be enough of the environment left to enable us to live.

"At the same time we have to use the environment, use its resources, and its wealth, because that too is necessary for our existence. We can't preserve the environment in a perpetual state of wilderness, because then we couldn't survive.

"So we both have to use the environment and protect it at the same time. The real problem is proper management. We have to manage the environment in a way that's best for our whole society. We have to manage the environment in a way that will help us to survive."

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The drought was a critical survival problem. The group in Arlin's office was almost wilting from the weather. The drought had brought them together, and the heat was getting on their nerves, fraying their tempers, until they were almost snapping at each other's comments.

Bob Arlin grimaced as he mopped his forehead. First, Senator Hinton was on the warpath for water for his farmers. Next, Bill Greenwood had gotten into an argument over politics. Larry Mearman, as usual, had stuck his nose in where he wasn't wanted. Arlin had to referee the squabble. He had to get them off their temporary diversions, and get back to the fundamental nature of their problem.

"Look," he interrupted, getting Hinton's attention. "All this stuff about the present drought is important. We have to do what we can to try to help the farmers. But don't do like you've always done before—don't just make care of the present emergency and leave the basic problem still unsolved.

"The basic problem is weather—the things that we're concerned with here in this Weather Center." Arlin held Hinton's eye—an icy blue stare that probed with challenge. Bill Greenwood frowned at being diverted from his questions.

"Both of you came here to investigate us," Arlin continued. "Senator Hinton wants to know the value of our activities to agriculture. Are we doing an effective job, or should we be reorganized out of existence? Mr. Greenwood wants to know if somehow we're defrauding the public by failing to do a proper job.

"The answer is, we—the government—are defrauding the public if we don't make effective use of all our knowledge. And as part of that, we've got to let the public know about the knowledge that we have. This is Bill Greenwood's point—we shouldn't hide anything from the public."

Arlin glanced at the reporter. "But you have to share that responsibility, too. If we have something important to say, it's your job to get the message to the public. So let me explain some facts about the weather."

His listeners were suddenly fully attentive. Hinton was watching carefully, his face stern, his eyes cold and probing. Greenwood squirmed into a chair and primed himself to get the story. Larry Mearman lounged against the door, with a sardonic smirk as he observed the confrontation. Only Hinton seemed untroubled by the heat. The others all seemed wilted.

"Weather," Bob Arlin repeated forcefully. "Let me talk about the weather, and particularly weather in California. The problem is, when we're concerned about weather in California, we actually have to be concerned with weather in all the western States, and in Canada, and Alaska, and the North Pacific Ocean. We even have to be concerned with weather for the entire North American continent, and even for the whole world.

"We even have to get into a larger subject—not only weather, but climatology—the study of all the natural processes that effect the weather and climate, and how they're continually changing. The climate's changed extensively in the past, and we can expect that it'll continue to change in the future.

"In order for you to really get a good understanding of that, let me go through the current theories, or schools of thought, about climatology. There are really three different points of view." Arlin paused to make sure Greenwood could keep up with his notes. Larry Mearman was still smirking. Senator Hinton was staring fixedly at Arlin. Arlin wiped his forehead quickly, then plunged ahead.

"One group believes that if you understand the dynamics of atmospheric circulation you can forecast the weather. The second group believes that an understanding of thermal energy processes is basic to understanding climate. The third group contends that in order to project future climatic trends, you have to know what's happened in the past.

"Each one of these points of view has merit. In the short run, for daily weather forecasting, the first method is the one that's used. Here, meteorologists want to know the air pressure, and temperature, and wind velocity and direction at points all over the world, and from that they try to predict how the world's air masses will behave for the next few days.

"But this method isn't useful for long range weather or climate forecasting. It doesn't account for changes in solar radiation, or changes in the energy and water content of the atmosphere."

"What water content?" Larry Mearman asked sardonically. "That's been zero for several months." He was lounging against the wall, as if aloof from the importance of the subject.

Bob Arlin frowned, but refrained from any comment. "To account for energy considerations, a more complex theory had to be developed." He continued carefully. "Here, it's proposed that all atmospheric changes are the reflection of thermodynamic processes resulting from the unequal distribution of energy within the Earth's atmosphere. Solar radiation is the most important component, as solar energy is absorbed at all levels in the atmosphere, and on the ground surface and on the sea.

"The amount of solar energy affecting the weather can be influenced by many things—changes in solar output itself; changes in the amount of moisture, or dust, or volcanic ash in the atmosphere; the extent of cloud cover; the albedo, or reflective properties of the surface; and so on.

"Factors such as temperature, pressure, rainfall, and wind velocity as used in the first method are consequences of the factors considered in the second method involving the unequal distribution of energy within the atmosphere, and of the thermodynamic processes that try to balance out this uneven distribution of energy.

“Unfortunately, while this energy theory appears sound, the requirements for data and for computation are so overwhelming that it’s been very difficult to use this theory to predict future weather and climate.”

Arlin paused to observe his audience. His story had been vastly oversimplified—he’d omitted a lot of technical detail. But so far it appeared that his listeners were still with him. It was important that Hinton, in particular, got the point of the part that was coming next.

