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WHY ALL THE FUSS ABOUT OUR ENVIRONMENT?

by
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DISSENT A BASIC FREEDOM

Russell Baker has pointed out that this is the age of dissent. There is dissent if we outlaw filthy speech. There is dissent if we outlaw marihuana, communism, or extramarital sex. There is dissent against restrictions on ordering machine guns or bazookas by mail. And an overwhelming majority of Americans expressed dissent against George McGovern and voted for Nixon and Agnew. Nixon now has been pardoned, and there even is dissent about that. It seems time someone besides managers of copper smelters, strip mines, and refineries expressed dissent about all the fuss being made about our environment.

After all, this is a nation of free men who resent using litter barrels if they find them repulsive (Fig. 1). Some don't trust such geophysical equipment; others object to creeping socialism because the city might get funds from selling advertising space on the receptacles (New York City's take from such advertising is about three quarters of a million dollars yearly). The scenic overlook where 1-10 crosses the west rim of Mesilla Valley is a near classic example, with a parking area having numerous litter barrels, but the litter is not in them; it is on the ground. Ah Freedom! Freedom not only to dissent from arbitrary bureaucratic regulations, but freedom to deface disagreeably too.

ENERGY, NUMBER 1 PROBLEM

Many feel that lack of energy is our number 1 problem. We need weeks that begin without Mondays and days that begin without mornings. Voters generally show a lack of energy even to go to the polls to pull some levers. In the last election, for example, less than half the voters used their freedom to vote; the other half used their freedom not to vote. My own voting generally reveals me a dissenter; I possess a healthy record of voting for lost causes.

Figure 1. America the Beautiful. View east across Mesilla Valley from the scenic overlook where I-10 crosses the west rim of the Valley. Is our public school system capable of teaching the art of using litter barrels?

An energy problem in New Mexico concerns the environmental impact of strip mining of coal. Apparently few of the environmentalists who oppose strip mining, ever had to mine coal underground. I have previously suggested a mining procedure that could leave the range improved after strip mining (GeoTimes, July 1974). The suggestion involves storing runoff in preliminary trenches and utilizing that excess water to help revegetate ground that has been backfilled. There has been too much emphasis on simply restoring the original surface contour and not enough emphasis on the need for extra water in arid and semiarid land to help revegetate new plantings.

In brief, I argue that strip mining on deserts can be environmentally advantageous, and that the environmentalists are the ones blocking range improvement by arguing for maintenance of a deteriorated range. The range can and should be improved and that can be accomplished as a by-product of stripping the coal. Or, perhaps the coal should be regarded as the by-product.

Regarding oil and gas, we might consider legislation dividing the big oil companies 4 ways, each new company to specialize in either: 1) exploration and production; 2) transportation; 3) refining; or 4) marketing. The independents would have greater independence and thereby increase that competition and freedom of enterprise so loudly asked for (but questionably wanted) by the captains of industry. This would not solve our shortages, but should help. Those who regard this proposal as controversial may dissent.

URBANIZATION OF MESILLA VALLEY

According to environmentalists a major problem in Mesilla Valley is land use, for the valley's richly productive agricultural land is threatened by urbanization. Mesilla Valley could become another suburbia and victim of urban sprawl. In another 25 years, according to predictions, El Paso and Las Cruces will be joined as one metropolitan area. Where will these people have their homes? Where will they have their jobs? In environmental problems, as with bodily ills, there are two approaches—cure and prevention.

Again we have the problem of the dissenters. Most Americans (about 150,000,000 of our 200,000,000) seem to prefer urban life. Not only do three-quarters of our people live in cities; both the number and the *proportion* moving to urban areas are increasing every year. If Mesilla Valley is destined to become urban rather than remaining extraordinary, there are different choices for planning or not planning that change.

City planners could try to keep the valley floor producing chile, pecans, tomatoes, lettuce, onions, and cotton and encourage use of the hillsides bordering the valley for residential areas and industry. Numerous tax devices could accomplish this, but politically they would be difficult to sell. Too many dissenters. One measure that might discourage urbanization of

farm lands would be to use the sludge from the Las Cruces waste water treatment plant as fertilizer, being sure to spread it on the windward side of proposed realty developments.

