

THE SIGN OUTSIDE THE ONLY ENTRANCE to the Dugway Proving Grounds offers a macabre welcome: "Warning—dangerous instrumentalities of war are being tested on this post. Caution: Do not handle any unidentified objects. Report their location to security."

Dugway, the Army's chemical and biological testing station, is spread out along one million acres ranging from Skull Valley, Utah—about 80 miles southwest of Salt Lake City—to the Great Salt Lake Desert—halfway to Nevada in the west. It is perhaps the key installation among the five bases that make up the military's billion dollar chemical and biological warfare (CBW) arsenal.

The first two weeks of March 1968 were hectic ones for the soldiers and scientists at the proving grounds. The base was in the midst of a series of airborne tests involving nerve gas; nearby sheep ranchers heard the echo of sonic booms daily as the jet airplanes sprayed their deadly cargo onto test areas. Things went as usual until the cold and windy late afternoon of March 13. The Army scheduled the day's test flight for six p.m. The test site was marked off in grids like an outsized football field; thousands of air samplers had been installed throughout the proving grounds and beyond to electronically monitor and track the spread of gas. Later, Dugway researchers dressed in protective suits, high rubber boots and rubber gloves would survey the test site to inspect vegetation and the remains of animal life.

After two trial runs, a jet aircraft carrying a pair of high-pressure spray tanks filled with nerve gas swung over the base at high speed before barreling back toward the test site at an altitude of 150 feet. The time was 5:49 p.m. The gas was to be discharged under a pressure of 6.5 pounds per square inch; it had been dyed red to make visibility easier at dusk. At least three, possibly four, high-speed cameras equipped with color film carefully recorded the plane's approach and its discharge of the poison gas. The winds were blowing from the southwest to the northeast—toward Salt Lake City—at ground speeds of 5 to 25 miles per hour with gusts up to 35 miles per hour. Similar conditions prevailed up to 2300 feet.

The intention was not to test the gas itself, nor the high-pressure dispensers. The Army staged the test to determine how the gas distributes itself downwind in winds 5 to 25 miles per hour blowing to the northeast. That was the only information desired. The color films, which are highly classified, tell the story: the jet roared in at or above the speed of sound, opened its tanks and began spraying the test area. After a few seconds, the tanks were to close and the plane pull up. But something went wrong, and the tanks stayed open. The plane pulled up with the lethal nerve agent still spraying out. The Army has admitted to various state and federal officials, who were cleared for security, that gas escaped at least 1500 feet into the windy upper reaches above Dugway. Many observers believe the gas was carried far higher. (One knowledgeable source said a computation gave the cloud of lethal gas a range of 394 miles.) The men at Dugway watched helplessly as the gas drifted toward U.S. Highway 40, a heavily traveled route which serves as a main link between the Midwest and Northern California. But at seven p.m., an hour after the gas escaped, they got a break. The winds shifted slightly from the southwest to the west; the gas was blown away from Highway 40 toward Skull Valley. About that time, a heavy rain began to fall, washing

the toxic material from the air. Hours later, it began to snow.

Sometime early the next morning, Sheriff Fay Gillette of nearby Tooele County was told there was trouble in Skull Valley, a sheep-grazing area across a small mountain range from the military test center. Gillette quickly drove out to investigate. "I've never seen such a sight in my life," the sheriff recalled later. "It was like a movie version of 'death and destruction'—you know, like after The Bomb goes off. Sheep laying all over. All of them down—patches of white as far as you could see. All the Basque shepherders could say was 'muerto, muerto.'" Sheep were killed as far as 47 miles west of the test site. U.S. 40 is 33 miles to the north.

What Gillette and the terrified shepherders had seen on March 14 in Skull Valley was the beginning of what was ultimately to be the death of 6400 sheep. "I had an idea right off whose fault it was," Gillette said. But, like other officials of the state, he kept his thoughts to himself.

THE MILITARY MEN AT DUGWAY watched in silence for a week as teams of state and federal veterinarians and pathologists investigated the strange deaths. Many of the scientists believed at first that the sheep had died from eating poisonous weeds; others talked of pesticides. As the incident attracted nationwide interest Skull Valley was quickly filled with newspapermen and television crews. Reporters wrote of sheep with drooping heads, twisted necks and spines. A UPI dispatch on March 24 told of dying sheep that "could be seen making kicking movements with their feet in vain attempts to rise, great heaving movements in their chests as if they were short of breath, and their eyes appeared to be staring without really seeing." The report noted that the symptoms were very similar to those produced by nerve gas poisoning.