“The third method involves an entirely different approach,” he explained. “Here, it’s contended that in order to project the future, you have to be guided by what’s happened in the past.

“For this method it’s been necessary to study historic information. By researching old court records, church histories, diaries, ancient crop production records, and so on, scientists have been able to reconstruct the climatic record for the past 5,000 years. This shows a succession of changes.

“Looking at the worldwide patterns for the last several hundred years, it appears that the 30 year period from about 1930 to 1960 was very unusual in the general mildness of the climate. In the centuries before 1930, the variations between hot and cold periods, and between wet and dry periods, were much greater than in the years following that date.

“For example, in the 1940s, 50s, and 60s, a great deal was done to increase agricultural production throughout the world. There were great successes, and this has been called the Green Revolution. Looking back, the success was due in part to the use of scientific agriculture, with the development of new crop strains and the increased use of fertilizer. But also, the success may have been due to the fact that the world experienced unusually calm and favorable weather during this period—weather that helped in the production of record crops.”

Arlin kept his attention on Senator Hinton. As an agricultural expert, he ought to be acquainted with this recent history. But did he understand its real significance? And more importantly, did he understand the more recent problems?

“The early 1960s seems to be the point when a different and more severe weather pattern began to develop,” Arlin continued. “There were crop failures in India and Russia in the early 1960s. In 1964 a massive crop failure caused the Russians to import grain from the United States. Also, Premier Khrushchev was deposed as a result of the failure of their agricultural program.

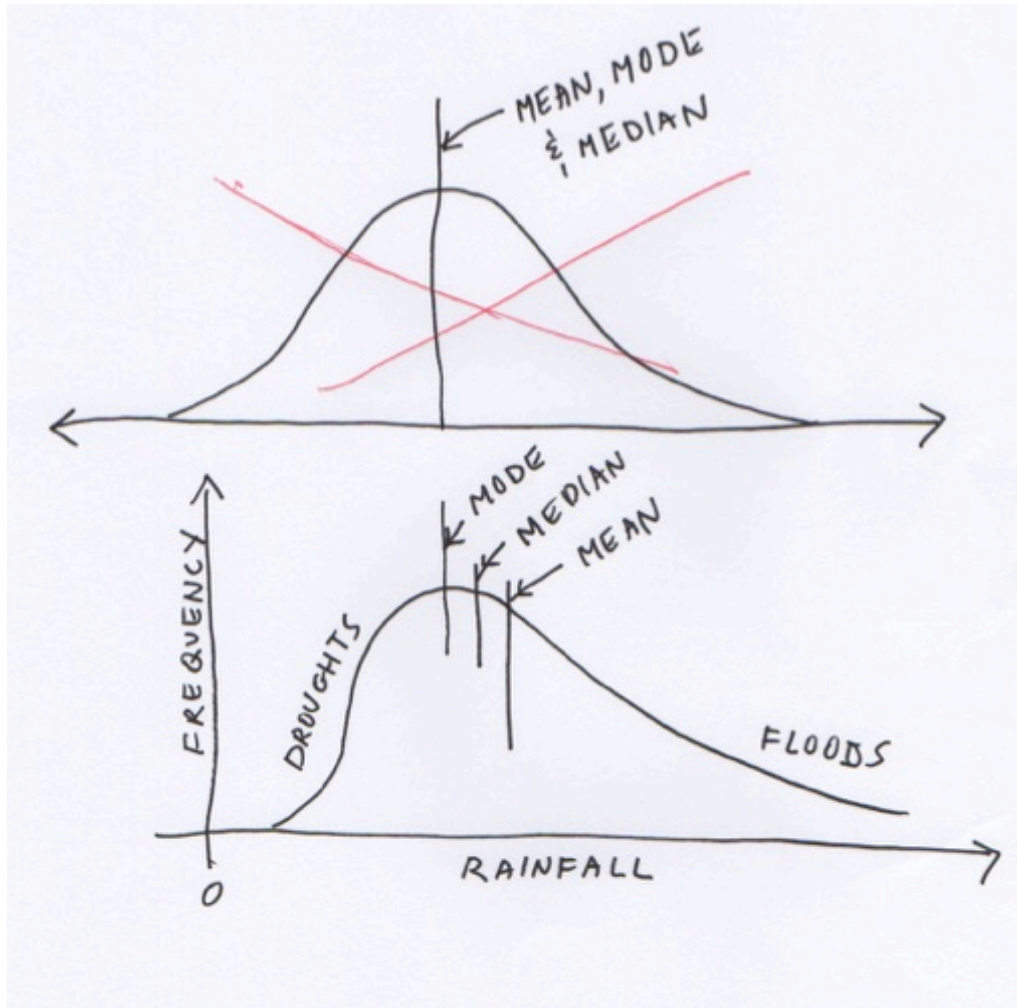
“In 1968 there was a record drought all across Africa, with widespread starvation, and that led to the eventual overthrow of Emperor Haile Selassie in Ethiopia, and anarchy within that country.

“In 1972 the weather caused another major crop loss in Russia. In 1973 and 74 there were record droughts, or floods, that led to crop losses all around the world. In 1975 and 76 there was a severe drought in England. In 1976 and 77 there was a drought in the western United States, and particularly here in California.