Urbanization poses technological problems too. One concerns the accelerated runoff discharged from roofs, streets, and parking lots that might be developed on the bordering hillsides. Ground water levels might be seriously lowered too, unless the runoff was recharged into the urbanized bajadas. The fact that runoff from urban areas is not fit to drink is detail. Is it not true that urban runoff is better quality than runoff from agricultural lands that contribute herbicides, pesticides, and salts?

An alternative plan is to do nothing, or, as is said in government (and big industry), "refer the matter to a committee." Let the farm lands become city streets and leave the arroyos and flash floods to the realtors and Corps of Engineers (Figs. 2, 3). There is no reason why those inspiring dams cannot be extended to El Paso. Buildings in the urbanized areas that are high enough could see the mountains over the tops of the dams. This aesthetic aspect of the environmental problem can be appreciated by looking eastward from 1-25 where it bypasses Las Cruces, and watching the Organ Mountains play hide and seek back of the dams!

Even this laissez-faire approach to land use could be spoiled by planning. Since the best view from Mesilla Valley is eastward to the Organ Mountains, buildings should be high-rise, the back side of which is as inspirational as the dams. When (not if) Mesilla Valley becomes urbanized, the high rises will come. Spared planning, Mesilla Valley could become as lovely as Newark, Chicago, or Los Angeles.

The empty ground back of the dams might be used for motorcycle obstacle races (Fig. 4); outlets are needed for those cyclists who otherwise blast the city streets. The acreage behind the dams is otherwise useless, except to collect tumbleweed, and the dams would partly protect the city against the noise of the motorcycles. Those dams could have a use besides protecting the property owners who have built in arroyos where no outdoorsman would even camp. They might also be used as foundations for windmills to generate electricity. It no longer can be argued that these would mar the scenery—we've already succeeded in doing that!

In today's world, to appreciate problems, we need numbers, and numbers require assumptions. Let the buyer of statistics beware!

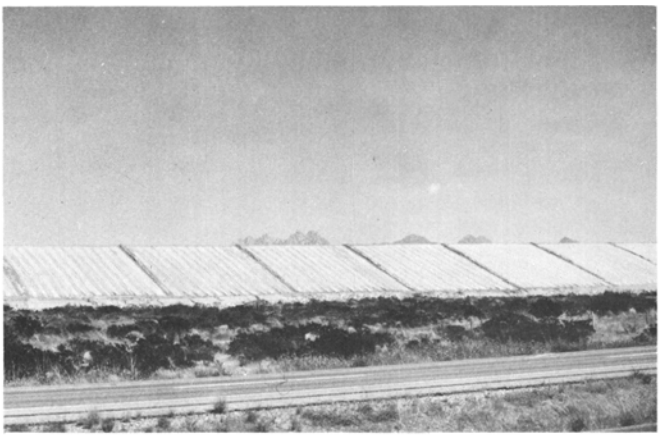

Figure 2. Landscaping by the Corps of Engineers. Contrary to popular belief, the dams were not intended to protect the Organ Mountains against smog. See Figure 3.

Figure 3. Las Cruces needs the flood control dams to protect apartments and other realty developments built in arroyos. The only alternatives would be legislation providing for anti-gravity water flow, or more adequate zoning.

In 1940 Las Cruces had 8,000 people. We might assume linear growth to about 75,000 by the time we are 25 years older, or we might assume geometric growth to about 200,000 by then. Some city planners assume growth to about 125,000 by A.D. 1990. In 1930, El Paso had 102,000 people; in 1950, 200,000; in 1960, 300,000; in 1970, 360,000. Again, we might assume linear increase to a half million in the next quarter century or we might assume geometric increase to 900,000. Whatever the assumptions, it seems reasonable to assume that the population of the El Paso-Las Cruces area will be more than a million by the end of the century, particularly if we include the intermediate stops. New construction of homes and industrial facilities during the next quarter century will equal everything now existing. No Paul Revere is needed to warn us "The people are coming!"

And while on the subject of urbanization, let us not overlook the potentialities of urban renewal. Imaginative urban

Figure 4. Motorcycles cause much noise in a city, and they can tear up desert land. Why not use the basins back of the dams for motorcycle trails and obstacle race courses? Both the noise and the damage, as well as the tumbleweed, would be contained. (Photo from Public Land Law Commission).

development can convert today's slums into historically fashionable restorations. Witness Georgetown or Capitol Hill in Washington, D.C.—our nation's capital, and Fells Point or Bolton Hill in Baltimore.

WATER, DOES IT HAVE BODY?