The Army doesn't talk openly about nerve gas anymore, but in years past the public was exposed regularly to horror-ridden—and Pentagon-inspired—articles telling, as one popular magazine did 15 years ago, of the "New Weapon of Chilling Terror." In 1954, Lieutenant Colonel S. J. Efnor, then commander of the Rocky Mountain Arsenal, a chemical production base near Denver, told a local newspaper that, "The gas from a single bomb the size of a quart fruit jar could kill every living thing within a cubic mile, depending on the wind and weather conditions. . . . A tiny drop of the gas in its liquid form on the back of a man's hand will paralyze his nerves instantly and deaden his brain in a few seconds. Death will follow in 30 seconds."

Nerve gas acts by lowering the level of cholinesterase, a key chemical in red blood cells that controls muscular coordination. A science writer once explicitly described what follows: "The voluntary muscles go into a state of vibration and then become paralyzed. With the involuntary muscles, which power the blood vessels and other internal organs, the delicate balance of actuating the deactuating nervous stimulations is upset. The pupils, bladder and alimentary canal constrict, the penis erects, the tear and saliva glands secrete and the heart slows. The cause of death is generally asphyxia following paralysis of the respiratory muscles." In short, victims of nerve gas poisoning strangle in their own vital organs.

The March 13 test involved a nerve agent known as VX, which was developed by researchers in the late 1950's at the Edgewood Arsenal, the Army's main chemical warfare

research center near Baltimore, Maryland. VX is unlike other nerve agents in that it is a persistent chemical with a heavy consistency and it evaporates slowly. Once used, the gas turns a target area into a virtual no-man's-land.

According to Dugway officials, slightly more than seven milligrams of VX, or about 7/1000's of a gram, would have a 100 per cent certainty of killing a 100-pound sheep if applied to its face and hoofs. "It would have killed people just as quickly as anything else," said one civilian who took part in the subsequent investigation of the sheep slaughter, "but everybody was under cover. The combination of rain and dark kept everybody inside that night. It was cold and people driving in cars through the valley had their windows rolled up." The source added that the amount of nerve gas needed to kill a sheep is roughly equivalent to the average lethal dosage for a man.

The military, quick to deny that it had been testing anything even remotely toxic on the base, assured newsmen that tests with nerve agents or similar weapons had not been conducted since the preceding July. "When we first found out about it, we checked and found we hadn't been running any tests that would cause this," Dugway public information officer Tom Donnelly announced on March 20.

But the next day the Pentagon sent a fact sheet to the office of Utah Senator Frank E. Moss, telling a different tale: tests involving 320 gallons of a "persistent agent were conducted from two spray tanks from a high-speed type aircraft approximately 27 miles from the nearest sheep herd." A Pentagon official quickly called Moss' office to explain that the fact sheet was for "Official Use Only," but it was too late; a press aide had already telephoned newsmen with the information. Just why the information was made available isn't clear; perhaps the Pentagon had miscalculated its hold over Moss, a senator who usually remembers the extent to which Utah's economy is directly linked to defense spending. The military is the state's largest employer; last year the Pentagon paid more than \$260 million in salaries and nearly \$180 million in contracts to defense-oriented industries there. One of every 11 non-agricultural civilian jobs in Utah is at a defense installation.

Faced with Moss' indiscretion, the Army acknowledged nerve gas was "highly suspect" but raised a number of questions. Brigadier General William W. Stone of the Army Materiel Command in Washington, who was flown out to Utah to take charge of the investigation, told newsmen the sheep symptoms did not match those normally associated with nerve gas poisoning and that study crews had found "no traces whatsoever" of the nerve gas in the area except on the actual test site itself. "We do not have any evidence to tell us the actual chemical compound or to help us pinpoint the source and how it got to the sheep and not to humans or to other animals," he concluded. Dr. Mortimer A. Rothenberg, scientific director at Dugway, also publicly aired his doubts, noting that only sheep seemed to have been affected by the gas. Said the scientist, "All the other animals in the area remain healthy," as did the 50 or so residents of Skull Valley. "If it did occur it was phenomenal." It was left to an anonymous Army spokesman, however, to issue the flat denial. On March 24, a representative emphatically declared that the sheep deaths had nothing to do with the tests at Dugway.