“Events since 1960 seem to suggest that the climate may be returning to a worldwide pattern that’s more ‘normal’, or more variable, in that it will resemble the several hundred year variable period before 1930, rather than the shorter and calmer period following that date. The scientists aren’t able to tell yet whether we’re entering a wetter period, or a dryer one, or a cooler period, or a warmer one. All they know is that the overall pattern may be changing. The variations from year to year seem to be much greater than before.”

Arlin reached for a pad of paper and sketched a few quick lines. “Here’s where we get into the matter of statistics,” he continued. He gestured at his drawing. “Most people may be familiar with this standard bell-shaped curve of probability distribution. There’s a central, or average value, called the mean, and an equal distribution of other values on either side of the mean. This type of curve is applicable to many types of data, but it doesn’t apply to rainfall.”

Arlin crossed out the first drawing in red ink and drew another curve below it. “Rainfall exhibits a very unsymmetrical distribution. Rainfall at any locality can drop from the average value down to zero, but obviously can’t go below zero. But in the other direction, there’s no physical limit to how high above average the rainfall can be. Therefore, rainfall necessarily has to have an unsymmetrical distribution. Technically, it’s called a skewed distribution curve.



“And here’s the important point.” Arlin kept their attention on the figure. “If future weather is going to be more variable than it was in the recent past, then this curve of rainfall is going to become even more unsymmetrical and more skewed than before. We’ll have more dry statistics. We’ll have more droughts—more frequent ones and more severe ones. But as before, the rainfall can’t fall below zero.

“On the other hand, we can also have more floods, and floods of greater severity and frequency than we’ve experienced in the past. This rainfall curve will get broader and more unsymmetrical, and the range between extremes will become larger and larger.

“Now here’s where everyone’s completely missed the boat,” Arlin said with emphasis. “Some groups want to stop all human activities so as to protect the natural environment. The actual fact is that nature may be making a major change in the environment, and this change could be catastrophic for human affairs.

“We have to make some type of response to these changes—construct some physical projects—just to protect ourselves and survive as our natural environment changes. In particular, if we’re going to be faced with increasing floods, we need more flood control

reservoirs. And if we're going to be faced with more droughts, we need to save the water in these reservoirs for use in time of drought.

"This is really the most fundamental concept of water resources engineering," Arlin stated vigorously. "We've always had to make some modifications or changes to the environment just to maintain our lives. But if the natural environment changes, then it will take even greater changes on our part to insure our own survival."

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VII

The office was a feeble island of light in a world of raging fury. The storm was howling, blinding, booming cacophony that pervaded all space—it was the whole of existence. The city was obscured—dark, silent, submerged, forgotten. Only the storm existed, and its existence overwhelmed all human efforts.

Bob Arlin shuddered as he glanced through the shadows around the office. The evening relief crew had failed to arrive. The downpour and power outage made travel impossible, so the day staff was marooned in the building for the night. Now they were huddled around the control center, keeping a cheerless vigil as they waited for the storm to pass.

“Coffee, anyone?” Karen was acting as hostess. Bob Arlin’s secretary had connected the electric hot plate to one of the few emergency circuits. In addition, someone had raided the candy and cookie machines in one of the lower lobbies. In between their tours of attention at the radio, Arlin and the others had managed to call home and advise their families of their safety.

Now they were clustered around Dolores, who was taking her turn at the control center. The flood zone on the wall map glared a brilliant red, and the mass of colored lights cast an ominous gloom that helped depress their spirits.

“Mr. Arlin?” Dolores was calling for his attention. “We have one of the field crews on the radio. They want to talk to you.”

He took the seat next to her at the console. “Arlin here. Go ahead.” Hinton and Greenwood and the others gathered around to listen.

“Mr. Arlin, this is crew seven, on the levee north of town. It looks like a flood surge is reaching us. Things are really bad. The water’s up to our sandbags, and I don’t think we’ll be able to hold it. There’s a tremendous amount of junk coming down the river.

“There are a lot of loose boats, and tree trunks, fences, wrecked farm buildings—everything. Some of it’s getting lodged against obstructions like bridge abutments, and pilings, and in the bends in the river—and then that forms a barricade that starts catching more stuff. This is blocking the flow, and the water is backing up and rising on us. When that flood surge gets here I’m afraid it’ll get out of control.”

“Can you dislodge the debris? Try and get it moving.”

“We can’t reach all of it. We can get at some of the bridge abutments, and keep them clear, but we can’t reach the junk out in the channel.”

“How about dynamite?” Arlin called. “Try blasting it loose.”

“We thought of that, but there’s no way to get out there to set the charges. The river’s too dangerous to use a boat, and we can’t control an unmanned raft well enough to get it in position.”

“Are any helicopters available? Could you bomb it?”

“No. They’re grounded. They can’t fly in this storm.”

“Then try artillery. Call the National Guard to get some equipment out there.”

“Right. We’re already in contact with them for labor. I’ll see if they can send some tanks.”

Senator Hinton spoke up quickly. “I’ll call them, too. I know the General. He got pipe for me last summer.” He moved quickly to the nearest phone.

