

ALL STORIES NEW

Galaxy

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Cover by PEDERSON illustrating HOT PLANET

It has happened a hundred times in the long history of Earth — and, sooner or later, will happen again!

THE GREAT NEBRASKA SEA

EVERYONE — all the geologists, at any rate — had known about the Kiowa Fault for years. That was before there was anything very interesting to know about it. The first survey of Colorado traced its course north and south in the narrow valley of Kiowa Creek about twenty miles east of Denver; it extended south to the Arkansas River. And that

was about all even the professionals were interested in knowing. There was never so much as a landslide to bring the Fault to the attention of the general public.

It was still a matter of academic interest when in the late '40s geologists speculated on the relationship between the Kiowa Fault and the Conchas Fault far-

By **ALLAN DANZIG**

Illustrated by **WOOD**

ther south, in New Mexico, and which followed the Pecos as far south as Texas.

Nor was there much in the papers a few years later when it was suggested that the Niobrara Fault (just inside and roughly parallel to the eastern border of Wyoming) was a northerly extension of the Kiowa. By the mid sixties it was definitely established that the three Faults were in fact a single line of fissure in the essential rock, stretching almost from the Canadian border well south of the New Mexico-Texas line.

It is not really surprising that it took so long to figure out the connection. The population of the states affected was in places as low as five people per square mile! The land was so dry it seemed impossible that it could ever be used except for sheep-farming.

It strikes us today as ironic that from the late '50s there was grave concern about the level of the watertable throughout the entire area.

THE EVEN more ironic solution to the problem began in the summer of 1973. It had been a particularly hot and dry August, and the Forestry Service was keeping an anxious eye out for the fires it knew it could expect. Dense smoke was reported

rising above a virtually uninhabited area along Black Squirrel Creek, and a plane was sent out for a report.

The report was — no fire at all. The rising cloud was not smoke, but dust. Thousands of cubic feet of dry earth rising lazily on the summer air. Rock slides, they guessed; certainly no fire. The Forestry Service had other worries at the moment, and filed the report.

But after a week had gone by, the town of Edison, a good twenty miles away from the slides, was still complaining of the dust. Springs were going dry, too, apparently from underground disturbances. Not even in the Rockies could anyone remember a series of rock slides as bad as this.

Newspapers in the mountain states gave it a few inches on the front page; anything is news in late August. And the geologists became interested. Seismologists were reporting unusual activity in the area, tremors too severe to be rock slides. Volcanic activity? Specifically, a dust volcano? Unusual, they knew, but right on the Kiowa Fault — could be.

Labor Day crowds read the scientific conjectures with late summer lassitude. Sunday supplements ran four-color artists' conceptions of the possible volcano. "Only Active Volcano in

U. S.?" demanded the headlines, and some papers even left off the question mark.

It may seem odd that the simplest explanation was practically not mentioned. Only Joseph Schwartzberg, head geographer of the Department of the Interior, wondered if the disturbance might not be a settling of the Kiowa Fault. His suggestion was mentioned on page nine or ten of the Monday newspapers (page 27 of the *New York Times*). The idea was not nearly so exciting as a volcano, even a lava-less one, and you couldn't draw a very dramatic picture of it.

To excuse the other geologists, it must be said that the Kiowa Fault had never acted up before. It never sidestepped, never jiggled, never, never produced the regular shows of its little sister out in California, which almost daily bounced San Francisco or Los Angeles, or some place in between. The dust volcano was on the face of it a more plausible theory.

Still, it was only a theory. It had to be proved. As the tremors grew bigger, along with the affected area, as several towns including Edison were shaken to pieces by incredible earthquakes, whole bus- and plane-loads of geologists set out for Colorado, without even waiting for their university and government de-

partments to approve budgets.

They found, of course, that Schwartzberg had been perfectly correct.

THEY FOUND themselves on the scene of what was fast becoming the most violent and widespread earthquake North America—probably the world—has ever seen in historic times. To describe it in the simplest terms, land east of the Fault was settling, and at a precipitous rate.