It was not until mid-April, after much of the publicity over

the sheep deaths had died down, that the Army finally reported that laboratory experiments indicated nerve gas had killed the sheep, although a statement issued in Washington emphasized that there was no conclusive evidence that gas had escaped the confines of Dugway. The statement was based on a study by the National Communicable Disease Center in Atlanta, Georgia, a branch of the Public Health Service, which reported: "By means of gas chromatography, infrared spectroscopy and mass spectrometry, isolated compound [from snow and dead sheep] has been shown identical to test agent supplied . . . by Dugway." The Army's reaction was to propose the establishment of an "unbiased group" to review safety procedures at the base.

In May, the Army announced that tests were continuing and evidence "is still inconclusive." By this time, interest in the Dugway incident had waned: the out-of-town press had long ago gone home; the Army was paying claims for the sheep, and everyone's sense of fair play seemed satisfied.

After receiving a classified briefing by Dugway officials in late May, Senator Moss told the Salt Lake Tribune: "They assured me that my suggestion of a thorough review of all their safety procedures, which have been successful for 26 years except for the incident of the sheep in March, is under consideration and will no doubt be approved and carried out."

THE DUGWAY INCIDENT WAS THE U.S. Army's first major public mistake with a chemical weapon. All the elements for a nationwide scandal were present: target practice with a lethal nerve agent, an incredibly obvious series of military lies, a heavy concentration of newspaper and radio-television reporters, and a national presidential campaign. Yet the sheep deaths led neither to congressional outcries about the military's CBW program nor to a public debate about such weapons; nor did it even provoke any serious citizen reaction in Utah. Concern, from the highest level of state officialdom on down, was that too much investigating or talking about the incident might make the Army move its CBW base from Dugway. The nerve gas incident is perhaps more terrifying but really no different from other mistakes, or accidents, or decisions at military bases all over the nation. Lying becomes the order of the day and the attitude is "don't rock the boat." Pentagon funds buy not only goods and services, but also the cooperation and zeal of countless men on Capitol Hill, in federal agencies in Washington and in state capitals from Maine to Hawaii.

Dugway's reluctance to accept responsibility promptly for the sheep deaths, a reluctance that did nothing but further the controversy, was standard operating procedure for the military's chemical and biological warfare program. Because of the public's abhorrence of the notion of such weapons, public relations considerations are often allowed to take precedence over common sense. "While the sheep were dying," said one civilian involved in the investigation, "the Army sat over there just hoping these boys [the civilian scientists] would continue to go the poisonous plant route."

One man who refused to play along was Dr. D. Avaron Osguthorpe, a Salt Lake City veterinarian acknowledged as a foremost expert in sheep ailments. Osguthorpe was appointed by Utah Governor Calvin Rampton to represent the state in the investigation. The wealthy forty-seven-year-old sheep rancher was one of the first to examine the sheep, and he eventually

Opposition to spending for chemical and biological warfare research has finally begun to attract some attention in Congress. Representative Richard D. McCarthy (Democrat, New York) recently convened a meeting of 22 congressmen and senators to hear a briefing on the nation's CBW program by General J. A. Hebbeler.

The legislators were told, albeit with some reluctance, that the United States is spending \$350 million in 1969 on CBW. The statistic, published on the front page of the New York Times, shocked the nation and evoked immediate protest.

It was a lie. The military will spend more

than \$600 million this year on CBW, according to classified budget figures. The Defense Marketing Service (DMS), a private newsletter published for the aerospace industry, staffed largely by former officials and officers of the Defense Intelligence Agency, states that the military's main chemical base, the Edgewood Arsenal in Maryland, alone has a fiscal 1969 budget of \$421.5 million, of which \$57.3 million is earmarked for research, \$266.4 million for procurement, \$9.6 million for operating costs, and \$1.9 million for stock funds. According to DMS, another \$29.8 million will be spent at Fort Detrick, Maryland, the main biological test center,

and more than \$75 million in operating and production costs will be divided among the Army's other four chemical and biological warfare bases, including Dugway.