Another signal light was flashing. Arlin switched channels. “Arlin here.”

“This is Petersen, on the American River north of town. Something’s wrong. The water’s starting to back up east from the Sacramento River, and we’re getting reverse flow. We can’t hold it. It’s topping the levee.”

There were some shouts and noises in the background that came through above the sound of the storm. “Hell! It’s breaking through!” There was more excited confusion.

“Hello? Petersen?” Arlin kept calling for attention. “Is anybody there? Come in. Hello?”

“Arlin! We’ve lost it!” Voices were shouting in confusion. “Put out an alarm! A section of the levee gave way!”

“Larry!” Arlin ordered. “Call the radio and TV stations, and put out some emergency notices to the public! Greenwood! Get on the phone to your paper. Dolores, start taking the information down, and keep track of the flood zone on your map.”

He spoke again to the radio. “Petersen? Give me the details. Where’s the break?”

“It’s at about Mile Three. The water is running into these low areas between the levee and the tracks. These spots have already started to fill because of the power outage. When the flood fills up these areas, the water will head south, maybe on about 20th Street, and go down east of the Capital!”

The next several minutes—hours?—were a maelstrom of pandemonium. Arlin’s office was one of a number of emergency communications centers, with radio links to the flood crews in the field, and with phone patches to the National Guard, civil disaster office, police, fire, hospitals, Red Cross, and radio and TV stations. The emergency operations were severely handicapped by the absence of lights and power throughout the city. Everyone was calling frantically to everybody else, passing on bits of data.

The flood wave moved inexorably south through the Capital. The water rushed down the streets, branching at the corners to sweep off in new directions. At other spots the racing rivers met: the reinforced flow surged on to flood still other areas. Dolores was fully occupied keeping a rough tally as the flood swept across her map.

The rush of water through the levee tore away at the edges of the original breach. The gap widened, became a chasm. The river poured out of its channel. Scattered emergency calls gave the progress of the wave front through the city.

The railroad marshalling yard along the north edge of town was the first area to be submerged. Then the water found a dozen cross streets, and flowed south through the old central residential area. Gradually, exploring tongues of water turned west, toward the business district, and toward the Capital. A sudden surge found a low area and rushed further south, down 15th Street, toward Land Park, and through the depressed remnants of an ancient river channel.

Suddenly the emergency lights went out. The radio went dead. “Damn!” Mearman cried in the darkness. “The water’s in the basement. It’s flooded out our generator.”

Arlin groped his way through the blackened room to the supply cabinet, and pawed through the material blindly. He found a flashlight, and flicked it on. The beam showed a group of pale faces clustered around the dead control center. “O.K.,” he sighed. “There’s nothing we can do now except wait until it’s over.”

“Here, I’ve got a portable radio.” Dolores called. “We can listen as long as the batteries hold out.” She clicked the switch, and turned to get the news.

“The phones are still working,” Senator Hinton reported. “They must be on a different power supply. Give me that light a minute.” The dial whirled noisily as he placed a call.

In a moment he turned back to the group. “The Army’s pulled its men back. There’s nothing they can do now to stop the flood. They’ll have to organize a convoy of trucks and freight cars to bring in rock to throw in the break in the levee. It may be morning before they can get enough equipment mobilized.”

The Senator stirred uneasily in the darkness. Like the others, he appeared keyed up from the excitement of their crisis. “I don’t understand how things could have gotten this bad so suddenly,” he complained. “Over the years we must have spent hundreds of millions of

dollars on these levees. Why weren't they adequate to do their job? And why wasn't there an emergency repair force standing by?"

"How come people wanted to build this city in a river bottom?" Arlin responded in annoyance. "And particularly at the junction of the biggest rivers in the State? There are low areas—old river channels—all over town. They chose the worst possible place to live, so they have to expect some trouble occasionally."

"But you engineers should have protected us. What have you been doing?"

"You politicians should have given us the money needed to do a proper job," Arlin retorted. "What have you been doing?"

"It's like I told you before," he added in impatience. "The Legislature only responds when there's a crisis. In good years they forget all about solving our long term problems."

Bob Arlin suddenly slapped the desk in disgust. "Hell, I don't know anyone with a shorter memory, or less understanding of the long range importance of things, than you politicians. You act like this flood is the fault of the engineers."

"Here in Sacramento, of all places, you ought to know better. Just look around you. Within a block of the Capital you can see some of the old houses from the last century. Old Victorian mansions that were built in the 1880s and 90s—even the Governor's Mansion. They all have the first floor about six or eight feet above ground level. Didn't you ever wonder why?"

"It's because of flooding," he rushed on quickly, not giving Hinton a chance to answer. "Flood after flood after flood all during the nineteenth century. The river moved back and forth through all these old channels. Sacramento was frequently under water, so people learned to build their houses high enough to keep them above the flood level."

