ECOLOGY

NATURE RAMBLINGS by Frank Thone

Bluegrass or Bluestem?

GRASSLANDS of the western prairie region are in a state of dramatic suspense. Blighted by last year's unprecedented drought, large areas in them are now seemingly bare of life. They are, botanically speaking, public domain, unclaimed homesteads, which the first to come among plants, and the most tenacious to hold, may claim and keep as their own. Which will take them, lush bluegrass from the East, or hardier bluestem of the West?

When the five-year drought began in 1929, these pasture lands had long belonged to the immigrant bluegrass, encouraged by grazing and able to compete with the native prairie grasses as long as there was abundant rain. But when the drought reached its sky-seared, soil-bankrupt climax last summer, the bluegrass was the first to die. Now its place is empty. Will its children succeed it, or will offspring of the western grasses reclaim the heritage that was theirs in an earlier generation?

Studies conducted by Prof. J. E. Weaver of the University of Nebraska, and by his graduate aides Lawrence Stoddart and William Noll, suggest that the victor's spoils may go to the sons of the native-born; indeed, if water shortage continues, will almost surely do so.

Nearly a year ago, foreseeing what the summer might bring, the three ecologists began a program of careful observations of prairie vegetation under drought, which they continued throughout the blazing summer. In general, they found that fitness for survival in a drought-cursed land was determined by two things: ability to get water and, water once got, ability to keep it.

Bluegrass, not native to such an unkind clime, could neither keep what it had, nor renew its supplies for long, since its roots are shallow. The native bluestem grass species, with roots that drill into the soil two or three times as deeply as do those of bluegrass, could tap reserve supplies, depleted as even these became, and so come through a lean year with life still in their clutch.

What was true of the deep-rooted grasses Dr. Weaver and his associates found even truer of other deep-rooted prairie plants. The prairie shoestring, big, lusty, blue-flowered legume, has roots sometimes sixteen feet long. It easily withstood the drought and bore a big crop of seeds, as though nothing unusual were happening. So also with others of its biological brethren; though it is true that many of them were forced into abnormally early blossoming.

Two devices for hanging onto water once obtained demonstrated themselves strikingly. One is the reduction of leaf-area by rolling the leaves or other evaporation-defeating tricks; the other the retention of water by the "thickening" of the sap, until its resistance to further loss, in at least one plant tested, rose to the equivalent of sixty atmospheres, or a pressure of nearly half a ton to the square inch.

When stress-times come to the prairie, truly the toughest survive!

Science News Letter, March 2, 1935

PHYSIOLOGY

Female Sex Hormone Starts "Wild" Growth of Cells

BY MAKING cells grow "wild," the female sex hormone may play an important part in causing cancer. First definite proof of a long-suspected but unproved relation between sex and cancer has been found by a group of Canadian investigators, Prof. J. B. Collip and Drs. H. Selye and D. L. Thomson of McGill University.

"Our findings are at the moment without practical significance," says Prof. Collip.

But though scientists are not yet able to foresee how this discovery can be applied to human cases of cancer, they nevertheless view this progress as a valuable addition to knowledge.

Daily injections of the sex hormone for ten weeks produced in rats symptoms closely resembling the beginning stages of cancer growth, Prof. Collip and associates have reported (*Nature,* Jan. 12.)

Certain cells in the animals' bodies showed changes in their nature and growth that made them look, to the scientist's eye, like the wildly-growing cells of cancer. In the words of the scientific report, the animals' uteri showed "more or less complete metaplasia" or change of the "cylindrical secretory epithelium into a stratified squamous epithelium with cornification from which irregular buds penetrated deep into the stroma" or underlying tissue.

The female sex hormone has been suspected of possibly causing cancer or at least being able to cause it ever since chemists discovered that this hormone and certain coal tars known to produce cancer are strikingly similar in chemical composition. Medical scientists have been trying to settle the point and one group of investigators found evidence strongly suggesting that the female sex hormone could produce cancerous changes. The results of Prof. Collip and associates are more definite, however.

Their discovery came in the course of investigating anti-hormone effects. The McGill group of scientists has found