The Air Force has publicly announced that it will spend \$71 million on just the herbicides and defoliants used in South Vietnam in 1969. No statistics are available on other CBW operating costs for the Air Force or for the Navy, although both are running vigorous testing programs.

A Senate source with access to classified CBW spending totals told me: "\$650 million a year on CBW is a conservative figure."

—SEYMOUR HERSH

became the Army's greatest critic in the incident. The veterinarian had flown out to Skull Valley a week after the test. "I knew right away it was an organophosphorous [nerve gas] poisoning," Osguthorpe told me. "I injected the standard atropine dosage into some of the sheep with no results—got up to 15 times the recommended dosage before some of them responded. I autopsied several sheep. Not a mark on them at all. I was the only one who said this is organophosphorous poisoning. In my mind, there was just no doubt. The Army moved me in then—brought me right inside."

Although the veterinarian was given a quick security clearance, he soon became the one man the Army could not control. During the investigation, Osguthorpe said, the Army continued to deny responsibility. Under the wrap of secrecy, the military allowed Osguthorpe to see the color films of the test and made it clear they were at fault. But they demanded that the veterinarian go along with them publicly.

Osguthorpe is a devout Mormon, a rancher's son who was raised in Blackfoot, Idaho, and taught to speak his mind. He didn't like the lying. "That Saturday we could have shut the thing off right there," he said. "I'd have been glad to go back home. Instead they chose to deny it all the way."

He began playing devil's advocate. "The first time they showed us the color film," he said, "they showed only the actual spraying in the target areas, but nothing before and after. I asked for another showing and said I wanted to see all the film. I saw the gates fail to close. It was a mechanical failure. Since then they've let a \$400,000 contract to develop a fail-safe gate."

Like most state officials I talked to in connection with the incident, Osguthorpe firmly believes that the nation must pursue its research and testing of chemicals and biologicals and that such work must be conducted at Dugway. "We've got a defense business bringing in \$35 million a year into the state; sheep bring in about 1/35th that amount. Which is more important for Utah?" he asked.

Perhaps that explains why even Osguthorpe, despite his battle with the Army, at no time considered informing the public of the real dangers inherent in the chemical and biological research at Dugway. But he knew. As chief veterinarian for the four ranches in Skull Valley, he'd seen some strange things happen. "In the last three to five years I've bumped into some new livestock diseases that I couldn't treat with antibiotics," he told me. Among the biological agents being

tested at Dugway, along with such diseases as tularemia and anthrax, are very lethal bacterial endotoxins, the products of dead infectious bacteria. These are not living organisms, however, and livestock—or people—accidentally infected with the toxin will not respond to antibiotics.

Sheriff Fay Gillette also knows about some of the dangers at Dugway: "What bugs me is that they [officials at Dugway] think we're dumb. People know they're working with this stuff that's like dynamite. They're doing a hell of a lot more than we know about." On at least 12 occasions during a four-year span, Gillette's men have been called by security men at Dugway and asked to monitor Highway 40, a precaution necessitated by wind shifts. "We used to have to go out and check, move everybody that was stopped or stalled. Dugway would pay for a wrecker if it was needed," the sheriff said. He did not report the action to his superiors.

"We in the county live here," the sheriff said. "We know that they've killed birds and rabbits. We're entitled to the consideration of knowing when they're going to test. Ah, Christ," he added disgustedly, "they figure you're dummies."

And in early April, Dr. Kelly H. Gubler, chief of staff at Tooele Valley Hospital some 35 miles from Dugway, told the Medical World News, ". . . I've treated Dugway workers in the past for an overdose of anticholinesterase [nerve gas] agents, even though the Army denied they were contaminated at the proving ground." Gubler added that "the important question is not what killed the sheep, but what are the real human hazards involved in chemical and bacteriological testing. I don't consider even Tooele immune from Dugway chemicals. We should bear in mind that with a slight amount of misdirected contamination, there could be a massive human disaster."