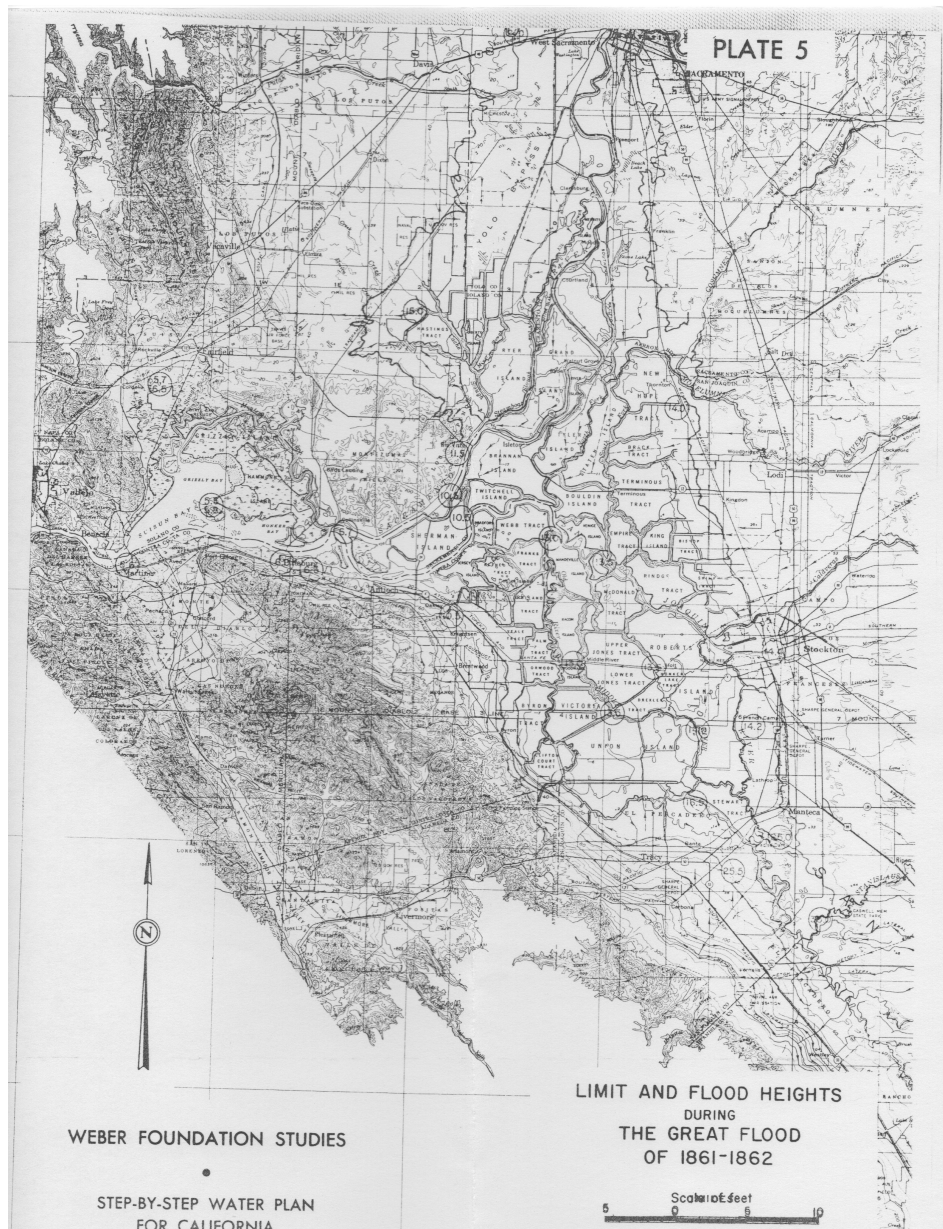
"Here, look at this," he demanded. He moved to a shelf, turned his flashlight on it, and pulled out a fat, bright orange-covered report. "The Weber Report. This was filed with the Legislature in 1960 by a former State Senator and engineer. He was a descendent of one of the founders of the City of Stockton. But hardly anyone ever looked at his work. He's got a chapter here on the greatest flood of record, which occurred just a hundred years before his report, in 1861 and 62."

Arlin opened the book and flipped the pages. "The average rainfall in Sacramento is about 16 inches a year. In the winter of 1861-62 there was 15 inches in January alone. For the whole winter there was a total of 33 inches, or more than twice the normal rainfall."

"Storm after storm hit the area in December and January, and the valley floor was continually flooded. The Sacramento River was flooded from Red Bluff and Chico down through Sacramento to the Delta. The San Joaquin River was flooded from Los Banos north to Stockton and the Delta. The east side streams hit this flood in the middle, and were swept out of their banks and flooded through Stockton."

"In Sacramento, there was a six-week period at the beginning of 1862 when the river was at a record flood level. And that was before we had the present levees, so the whole town was under water."

"There was an inland sea about 80 miles long through this whole Central Valley, from north of Sacramento down to about Modesto, and about 40 miles wide, from Antioch east through Stockton. The whole Delta area was under about 10 feet of water. Here, he's got a map that shows the full extent of it. Sacramento is up at the top of the flooded area." Arlin spread the page out for Senator Hinton to examine under the beam of the flashlight.



"It's been computed that there may have been a peak flow out of the Delta of a million cubic feet per second. Normal flows are more like five thousand. One author called that the 'Noachian Flood of California'.