If the population doubled, the demands for water will increase although not necessarily double. Yet this is desert where, if one drives slowly, he may die of thirst. In that Biblical time when it rained for 40 days and 40 nights, (Genesis 7:12) Mesilla Valley got only a trace. It has been said that money is at the root of all evil, but in southwestern United States, water is at the root of most evil as evidenced by incessant squabbling over water rights, because every diversion involves depriving one needy party to provide for another.

Actually, if much of Mesilla Valley becomes urbanized, the total water needs might be only a little greater than now because more than half the water used for irrigation is consumed (lost from the system) whereas industrial, residential, and other municipal uses consume only a small percentage of the water. There would, however, be need for greatly enlarged and improved facilities for treating liquid wastes. In an industrial city, raw sewage may contain 75 mg/1 of suspended solids and 225 mg/1 of biodegradable organic matter. After treatment in a modern plant, the water returned to the system may contain 25 mg/1 of suspended solids and 15 mg/1 of biodegradable organic matter. With so little flow in the Rio Grande, the new city will have to do better than that. As the graffiti say, "Please flush the toilet; the water is needed in El Paso." Given adequate urbanization, the Rio Grande could challenge the Rhine, which is said to go through the human body 6 times before reaching the North Sea.

Southwestern United States is notorious for mining water and causing drawdown of the water tables. The principal culprit is agriculture, which uses the water for irrigation; this water, as already noted, is largely lost from the system. In the Mesilla Valley, ground water levels are falling about 1 to 2 feet per year. If we are not going to prohibit, or at least greatly restrict, the use of ground water for irrigation, then, considering only water, it would be in the interest of everyone (including Mexico) for Mesilla Valley to become urbanized.

The history of federal involvement in water management problems has gone through several stages, another example of creeping socialism. At first Uncle Sam was concerned with harbors and rivers for transportation—building canals and improving the channels of the Mississippi River system for navigation. Flood control was left as a local problem until the 1880's, when disastrous floods along the Mississippi made it clear that floods are an interstate problem, and this led to big business for the Corps of Engineers, extending now to the slopes of Mesilla Valley. Next came the era of water development for irrigation in the western states and creation of the Bureau of Reclamation, and then came the era of water development for power, notably the Tennessee Valley Authority. With so many dams, the reservoirs became playgrounds, tremendously popular recreational areas. New Mexico probably as more acreage of boat decks than of water surface. In the uture we had better anticipate a stage when *drastic* action will e needed to curb the mining of ground water; the cure will be ainful, both economically and politically, because so many eople have become dependent on that water. But if the states fail to act, the Great White Father in Washington will intervene, because much or most of that water is being drained from under lands that are publicly owned, and voters in northern and eastern states may become aroused.

Water problems along the Rio Grande can be affected too by other developments that are remote geographically. For example, Mexico has complained, with good reason, that the water she receives from the Colorado River is excessively saline (about 1,500 ppm), and the United States finally has agreed. Below Glen Canyon the salinity is 600 ppm; at Imperial Dam the salt content is almost 900 ppm, and by the time this water reaches Mexico it contains 1,500 ppm. More than half the increase is contributed by Man, especially by agricultural activities. In agreeing to reduce the salinity of the water delivered to Mexico to 1,000 ppm (still high for high value crops), the various desalting and diversion measures could reduce the water that has been planned for diversion to the Chama and Rio Grande, and divert funds needed for other water development projects in New Mexico.

New Mexico could be affected by the NAWAPA Project (North American Water and Power Alliance). This is a bold plan to use water from the upper Yukon and other unused rivers draining from the northern Canadian Rockies by bringing it southward via the Rocky Mountain Trench, across mountain divides to the Columbia-Snake River system and continue southward via the Great Basin, Colorado River, and other possible routes to the southwestern states and to northern Mexico. It is a grandiose scheme, entirely feasible technologically, bitterly opposed by environmentalists, and received cooly by the Canadians—at least prior to being offered a price. The cost is considered grandiose too, but only by those not familiar with our annual military budget. It is the only plan for developing additional water that does not rob Peter to pay Paul.

Such projects are not as far away from New Mexico as they may seem, but New Mexico's newspapers and political leaders say little about them. The issues are far reaching, complex, and controversial, and intelligent solutions will be found only if geologists and the general public, including those in New Mexico, are adequately informed and become involved.

