

ECONOMICS

Moving to Better Lands Seen as Resettling of America

Continuation of Agricultural Reforms May Turn Marginal Areas Into Forests, Parks and Suburban Settlements

WE THINK of the settling of this continent as something belonging to the romantic past—of Pilgrims in New England and Quakers in Pennsylvania, of the Boones and the ancestors of Lincoln in the Kentucky forests, of the trains of covered wagons rolling evermore toward the setting sun. Those were days of settlement, truly, though they were also days of continuous un-settlement, as each generation in its turn arose to follow westward the constantly retreating but not-yet-spent lure of free land. The whole era of pioneer settlement in America was based on just that: individual self-sufficiency on free land, land of virgin fertility capable of yielding first a hard-won livelihood, and finally abundance, to the hardy and enterprising. We pass over without noticing the unfortunates and ill-adapted whom this tremendous rough plow turned under into oblivion.

But a new day is upon us, heralded by the tentative first efforts at a national agricultural economy being made this summer by Secretary of Agriculture Wallace and his associates. It is setting up a new social pattern for our farmers, of acknowledged interdependence instead of the old independence. When a man plants in grass a fourth of his former wheat acreage, and pastures cows on that grass, he is going to make stock-raisers seven states away feel the effects of that simple change. The planners of the new deal in agriculture have to take that into account.

They are doing so. In a recent address, Assistant Secretary of Agriculture Rexford Tugwell said, "In changing our pattern of basic crop production, we have set upon a process which is bound to alter our entire agricultural structure; and I think it may go beyond that and lead in time to a rational resettlement of America."

Especially was Dr. Tugwell concerned with the problem of the "marginal lands"—thin, rocky soils of the East, dry, alkaline lands of the West, poor, starved stretches of sand in the South

that yield half-starved livelihoods to the men who try to work them, while fat lands lie untilled or under-tilled because of the sweatshop competition of these pauper farms. Unless the New Deal in agriculture ends in frustration and failure, it will eventually have to work out a method by which these farmers can be induced to leave their unprofitable holdings and be settled on better lands, and also to decide the uses—forest, recreational areas, suburban settlements—to which the abandoned poor lands may be put.

In Russia, it is reported, such resettlement is being done sweepingly and more or less arbitrarily. America of the New Deal is not ready to readjust its life by compulsion, so long as persuasion to voluntary action is possible. But events sometimes have a way of supplying a compulsion all their own.

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PLANT PHYSIOLOGY

Heavy Water Prevents Seeds From Sprouting

THE NEW "heavy" water, one of science's latest discoveries, prevents the sprouting of seeds and may actually kill them, Prof. Gilbert N. Lewis of the University of California has discovered through the first biochemical experiments made with the double-weight hydrogen isotope.

Using minute tobacco seeds, Prof. Lewis put some of them in tiny test tubes that contained ordinary water. Others he put in tubes of the special heavy water containing only double-weight hydrogen. The seeds in ordinary water sprouted. Those in the new heavy water did not.

From theoretical considerations, Prof. Lewis predicted that water made with the heavy hydrogen would not support life and would be lethal to higher organisms. This was the first chance to test his theory. Prof. Lewis is now determining whether the seeds placed in

heavy water were merely inhibited or actually killed.

The heavy water used in these experiments has two atoms of hydrogen and one atom of oxygen, just as all water has. It is represented by the same familiar formula, H₂O. But all the hydrogen in the heavy water used by Prof. Lewis has its heart or nucleus twice as heavy as the common hydrogen nucleus, and so the weight of the rare water is increased due to this heavier constituent, known as hydrogen isotope of mass two.

Prof. Lewis has made a report to the *Journal of the American Chemical Society*.

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ASTRONOMY

New Determination Sets Greatest Solar Heat

ASTRONOMERS have made many guesses at the temperature of the interior of the sun from 10,000,000 degrees Centigrade up, but the limit is less than 100,000,000 degrees Centigrade (180,000,000 degrees on the common Fahrenheit scale) if new evidence on the disintegration of light elements is correct. Dr. Edwin McMillan of the University of California states in the *Physical Review*.

Astronomical evidence for this temperature is based on the heat necessary to balance the pressure of more than 9,000,000 tons to the square inch that exists at the center of the sun. Dr. McMillan has made his estimate from the relative amounts of lithium in the sun.

This terrific heat would be sufficient to transform the heavy lithium number seven into its lighter twin number six. Examination of pictures of the sun's spectrum taken by Dr. Arthur S. King of the Mount Wilson Observatory showed Dr. McMillan that the quantity of the light lithium in the sun is not much greater than on the earth.

A temperature of 180,000,000 degrees would jostle the cores of hydrogen atoms in the sun about with a speed equivalent to that given by an accelerating electrical field of 10,000 volts and this speed has been found to be sufficient to break down the heavy lithium in the laboratory. But since there is no excess light lithium on the sun it can not have this enormous temperature unless some unknown process keeps building up the heavy twin.

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