Rock scraped rock with a whining roar. Shuddery as a squeaky piece of chalk raked across a blackboard, the noise was deafening. The surfaces of the land east and west of the Fault seemed no longer to have any relation to each other. To the west, tortured rock reared into cliffs. East, where sharp reports and muffled wheezes told of continued buckling and dropping, the earth trembled downward. Atop the new cliffs, which seemed to grow by sudden inches from heaving rubble, dry earth fissured and trembled, sliding acres at a time to fall, smoking, into the bucking, heaving bottom of the depression.

There the devastation was even more thorough, if less spectacular. Dry earth churned like mud, and rock shards weighing tons bumped and rolled about like pebbles as they shivered and

cracked into pebbles themselves. "It looks like sand dancing in a child's sieve," said the normally impassive Schwartzberg in a nationwide broadcast from the scene of disaster. "No one here has ever seen anything like it." And the landslip was growing, north and south along the Fault.

"Get out while you can," Schwartzberg urged the population of the affected area. "When it's over you can come back and pick up the pieces." But the band of scientists who had rallied to his leadership privately wondered if there would be any pieces.

The Arkansas River, at Avondale and North Avondale, was sluggishly backing north into the deepening trough. At the rate things were going, there might be a new lake the entire length of El Paso and Pueblo Counties. And, warned Schwartzberg, this might only be the beginning.

By 16 September the landslip had crept down the Huerfano River past Cedarwood. Avondale, North Avondale and Boone had totally disappeared. Land west of the Fault was holding firm, though Denver had recorded several small tremors; everywhere east of the Fault, to almost twenty miles away, the now-familiar lurch and steady fall had already sent several thousand Coloradans scurrying for safety.

All mountain climbing was

prohibited on the Eastern Slope because of the danger of rock slides from minor quakes. The geologists went home to wait.

There wasn't much to wait for. The news got worse and worse. The Platte River, now, was creating a vast mud puddle where the town of Orchard had been. Just below Masters, Colorado, the river leaped 70-foot cliffs to add to the heaving chaos below. And the cliffs were higher every day as the land beneath them groaned downward in mile-square gulps.

As the Fault moved north and south, new areas quivered into unwelcome life. Fields and whole mountainsides moved with deceptive sloth down, down. They danced "like sand in a sieve"; dry, they boiled into rubble. Telephone lines, railroad tracks, roads snapped and simply disappeared. Virtually all east-west land communication was suspended, and the President declared a national emergency.

BY 23 September the Fault was active well into Wyoming on the north, and rapidly approaching the border of New Mexico to the south. Trinchera and Branson were totally evacuated, but even so the over-all death toll had risen above 1,000.

Away to the east the situation was quiet but even more omi-



nous. Tremendous fissures opened up perpendicular to the Fault, and a general subsidence of the land was noticeable well into Kansas and Nebraska. The western borders of these states, and soon of the Dakotas and Oklahoma as well, were slowly sinking.

On the actual scene of the disaster (or the scenes; it is impossible to speak of anything this size in the singular) there was a horrifying confusion. Prairie and hill cracked open under intolerable strains as the land shuddered downward in gasps and leaps. Springs burst to the surface in hot geysers and explosions of steam.

The downtown section of North Platte, Nebraska, dropped eight feet, just like that, on the afternoon of 4 October. "We must

remain calm," declared the Governor of Nebraska. "We must sit this thing out. Be assured that everything possible is being done." But what could be done, with his state dropping straight down at a mean rate of a foot a day?

The Fault nicked off the southeast corner of Montana. It worked its way north along the Little Missouri. South, it ripped past Roswell, New Mexico, and tore down the Pecos toward Texas. All the upper reaches of the Missouri were standing puddles by now, and the Red River west of Paris, Texas, had begun to run backward.

Soon the Missouri began slowly slipping away westward over the slowly churning land. Abandoning its bed, the river spread uncertainly across farmland and

prairie, becoming a sea of mud beneath the sharp new cliffs which rose in rending line, ever taller as the land continued to sink, almost from Canada to the Mexican border. There were virtually no floods, in the usual sense. The water moved too slowly, spread itself with no real direction or force. But the vast sheets of sluggish water and jelly-like mud formed death-traps for the countless refugees now streaming east.

