



TELESCOPING TIME

The pot at the right contains specimens of winter oats from yarovized seeds; the control pot at the left contains plants from unyarovized seeds. Both were planted at the same time. Dr. Dmitry Borodin, who is trying yarovization experimentally in this country, is shown in the insert.

ARCHAEOLOGY

Iron Age Treasures To Be Sold in New York

THE "TREASURES of Carniola," a great collection of 20,000 bronze and iron objects belonging to the early Iron Age of Europe, have been shipped across the sea to be sold in New York.

The collection was amassed chiefly by excavating numerous tombs in the province of Carniola, Austria. The late Dutchess Friedrich Paul of Mecklenberg sponsored this work for ten years, by a special license from the Emperor of Austria. The collection was her private property.

The early Iron Age in central and western Europe is scientifically known as the Hallstatt culture because it is identified with Hallstatt, Austria, where a cemetery of the age first came to light. The age lasted from about 900 to 500 B.C. and was notable because iron then came into use in commercial quantities: The graves of the people contain such things as swords and helmets, pins and other ornaments, glassware, household utensils, and farming implements.

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PLANT PHYSIOLOGY

Yarovization Process Turns Biennial Plants Into Annuals

Starting Germination, Then Chilling Seeds, Speeds Flowering and Fruiting; Widely Used in Russia

"YAROVIZATION," a new seed treatment to speed growth of crops, is likely to be heard of a good deal in future because of American experiments now in progress. As a word, it bids fair to become incorporated in the English-speaking vocabulary of the plant sciences and the agricultural arts.

Yarovization is the treatment of seeds before they are planted, with the artificial regulation of certain natural plant growth factors: moisture, temperature and time. Each plant species, and within the species each variety and strain, has a particular combination of these factors to which it responds best, according to the practitioners of the new technique. Most interesting claims are made by the "yarovizers." They state that in Russia properly yarovized seeds produce plants that yield their harvest in much less time than do untreated similar seeds, making possible such things as the ripening of grain from winter-wheat seed sown in spring instead of autumn, the pushing northward of the cotton and corn belts, the speeding up of plant breeding experiments in greenhouses, etc. In the United States the process is as yet only in the experimental stage.

Invented by Russian

Yarovization, in its special sense, is the invention of a young Russian plant breeder, Dr. T. D. Lyssenko of Odessa. In this country, experiments with the new process were carried on last summer at the Arlington Farm of the U. S. Department of Agriculture by a Russian scientist, Dr. Dmitry Borodin, who is now in process of becoming an American citizen. His status in the Department of Agriculture was that of "collaborator." In his researches, he had the cooperation of numerous scientists at various experiment stations throughout the country.

To yarovize seed, it is exposed to a given degree of moisture, for a stated period of time, at a predetermined temperature. Each kind of seed has its own

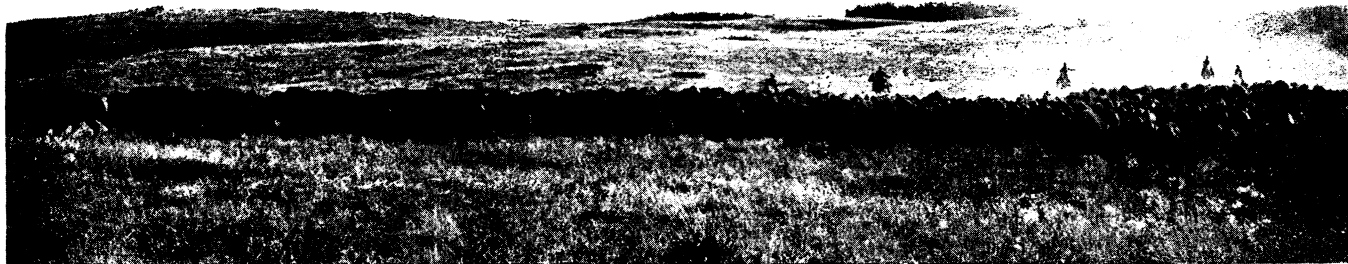
"formula." Thus, to change winter oats from a two-season to a one-season crop, which is Dr. Borodin's outstanding accomplishment thus far, the formula reads: 50:28:2; that is, 50 per cent moisture (on the basis of the dry weight of the seeds), 28 days of treatment, at 2 degrees Centigrade above freezing. Then the seeds are dried, and in this state can be stored for a few days, or shipped to the place of planting. After planting, they mature their crop much more quickly than do untreated "control" seeds. Untreated seeds of winter grains—wheat, barley or oats—refuse to bear a crop during the first season after sowing, even if sown in the spring; but yarovized seeds out of the same lot behave just like spring grains, and mature their crop during the same summer.