"And it wasn't just a local problem," Arlin continued. "It was State-wide. They also had record floods in Southern California.

"If we ever get anything even remotely close to that again, we'll have billions and billions of dollars' worth of damage. The whole Delta and all the islands and farms will be totally destroyed. There'll probably be hundreds or even thousands of casualties. All our reservoirs put together only have enough flood control storage space for a fraction of the amount of water that was involved in that storm."

"Did you say 1862?" Greenwood cut in. He was checking his notebook under the flashlight.

"Yes. The peak of the flood was at the end of January 1862."

Greenwood flipped back through his notes. "Earlier this afternoon when we were talking with Miss Valenzia, and she said the worst drought that wiped out the Spanish

ranchos was from 1862 to 1864. That drought must have started as soon as the flood ended, and then lasted a couple of years.”

“Hey, I’d never noticed that before,” Arlin commented. “They had the two opposite extremes—flood and drought—one right after another, and each one set a record.”

Senator Hinton spoke up again. “That business of going from one extreme to the other reminds me of that story of changing weather patterns you told me a few months ago. I don’t know if you were trying to predict the future, but you sure called the shot. We’ve certainly gone from one extreme to the other now.”

“I was just talking in general concepts,” Arlin answered. “It was inevitable that there would be a major wet cycle some time—we’ll even get that record flood again someday—but I never expected things to change so soon.”

“What caused that? Do you have any ideas?”

“The only thing that’s occurred to me is that the eruption of the volcanoes in Hawaii last summer might have acted as a trigger. We noticed it on the satellite images during the drought at the about the same time as we were having the forest fires here in California. That eruption continued for several weeks, and a tremendous amount of ash and smoke was discharged into the atmosphere.

“Then moist air masses moved in from the North Pacific and from the Arctic. All the dust particles from the smoke clouds acted as nuclei for the formation of water droplets. It was like a giant cloud seeding operation. As a result of a long sequence of chain reactions, that led to a storm here.”

Bob Arlin suddenly recalled another factor. “There was a gigantic volcanic eruption about a hundred years ago that cause the same kind of effects. Krakatoa erupted in Java in 1883. It put so much ash into the air all over the world that it lowered the Earth’s temperature a couple of degrees. That led to a very wet and rainy period around the world for a number of years just before the turn of the century.

“So the question we have to think about is, with all this erratic weather now, what kind of long term changes are ahead of us? When’s that record flood coming again? And will we be able to survive it? How severe are the coming changes in the environment going to be?”

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The drought had come as a drastic environmental change—and a change that was creating havoc. Bob Arlin studied the group in his office. They were all here reacting to a crisis. Somehow, he had to turn that around.

Arlin frowned. A problem can be looked at merely as a problem—or as an opportunity. You can react to a crisis, or you can seize the opportunity to achieve new goals. But what could he do now?

Senator Hinton was in a key political position, and had ambitions to run for Governor. Bill Greenwood was here to put the spotlight on any failures in the government. Was there any way to combine those efforts, and direct them towards some purpose?

“We’re in for changes,” Arlin stated. “All over the world there are signs that the weather is changing. There are more frequent floods, more frequent droughts, more hot spells, more cold spells. And all of that means trouble.”

Senator Hinton stirred impatiently. “That’s all the more reason I need to develop an effective relief program for the farmers. You’re just adding fuel to the need for my program.”

“Yes, but what is your program?” Arlin challenged. “So far, you’ve just been talking about emergency relief proposals. I’ve been suggesting that you ought to look further than that. Look as far as you can. Look at how everything relates to everything else. Look at the whole world.”

Hinton reacted coldly. His blue eyes narrowed, and his expression became sterner. Bill Greenwood had given up on taking notes. Now he was studying the battle carefully. Larry Mearman, as usual, was smirking haughtily from a corner. Except for Hinton, they were all disheveled and short-tempered from the heat.

Bob Arlin continued, addressing Senator Hinton. "When you first came in, you told me about a number of things that went full circle. You said you needed water to produce food, then you need power to pump the water, you need oil to generate power, you need food to sell overseas in exchange for oil, and you need water to produce the food.

"Now turn that around and look at the other side of the problem. The rest of the world needs food. As the underdeveloped countries continue to grow—and they still have the highest birth rates—they're going to need still more food. Already, in most of these countries they don't have enough agricultural production to feed their people. Without enough food, they'll soon face mass starvation.

"And if that weren't bad enough, think of the implications of *that* problem. In countries where people are starving, and facing death, they have nothing more to lose. They've no reason to refrain from war. If they can't get food peacefully, they'll get it by force—by invading other countries. World-wide food shortages may lead to a world-wide war.

"At the very least, we can expect governments to be overthrown because of famine. Khrushchev and Selassie were ousted because of food failures, so we can expect more of that in the future. And with unstable governments, there's always the chance of some demagogue starting trouble.

"Now neither ourselves, the western Europeans, nor the Russians wants war," Arlin continued sternly. "We all have too much to lose. Our standard of living is so high that we'd suffer catastrophic damage in any kind of war. But the people in Africa and Asia and Latin America who exist in poverty and on the edge of starvation—these groups don't have that problem. Their standard of living is so low compared to ours that they might be led by some fanatic to believe that they could get more food by invading other countries.

