

and for everyday purposes in most countries. Once a proposal to return to the earlier "upside down" way of measuring temperature set Dr. Tuckerman to speculating that "Instead of marveling at temperatures of millions—or is it billions?—of degrees at the centers of stars, we should be wondering how nearly those temperatures could come to the Absolute Zero of hotness!"

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## METALLURGY

## "Popcorn" Method Used To Crush Mineral Ore

A "POPCORN" method of crushing mineral ores, wherein the ground rock blows itself apart by internal explosion, was described by R. S. Dean of the division of metallurgy, U. S. Bureau of Mines, before the meeting of the American Institute of Mining and Metallurgical Engineers.

In a process quite like that used in making the familiar "puffed grain" cereal breakfast foods, ore is placed in a strong container and steam at from 150 to 250 pounds pressure forced into it. The high-pressure steam seeps through cracks and crevices of the ore.

Suddenly a valve is opened and the pent-up steam escapes. Steam imprisoned within the ore particles exerts such force on its way to freedom that it blows the ore apart.

So cheap is the method of crushing by steam explosion that a ton of ground ore can be crushed for a power cost of 1.6 cents. This is less than one-fifth present crushing costs.

*Science News Letter, February 23, 1935*

# NEW

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### Streamlined Plantings

PLANTINGS in the experimental demonstration strips of trees in the Great Plains shelterbelt zone are to follow a plan not familiar in older farm shelterbelts of the West and Midwest.

Instead of solid phalanxes of trees all of the same species and therefore of the same height and appearance, the new ten-rod strips are to be built up of trees varying in height from margin to middle. The strips will not be abrupt walls, but sloping ridges.

Down the middle of each strip, according to Forest Service plans, the tallest, fastest-growing species, such as elms, will be planted. Flanking these will be trees of slower growth and less height, perhaps burr oaks. Finally, like light-armed auxiliary troops on the flanks of the heavy battalions, the outer margins of the strips will be "tied down" with plantings of small trees like hawthorns and shrubs like sumac and buckbrush.

Such a graded structure will have a considerable advantage in the primary object of the shelterbelts, it is expected. If the trees were all of the same species, they would, after a few years, lose much of their usefulness in turning the wind.

Their tops would, to be sure, break the force of blizzards at roof level, but the wind could rush through among their branchless trunks with little hindrance. But a wind encountering a forest edge that thrusts massed twigs against it all the way from ground level to the highest tops will be deflected upward.

The new shelterbelt design is as much an advance on the old as are the new automobile bodies in their contrast to the vertical-lined designs of four or five years ago.

Mixed plantings of this kind are less

artificial, too, than are the old one-species belts. In any natural woodland, especially those venturesome groves that strive against grasses for a place on the prairies, one finds anywhere from three to eight or ten species of trees, and the margins are almost invariably fringed with small trees and bushes.

It is this marginal zone of shrubs, indeed, that gives natural timberland a great deal of its charm, for many of its components have lovely flowers in the spring and bird-enticing fruits in summer and fall. In such thickets many of our best-beloved small birds nest, in preference to the taller trees above, and on the ground beneath their concealing low branches lurk bobwhite and rabbits. It is not unlikely that some of the best dividends from the new plantings will be harvested, by nature-lovers and sportsmen, from these marginal shrubs.

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## GENERAL SCIENCE

## Science-Based Industries Seek R. F. C. Support

NEW industries, based on recent developments in science and technology as yet untried on a commercial scale, may seek funds for their establishment through appropriations made available through the Reconstruction Finance Corporation bill which has just been passed by Congress and signed by President Roosevelt. The R. F. C. regulations surrounding loans for this purpose have not been prepared, but they are among the matters now under consideration in the R. F. C. legal department, and issuance of a ruling is expected in the near future.

If it is decided that such new industries, upon the posting of the "reasonable security" required by the new law, are entitled to the aid of Federal loans, a number of applications will probably be made within a very short time. Among the projects whose backers are watching the outcome of present discussions with interest are:

A proposal to manufacture newspring paper from pine, in the South.

A process for obtaining starch for laundry and other purposes from sweet potatoes, also held out as a new possibility for Southern agriculture.

The proposal to turn surplus grain into alcohol for mixing with gasoline motor fuel, which has been revived in the legislatures of several Grain Belt states.

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