Yet another problem of water supplies concerns the losses attributable to transpiration by stands of phreatophytes along the Rio Grande and irrigation ditches branching from it. The U.S. Geological Survey estimated that transpiration losses from saltcedar, cottonwood, willow, and other phreatophytes along the Rio Grande and Pecos Rivers in 1967 amounted to 685,000 acre-feet, more than sufficient for the megalopolis expected in Mesilla Valley. Attempts to eradicate the water-loving plants by chemical sprays has led to protests that the spraying has reduced the bee population. In addition, much water is lost from the lawns and trees around our homes. But do we really want to do without the greenery? Temperatures in a stand of trees may be 10° F lower than temperatures in the surrounding shrub country, the cooling, of course, attributable to the water lost by evaporation. Moreoever, a lawn about 150 x 150 feet produces enough oxygen to supply a family of four.

Finally, although Las Cruces and Mesilla Valley have protected themselves against floods, nothing has been done to prepare for the 100 or 1,000 year drought when the Rio Grande ceases to flow. How adequate are the ground water supplies for such contingency and how will they be prorated?

CLEAN AIR

Air pollution is caused by people. Not by you and me, of course, but all those other people, known as "They." Curiously, it is easier, legally, to cure air pollution than to prevent it. This is because the Clean Air Act of 1970 decrees two standards—a primary air quality standard to protect human health, and a second but stricter standard to protect vegetation, livestock, and property. The primary standard must be met by 1977; no date was set for compliance with the secondary standard.

But is the Environmental Protection Agency obligated to prevent deterioration of air quality where it already is cleaner than the set standards? Industry, joined by the Department of Commerce, Office of Management and Budget, Federal Power Commission, and Energy Administration say no, because it would slow or even stop development of power plants near newly opened strip mines. It could also hamper urbanization of Mesilla Valley. Even Albuquerque has exceeded the "warning" level of air pollutants three times in the last three years, and has been considering ordinances to allow the mayor to order public streets closed to traffic during periods of high air pollution.

Sulfur dioxide has been considered a major air pollutant. But the Surgeon General has not found *dry* sulfur dioxide harmful, unless taken in excess. It is dew on plants or body moisture in the lungs or on nylons that generates the damaging sulfuric acid; control dew and body moisture and the problem is solved. Powerful lobbies support unsafe cars; again quoting Russell Baker, "Why does bad air lack a defender?"

According to the New York Times, E.P.A. developed a three-fold classification of air standards: Class 1 would include those areas where states desire essentially no change in air quality; Class 2 would include areas where states would allow moderate levels of pollutants; Class 3 would include areas where states want major development and are willing to accept pollution as far as the secondary standards provided by federal law. In which class should Mesilla Valley be zoned? (See Fig. 5).

Figure 5. Purple mountain majesties above the fruited plain. View is east across Mesilla Valley to the Franklin Mountains, but of course they are in Texas. A very nice state park is located just about center of the smog.

TOXIC ELEMENTS AND RELATED HEALTH PROBLEMS

A recent court case in the middle west involving alleged toxic elements being dumped as effluent into Lake Superior could have repercussions in the Southwest. A mining company has been dumping pulverized waste rock containing microscopic particles of asbestos, or something like asbestos, into Lake Superior. Three states—Minnesota, Michigan, and Wisconsin—after much prodding by environmentalists, brought suit to force the company to cease the dumping. A lower court sustained the complaint; and an appeals court overruled the lower court but did order the company to take immediate steps to find other means of disposing of its waste. The issue hinged on doubts whether the particles really are harmful in drinking water.

Although the company has a respite, it seems certain that the issue will be resolved in favor of health rather than the company's business interest. It would seem only reasonable that wherever there is doubt about a health hazard, the issue should be resolved in favor of protecting health. For example, does zirconium contribute to cancer? Maybe yes, says the Food and Drug Administration; definitely not, say the companies that use it. Is there an informed and unbiased biochemist in the house?

Unfortunately, industry generally has failed to react constructively to such challenges; generally, instead of bringing company expertise to help establish the facts and to find reasonable cures, industry's first reaction almost invariably has been negative. Yet the philosophy of health first and business second is increasingly becoming the basis of judicial decisions, and increasing numbers of companies are going to have to change their products and/or their waste disposal practices, including effluents discharged into the air and those dumped into storm sewers, municipal sewage systems, or pumped into the ground. Few if any waste water treatment plants monitor effluents for minute quantities of toxic elements that may accumulate to dangerous levels. This aspect of pollution control lies ahead.

