



Vegetable Versatility

WHAT a variety of life-ways can be worked out by members of a single plant family!

Take the legumes, for example—that numerous and very widespread plant group that includes clovers, peas, beans and their relatives. They range in size from tiny plants, less than some of the mosses, to towering trees like the locusts and the Kentucky coffee bean. They range in wholesomeness from nutritious peas, lentils, innumerable appetizing kinds of beans, to the stock-poisoning loco weeds of the West. They range in habitat preferences from the mesquite and screw-beans of the arid Southwest to the hog-peanuts that grow in the waterlogged muck of swamps.

Whatever may be your requirement of a plant, there is pretty sure to be a legume of some sort to answer it. Food? So important is this family in our dietary that one member is almost the civic coat-of-arms of Boston, and in French "legume" has come to signify any kind of vegetable. Wood? Locust timber is of the best. Shade? Again the locust tribe can offer its services. Oil? There are soy beans and peanuts. Fodder for our beasts? Clover, alfalfa, lespedeza and soy bean hay. Flowers? Sweet peas, redbud, acacia, lupines, and a host of others besides. Flavoring? Well, there's licorice, at least, and honey from white clover and alfalfa. Even insect poisons: the potent new stuff called rotenone comes from derris and cubé of the tropics, and can at need be extracted from the Devil's-shoestring plant of our Southern coasts.

History and literature have been made by plants of the legume family. The pottage that Esau bought so expensively was made of either peas or lentils. So was that other mess of pottage which the prophet Habakkuk delivered in such a

hair-raising hurry to the prophet Daniel. The "husks that the swine did eat" in the parable of the Prodigal Son were in all likelihood the cloyingly sweet-flavored pods of a small locust-like tree common in the drier lands of the Near East.

Even modern science acknowledges a debt to the legumes every time it uses a lens, in telescope, microscope, camera or projection lantern. For the word "lens" is simply the Latin for the edible

seed of the lentil, which has a bulging discoid shape exactly like that of a double-convex magnifying glass.

Even greater, however, is the more direct debt of biology. For it was with a handful of common peas that Gregor Mendel, in the patient quietness of his monastery garden, laid the foundation for his famous generalization that is the beginning of modern genetics.

Science News Letter, June 22, 1935

MEDICINE

Fever Treatment Cures 80% With One Kind of Arthritis

Patients Hobbling About Painfully on Crutches One Day Are Able to Walk Briskly 48 Hours Later

A PATIENT suffering from one type of arthritis, that due to the gonococcus "germ," has an eighty per cent. chance of being promptly cured by a few sessions of fever treatment, Dr. Philip S. Hench of the Mayo Clinic reported to the American Association for the Study and Control of Rheumatic Diseases.

Fever treatment does not, however, offer nearly so much hope to patients suffering from other forms of arthritis, Dr. Hench emphasized.

At the rheumatism conference at Atlantic City Dr. Hench showed pictures of some patients afflicted with gonorrheal arthritis or rheumatism hobbling around painfully on crutches one day and walking briskly about twenty-four to forty-eight hours later. Early and efficient treatment is necessary to obtain the best results.

Even the patient who has had this type of arthritis for six weeks or more has still a 35 per cent. chance of being relieved of his painful symptoms, Dr. Hench said, summarizing results obtained at various clinics throughout the country. If he is not cured, this type of patient has an additional 30 per cent. chance of being markedly relieved with only some remaining stiffness.

"Unfortunately germs supposed by many to cause the common forms of rheumatism (chronic deforming arthritis) are usually resistant to heat and apparently are not killed by the amount of fever which it is safe to induce in human beings," Dr. Hench said.

"The development and poisonousness of these germs may be somewhat hindered, however, and circulation to the

joints may be improved; hence, some of these patients with rheumatism also get relief from fever treatments, although not nearly so often as those who have gonorrheal arthritis. It was reported that, of about 315 patients with rheumatism who were treated in various clinics, 5 per cent. had been relieved of their symptoms and 25 per cent. had quite definitely been benefited."

The idea of fever treatment has become familiar to the public. What actually happens to the body during this treatment may be less familiar. Dr. Hench described it vividly as follows:

"A whirlpool of physical and chemical reactions occurs during the induction of such a 'friendly-fever' in human beings. Blood vessels change their size; the blood, kidney excretion and sweat are altered in their content, and it would seem that the immunity mechanism of the patient is enhanced. The most important discovery is that the germs of gonorrhea and syphilis can actually be killed if enough fever can be generated in the patient."

"While fever therapy in the hands of specially trained physicians and assistants is essentially a safe procedure," he continued, "the reactions must be carefully controlled at all times by attendants. Such treatments cannot therefore yet be said to be cheap, and the day when anyone can turn on his own electric apparatus and cook away his disease in the fires of fever has certainly not now, and probably never will, arrive."

Fever treatment seems quite new. Its present form and usefulness are indeed owing to modern inventions. Actually,

however, the beneficial or curative effect of fever has been known for thousands of centuries.