"So what should we do?" Arlin asked rhetorically. "Should we spend billions of dollars for more armament, so we could defend ourselves in the event of another world-wide war? Or should we try to produce food, and try to head off the chance of war? It's the old question of guns or butter?"

"Now wait a minute," Hinton interrupted impatiently. "I've listened long enough. We can't possibly produce enough food for the rest of the world."

"I know that. Every country will have to produce the most it can. But if the weather is going to change—if every country is going to have more floods and droughts—there'll be greater crop losses all around the world, and a greater chance of famine. In spite of the best that everybody can do the environment is going to be our most serious problem. Changes in the environment that destroy the world's food supplies might be the trigger that leads to war."

Arlin rushed on impatiently. He still had to come up with some solution. "So if we choose to produce food, should we do it on a haphazard basis, at the mercy of the weather? Or should we develop an organized program?" Arlin pressed his challenge at Hinton, and then at Greenwood.

"Now, back to California," he continued rapidly, before anyone responded. "Here we have some major advantages. Basically, the natural environment here is one of the best in the world for raising food. We have this tremendous Central Valley, with wonderfully fertile soil. We have ideal weather. Normally—except in this drought—we have sufficient water. In fact, ordinarily only about half of our total supply is used. It's a falsehood to say that California has a water shortage—we only have a shortage in the level of development.

“So we have the water, and we have extremely elaborate water distribution systems, with Federal and State and local projects that are the most advanced in the world.

“We also have the farms, and extensive orchards and vineyards. And we have a highly developed agricultural management structure, with canners, food processors, storage facilities, marketing procedures, distributors, and son on. In fact, that’s where you’re an expert.

“Put this all together, and California has all the advantages and resources required to become a wild-wide leader in food production. This isn’t something that requires a breakthrough in new technology. All that’s needed is the final step of political dedication.

“The only thing missing is a comprehensive program of drought management, and flood management, that will insure that we can maintain full agricultural production even when the environment changes. We don’t want to continue what we’ve had to do this year—steal water from one area to use it in another. We want to protect all areas. For that, all we need is reservoirs to catch the flood water and store it so we can use it in periods of drought.”

“You’ll never get that through,” Senator Hinton responded coldly. “The extremists in the environmental lobby will fight you to the end. They’ve held up those projects for years.”

“So why are they fighting?” Arlin retorted. “Do they want to preserve the natural environment untouched? If so, they’re promoting world-wide starvation and the threat of war. How abysmally stupid and selfish can you get? We need something more constructive than that. We need a program that will help preserve peace, and help insure the preservation of our civilization.

“So let me make you a proposal,” Arlin stated. “You’re an experienced agricultural businessman. In addition, you’re a political leader who is trying to develop a legislative program to help the farmers. Also, you’re trying to run for Governor. Why don’t you combine these efforts, and enlarge on them the way I’ve been suggesting? Why don’t you turn this problem into an opportunity?”

“Why don’t you create a California Food and Peace Administration?” Bob Arlin challenged. “Why don’t you combine flood control, drought control, environmental protection, water management, food production, international trade, increased employment, and all our other problems into one total, coordinated program?

“If you want to do something with that reorganization bill that you’ve been considering, why don’t you use that as the vehicle to carry out this program? Bring in the Department of Public Resources, the Department of Agriculture, the Department of Business, and whatever else that’s needed. And remember the office of Dry Statistics—our role will be to coordinate world-wide weather information to help make the program most effective.”

Bob Arlin turned to Greenwood. “Make sure you take this down,” he ordered. “Here’s a challenge for a man who is seeking the State’s highest office. Let’s see how he responds.”

He turned again to Hinton, and repeated himself for emphasis. “Why don’t you turn this drought crisis into an opportunity to create a long-range program that will really do some long-range good? Why don’t you develop a really comprehensive and effective program that solves every one of our problems?

“Put all of your expert knowledge to use. Make your platform the creation of the California Food and Peace Administration. If you can put all that together and make it work,” Bob Arlin stated, “then you’ll be entitled to become our Governor.”

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VIII

The pale light of dawn began to illuminate the silent office. Bob Arlin stretched, and rose from his cramped position at his table. The clouds had thinned and lifted, and the rain had been reduced to a minor drizzle. The wind had died away.

He'd managed to get a couple hours of rest. However, with the lack of heat in the building, it had become so cold as to be uncomfortable. Arlin pulled his coat more tightly around himself and wandered to the window.

The scene below was wet and soggy. Water ran in the gutters, and the street was littered with flood-borne rubbish. There was a gray watermark on the wall of the opposite building that indicated where the crest of the storm had passed.

Arlin gradually became aware that the lights were back on again. Not the emergency power, but the normal commercial supply. During the night the emergency crews had been able to restore the service. But the flood water in the basement still had the building's heating system out of commission.

"Good morning." It was Senator Hinton. "Well, I guess we made it."

Bob Arlin nodded ruefully. It was too early for a bring reply. He glanced at the control center. There were only a few red lights on the map now, showing water in some of the by-pass channels.