Fluorine in water is only one of many applications of geology to health problems. Lead, for example, is a cumulative poison. The consensus among authorities is that to avoid chronic lead poisoning, the blood should contain substantially less than 1 part per million. The average natural value in blood in an uncontaminated environment has been estimated as low as 0.0025 ppm. In the United States the average is about 0.25, probably because we have become so largely urban. In our rural population the amount is more like 0.05 ppm. The lead we feed into our systems is supplied by many sources—gasoline, insecticides, food-can solder, paints, glazes, and alloys. At least we should be measuring the quantities contributed by the various sources. Corrective measures can be taken when the facts are in.

PUBLIC LANDS

Another major kind of environmental problem in and around the Mesilla Valley involves our habit of free, unrestricted use of the public lands. One third of New Mexico is federally owned, and every geologist should read the report to the President and Congress by the Public Land Law Review Committee (One third of the Nation's Land, Washington, D.C., 1970). The principal recommendations of the Commission,

which represented every kind of land use interest, are briefly summarized as follows:

> The Commission recommended that:
>
> 1. The policy of large-scale disposal of public lands be revised and only those lands should be disposed that will achieve maximum benefit for the general public in non-federal ownership;
> 2. All lands not previously designated for a specific use should be reviewed;
> 3. Congress has largely delegated to the executive branch its authority over public lands, but should reassert national policy by prescribing controlling standards;
> 4. Congress should reserve to itself exclusive authority for land withdrawals for specific uses;
> 5. Public land management agencies should be required to promulgate comprehensive rules after full consideration of all viewpoints, and with provision for simplified appeals; existing procedures are cumbersome and provide no assurance against capricious executive decisions. Witness the National Park Service closing Capital Wash in Capitol Reef National Monument, and the present proposal to declare about 99 percent of Organ Pipe Cactus National Monument as Wilderness!
> 6. Consideration should be given to all possible uses of land and the maximum number of compatible uses permitted; where there is maximum benefit from a particular use, that use should be recognized as the dominant use;
> 7. Statutory guidelines are needed to assure that the public lands are managed so as not to endanger the environment;
> 8. The United States should receive full value for use of the land, except the monetary payment need not be full market value where there is no consumptive use of the land or its resources;
> 9. Firm tenure and security of investment must be guaranteed to cover situations where particular land use must be interrupted because of federal need;
> 10. The United States should pay, in lieu of taxes, for burdens imposed on state and local governments, and without regard to the revenues generated from those lands;
> 11. Provide for sale at full value of public lands required for certain mining activities or where suitable only for dry-land farming, grazing, residential, commercial or industrial use, provided such sale is in the public interest and important public values will not be lost;
> 12. Legislate a framework within which large tracts of land may be made available for expansion of existing communities or development of new ones. The potential urbanization of Mesilla Valley is a case in point;
> 13. Arrange for limited disposition of lands administered by the Forest Service, where such lands are needed to meet a non-Federal but public purpose;
> 14. Flexible mechanisms for making federally owned lands available to state and local governments; cf. No. 12;
> 15. Consolidate, both in the Legislative and Executive Branches, responsibilities for administration of publicly owned lands; at least reduce the existing differences in policies in different agencies and committees of the Congress.

Most of these are self-explanatory but a few comments are in order. A local problem in the Organ Mountains is the degree to which potential mineral resources should be considered in the plan of the Bureau of Land Management to withdraw lands there for park purposes.

Increasingly, western United States, including Mesilla Valley, will be faced with new cities, whether planned and developed commercially or publicly. There already is talk of new cities to be built in the San Juan Basin as part of the energy development boom there.

The Denver City Parks, utilizing lands in the Front Range, provide an example of the practicality of recommendation 13. And recommendations 12 and 14 could be important if there is to be planning for growth in the Mesilla Valley.

NON-PRODUCTIVE USES OF PUBLIC LANDS

Many geologists and others engaged in the mineral industries oppose creation of wilderness areas because such lands become closed to prospecting and mineral development. Another target, though, should be those 5 vast areas in the Southwest reserved for particular military purposes, areas where any kind of entry is "Forbidden by order of the Commanding General." Specifically the areas are:

1. White Sands including the reservation lands to the south and southeast;
2. Luke Air Force Range and Yuma Proving Ground in southwest Arizona;
3. The several Naval and Air Force reservations in the Mohave Desert;
4. Nellis Air Force Range and the AEC Test Site in southern Nevada; and
5. Dugway Proving Grounds and Air Force Ranges in the Great Salt Lake Desert.

