AGRICULTURE

The Dust Bowl Again

The Dust Bowl presents a problem to our nation in times of drought. How to meet this problem if spring brings severe dust storms is discussed by a top conservation expert.

By HUGH HAMMOND BENNETT
Formerly Chief, Soil Conservation Service

➤ PROLONGED drought in the Great Plains is fast brewing ominous dust storms again. Thus far the storms have not grown to the proportions of the "black blizzards" of the nineteen thirties. Then a number of "dusters" reached the Atlantic coast. On May 12, 1934, a great "black duster" rolled across the country from the southern Plains to blot out the sun over the nation's capital and deposit Plains soil on the decks of ships hundreds of miles off the Atlantic coast. It was the first such experience since white man came to America. But others followed, during the thirties.

This time we have had no such dust storms; they have been more of a local nature. But what may happen with the return of the wind-erosion days of spring no one knows.

Frequently this current drought is referred to as the worst we have had. No, the one of the thirties was the worst, according to my experience. This time we have had no great trans-continental dusters; nor have we heard of crows building their nests of bits of wire picked up from barren farmsteads, in the absence of enough plant material for normal construction purposes.

But we gain nothing from such comparisons, except perhaps faith to go ahead with a sound program of anti-drought operations, which is the only effective way to curb wind erosion and dust storms.

Problem Is Complicated

Proposals appearing in the press are encouraging. At least we have a plan, parts of which are already in operation. The plans reported may sound complicated but the problem itself is highly complicated.

It may profit us to examine some aspects of our fight against the effects of drought during the first dustbowl period. That was a prolonged dusty and disastrous drought that extended across the Great Plains from Canada deep into Texas and adjacent New Mexico. The whole vast area was parched, including even the deep alluvial soils of river bottoms. At first Russian thistle, which has great tolerance for drought, was cut for hay, but finally that, too, succumbed to drought. At first, hay was shipped in but eventually trainloads of hungry cattle had to be shipped to remote pastures. Farmers by the hundreds gave up, abandoning their lands to move in waves of migration to distant states. And there was "dust pneumonia" and numerous accidents along dust-dimmed roads.

Then the rains came and good crops of wheat and sorghum. The people forgot. They plowed up more virgin grassland along with much of what farmers had gradually reestablished with the assistance of soil conservation measures.

"Suitcase farmers" came in, leased land, tore down fences, plowed up everything and seeded wheat. Some of them made fortunes, repacked their suitcases, moved out and forgot their crimes against the public. But nature neither forgot nor forgave. Accordingly, we are being punished again for interference with the stern laws of nature.

Not all has been forgotten—and that is what I want to point out. Experience sometimes provides valuable suggestions. I have reference to the experience of the Soil Conservation Service, whose birthday corresponded closely with the great dust storm of May 12, 1934.

The Soil Conservation Service ran head-on into the catastrophic drought of the 1930's and its attendant evils without combat experience or proved implements of attack. Fortunately the Service was founded on the concept that soil erosion can be coped with only through the use and protection of land according to the needs and capability of the different kinds of land a farmer has, making use of those adaptable measures and combinations of measures required for sustained productivity of the soil.

New Measures Developed

Every proven measure was utilized and many new measures were quickly developed through trial and error. The old practice of listing was amended by contour application. Crop residues were carefully protected from overgrazing. Good results came from using wheatland for wheat, grassland for grass, and sorghum land for sorghum. We harvested seed of all the good grazing grasses of the region and planted them in contour furrows within their known range limits. Pasture areas were contour furrowed; even hole-digging machines were used on the contour on some of the more vulnerable lands. Wild sunflower—a weed—was planted in some of the more stubborn areas. Every implement and every planting were held to the contour. It probably was the world's greatest contouring movement, with the

ISOTOPES BOTTLED—Remote control is used to bottle atomic compounds "cooked" in British atomic furnaces and sent all over the world by air and ordinary mail. They are being used more and more in medical and biological research and industry.

exception of the practice of bench-terracing, which had its origin in ancient time.

Every measure mentioned in the press announcements and others were employed, except the Soil Bank.

The work proved successful where properly applied and maintained. To a considerable degree, wind erosion was stopped throughout the Great Plains.