Perhaps the North Platte disaster had been more than anyone could take. 193 people had died in that one cave-in. Certainly by 7 October it had to be officially admitted that there was an exodus of epic proportion. Nearly two million people were on the move, and the U. S. was faced with a gigantic wave of refugees. Rails, roads and air-lanes were jammed with terrified hordes who had left everything behind to crowd eastward.

All through October hollow-eyed motorists flocked into Tulsa, Topeka, Omaha, Sioux Falls and Fargo. St. Louis was made distributing center for emergency squads which flew everywhere with milk for babies and dog food for evacuating pets. Gasoline trucks boomed west to meet the demand for gas, but once inside the "zone of terror," as the newspapers now called it, they

found their route blocked by eastbound cars on the wrong side of the road. Shops left by their fleeing owners were looted by refugees from further west; an American Airlines plane was wrecked by a mob of would-be passengers in Bismarck, North Dakota. Federal and State troops were called out, but moving two million people was not to be done in an orderly way.

And still the landslip grew larger. The new cliffs gleamed in the autumn sunshine, growing higher as the land beneath them continued its inexorable descent.

On 21 October, at Lubbock, Texas, there was a noise variously described as a hollow roar, a shriek and a deep musical vibration like a church bell. It was simply the tortured rock of the substrata giving way. The second phase of the national disaster was beginning.

THE NOISE traveled due east at better than 85 miles per hour. In its wake the earth to the north "just seemed to collapse on itself like a punctured balloon," read one newspaper report. "Like a cake that's failed," said a Texarkana housewife who fortunately lived a block south of Thayer Street, where the fissure raced through. There was a sigh and a great cloud of dust, and Oklahoma subsided at the astounding

rate of about six feet per hour.

At Biloxi, on the Gulf, there had been uneasy shufflings under foot all day. "Not tremors, exactly," said the captain of a fishing boat which was somehow to ride out the coming flood, "but like as if the land wanted to be somewhere else."

Everyone in doomed Biloxi would have done well to have been somewhere else that evening. At approximately 8:30 p.m. the town shuddered, seemed to rise a little like the edge of a hall carpet caught in a draft, and sank. So did the entire Mississippi and Alabama coast, at about the same moment. The tidal wave which was to gouge the center from the U. S. marched on the land.

From the north shore of Lake Ponchartrain to the Appalachicola River in Florida, the Gulf coast simply disappeared. Gulfport, Biloxi, Mobile, Pensacola, Panama City: 200 miles of shoreline vanished, with over two and a half million people. An hour later a wall of water had swept over every town from Dothan, Alabama, to Bogalusa on the Louisiana-Mississippi border.

"We must keep panic from our minds," said the Governor of Alabama in a radio message delivered from a hastily arranged all-station hookup. "We of the gallant southland have faced and

withstood invasion before." Then, as ominous creakings and groanings of the earth announced the approach of the tidal wave, he flew out of Montgomery half an hour before the town disappeared forever.

One head of the wave plunged north, eventually to spend itself in the hills south of Birmingham. The main sweep followed the lowest land. Reaching west, it swallowed Vicksburg and nicked the corner of Louisiana. The whole of East Carroll Parish was scoured from the map.

The Mississippi River now ended at about Eudora, Arkansas, and minute by minute the advancing flood bit away miles of river bed, swelling north. Chicot, Jennie, Lake Village, Arkansas City, Snow Lake, Elaine, Helena and Memphis felt the tremors. The tormented city shuddered through the night. The earth continued its descent, eventually tipping 2½ degrees down to the west. The "Memphis Tilt" is today one of the unique and charming characteristics of the gracious Old Town, but during the night of panic Memphis residents were sure they were doomed.

SOUTH and west the waters carved deeply into Arkansas and Oklahoma. By morning it was plain that all of Arkansas was going under. Waves ad-



vanced on Little Rock at almost 100 miles an hour, new crests forming, overtopping the wave's leading edge as towns, hills and the thirst of the soil temporarily broke the furious charge.