Surely some of these lands could be shared simply by scheduling times for different kinds of experimental uses. After boyhood as an army brat and 30 years in civil service, I suspect we have 5 instead of 2 or 3 such reservations because of bureaucratic empire building rather than real war preparedness needs. To borrow a phrase from the NEW YORK TIMES, "Are we getting the biggest bang out of our buck?"

Local opposition to such consolidation would be considerable, because communities have become dependent on those military expenditures. But Roswell survived the closing of its military base; Mesilla Valley survived the closing of Fort Selden and Fort Mason, and in the long run probably would be ahead if Tularosa Valley became productive land. Again though, some may regard the thought as controversial and wish to dissent.

RANGE DETERIORATION

Range deterioration around Mesilla Valley is illustrated by the sand mounds held by mesquite and four-wing saltbush (coppice dunes). The mounds commonly are a few feet high and held in place by the shrubs. The sand mounds rest on a pedestal of stabilized sand a few inches thick that, on La Mesa, caps tough, laminated caliche. The mounds have been attributed to overgrazing during the last half of the last century when extensive herds of livestock were introduced into the region. The mesquite mounds are the Basin and Range counterpart of the arroyo cutting that has plagued the shale and sand deserts on the Colorado Plateau.

Both the sand mounds and the arroyos developed after the range began to be used intensively, and the evidence that they are attributable to overgrazing is fortified by the fact that the deterioration began at different times in different valleys shortly after each valley was occupied and used for ranching. But this is not necessarily the whole story, because the dendrochronology record indicates that the climate changed and became drier during the second half of the last century, just as the range was beginning to be used extensively. There is, therefore, some question about the relative degree of each of the contributing causes.

There was similar dry spell and accelerated erosion by wind and streams during the dust bowl days of the 1920's and 30's, and this was followed by a wetter period that began about the time the Taylor Grazing Act was passed and the Soil Conserva-

tion Service began its efforts to curb the erosion. The erosion did become minimized, but again one can fairly ask to what degree the improvement was due to conservation efforts and to what degree to better natural watering and consequent natural revegetation.

Another form of range deterioration is strictly man-made, and the two principal culprits are the Forest Service and Bureau of Land Management. Both have programs for clearing land of pinyon and juniper (Fig. 6) in order to provide better forage for livestock on those public lands. The carrying capacity of the land annually might be doubled or even tripled, from something like 5 cows per square mile to 10 or even 15. A square mile in Kansas or in eastern United States will support a few hundred cows annually, and this taxpayer believes the public money could better be spent raising the livestock there, where we would be working with nature instead of trying to change it, and the cows would be more contented.

Moreover, the argument that the pinyon-juniper has advanced onto land that once had better forage is only a half-truth, because there is good archeological evidence at numerous places in the Southwest showing that there has been no significant change in the lower limit of the woodland in the last thousand or so years. Prehistoric Indians chose to live at the edge of the woodland, just as we do today.

Other environmental changes caused by Man involve vandalism (Fig. 7) and reduction of the coyote population to the point that rabbits and rodents consume much or most of the desirable forage.

POTENTIAL PARK LANDS

Mention has already been made of the BLM plan to create a park in part of the Organ Mountains. The problem is reconciling such withdrawals for special use with the desirability of mineral prospecting. Although the proposed park is an admirable plan, the principle of multiple use enunciated by the Public Land Law Review Commission should be applied and the park area left open to grazing and to prospecting. In such a gorgeous area, however, the restrictions on grazing and provisions for reclamation of damaged land could be more stringent than for non-park lands.

