

AGRICULTURE

Well-Bred Potatoes

Scientific work done in the past few decades is yielding disease-resistant, smoother spuds. Twenty-five new varieties released by the Department of Agriculture.

By JOSEPHINE HEMPHILL and DR. FRANK THONE

► POTATOES are ammunition in our battle against world famine. We are urged to eat them in place of part of our bread, so that wheat may be shipped to hungry folk overseas. They would be glad to get potatoes if we would send them instead of wheat; but potatoes contain a lot of water, so it is more practicable to keep them here for our own use and ship the drier, more compact wheat.

That we have good potatoes to eat nowadays is due very largely to scientific work that has been done in the past few decades, to make potatoes bigger and better, and above all to make them grow in defiance of the numerous fungus and other diseases that lie in wait for them in the fields.

How much we owe to plant breeders for the improvement of potatoes can be judged from a glance at the earliest published picture of a potato plant and its tubers, which appeared in 1597, in the famous *Herball* of the early English botanist, John Gerard. The potatoes are depicted as rough and irregular, and not very large. As far as one can tell from the number of them shown among the roots of the pulled-up plant, these early potato vines were not very heavy yielders, either.

Even so, the potato variety that John Gerard knew only a century or so after the discovery of America was already a considerable improvement on its ancestors. Primitive potatoes, as shown by pottery models found in ancient Peruvian tombs, were small and had such deep-set eyes that they seem to have been mere collections of hollows and humps.

Despite this early botanical knowledge of the potato in England, its cultivation was slow in reaching the American colonies. According to the earliest known authentic records, the potato was first introduced in 1719 by a colony of Presbyterian Irish in New Hampshire. This first stock of seed potatoes came from Ireland—so it seems that the much-contested name "Irish potato," has some

justification after all. Colonial New Englanders didn't care much for this new vegetable, and little was done to improve it. In fact, it was not until about a century ago, in the 1840's, that really serious efforts toward improvement by breeding were started.

There was reason for such efforts in that decade. A wasting fungus disease, known as late blight, was wiping out crop after crop across wide areas. Hardest hit was Ireland where in the "black summer" of 1846 thousands died of starvation. That famine is credited with starting the tidal wave of Irish immigrants whose descendants now form a highly important segment of the American population.

The Irish, who can always sing about their troubles, made a song about the disastrous failure of their principal food crop. It is now known chiefly in the form of humorous parodies, but the original version was not funny at all:

"Oh, the praties they are small
When we dig them in the fall,
And we eat them coats and all,
Full of fear, full of fear."

In this country, a mistaken theory arose that potatoes had lost their vigor through many generations of propagation by cuttings only, and that if new kinds could be started from seed the blight would not harm them. The Rev. Chauncey Goodrich of Utica, N. Y., a leading advocate of this doctrine, in 1857 originated one of the first improved potato varieties, the Garnet Chili, from seed of South American stock. It was a good potato, but still not blight-resistant. From this variety sprang a number of other famous lines, including the well-known Burbank, Early Rose, Green Mountain and Triumph.

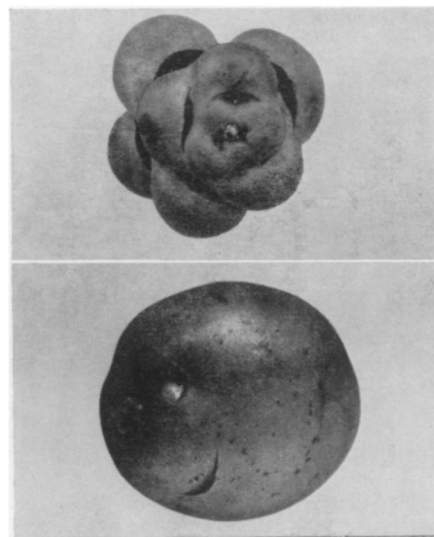
Although potatoes continued to be improved through the rest of the nineteenth century, really scientific potato breeding could not get under way until the rediscovery of Mendel's principles of genetics, in 1900. Then scientists could begin to fit definite characters,

such as disease resistance, smoother shape and heavier yield, together like stones in a mosaic picture. The U. S. Department of Agriculture, with the co-operation of some 35 state and territorial experiment stations, is working on a unified potato breeding program inaugurated in 1929.