His remarks were picked up by the wire services and published in newspapers around the world. Gubler promptly denied making the statement, and Tooele, a prosperous town of 16,000 which is financially dependent on Dugway and other nearby military bases, accepted his denial. Two weeks later the Tooele County Chamber of Commerce voted to express publicly the city residents' confidence in the installation. The Chamber's reaction was typical; when I visited the town in late July, concern was directed not at what the base was doing, but at the possibility that renewed criticism might force the Army to move the base. "Everyone here has two cars, a camper, and a pickup truck," said Sheriff Gillette.

"They don't want to lose that." "Some people here believe that pacifists would have a lot to gain—especially with articles like yours," Jan Swanson, the twenty-five-year-old associate editor of the weekly Tooele Transcript, told me. She explained that one theory being discussed in the city is that a pacifist or group of pacifists working at Dugway could have found out what gas was to be tested and then killed the sheep with it.

IF ANYTHING, THE MARCH INCIDENT at Dugway was the exception. A mechanical malfunction is much less likely to occur than a freakish wind shift or a poorly supervised test. One former Dugway researcher wrote me that when he worked at the base in the late 1950's, "There were certainly a number of cooked-up results submitted by our group. The tests were supposed to be done when weather conditions were proper, usually meaning that the wind was not to be too strong. Unfortunately, the wind and the ambition of test officers and section heads were not always the same.

"When these so-called tests came into our lab to be computed it was obvious the wind was too strong. . . . When this happened there was usually hell to pay. If we were honest about the results we would then have to interpret them over again. This meant processing these thousands of catch apparatus again. And if the results were the same we would usually be chewed out for our poor technique. Very often we 'dry-labbed' it [gave them the results they wanted] or else the section heads would.

"It took no idiot to figure out that the more tests there were the more people would be needed and this was exactly the way most of our superiors could improve their position. It was Parkinson's Law gone wild. For a while we worked two shifts to do more tests. V-agent [VX] was just beginning to be tested on a big scale so the people at Dugway were trying to test as much of this as possible in addition to matching the G-agent [GB] tests from previous years, even though there wasn't much more to be learned about G."

On the investigating team appointed by Governor Rampton shortly after the incident, key roles were played by two civilians, besides Osguthorpe—Dr. G. D. Carlyle Thompson, director of the State Board of Health, and Dr. Jordan Rasmussen, chief veterinarian for the State Agriculture Department. The committee, which met regularly over the next few months, filed no public reports on its work nor did it make any private formal recommendations to the governor. Theoretically, members of the investigating committee were to represent the citizens of Utah in the inquiry. In fact, they represented Dugway.

During an interview, Dr. Thompson told me repeatedly about his long and happy association with the CBW base. "As soon as I heard about it [the sheep slaughter], I called Dugway to find out. We've always had good cooperation. By now, I've got security clearance almost every place you turn around," he added. Thompson said that his is a limited role: "It's not up to me to determine whether these tests should be held. It's up to me to determine if the health of our citizens is protected."

Thompson, who has spent 30 years in the health administration field, acknowledged that he had seen the classified films of the malfunction. "They've got the most fantastic camera equipment there you've ever seen," he noted. The doctor emphasized that once he learned what really happened at Dugway, his role did not change. "We did checks. I soon had

a clue that there was no evidence of human danger." Yet Osguthorpe told me that he ran tests on some of the Skull Valley residents a week after the sheep began dying and found that their cholinesterase levels had dropped sharply, although no residents suffered any nerve gas poisoning symptoms.

Was there danger to Salt Lake City residents? "It would be possible for me to say that this could have hit Salt Lake City," Thompson replied, "but why should I say something that will scare the pants off a half-million people without doing any good? Every experience teaches us something so we try to improve. The sheep incident even caused a complete review of safety procedures at Dugway. I've heard it said that \$300,000-\$400,000 [the estimated reimbursement price of the sheep] was a relatively cheap price to pay for what we've learned.

"You have a terrific responsibility," the state health director told me, "not to write anything that isn't going to do any good, something that will just upset people by telling them things they shouldn't know."

The doctor practices what he preaches. When Dugway is anxious to survey the few score residents of Skull Valley after a series of biological tests, the state health director is called upon. "We in the Health Department are always doing surveys and checkups," said Thompson. "Whenever we do one near Dugway, we take advantage of it to check for the [biological] agents being tested at Dugway. The people in the Valley don't really know what we're doing. We draw blood for one thing, then check it for another."