Washington announced the official hope that the Ozarks would stop the wild gallop of the unleashed Gulf, for in northwest Arkansas the land rose to over 2,000 feet. But nothing could save Oklahoma. By noon the water reached clutching fingers around Mt. Scott and Elk Mountain, deluging Hobart and almost all of Greer County.

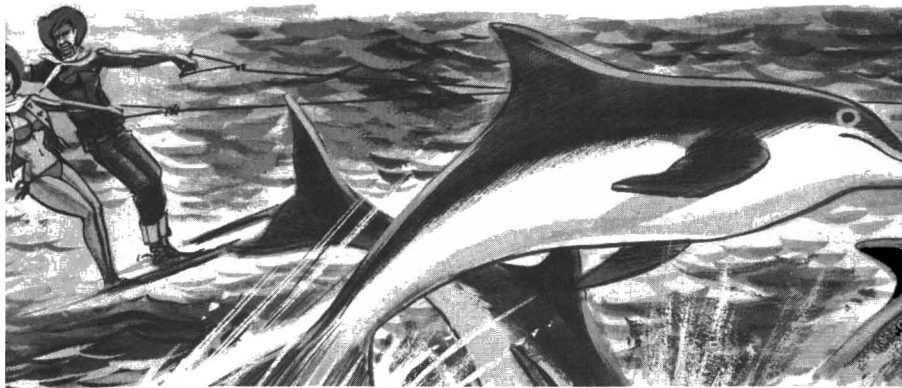
Despite hopeful announcements that the wave was slowing, had virtually stopped after inundating Oklahoma City, was being swallowed up in the desert near Amarillo, the wall of water continued its advance. For the land was still sinking, and the floods were constantly replenished from the Gulf. Schwartzberg and his geologists advised

the utmost haste in evacuating the entire area between Colorado and Missouri, from Texas to North Dakota.

Lubbock, Texas, went under. On a curling reflex the tidal wave blotted out Sweetwater and Big Spring. The Texas panhandle disappeared in one great swirl.

Whirlpools opened. A great welter of smashed wood and human debris was sucked under, vomited up and pounded to pieces. Gulf-water crashed on the cliffs of New Mexico and fell back on itself in foam. Would-be rescuers on the cliffs along what had been the west bank of the Pecos River afterwards recalled the hiss and scream like tearing silk as the water broke furiously on the newly exposed rock. It was the most terrible sound they had ever heard.

"We couldn't hear any shouts, of course, not that far away and with all the noise," said Dan Weaver, Mayor of Carlsbad. "But



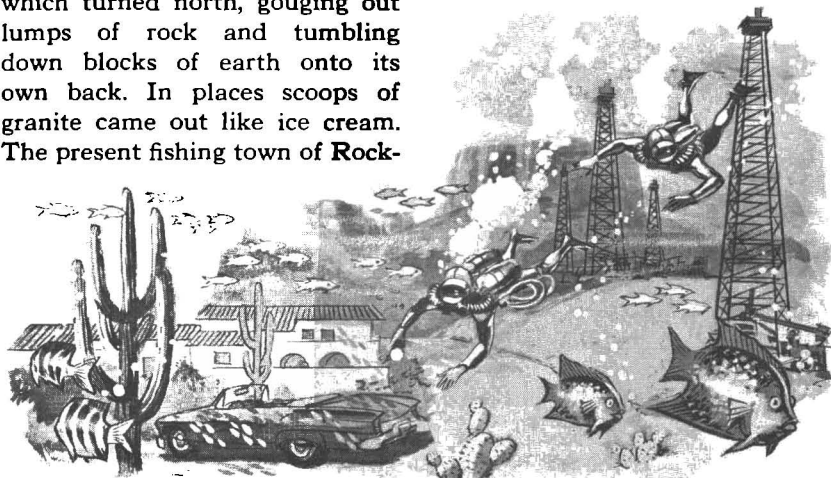
we knew there were people down there. When the water hit the cliffs, it was like a collision between two solid bodies. We couldn't see for over an hour, because of the spray."

Salt spray. The ocean had come to New Mexico.

THE CLIFFS proved to be the only effective barrier against the westward march of the water, which turned north, gouging out lumps of rock and tumbling down blocks of earth onto its own back. In places scoops of granite came out like ice cream. The present fishing town of Rock-

port, Colorado, is built on a harbor created in such a way.

