

WILDLIFE MANAGEMENT

Drought Menaces Wildlife In Western National Parks

Situation Most Acute in Wind Cave National Park Where Animals Lack Pasturage and Hay for Winter

DROUGHT has developed a new menacing front in the Northwest—big game animals in the U. S. National Parks, now on parched pasturage, are threatened with starvation next winter through shortage of the hay crop that has ordinarily supplied supplementary feed.

The situation is most acute at present in Wind Cave National Park, a small park on the south slope of the Black Hills in South Dakota. Although the total number of bison, elk, antelope, and deer on this comes to less than 500 head, lack of pasturage now and hay for next winter makes even this small number look like too much of a load.

In Rocky Mountain National Park there has long been a deer-and-elk problem, because the natural range north of Estes Park is overstocked, and efforts of the National Park Service to get it extended have thus far been unsuccessful. Glacier National Park, on the other hand, offers less of a problem, because the deer pasture there depends primarily on winter snows, and these have been abundant even when the Plains have suffered from both summer and winter drought.

Problem at Yellowstone

Yellowstone National Park of course has the biggest problems to face, because it supports the largest herds of big game, and because droughts of the past few years have left the range in bad shape. The present state of the range where the thousand buffalo feed is not accurately known at the moment, but a survey has been started.

The 10,000 head of elk which constitute the so-called Northern and Gallatin herds are known to be a grave overload on their natural range, but efforts to get more land have been stymied by the opposition of ranchers whose lands run right up to the northern boundary of the Park. The Southern elk herd feeds in Yellowstone Park only during the summer, and lives most of the time outside the Park boundaries, so that while it presents a serious problem, the responsibility for solving it does not

rest primarily on the National Park Service.

Distress and possible wholesale starvation of the Yellowstone elk herds, the largest surviving groups of these animals left in the United States, will undoubtedly be intensified by the difficulty of procuring supplementary feed. In past "distress winters," public-spirited citizens have often dug down into their own pockets to purchase hay from outside resources, but this year they will have to bid against the urgent need for feed of all kinds to save the herds of domestic animals throughout the drought-swept Northwest.

Science News Letter, July 18, 1936

CLIMATOLOGY

New Dust Bowl Forming In Drought-Stricken Area

DROUGHT is making another dust-bowl in the Northwest, to replace the one in the Southwest that was blotted out, at least temporarily, by heavy rains a few weeks ago. The soil of the Dakotas and Montana, left naked over wide areas by the death of all vegetation, lies loose to any wind that chooses to blow.

For the present, dust storms are not expected, for strong winds are rather exceptional in summer. But when the powerfully stormy northwesterlies begin to blow, in late autumn and winter, it will be another story.

"Unless the land can be well covered with vegetation, there is every likelihood that the drought area will furnish severe dust storms," Dr. Walter C. Lowdermilk, of the Soil Conservation Service, U. S. Department of Agriculture, told Science Service. And at present the prospects for covering the land appear very slim indeed.

A snow cover, falling early and persisting through the winter, might avert the wrath to come until March, when the snow melts off and the high winds will blow the dust regardless. But if the winter is open and relatively snowless, as it often is in the Northwest, the

dust storms may rage all winter through.

In the new dust bowl as in the old, there is only one dependable permanent remedy: cut down the plowed area and increase the acreage of deep-rooted, long-lived grasses.

Science News Letter, July 18, 1936

GEOGRAPHY

Drought, Dust and Pests, But Anyway No Prairie Fire

IN ALL the long catalog of woes that heat and drought have brought to the West, at least one former affliction has been spared—the prairie fire.

Chronicles of pioneers of the Prairies and Plains tell again and again of this deadly sweeping terror, that would spring over the horizon without any warning, rage through the cotton-dry grass and down upon the unwary caravan faster than any Cossack charge.

Its causes were various: occasionally a bolt of lightning, with insufficient rain afterwards to extinguish; sometimes a careless campfire set by some other traveler; more often the Indians, who would purposely start the fire either to clear the way for fresh young grass for the buffalo, or as a deliberate weapon against the invading whites.

There was one effective weapon, if you saw the prairie fire's approach soon enough, and the wind was not too high. You could "backfire"—in desperate haste pluck out a circle of grasses a few yards in diameter, start a fire at the edge of it, and stand with a blanket wrapped round your head while the brief flames flared round you. Then retreat into the blackened area of safety you had created, or even stay right where you were, if perchance the momentary wind had carried your ally-fire toward the approaching bigger enemy. Lonely settlers often saved their houses and barns by first plowing a few furrows around them, and then starting the backfire.

No Fuel

But now there are no prairie fires, because there is no fuel for them. "The plow that broke the Plains" broke also this one enemy of the plainmen. Cultivation abolished much of the old-time deep grasses that stood dry and inviting fire in times of drought, and what the plow did not do the too-many hungry cattle did.

White man's appetite for grain, whetted by year upon year of failure to get it, loaded the remaining rangelands with far more hungry animal mouths than

they could support on a continuous-yield basis in times of full rain. And during the present dry half of the irregularly recurring climatic cycle, those mouths, desperate with starvation, have skinned the grass down to the very roots. There is nothing left to eat, nothing left to burn.