The other key member of the investigating team, Dr. Jordan Rasmussen, also emphasized his close association with Dugway. "I've been as close to them as anybody else," he told me. "We cooperate very extensively. I feel they were a victim of circumstances. The incident's been exaggerated in many ways."

THE PUBLIC HEALTH SERVICE ALSO FOUND itself in the role of protecting the military in the aftermath of the sheep slaughter. That agency had often worked with Dugway, monitoring the area outside the base for evidence of biologicals or other clues that the testing had spilled over. Suddenly asked to help investigate the death of the sheep, the agency found itself analyzing data to demonstrate what it already knew—nerve gas was responsible. Nevertheless, on March 22, B. J. Osheroff, deputy director of the Public Health Service Office of Program Planning, said in Washington that unconfirmed findings of red urine and red tears in the sheep would point to an outlawed pesticide. The use of red dye to aid in monitoring tests is standard at Dugway; presumably such use would be known to the officials, in light of the agency's earlier role in monitoring tests.

The federal zeal to help Dugway cover its tracks in the sheep incident was matched in full by that of state officials. Joseph Francis, Utah commissioner of Agriculture, told me he thought Dugway had done "an exceptionally good job," generally, in its testing programs. "These things are hard to administer without having some mistakes," Francis added. David R. Waldron, another Agriculture Commission member, refused to talk because of the heavy security he said surrounded the incident, although he did praise the military's "cooperation."

By December the situation had quieted to the point where Brigadier General John G. Appel, by then the new commander of the Desert Test Center, was able to make an announce-

ment which an Associated Press dispatch reported this way: "Saying military nerve gas was not the cause of a massive sheep kill last spring, an Army commander announced a plan Friday to keep it from happening again." Appel, after duly noting that "insecticides have permeated the world," announced "Project Safe," a program to produce tight control over the testing of chemical and biological agents at Dugway. What Appel did not say is that the Army had called for just such a program ten months before the sheep incident. The "Chemical and Biological Weapons Surety Program," initiated by order on May 3, 1967, according to Pentagon records, called for a general tightening of the safety conditions at CBW test facilities.

A few weeks after Appel's reassuring speech, the Pentagon announced the results of its safety review. The review added nothing to the question of what was responsible for the sheep kill, and in effect did nothing more than put on the record some of the existing practices at Dugway. It suggested that permanent monitoring sites be established in Skull and Rush Valleys and that the state give a complete checkup to area residents at least every six months. It also called for a major public relations program to reassure the residents about the function of the test center and suggested that "certain Utah state officials . . . require general knowledge of the activities of the Test Center." This was necessary, the study explained, because "experience has shown in other situations that assurances given by the testing group [i.e. Dugway] reinforced by assurances of knowledgeable state officials and community leaders are much more readily acceptable by the public at large."

In its recommendations, the report merely called for tighter weather restrictions by Dugway when testing large quantities of nerve agents, although smaller quantities, it said, could be tested under existing safety practices. The restrictions will not hamper testing at the base. For example, the report outlawed air drops from altitudes of more than 300 feet; most tests are conducted at altitudes far below that.

THE DUGWAY INCIDENT HAD LITTLE OUTWARD impact on the 500,000 residents of greater Salt Lake City. Only a few letters about the sheep deaths were published in the two Salt Lake City newspapers, reflecting perhaps the relative lack of interest displayed by the newspapers themselves. The Dugway story consistently showed up in the second section of the city's major newspaper, the Salt Lake Tribune, even at a time when it was front-page news elsewhere.

One resident who did something about the apathy was Earl Jones, an artist and professor at the University of Utah who helped design a billboard depicting a dead sheep. The billboard, displayed in the center of Salt Lake City, had this message: "An unfortunate error . . . they were saving it for PEOPLE."

"It stayed up four weeks with no public attention or press attention," related Jones. "I wanted to see if other people in the area were as up-tight about it as I was—but we got no response."

The military secrecy, the heavy state dependence on military expenditures, and the seeming apathy of the Salt Lake City residents provide the kind of atmosphere in which operations such as chemical and biological warfare can prosper with no questions asked. But there is some evidence that the various

agencies work hard to ensure that the atmosphere is not marred.