Not all of this work has been forgotten. The Dalhart area in the Texas Panhandle is a notable exception. This was in one of the worst wind-whipped, drought-stricken areas in the whole afflicted region.

Finally the situation in this area was put under control. Even the dunes that had blown up were leveled and controlled with contour plantings of sorghums. And here the farmers had held on to their conservation practices; today these farms are in much better shape than those where the conservation practices were neglected or plowed up. The Dalhart area is a place where Plains farmers can go for conservation information and inspiration.

I mention these matters for whatever they may be worth. They give me faith to predict a successful outcome of the new battle that apparently is to be fought to the finish, provided it is not made over-complicated and provided further that the farmers, the farmers' soil conservation districts, and those agencies which have had actual experience combating wind erosion along with other pertinent agencies be brought as fully as possible into cooperative action.

And, let's not forget that an element of mathematics is involved: We have a limited area of productive land, which is steadily being decreased by erosion, new buildings, new roads, and so on; we have, on the other hand, a rapidly increasing population. Let's not overlook the fact that these trends can clash with one another—will clash if left unattended.

So let's devote our efforts to solving the problems immediately in front of us. There is no time to waste on notions and unproved theories. We must move on the basis of land facts.

Science News Letter, January 19, 1957

AERONAUTICS

Aging Slowed in Space

➤ A SPACE SHIP traveler upon returning home from a long journey at high velocity would find that he had aged less than his earthbound twin.

This prediction of Einstein's theory of relativity has been verified experimentally, a United States scientist reports in a communication in *Nature* (Jan. 5).

To reach this conclusion, Dr. Frank S. Crawford Jr. of the University of California Radiation Laboratory combined the results of tests made by several scientists over a period of years.

He substituted the tiny sub-nuclear particles known as mesons for the brothers, since space travel is still for the future.

Some scientists, however, do not agree that Einstein's theory predicts the traveler would return physiologically younger than the stay-at-home. A controversy concerning this has been continuing for some time with strong words in the staid pages of *Nature*.

In order to guarantee Einstein's prediction that a pocket watch carried by a fast-moving space traveler will have performed fewer revolutions than the watch of his earthbound twin, Dr. Crawford says, three assumptions are sufficient. These are:

1. The time change of Einstein's theory of special relativity holds for uniform motion.

2. The acceleration of an ideal clock relative to an inertial framework has no influence on the clock's rate, and the increase in the proper time of the clock at any time is the same as that of the standard clocks in the framework in which the clock is momentarily at rest.

3. The traveler and his pocket watch are "good approximations" to an ideal clock, that is, the accelerations must not kill the traveler or break his watch.

Dr. Crawford sees a check of the first assumption in experiments that measured the lifetimes of mu mesons in flight, then predicted their lifetimes at rest, which value was later verified by tests.

The second assumption, Dr. Crawford reports, was verified by experiments in which the number of mu mesons decaying radioactively when at rest both at 11,500 feet and at 600 feet was counted. The counts were roughly as expected.

The scientists conducting the experiments cited by Dr. Crawford include Drs. Bruno B. Rossi, Norman Hilberry and J. Barton Hoag, Dr. F. Rasetti, Nobel Prize winner Dr. P. M. S. Blackett and Dr. H. Ticho.

Science News Letter, January 19, 1957

PUBLIC SAFETY

Misjudgment by Drivers Big Accident Cause

➤ DRIVERS misjudge and this is the major cause of accidents, a member of the Oregon State Highway Department told the Highway Research Board meeting in Washington.

A study of accidents on two-lane country highways with gravel shoulders in Oregon led researchers there to conclude that "accidents are essentially chance occurrences resulting from errors in judgment," David W. Schoppert of the Department said.

"The number of accidents," the Oregon survey showed, "increases with the number of situations presenting a change in conditions, and therefore requiring a decision on the part of the vehicle operator."

The study, made along 1,400 miles of highway in an attempt to find a means to predict accidents, also showed that on little traveled highways, accidents are not related to the highway conditions such as width of lanes or wider shoulders. But, accidents increase when more cars are on the highway; the number of intersections and through driveways increases; sight distance is impaired and cross-section is reduced.

Mr. Schoppert also reported that the Oregon researchers have been able to formulate a series of equations which can be used accurately to predict the number of accidents on rural two-lane highways from road elements such as the average daily traffic, lane width and shoulder width.

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