

BOTANY

Wealth From Weeds

Plants Now Neglected, or Grown Only as Ornamentals, May Be Added to Tomorrow's List of Profitable Crops

By DR. FRANK THONE

WEALTH for tomorrow may lurk unsuspected in some wayside plant you pass every day—or even in some weed that you hoe out of your garden-patch, grumbling at its being in your way. It may be waiting only for some one with the scientific curiosity and patience needed to give it a boost, ready to reward him with fame as well as fortune. Who can tell?

It is only within the past few years that such an idea could be proposed as anything but the wildest kind of speculation. Botanists have learned new magics that should make it possible to take almost any kind of plant, and by lavishing sufficient care and thought upon it to make it valuable for food, or fiber, or flavor, or beauty, or perfume.

Outstanding among these magics are three: X-rays and other radiations, to bombard heredity-bearing chromosomes and change the course of evolution; colchicine, to double chromosome numbers and turn ordinary plants into giants; indole-acetic acid and other growth-promoting substances, to pinch-hit for bees and the pollen they carry, and produce fatherless fruits without seeds. With powerful aids like this at their command, plant scientists may well tackle any kind of a job in plant alchemy with confidence of producing just what is wanted.

Not Yet Begun

Curiously enough, plant geneticists have not yet begun to adventure in the wild. A tremendous amount of work is being done, but it is all being done on the standard, old-line grains and vegetables and fruits and flowers that have been grown in our fields and gardens for dozens of centuries. They have improved these vastly, but they have added very few to their number. In agriculture at least, there is no new thing under the sun.

No new thing, and for an amazingly long time. Of our major crops—wheat, corn, rice, potatoes, cotton, sugarcane, and a score of others—there is not one whose early history is known. They

were all cultivated, in Old World or New, in the New Stone Age, ten thousand years or more ago. We are merely carrying on with what our ancestors left us, making only minor additions to the stock.

Plant scientists of today are hardly to be criticized for sticking to the old crop plants for their experiments. The techniques are all new, and the possibilities of the old reliable breeding stocks are known and by no means exhausted. Moreover, most of the scientists are employed either in the U. S. Department of Agriculture or in State Experiment Stations, where the taxpayers' representatives are likely to be sharply insistent on "practical" work. So pioneer research, in the effort to find uses for the useless, is likely to be confined at first to endowed institutions and to serious amateurs working on their own.

You can plan an interesting and amusing summer game with yourself, by sizing up a plant—any plant—and deciding what would need to be done with it to make it profitable. No need to dismiss any weed as worthless. Re-

member, all our crop plants were wild plants once. Wheat and corn were once wild grasses, roses and lilies just wild flowers. Tobacco is still called "the weed". Let your imagination, then, roam untrammelled, assured that the new genetical magics can make your dreams come true.

Early plant breeding did remarkable things to potatoes, between the discovery of America and the present time. The first potatoes that white men saw were knotty little nubbins with deep-set eyes, and that despite the fact that South American Indian farmers had been raising them for nobody knows how many centuries. Slow improvements, during the past 450 years, have developed the smooth-skinned "hippopotopotatoes" that come out of the baking oven nowadays.

Tobacco Was Weedy

That other great Indian gift, tobacco, was also a bit on the weedy side when Columbus brought the first specimens back home with him. At least, the earliest published pictures show it with a branching stem and relatively narrow leaves, not at all like the wide, thin, delicate-textured Sumatra wrapper tobacco of today. What its flavor was like we can only guess—shuddering. Perhaps England's Puritan king, James I, had



NEEDS NO VINEGAR

Some people like the taste of oxalis leaves, just as they are. If induced to grow several times as big, they might be good as a self-flavored salad ingredient.

some cause for his hostility to the poisonous weed.

There are any number of cultivated plants that represent only one out of several possible species. Nobody knows why the prehistoric farmers chose this one, neglecting the rest. Thus, only one kind of tobacco is grown for smoking, out of a dozen and a half known species of *Nicotiana*. Of 21 species of banana, only about three are rated as edible, and only one of the three is cultivated on a large scale. It seems only reasonable to suppose that in kinships like these, there may be some neglected sister, some ignored Cinderella, which might surprise us all if she had a chance.