The water had found its farthest westering. But still it poured north along the line of the original Fault. Irresistible fingers closed on Sterling, Colorado, on Sidney, Nebraska, on Hot Springs, South Dakota. The entire tier of states settled, from south to north, down to its eventual place of stability one thou-



sand feet below the level of the new sea.

Memphis was by now a seaport. The Ozarks, islands in a mad sea, formed precarious havens for half-drowned humanity. Waves bit off a corner of Missouri, flung themselves on Wichita. Topeka, Lawrence and Belleville were the last Kansas towns to disappear. The Governor of Kansas went down with his State.

Daniel Bernd of Lincoln, Nebraska, was washed up half-drowned in a cove of the Wyoming cliffs, having been sucked from one end of vanished Nebraska to the other. Similar hairbreadth escapes were recounted on radio and television.

Virtually the only people saved out of the entire population of Pierre, South Dakota were the six members of the Creeth family. Plucky Timothy Creeth carried and dragged his aged parents to the loft of their barn on the outskirts of town. His brother Geoffrey brought along the younger children and what provisions they could find—"Mostly a ham and about half a ton of vanilla cookies," he explained to his eventual rescuers. The barn, luckily collapsing in the vibrations as the waves bore down on them, became an ark in which they rode out the disaster.

"We must of played cards for

four days straight," recalled genial Mrs. Creeth when she afterwards appeared on a popular television spectacular. Her rural good-humor undamaged by an ordeal few women can ever have been called on to face, she added, "We sure wondered why flushes never came out right. Jimanettly, we'd left the king of hearts behind, in the rush!"

But such lightheartedness and such happy endings were by no means typical. The world could only watch aghast as the water raced north under the shadow of the cliffs which occasionally crumbled, roaring, into the roaring waves. Day by day the relentless rush swallowed what had been dusty farmland, cities and towns.

Some people were saved by the helicopters which flew mercy missions just ahead of the advancing waters. Some found safety in the peaks of western Nebraska and the Dakotas. But when the waters came to rest along what is roughly the present shoreline of our inland sea, it was estimated that over fourteen million people had lost their lives.

No one could even estimate the damage to property; almost the entirety of eight states, and portions of twelve others, had simply vanished from the heart of the North American continent forever.

IT WAS in such a cataclysmic birth that the now-peaceful Nebraska Sea came to America.

Today, nearly one hundred years after the unprecedented—and happily unrepeated—disaster, it is hard to remember the terror and despair of those weeks in October and November, 1973. It is inconceivable to think of the United States without its beautiful and economically essential curve of interior ocean. Two-thirds as long as the Mediterranean, it graduates from the warm waters of the Gulf of Mexico through the equally blue waves of the Mississippi Bight, becoming cooler and greener north and west of the pleasant fishing isles of the Ozark Archipelago, finally shading into the gray-green chop of the Gulf of Dakota.

What would the United States have become without the 5600-mile coastline of our inland sea? It is only within the last twenty years that any but the topmost layer of water has cleared sufficiently to permit a really extensive fishing industry. Mud still held in suspension by the restless waves will not precipitate fully even in our lifetimes. Even so, the commercial fisheries of Missouri and Wyoming contribute no small part to the nation's economy.

Who can imagine what the

middle west must have been like before the amelioration of climate brought about by the proximity of a warm sea? The now-temperate state of Minnesota (to say nothing of the submerged Dakotas) must have been Siberian. From contemporary accounts Missouri, our second California, was unbelievably muggy, almost uninhabitable during the summer months. Our climate today, from Ohio and North Carolina to the rich fields of New Mexico and the orchards of Montana, is directly ameliorated by the marine heart of the continent.

Who today could imagine the United States without the majestic sea-cliffs in stately parade from New Mexico to Montana? The beaches of Wyoming, the American Riviera, where fruit trees grow almost to the water's edge? Or incredible Colorado, where the morning skier is the afternoon bather, thanks to the monorail connecting the highest peaks with the glistening white beaches?