Perhaps there are plainsmen who still remember old times with something of a pang—who would not be wholly sorry to see an old-fashioned prairie fire again, because if it did symbolize destruction, it also symbolized a high abundance even as did the "whole burnt offerings" of ancient Israel.

Science News Letter, July 18, 1936

PHYSIOLOGY

Electrical Changes in Body Controlling Factor in Growth

By PROF. H. S. BURR, Yale University School of Medicine

IN ALL probability, wherever there is life, electrical phenomena are to be found. Electrical studies of living plants and animals have added much to our information since Galvani first published his description of "Animal Electricity."

Great progress has been made in the study of the nervous system through the adaptation of recent commercial radio apparatus to this use. However, it has been very difficult to determine with precision the nature of the electrical currents which have been noted in association with living animals and plants since most of the meters used require current for their operation, and hence have complicated the results by the effects of changes in resistance.

To overcome these difficulties, a vacuum tube microvoltmeter has been developed which is stable, draws no current and is, therefore, independent of resistance. With this instrument, differences as small as a millionth of a volt can be read accurately. Reproducible voltage differences of a characteristic order in fishes, salamanders, frogs, chicks, rats and mice, cats, rabbits, dogs, monkeys and man have been obtained.

Accompanying Life Processes

Moreover, it has been shown that these voltage differences are very closely associated with minute variations in the living process. The instant of ovulation in the intact cat and rabbit and an electrical rhythm in the menstrual cycle in women has been recorded. A marked change associated with the appearance of cancer and a definite correlation with growth during the embryonic and adult life have been observed.

In a rather surprising way it has been found that the voltages developed are not the result of chaotic currents but of

currents organized into a very definite pattern which is characteristic of the species and may show the same individual differences as do series of finger prints. With this instrument, it is possible to write a kind of electrical formula for the individual animal.

"Prospect" the Body

In addition, it is possible to study electrically a live animal with very great accuracy without having to kill it for analysis or without in any real sense modifying its activities. In fact, it is possible to prospect the body of an animal for voltage differences much as a geophysicist maps the surface of the

ground for hidden ore. Plots constructed in this way give numerous clues to what is going on inside the animal.

It has been found, moreover, that readings taken from any two points on the body reflect not only what is going on in the immediate vicinity of those points but also the *total* activity of the animal. Every animal so far studied produces electricity in amounts that can be accurately measured.

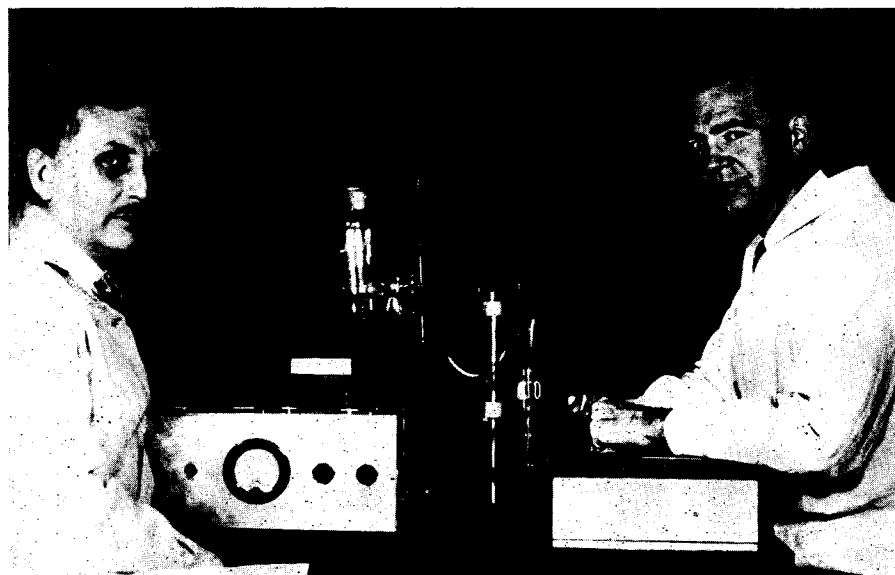
The data suggest that each animal possesses a dynamic electrical picture which, although constantly changing in minor ways, nevertheless, possesses recognizable individual characteristics.

There is a very real possibility that this electrical picture or electrodynamic field may provide the explanation of the amazing capacity of an animal to grow from a single egg into a multipelled adult in the midst of the rapidly changing chemistry of development.

Hope For New Clue

It may be that in these electrical studies will be found the clue to the mechanisms by means of which the chromosomes determine such things as shape of face and color of eyes, and that "animal electricity" is the expression of a fundamental electrical field acting as a guiding and controlling factor in the development of any individual.

Science News Letter, July 18, 1936



STUDY BODY CURRENTS

How Yale experimenters study electricity of nervous system by adapting radio apparatus to this purpose. Prof. H. S. Burr, left, is ready to make measurements upon Dr. R. G. Meader, right, who has his fingers in salt dishes to make electrical contact between his body and the sensitive instruments. Taking of readings is accomplished simply and without discomfort to the person being tested.