In late June, Osguthorpe told a scientific forum in Logan that traces of nerve gas still lingered in Skull Valley. The Associated Press quoted him as saying that the nerve agents "are stable and lingering in the vegetation and soil. Reports that the Skull Valley area is clear of dangerous compounds are false. Animals taken into the area suffer toxic effects." Although the veterinarian did not say so, four sheep were placed in the valley in late May by Dugway researchers. They were dead within five days.

Osguthorpe's revelations made less news in Salt Lake City than did an announcement from Washington that the Army Claims Service had approved a \$376,685 claim for the loss of sheep on the Hatch Ranch, largest ranch in Skull Valley and the one which suffered more than 90 per cent of the loss. "This initial claim is only to cover the loss for dead and disabled sheep," Republican Senator Bennett told newsmen. "There will be a second claim filed after the extent of secondary damages has been determined."

The secondary claims could total as much as \$1 million for damage to reputation and potential future business. The Army will probably pay willingly; its ambition is to force the sheepherders off the federally owned land in Skull Valley and expand the outer perimeters of Dugway. Discussions between the Pentagon, the ranchers, and federal officials representing the Bureau of Land Management, which owns the ranch lands, were initiated immediately after the incident. Dugway, which now controls more than 850,000 acres of land in the area, could add as much as 400,000 acres more, moving the base's eastern border 25 miles or so closer to Salt Lake City. In light of this, the Army would define prompt payment of claims as good public relations.

"The Army's always made it clear that they were going to pay—it was just a question of the amount, not the liability," explained Alonzo W. Watson Jr., attorney for the Hatch Ranch. "We've had excellent cooperation from the Army."

I asked Watson why, then, didn't he seek the truth about the Dugway incident? "What's the point?" the young lawyer replied. "It's up to Congress and the Army to tell what they want to do. Our thought is that as long as you pay us, that's all that matters. Maybe it's a little selfish," he added with a shrug, "but . . .?"

The Dugway incident is a microcosm of what's wrong with America, of what's really meant by the phrase "military-industrial complex." In Utah, a tiny group of state officials exchanged participation in classified briefings for public responsibility. Few, if any, were operating solely for personal financial gain; the good of the state was justification enough. "Good," to these men, is measured simply in terms of military contract dollars, those contracts that congressmen fight among each other to announce. The others involved in the Dugway issue limited their responsibilities to the narrow question of clients' rights, or the proper role of their federal agency, or whether the incident was worthy of front-page play and an editorial. None of the participants saw fit to warn the citizens of Salt Lake City publicly of the danger inherent in a major CBW test facility 80 miles upwind. The Dugway incident prompted, in effect, a breakdown of the basic institutions of democracy. What happened at Dugway is happening, in a sense, in South Viet-Nam, at antiballistic missile defense sites, and perhaps even in the White House.

[AFTERWORD]

A SECOND DISASTER AT DUGWAY is inevitable; in fact, it may already have happened. This time the agent in question is not nerve gas, but something even more alarming: Venezuelan Equine Encephalitis (VEE), a virus disease that can cause crippling damage to the human central nervous system.

VEE has long been known to be one of the military's top potential biological agents. Not necessarily fatal, it is highly infectious and relatively obscure. It is usually found in swampy areas of South and Central America, with some cases reported in Florida and Louisiana. Yet in March 1967, evidence of VEE in the State of Utah was reported by three University of Utah researchers, who published their findings in *Bacteriological Reviews*, a prominent science journal published by the American Society for Microbiology. While the specific VEE-causing organism was not isolated, tests indicated that local animals had built up specific immunity (or antibodies) to the disease.

At no point did the report discuss the critical question of whether Dugway tests had been responsible for the suspected outbreak of the disease in Utah, more than 1500 miles away from any other known case—an omission made less surprising by the fact that all of the authors were employed by the University's Ecology and Epizootology Research Center, which is financed by a \$500,000-a-year contract from Dugway.