We carefully cultivate apples, quinces and pears, but give almost no thought to new and tasty flavors that might grace our tables if we should increase the size of red haws, or the edible hips of wild roses.

Do you like rhubarb? That sharply acid flavor that so many find attractive is present in many plants, some of them not at all closely related to rhubarb. There is that attractive little wild flower, introduced into cultivation to some extent, the oxalis. Its name comes from the Greek word meaning sour. If its leaves, now small, could be expanded to half-a-dozen times their present span, might it not be a very nice addition to the salad bowl?

None Too Useless

No weed need seem too useless, even too repulsive. Can you imagine anything less attractive than skunk cabbage? Yet those who are cunning in the ways of the woods declare that they can cook its young leaves, when they come up new in earliest spring, into a really tasty dish—and no ill odor. Beneath the soil surface is a thick, starch-filled rootstock. But it is believed to be poisonous. Could the new magics of botany exorcise both ill odor and reputed toxicity? Why not?

One major contribution may be made by research to make useless plants useful, in rendering fruitful huge areas that are now unsuitable for ordinary cultivation. This country has millions of acres of desert, other millions that are too wet for farming. It has been our practice to irrigate the first when water is available, and to drain the second. But water is not always available for irrigation, and drainage has ruined old lake bottoms and swamps oftener than it has made good fields of them.

Better, it would seem, to find valu-



SMALL, THOUGH TASTY

Rose hips are nice to nibble at, and one or two species are used a little, in salads. Why not grow 'em as big as apples?

able plants that will grow in such places—or to use botany's new magics to turn the plants that now grow there wild into forms that can be cultivated in the same places at a profit. Thrifty Orientals make food (and appetizing food, too) out of the seeds of the water chestnut and the rootstocks of the wild lotus. With us, the water chestnut is simply a floating menace to navigation in a few of our eastern rivers, where it has become introduced. The lotus, which occupies thousands of acres of wet lands in our great interior valley, is at present only a beautiful wild flower. Yet we, too, may some day find it appetizing to become lotus-eaters. There are many other wet-land weeds of promise (cattails and arrow-leaf for example) that have starch-filled roots or rootstocks. We may eventually find it more profitable to farm the wet lands as they lie, rather than take the risk of draining them.

Improve Desert Plants

In the desert, it might be more profitable to improve desert plants than to go to great expense to put irrigation ditches into at least the less fertile lands. Tumbleweeds have been used in their younger, tenderer stages of growth, as fodder for livestock in drought years. It might be worth while to work on the tumbleweeds, to see if the stringiness can be taken out of the stems, the leaves

made larger and tenderer, so as to make them really worth-while stuff for hungry cattle to eat.

In the dry lands, too, are many species of wild legumes, both on the wild open lands and in the woods. Legumes have double value: they capture nitrogen from the air to enrich the soil, and some of them, like clover and alfalfa, are good fodder. But alas, some of the most abundant of the dry land legumes are poisonous, like the loco weeds and some of the wild lupines. Could this toxicity be bred out? Why not?

Research of this kind, long-shot efforts to make marginal and submarginal lands valuable by raising the value of plants that naturally grow on them, might well be made a part of the great program of world reconstruction that must be undertaken when peace comes again to the earth. If the schemes look visionary, they are certainly no less hopeless than the present apparent prospects for peace. Yet the problems of peace may replace those of war sooner than we look for, and we should be ready for them when they arise.

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MEDICINE

Hypertension Clue Seen In Enlarged Adrenals

COCKED-hat-shaped glands above the kidneys, called adrenal glands, hold a clue to the cause of one kind of high blood pressure, Dr. James F. Rinehart, Dr. O. O. Williams, now at Phoenix, Ariz., and Dr. William S. Cappeller, now with the U. S. Army, declare in a report from the University of California Medical School.

The outer part of these glands, which produces a life-sustaining hormone, was almost regularly enlarged in patients who died of the kind of high blood pressure technically known as essential hypertension, the doctors found. Comparable changes are rarely found in patients who do not have high blood pressure.

Overactivity of these adrenal glands may be the cause of the high blood pressure, but the scientists pointed out that the enlargement with presumable overactivity of the glands may be a result and not a cause of the high blood pressure.

Dr. Rinehart emphasized that the study does not suggest the use of surgery on the adrenals but calls for further study of the relationship between these glands and high blood pressure.

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