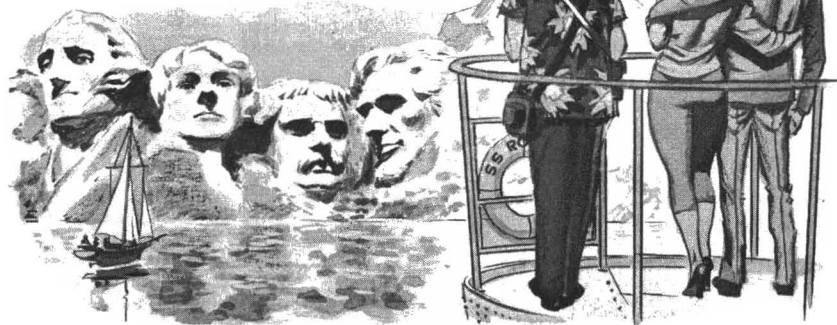
Of course there have been losses to balance slightly these strong gains. The Mississippi was, before 1973, one of the great rivers of the world. Taken together with its main tributary, the Missouri, it vied favorably with such giant systems as the Amazon and the Ganges. Now, ending as it does at Memphis

and drawing its water chiefly from the Appalachian Mountains, it is only a slight remnant of what it was. And though the Nebraska Sea today carries many times the tonnage of shipping in its ceaseless traffic, we have lost the old romance of river shipping. We may only guess what it was like when we look upon the Ohio and the truncated Mississippi.

And transcontinental shipping is somewhat more difficult, with trucks and the freight-railroads obliged to take the sea-ferries across the Nebraska Sea. We shall never know what the United States was like with its numerous coast-to-coast highways busy with trucks and private cars. Still, the ferry ride is certainly a welcome break after days of driving, and for those who wish a glimpse of what it must have been like, there is always the Cross-Canada Throughway and the magnificent U. S. Highway 73 looping north through Minnesota and passing

through the giant port of Alexis, North Dakota, shipping center for the wheat of Manitoba and crossroad of a nation.

THE POLITICAL situation has long been a thorny problem. Only tattered remnants of the eight submerged states remained after the flood, but none of them wanted to surrender its autonomy. The tiny fringe of Kansas seemed, for a time, ready to merge with contiguous Missouri, but following the lead of the Arkansas Forever faction, the remaining population decided to retain political integrity. This has resulted in the continuing anomaly of the seven "fringe States" represented in Congress by the usual two Senators each, though the largest of them is barely the size of Connecticut and all are economically indistinguishable



from their neighboring states.

Fortunately it was decided some years ago that Oklahoma, only one of the eight to have completely disappeared, could not in any sense be considered to have a continuing political existence. So, though there are still families who proudly call themselves Oklahomans, and the Oklahoma Oil Company continues to pump oil from its submerged real estate, the state has in fact disappeared from the American political scene.

But this is by now no more than a petty annoyance, to raise a smile when the talk gets around to the question of State's Rights. Not even the tremendous price the country paid for its new sea—fourteen million dead, untold property destroyed—really offsets the asset we enjoy today. The heart of the continent, now open to the shipping of the world, was once dry and land-locked, cut off from the bustle of trade and the ferment of world culture.

It would indeed seem odd to an American of the '50s or '60s of the last century to imagine sailors from the merchant fleets of every nation walking the

streets of Denver, fresh ashore at Newport, only fifteen miles away. Or to imagine Lincoln, Fargo, Kansas City and Dallas as world ports and great manufacturing centers. Utterly beyond their ken would be Roswell, New Mexico; Benton, Wyoming; Westport, Missouri, and the other new ports of over a million inhabitants each which have developed on the new harbors of the inland sea.

Unimaginable too would have been the general growth of population in the states surrounding the new sea. As the water tables rose and manufacturing and trade moved in to take advantage of the just-created axis of world communication, a population explosion was touched off of which we are only now seeing the diminution. This new westering is to be ranked with the first surge of pioneers which created the American west. But what a difference! Vacation paradises bloom, a new fishing industry thrives; her water road is America's main artery of trade, and fleets of all the world sail . . . where once the prairie schooner made its laborious and dusty way west!

—ALLAN DANZIG