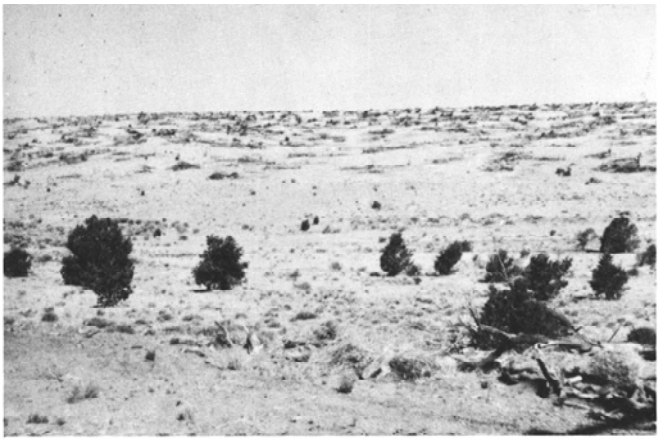

Figure 6. Is the clearing of pinyon-juniper woodland improving the range or causing deterioration? This clearing was by a government agency and is advertised as improvement, but a mining company could do as well and recover coal too.

Figure 7. Trigger happy vandalism; this sign is almost shot away. Meanwhile, local rifle clubs erect signs in Mesilla Valley telling us "Gun control aids criminals."

Kilbourne Hole and Aden Crater should be parks connected by reasonably satisfactory desert road and with access from 1-10, and they should be advertised for their geologic interest. Grazing should be continued and other use made of the park land, such as non-destructive drilling for what underlies the lavas. Whether established by the BLM or as a state park, the secondary uses could be more stringently regulated than on other open range.

Fort Mason and nearby stretches of the Butterfield Stage Line trail would attract many people interested in western Americana. And why, oh why, are the levees and shores of the Rio Grande closed by signs put there by the Border Commission No Trespassing"? Those levees and the river banks could be a lovely strip of park extending the length of Mesilla Valley. Who goofed?

At a great many places around the United States, controversy develops between the extremists representing the mineral industry and the extremists representing the environmentalists. A formula which would help negotiate the opposing views would be to consider the potential worth of a particular deposit. A deposit thought to be large enough and rich enough to affect the national economy in that commodity should be developed and aesthetic values sacrified. If, however, the deposit is small, even though its development might make the owner rich, the broader public interest should prevail and the owner reimbursed. Admittedly no two of us with our built-in biases would agree what constitutes "national importance," but at least such a formula would bring the antagonists together with a common basis for disagreement and eliminate much of the emotion that presently accompanies such controversies.

RECYCLING

Because of inadequate salvage of solid wastes in Mesilla Valley, a copper leach plant in Tyrone imports shredded tin

cans from Chicago! The argument that collection and recycling of solid wastes is not economical is economic nonsense that assumes the present system of trash collection and disposal is economical. Have you read your tax bill?

A means has been found to collect and recycle aluminum cans; why not similar patterns for collecting and recycling at least part of other kinds of waste in Mesilla Valley. Milk cartons, for example, could be crushed and collected at schools and restaurants where they are used in large quantity. Dairies might be persuaded to collect crushed cartons from customers who have their milk delivered. Government bureaus, many business establishments, and certainly universities could contribute to the cause by being equipped with machinery for baling wasted memos, envelopes, letters, and advertising. UTEP, NMSU, and UNM could salvage and bale memos from Vice-Presidents, Assistant Vice-Presidents, Deans, Assistant Deans and even Department Heads. Exams could be on "100 percent recycled University paper." The New Mexico legislature has taken the lead in this matter by ordering that paper in its waste baskets and tabled legislative bills be baled for recycling.

Garbage, now an expensive waste product, can be a source of energy. A ConEd plant being built in Chicago will burn garbage expected to produce enough power to light a Las Cruces. Connecticut has a statewide plan to develop one such plant a year from 1975 to 1985, and they are expected to produce 10 percent of the state's present electrical needs. Why not a similar long range plan for New Mexico?

The national scrap heap of old auto and truck tires grows by about 200 million a year despite some use as boat bumpers, channel markers, crash cushions at hazardous places along highways, artificial fishing reefs, and swings for kids. Experiments are underway to break tires down chemically and recover their petroleum and metal content. Old auto tires are said to produce twice as much heat as average grade coal, and a new Goodyear furnace in Michigan is reported to burn the tires with little or no smoke or odor and recover some zinc and iron from the clinker ash.

The quantities of waste are large, and if cities and counties would collect, the State could afford the transportation to and recycling at large recycling plants. City and county collection centers might be developed by adopting a system of redemption coupons to lessen the monthly cost of trash collection for those who contribute to the centers. Costs could be reduced one-half if trash collections could be reduced to once a week. Those who prefer to dissent could do without their rebate and be charged such extra costs as may be necessary to organize the system, which is not intended to save taxes; simply a method to approximately break even and preserve materials now going to waste.