Many Plants Yarovised

Dr. Borodin applied the yarovization technique to a great variety of plants at the Arlington Farm: winter barley, winter oats, corn, millet, sorghum, cotton and others, determining the "formula" for each.

Yarovization gets its name from the old Russian word for spring, "yar." When Dr. Lyssenko first performed his experiments, he thought of the process as something analogous to what happens in nature in the spring. Literally translated, then, the word might read "springification"; an attempt has even been made, mostly by research workers in England, to render it as "vernalization," but since it is now recognized that the whole process is not strictly analogous to that in nature, an Englishing of the word is now unlikely.

Like all "new" things under the sun, yarovization has had forerunners. As early as 1857, an American scientist, John H. Klippart of Ohio, discovered that larger and earlier grain crops could be secured by partly sprouting and then chilling the seed in darkness. He published an account of his researches, but the paper was overlooked and forgotten. Then, when Drs. W. W. Garner and H. A. Allard of the Department of Ag-



NOT BY ANY MEANS "THE LAST ROUNDUP"

The thundering herd shakes the plain again every year, when the Canadian managers of the great national herd of bison round up their shaggy cattle in the great Buffalo Preserve near Wainright, Alberta, preparatory to "cutting out" the surplus animals selected for slaughter and distribution as meat and hides.

riculture showed, a dozen years ago, that length of exposure to daylight has a great deal of effect on the flowering and fruiting of plants, more attention began to be paid to the general subject.

Working independently of the Russian experimenters, both in the U. S. S. R. and in this country, two other Department of Agriculture research men, H. H. McKinney and W. J. Sando, have developed a technique of pre-treating seeds by slightly germinating them and then chilling them in the dark for 50 to 65 days before sowing. They have been able to produce two or more crops of some winter wheat varieties in a single year by this method, which does not involve the development of such exact formulae for moisture, time and temperature as are called for in yarovization.

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HORTICULTURE

Apple Trees of World Number Half Billion

THERE are nearly 500,000,000 apple trees in the world, and of these the United States has approximately one-quarter.

A British Empire Marketing Board report points out that, though the numbers of apple trees in Britain, the United States and many parts of Europe have fallen considerably, there has been no decline in the average amount of fruit produced. In the United States, the reduction was by 100,000,000 between 1910 and 1930. The maintenance of production is due to the gradual rationalization of the world's apple industry, many countries having followed the example of America in growing apples in commercial orchards.

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GAME MANAGEMENT

Canada Kills 2000 Bison; Meat and Hides Marketed

BUFFALO meat will be available once more for homes, hotels and restaurants of this continent during November and December, following the decision of the Canadian Department of the Interior to reduce the government's buffalo herds at Buffalo National Park near Wainright, Alberta, by two thousand head. This wholesale slaughter recalls the settlement of the western country, when hunters and settlers wiped out nearly all the bison of the plains, killing more than a million of the animals in less than twenty years.

This year's slaughter is necessary because of the increase of the herd at Wainright to 7,500 head. There is only grazing room for about 5,000 animals at this preserve, where twenty-five years ago the Canadian government brought a nuclear herd of 716 animals. It is estimated that this original small herd has grown to 23,000 animals, including those moved to other preserves and those which have died naturally or been killed off for meat by the government.

Strictly up-to-date methods are used in preparing the 1933 bison for the meat market. The whole herd is rounded up annually and the animals selected for slaughter are separated in special corrals. The buffalo hunt of older days has been replaced by a modern abattoir and the animals are killed under the direction of inspectors of the Canadian Department of Agriculture.

In pioneer days, when countless thou-

sands of buffalo were killed, only the tongue and part of the carcass surrounding the hump were utilized for food. Modern slaughtering methods have made possible many other choice cuts from the American bison, and a variety of steaks, chops and roasts will be on the market marked with government inspection stamps.

Not all the buffalo meat will be eaten fresh. A number of the animals will be used to supply food to destitute Eskimos and Indians in Canada's far north. The meat is dried and shipped to the northern police posts, where the constables will distribute it to families in want.

In the West, buffalo robes and buffalo coats will be worn this year, for the hides of the buffalo are tanned. Modern fur-dressing methods have produced buffalo pelts superior to those which once were found in the homes of the early western settlers. And the Mounted Police will have new buffalo coats to wear on the Arctic trail.

Besides the herd of buffalo at Wainright, Alberta, the Dominion has small herds at other western game preserves and a herd of approximately 15,000 animals in Wood Buffalo Park, at the boundary of Alberta and the North West Territory, where a 17,000 square mile reserve is maintained for the buffalo. Nearly 7,000 buffalo have been shipped in recent years from Wainright to Wood Buffalo Park.

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