In their breeding work, the scientists have a large number of hereditary characters to shuffle and recombine. Whenever they find that a new seedling variety is better than the old kinds in at least one important character, this seedling is released to growers in the part of the country to which it is best adapted.

So far more than 25 new varieties have been thus released. First was Katahdin, introduced in 1933. This is a fine-shaped potato, shallow-eyed, of good cooking quality, and resistant to mild mosaic, a virus disease that is a worse enemy of potatoes than late blight. In 13 years Katahdin has become the most important of all late potatoes.

Katahdin, however, is still not blight-resistant. So the breeders went back to work on that problem. After making many crosses they selected one, subsequently named Sebago, that has good



OLD AND NEW—Ancestor and descendant: a primitive Peruvian tuber, all eyes and lumps (top), compared with a modern "smoothie" that even a GI stuck with KP would love to touch.



CRADLE-SONG—Seedlings of new potato hybrids are started and carefully tended in this Department of Agriculture greenhouse.

qualities to recommend it, and is resistant to other diseases besides blight.

Still the breeders are not satisfied. Potatoes that appear to be even better than Katahdin are being developed. One, a New York State variety named Empire, has already been released. Others are still known only as serial numbers in the breeders' books. Each adds something to quality in the pot, and each promises greater resistance to fungi, viruses and other potato plagues.

After a hundred years, the "dread potato disease" of the famine days seems to be on the way out.

Science News Letter, May 18, 1946

ENGINEERING

Engine Ignition System Needs No Spark Plugs

➤ NO SPARK plugs are needed in a method of igniting airplane and other internal combustion engines in a method developed by German engineers.

The method, known as the "ring-process", was designed to eliminate spark plug fouling and ignition difficulties in aircraft at high altitudes.

Ignition is effected by spraying a liquid ether into the combustion chamber at the time of the compression stroke. The liquid may be budadiol diethyl or diethyl glycol ether. It ignites at the temperature of the cylinder and thus sets off the com-

bustible charge.

This process is one of those secured in Germany by American scientists. It is fully described in a report now available from the Office of the Publication Board, U. S. Department of Commerce.

Science News Letter, May 18, 1946

GENERAL SCIENCE

Science Association Buys Site for Headquarters

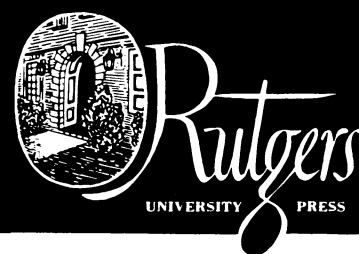
➤ A CITY BLOCK in downtown Washington has been purchased by the American Association for the Advancement of Science, general organization of scientists, as the site for its national headquarters.

Bounded by Massachusetts Avenue, N Street and 15th Street, the triangular area just off Scott Circle now contains four buildings, one of which houses the National Air Transport Association. It is understood that a new building is planned for the site.

At present the AAAS has offices in the Smithsonian Institution building and at American University.

Science News Letter, May 18, 1946

The simple process of spraying the flower clusters of *tomato plants* with a chemical solution containing a hormone results in tomatoes that are larger and contain more meat; also the yield is larger and the plants mature earlier.



Just published

Miracles FROM Microbes

THE ROAD TO STREPTOMYCIN



By SAMUEL EPSTEIN
and BERYL WILLIAMS

MIRACLES FROM MICROBES tells the first full story of "antibiotics" . . . of Dubos teaching a microbe to readapt its habits in order to fight other disease-carrying microbes . . . of Fleming's development of penicillin and of Waksman's discovery of streptomycin. Here are the unvarnished facts behind the "wonder drugs"—what they can, may, and cannot do. A skillfully written book with an introduction by Major General Norman T. Kirk, the Surgeon General. \$2.00

At all bookstores, or
RUTGERS UNIVERSITY PRESS
New Brunswick, N. J.