Geologists should be especially sensitive to the need for salvaging waste. As world demand increases there will develop increasing need for recycling. Copper is an example. The crust contains about 1.4×10^{15} tons, but probably no more than a couple of billion tons will be recovered, and of this about 10 percent is represented by reserves already known. Our great need today is for ideas on how to collect for recycling.

ETC.

Additional kinds of environmental problems, of course, are legion. We have not considered noise nor the IRS; neither kills, but either can drive one crazy. Each motorcycle illustrated in Figure 4 generates a noise level of about 110 decibels; the U.S. Air Force recommends use of ear protectors for long term exposure to noise levels greater than 85 decibels.

The Southwest, like the rest of the country, is plagued with junk mail and billboards, and Mesilla Valley has special problems of poverty, migrant workers, and alien workers. In 1960 the El Paso Sector of the Border Patrol arrested 3,300 illegal aliens; in 1970 more than 50,000. A high percentage of illegal aliens by-pass Mesilla Valley and the rest of New Mexico and head for interior states, notably Colorado and Illinois.

Too, like most parts of the country, Mesilla Valley has too many auto and motorcycle exhausts emitting blue smoke, and too many trucks bellowing black smoke like an ancient 2-8-8-2 mallet steam locomotive.

And then there is the government, for whom all of us toileth. In fact, government is so much a part of our environment, we cannot afford dishonesty. One way to achieve more honesty in government would be to require that the personal income tax returns of *all* elective officials, and *all* appointees to highly responsible positions, be made public. The Representative from Mesilla Valley and vicinity has protested this would be an intrusion on his private rights. But if he seeks privacy he should return, or be returned, to private life. The present system, shrouded in secrecy, is an open invitation to what James Thurber described as "government of the orioles, by the orioles, and for the foxes."

SUMMARY

A possible system for environmental management, generalized from the Public Land Law Review Commission, considers: 1, water; 2, biosystem maintenance; 3, quality of experience; and 4, air quality.

Water problems involve both quantity and quality of water. The most exacting standards relate to water for fishing, which demands a high level of dissolved oxygen, limited tolerance for temperature, trace elements, pH, toxic chemicals, nutrients, silt, organic matter, and whether the channel is mud, sand, gravel, or rock. To protect fisheries, there can be virtually no disturbance of land adjoining the waters. The next most exacting standards relate to domestic water supplies, swimming, and industrial uses demanding high quality water. The least exacting standards are for agriculture and industrial cooling water; these involve control only of salts and toxic elements. Declining water tables because of ground water being mined has been commented upon. So far, Mesilla Valley has been spared the problem of water pollution caused by feed lots extending across streams.

First order biosystem maintenance refers to maintaining the full natural biosystem for recreation, education, and scientific study, and usually involves creating wilderness areas. However, not many families can afford the luxury of a pack train to visit these areas, and easterners visiting the west do not have time to hike in. Most wilderness areas are for the wealthy. Second order maintenance allows for minor changes, perhaps even a road, and third order would be growing particular trees for lumber, as is well advertised by the Weyerhaeuser Company. The BLM and Forest Service destruction of pinyon-juniper stands, as already noted, is certainly an uneconomical major change of habitat. Not discussed in the summary are the controls needed to protect against infectuous elements in the biosystem—coccidioides, bubonic plague, rabies, tent caterpillars,

mosquitoes, flies, rats, etc. Just how far do we want to go in maintaining the biosystem?

Quality of experience refers to visual and esthetic environments, like the unseen scenery back of the dams along 1-25. It includes preservation of locations for their cultural, historical, and informational value e.g. Kilbourne Hole, Aden Crater and Fort Mason. Quality of experience also includes getting away from the crowds, like trying to get off a New York subway at 42nd Street or driving in the Rockies west of Denver on a Sunday afternoon. This argues for increasing the number and extent of parks and recreational areas and access to them.

The requirements for good quality air have been exaggerated, because we have alternatives. One is to stop breathing. Some who dissent may prefer to wear gas masks. And in those environments where the effluents are corrosive, people could wear space suits of materials that resist corrosion. The problem really is simple—technology (Fig. 8).

Figure 8. City planners recommend that dumps be located downwind from town, as at this sanitary (?) landfill east of Hachita. This would be a mess if the dump were windward (west) of town. Love America, or leave it.