Almost 2,300 years ago, the Greek physician, Hippocrates, wrote: "Those diseases which medicines do not cure, iron (the knife) cures; those which iron cannot cure, fire cures; and those which fire cannot cure are to be reckoned wholly incurable." For centuries thereafter physicians regarded fever as one of nature's ways of combatting and preventing the spread of disease. Modern physicians owe their revival of interest in fever as a means of treatment to Wagner-Jauregg, an Austrian physician, who noted that when patients who were affected by syphilis of the nervous system accidentally contracted fever of some sort they were often remarkably benefited. He therefore boldly began to inoculate such patients with malaria and he noticed that in the fires of malarial fever the system was actually often "purified."

Physicians then recalled that, since the sixteenth century, the Japanese had been in the habit of bathing frequently in very hot volcanic water, with apparently curative effects on syphilis and various forms of rheumatism. Thus in the last seven years a "new" and rather amazing form of medical treatment has arisen. In 1928 the press carried dispatches concerning the curious discovery of Dr. W. R. Whitney of the General Electric Company that workers exposed to high frequency radio waves developed fever. Realizing the possible value of this observation to medicine, Whitney and his colleagues developed "radiotherapy." Other methods of producing a safe form of fever in human beings have been developed, such as diathermy, the use of special hot baths, and more lately of the heated air-conditioned cabinets elaborated by Charles F. Kettering of the General Motors Corporation.

Science News Letter, June 22, 1935

● RADIO

Tuesday, June 25, 3:30 p. m., E.S.T.
POISON IVY, By Dr. James F. Couch,
 Bureau of Animal Industry, U. S. Department of Agriculture.

Tuesday, July 2, 3:30 p. m., E.S.T.
THE PUBLIC HEALTH LABORATORY—ITS VALUE TO MR. AND MRS. CITIZEN, By Dr. Fred O. Tonney, Director, Technical Service and Research, City of Chicago, Board of Health.

In the Science Service series of radio addresses given by eminent scientists over the Columbia Broadcasting System.

OCEANOGRAPHY

Fossil-Bearing Rocks Picked From Cliffs Under the Sea

Period of Rocks Recovered Shows The Crustal Movement Occurred Only 30,000,000 Years Ago

EVIDENCE completely upsetting existing theories about the long geologic period of stability and quiet supposed to have continued unbroken along the North Atlantic seaboard since the Palaeozoic age, 160,000,000 years ago, has been discovered by a joint Harvard University and Woods Hole Oceanographic expedition. This is the first time scientists have succeeded in taking fossil-bearing rocks from the cliffs of the North American continental shelf.

Dredging more than 2,000 feet below the surface of the Atlantic ocean was conducted on Georges Bank, about 120 miles east of Nantucket Island, Massachusetts, under the direction of Henry C. Stetson, research associate in palaeontology at the Harvard University museum of comparative zoology.

Fossils already found indicate that the last major crustal movement of the North Atlantic American coast occurred since the Upper Cretaceous period, 105,000,000 years ago, and possibly since the Miocene age, 30,000,000 years ago, since the valleys are cut in rocks assigned to these periods.

The evidence obtained by the submarine quarrying seems to confirm the generally accepted theory that the deep ocean valleys in the continental shelf were formed by rivers which flowed into the Atlantic before the shelf sank below the ocean. These valleys are now more than 6,000 feet below sea level at their greatest depths on Georges Bank and an upheaval sufficient to lift them above present sea level would have raised the highlands of New England and New York to current Alpine heights. It is also believed that a cliff about 7,000 feet high must have existed along the New England coast at that time.

Many fragments containing fossils have been dredged previously in this area, but no rock had been broken from the sides of these ocean valleys and immediately carried to the surface from exactly known depths previous to this Harvard expedition.

Working from the deck of the Atlantis of the Woods Hole Oceanographic In-

stitute, Mr. Stetson made eleven successful hauls. The middle and upper parts of the valleys between 2100 and 600 feet were found to be the best areas. Here the walls were either steep enough to prevent the deposition of recent sediment or else the mantle was thin enough to be penetrated. The lower parts of the valleys have gentler grades and the fill of debris material covers the bed rock so deeply that no rock was found exposed.

In one of these valleys the expedition dredged at a depth of 1956 to 1578 feet a coarse sandstone containing fossil molluscs, which Dr. Lloyd W. Stephenson, of the United States Geological Survey, has assigned to the Upper Cretaceous period, about 105,000,000 years ago.

Other evidence indicates that Georges Bank is fundamentally an extension of the coastal plain with a covering of glacial debris.

The work is to be continued this summer in the Hudson River submarine channel off New York harbor and in the newly discovered submarine river valleys off the Maryland coast. One of these latter valleys is the deepest yet found along the Atlantic coast, dropping 9,000 feet below sea level.

Science News Letter, June 22, 1935

RADIO

Police Radio Transmitter Viewed By the Camera

See Front Cover

POLICE are not concerned with the beauty of their weapons against the criminal world. But beauty is nevertheless present in the camera view of the hundred-watt radio transmitter for police use depicted on the front cover of this week's SCIENCE NEWS LETTER.

The transmitter was designed by the Bell Laboratories for the Western Electric Company.

Science News Letter, June 22, 1935

Among the rare animals of China are the golden-haired monkey, the blue sheep, and the Chinese red wolf.