Troubled by the report—which attracted no public attention—Dr. Joseph Jackson, a professor at the Public Health School of the University of Michigan, contacted me and told me that in 1963, he had been approached and offered a job by Dr. Victor J. Cabelli, then head of virus research at Dugway. Cabelli, said Jackson, “explained that they were carrying out an extensive research project to develop methods for starting epidemics with VEE virus.” Jackson added that although, according to Cabelli's account, “they were only using animals at that time, he did say ‘epidemic’ and not ‘epizootic’ [the spreading of disease in *animals*].”

Jackson wrote to Dr. Robert W. Sidwell, one of the authors of the report: “I cannot help but think that the introduction of VEE into that area must have been the result of human intervention. My recollection of Utah is that of a comparatively dry area, quite different from the ‘lowlands of tropical rain forests’ to which you indicated the virus has previously been limited. . . . I am sure that you must have been aware of the work being done at Dugway, and I wonder why you did not regard this as a possible means by which VEE became enzootic in the Utah area.”

Sidwell replied: “I am aware of the work done at Dugway; in fact, the Epizootology Research Laboratory on the University of Utah campus in which I worked was established to determine if the biological work done at Dugway had any effect on the wild or domestic animal population in the area. We were never informed, however, of the extent or time of testing carried out at Dugway, except that I was led to believe that the survey work we were carrying out for VEE was done as a *preliminary* to testing.”

The University of Utah's connection with Dugway is a key one, especially in that it is responsible for monitoring the outside perimeters of the test areas. University researchers argue that they are merely doing pure research. Like the state and federal officials connected with the sheep kill, the men from

academia lean over backwards to protect the military.

In fact, the tie between Dugway and the university is even closer than most students and faculty realize. You can dial some faculty telephone numbers listed in the campus directory and the phone is picked up in a Dugway laboratory 80 miles away. There is also clear evidence that university scientists have aided the Army in field test programs for biologicals. On October 18, 1966, for example, Dr. Peter Olsen, head of the university's ecology section located at Dugway, put in overtime requests for four of his staff necessitated by “on-site investigations of disease outbreaks in distant areas, and by a special study of induced rodent movement.”

The close ties between university scientists and Dugway make it impossible to determine how much—if any—VEE exists in the desert. Dr. S. L. Spruance, chief of communicable diseases for the Utah State Board of Health, said he didn't “know anything about it. I'd like to know more about VEE—if it is there. We're dependent upon the people who deal with the animals to keep us informed,” he added.

Spruance said he was told nothing of the 1967 report, nor did he know that sometime in late 1964 or early 1965, Dugway scientists thought they found hints of VEE antibodies in cows. Samples of cows' blood with the antibodies had been sent to the Communicable Disease Center in Atlanta, Georgia, according to Dr. Gerry Nolan of the University of Utah. “The cattle were bled and checked for antibodies,” Nolan said, adding that scientists there determined that while it was impossible to categorically state VEE virus was present, the burden was on the people at Dugway to prove that it was not present. “But they [the blood samples] were lost in the shuffle,” Nolan said. The man who handled the samples for the Public Health Service, Dr. Talford Work, initially told me that only a few samples were lost; later he denied any knowledge of their existence.

Another author of the 1967 VEE paper, Dr. Louis P. Gebhardt, chairman of the microbiology department at the university and a member of the academic committee overseeing the university's involvement at Dugway (who noted, “The work there is very poor, very poorly supervised. . . . We used to send our PhD students out there . . . but we had to stop because of poor supervision”), told me: “It scared us when we found VEE antibodies. We didn't know what to do.” But, he reiterated, “research has not gone on far enough to prove it was an absolute form of VEE virus.” I told Gebhardt about Dr. Jackson's contact with Cabelli and of his concern that an outbreak among the animal or human population of Utah might be imminent. Gebhardt, who has been associated with Dugway since the university began its involvement there in 1951, replied: “Cabelli may have played with it [VEE]. He was not a virologist and didn't know what he was doing half the time. He was a very poor scientist—a blowhard. He tried to get a job here but he was a lousy teacher and we wouldn't hire him.”

Cabelli, not a good enough scientist to teach virology at the University of Utah, was apparently competent enough to conduct biological warfare tests 80 miles away.

Seymour Hersh is the author of Chemical and Biological Warfare: America's Hidden Arsenal (Bobbs-Merrill, 1968). He is now working on a book on the Pentagon (which he formerly covered for the AP) to be published by Random House.