He moved over to the service counter and helped Karen prepare a fresh pot of coffee. As it began to heat, Bill Greenwood and the others gradually gathered around to share each other's company. The women were bundled in their coats for warmth.

When the coffee was ready, Arlin poured a cup and passed it to Dolores.

She smiled gratefully. To Arlin she seemed surprisingly cheerful after such a strenuous experience. "I just heard the latest news on the radio," she reported eagerly. "The Army worked all night. They got some empty freight cars and threw them in to block the levee. That was enough to form an anchor for the rock and sand bags. The flood is over."

Senator Hinton spoke up quickly. "Good! I want to go out there as soon as possible and see what they're doing. I want to commend them for their work." Then he paused and looked questioningly at Dolores. "And how about the Delta?"

She suddenly brightened. Her dark eyes flashed with spirit. "It's safe! There weren't any floods there. With what happened here, and with floods in all of the by-pass channels, that drew off enough water to protect the Delta."

Hinton smiled at her obvious relief. He took the cup that Arlin offered, and held it to warm his hands. "I didn't get a change to tell you the news last night," he said to Arlin. "We were completely occupied by the storm. But before I came over here, we'd just finished our action in the Legislature. Our food and peace program is on the way."

Bob Arlin suddenly came to life. "Wonderful! That's the kind of news to start the day."

"Our Committee held hearings throughout the State," Hinton explained, "and we had a remarkable response. About the only opposition was from a few die-hard extremists."

He nodded to Bill Greenwood. "Even your paper supported us. I want to thank you for your efforts."

Greenwood beamed. "My lucky break was in being here at the right time. I heard Bob's original proposal to you, so I had the background to really give the public a complete explanation of it. Then I've been able to follow up on the story with more interviews here about the details as they developed. It's a very constructive program, and has a lot of public appeal."

“Well, I want you to know that I appreciate all your efforts. At times you can be pretty disagreeable. You’re severe, and caustic. You put people on the spot, and challenge them to explain themselves. But I can see that that enables you to get all the facts for your story.

“You want full public disclosure of all the government’s activities, and so do I. That’s the only way to gain the public’s confidence. So again, you did a good job.

“And just to prove that I mean what I say—I’m going to need a press secretary in my campaign for Governor. I want to get this program to the public. Would you like to join me?”

Greenwood almost choked on his coffee. “Boy! That’s a wild curve.” In a moment he recovered. “Yes, I’ll do it,” he said more seriously. “I’d be honored to help you.”

Senator Hinton smiled appreciatively. Then he turned to Arlin. “There’s another thing I should say. Thanks ought to go to those who properly deserve it. Thank you.

“You were the stimulus, or catalyst, who put the idea together. I knew about droughts, and about the problems of agriculture, but your explanation of statistics about the weather was the thing that put it all in focus. I didn’t have that knowledge.

“So how about it? We’re going to need a program director as this law goes into effect. Would you consider the appointment?

Arlin was stunned. Things were happening much too rapidly. He tried to recover. “That’s easy,” he answered. “Yes. Because of the lack of constructive leadership around here for so long, I’d been thinking about an early retirement. But this is the kind of challenge that’s really exciting. I’d be glad to do it.

“But I have a wild curve of my own—I have one condition.”

“Yes?”

“As my successor here, I want Dolores. She’s got the background, and loyalty, and personal motivation in protecting agriculture and the environment that you won’t find anywhere in the State. She’ll do an outstanding job. She’ll be a key member of our team.”

“I’ll endorse that,” Greenwood said with feeling. He waved his notebook. “I’ve got an interview to write up here that’s really something special.”

“Fine,” Senator Hinton responded warmly. He caught Dolores’ eye. “I’m sure that can be arranged.”

Dolores was suddenly speechless. She stood dumbfounded, and the blood rushed to her cheeks. Karen suddenly embraced her enthusiastically, in tribute to the honor.

Hinton smiled at Dolores’ pleasure. Then he turned again to Arlin. “And since we’re making changes, let me tell you one of mine.

“Last summer, when you first presented the idea to me, you made me an offer I couldn’t refuse. The idea of a California Food and Peace Administration was a challenge I couldn’t resist. Particularly when you put me on the spot in front of the press.

“But I’ve been thinking about the whole idea. If it’s good in California, why isn’t it good in other States? Why can’t all of America be involved in a program to maintain peace around the world?

“So I’ve been thinking of changing the name. Instead of being named only for California, I wondered why not call it the American Food and Peace Administration? But even that isn’t just right. It might be *by* America, but it’s not *for* America—not entirely. It’s for the entire world.

“So what I’ve settled on as an eventual title is the International Food and Peace Alliance. Do you like the sound of that?”

Bob Arlin caught his breath. Here was another sudden wild curve. What kind of cascading chain reaction had he started?

Senator Hinton was not only running for Governor—now it was agriculture on an international scale. And he'd used the word 'eventual'. Did he have the thought of eventually trying to run for President?

Bob Arlin shook his head in wonder. "O.K., everybody, let's get back to work," he ordered abruptly. "We got through one crisis with a minimum amount of damage. Let's get this Weather Center back in operation so we can handle whatever happens next."

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