

Relicts and Disjuncts

Botany

Scattered all over the world, in out-of-the-way corners, there are little surviving groups of plants, left stranded where they are by the course of evolution, just as such things as wisdom teeth and a vermiform appendix are believed to have been left stranded in our own bodies. Such bits of evolutionary jetsam are usually known as "relict endemics."

Endemic communities usually occur where some kind of a sheltered nest is cut off from a hostile, competing world by natural barriers, leaving them to lead a cloistered life, protected from the stream of life that would otherwise swamp them. They are assumed to be the last fragments of once larger populations that held a much wider range of territory, in times when the living conditions now obtainable only in the sheltered corners dominated the whole terrain. Sometimes we can find the main body of the army, resting after a long retreat to another region. In such a case the stranded patch of plants is called a disjunct, instead of a relict, endemic.

Such relict and disjunct communities may be found in almost all parts of the country, except in regions of monotonously regular climatic and soil conditions, such as the Great Plains. They are, conversely, especially to be looked for in a broken terrain or in regions of marked climatic contrasts within narrow limits, and sometimes the natural barriers that protect them are very slight, so far as our power to detect them goes. Of course, the less the barrier, the more rapidly the beleaguered community is doomed to go under and become finally extinct.

An excellent case in point is furnished by the Torrey Pines, a little cluster of almost Japanese-appearing trees that hold the tops of two hills at the northern end of the city limits of San Diego, Calif. There are also a few of them on one of the Channel Islands off the coast, many miles to the north. There is no doubt that once a Torrey Pine forest held sway over a much greater portion of southern California, but the all-pervading chaparral now has the

remnant with its back against the wall. Perhaps the change has been encouraged by a shifting climate. The survival of the last members of the species here on the hilltops by the ocean seems to have been due to the fact that these particular hills have been relatively free from brush fires. Chaparral fires are common in southern California. The chaparral itself recovers quickly from them, but they are fatal and final to young pine trees. Thus, fire may have worked in favor of the invading brush in all places save this last precarious stronghold of the pines. At any rate, there they still are, holding obstinately to their hills; and no visitor to San Diego has done his duty by this southwestern corner of the country until he has seen the Torrey Pines.

Less desperate is the plight of another California relict endemic area, the Monterey peninsula. Here grow, among other highly interesting plants, two tree species, the Monterey Cypress and the Monterey Pine. There is no easily seen (*Turn to next page*)

Sugar Cane Hunt Begun From Air

Agriculture

Flying over the land of the headhunters and exploring in a few hours jungle country that would take months to transverse on foot, a U. S. Department of Agriculture expedition to New Guinea this summer will search for wild varieties of sugar cane that may bring added wealth to America's sugar planters.

The party, led by Dr. E. W. Brandes in charge of the government's sugar plant investigations, includes Dr. Jakob Jeswiet of the University of Mageringen in Holland, who for 15 years was in charge of the cane improvement division of the Experiment Station for the Java Sugar Industry, E. C. Pemberton, an entomologist on the staff of the experiment station of the Hawaiian Sugar Planters' Association, and Richard K. Peck, airplane pilot, who is a veteran of a previous aerial expedition to the wilds of the East Indies.

Back of the sailing, on April 12 from San Francisco, of these saccharine-bent aviators lies a story of agricultural romance that has few counterparts in history, if any.

Until two years ago, the Louisiana sugar-cane industry was slowly

dying of wasting diseases. The sugar-cane mosaic, carried from plant to plant by the corn aphid, had spread over the entire cane area. A root-rot complex (plants have complexes, like human beings) added to the misery of the Louisiana planter. The only way known to combat those diseases was by thorough "roguing" of the fields, but what help was that if entire fields were affected? One might as well dig it all up—did dig it up often—and start all over again with a whole year lost.

Then came the "P. O. J." canes, first brought in by Dr. Brandes and his associates in the Bureau of Plant Industry from Argentina, where they had been imported from the "Proefstation Oost Java," whence the name.

These canes had shown a disease that of the varieties commonly grown. They get the mosaic, but it does not affect them. They may not produce quite so much sugar per ton of cane, but they produce so much cane per acre that the net sugar production is much larger.

As a result of Brandes' study of the various P. O. J. canes, three varieties, P. O. J. 36, 213 and 234 were recommended for trial in Louisiana

In April, 1922, Elliott Jones, field manager of Southdown Plantation, Houma, La., took a few short pieces of P. O. J. 234 back to the plantation from the Department of Agriculture greenhouse in Washington. That was the beginning of this variety in the state.

And now the romance. The flood threatened Southdown Plantation in 1927. Here by this time was the largest nursery of P. O. J. 234 in Louisiana. The "Sugar Bowl" was given up to the flood, and with it most of the acreage of the old, susceptible varieties, such as D-74, Louisiana Purple and Louisiana Striped (ribbon cane). If Southdown and its P. O. J. canes were saved, the whole sugar bowl could be replanted to the disease-tolerant canes. Would the planters below Southdown consent to the cutting of the levees, so that the P. O. J. canes on Southdown could be saved, even at the expense of overflow of their own lands? They would, and they did.

As a result, practically all of the sugar district in Louisiana is now growing P. O. J. canes, largely from seed cane saved by this remarkable demonstration. A (*Turn to next page*)

Relicts and Disjuncts—Continued

reason why they should not be growing all along the California coast; they thrive in cultivation, as does the Torrey Pine, and their leaves and cones have been found embedded in the Carpinteria asphalt pits, many miles to the south of their present home. But something has crowded them out of all other parts of their original habitat—and the Monterey peninsula today is a mecca for plant ecologists, who come thither to attempt to read the riddle of these two trees.

There is another very notable endemic species in California, a fine fan palm named *Washingtonia* in honor of George Washington. It occupies in force a canyon in the hills 22 miles east of Banning, Riverside County, and occurs in a number of other places also. The Washington palm has come to be a great favorite as a street tree in California.

California's great rival state, Florida, can also boast of its endemic floras. Perhaps the most classic is the Torrey colony, occupying a series of ravines that cut back from the east bank of the Appalachicola River between the cities of Chatta-

hoochee and Bristol. In this area, which is about twenty miles long and from a half-mile to four or five miles wide, can be found a strange yew-like tree, the Torrey, or savin, or stinking cedar, or, in botanists' Latin, *Tumion*. It is found only in the depths of the ravines and on well-sheltered creek bottoms; on the uplands it does not venture. It has relatives in California and in Japan and China, but of this particular species, *Tumion taxifolia*, this little area is the only home. In the same region, and nowhere else, grows the Florida yew, *Taxus floridana*. This nest of ravines is hard to penetrate, but Torrey can be seen within the city limits of Chattahoochee. Botanically minded persons might do well to make a pious visit to this tree, for one of the classic papers of Asa Gray is entitled, "A Pilgrimage to Torrey."

A second Florida endemic, very recently discovered, is a remarkable patch of wild gooseberries along the shore of a little lake near Tallahassee. It created more or less of a sensation in the botanical world, for nobody had ever dreamed of a wild goose-

berry growing in Florida, and this was a new species to boot. It is probably neither a relict nor a disjunct, but what may be called an initial endemic; that is, a new species just getting its start, which has not yet had time to spread.

A most interesting endemic plant, which may possibly be another initial endemic, is the famous Venus flytrap, which grows only in the neighborhood of Wilmington, N. C. This is one of the class of insect-eating plants; the outer ends of its longitudinally hinged leaves snap shut like steel traps on any insect unfortunate enough to blunder against certain trigger-bristles they carry, after which the luckless creature is digested and assimilated by this bloodthirsty vegetable.

There may be an endemic group of plants in your own neighborhood; this is a very large country and has not yet been really thoroughly explored botanically. Endemic-hunting is great sport for one with a bit of training in botany and plenty of patience to search the ravines and odd corners of the woods.

Science News-Letter, May 26, 1928

Opium Bondage

Sociology

JOHN PALMER GAVIT, in "*Opium*" (Brentano's): The Chinese have "The Ten Cannots" to describe the condition of the opium addict. He cannot—

1. Enjoy sleep.
2. Rise early.
3. Be cured if sick.
4. Plan anything.
5. Walk any distance.
6. Enjoy wealth.
7. Help needy relations.
8. Get credit, even if an old customer.
9. Decently await his turn to smoke.
10. Give up the habit.

Science News-Letter, May 26, 1928

Because of the abundance of food supply in Southern California, that region supported a larger population of Indians than any similar area in this country.

In the course of his campaign to raise Italy's low birthrate, Premier Mussolini has distributed over \$25,000 to the heads of 1,300 large families in the past six months.

Sugar Cane Hunt—Continued

new page has been turned on which is being written the story of the comeback of an industry which had almost been given up as hopeless. The flood of 1927 was made to serve a useful end.

After the flood-waters receded, Nature compensated for her violence by giving the best she had for a favorable cane-growing season. The yield of P. O. J. 234 at Southdown Plantation in 1927 averaged 25 tons per acre. The University at Baton Rouge reported a yield of 41 tons for P. O. J. 213, yields of 43 tons were reported at other points, and predictions are made that when the P. O. J. canes get into full production the average yield of the state will be 25 tons of sugar cane per acre. Contrast this with the record of the old canes, slipping, slipping, slipping from an average yield of about 15 tons per acre to around 10 tons, to less than 7 tons in 1926, and you see what is happening in Louisiana.

These P. O. J. canes are more than disease-resistant. In the hurricane of August 25, 1925, which laid the cane fields flat at Southdown, the P. O. J. fields suffered very little breakage compared with adjacent fields of D-74. The P. O. J.s pulled them-

selves erect after the storm and started in to grow new leaves to replace those which had been broken off.

But that is not all. P. O. J. canes are hardy, frost-resistant, and Louisiana now has visions of an extension of the sugar-growing area beyond its present limits.

The P. O. J. canes are hybrids, developed by crossing wild varieties of cane that are immune, resistant or tolerant to disease but low in sugar content, on domesticated varieties which are high in sugar content but susceptible to disease.

Hence, the point to and reason for the Brandes expedition. If Brandes can find wild varieties which carry more sugar than and as much disease resistance as those used to produce P. O. J.s he will get what he went for.

Every good American with a sweet tooth in his head, and that's all of us, will pray that no head-hunter gets Brandes.

Science News-Letter, May 26, 1928

The average Canadian eats an egg and a half a day, whereas the average person in the United States eats only half an egg.