The Plant Wonderful

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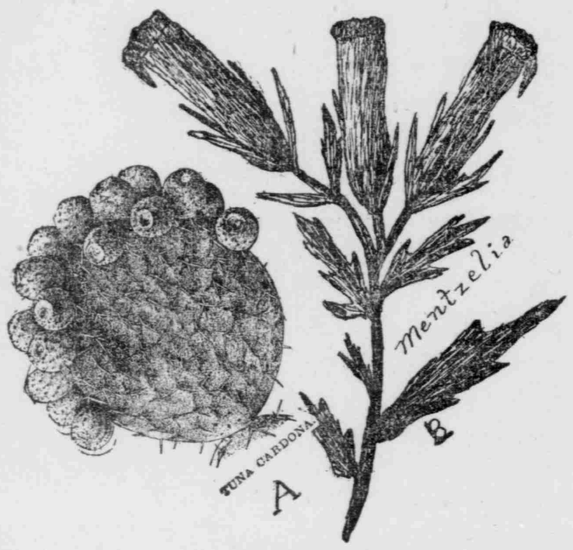
OBSERVATIONS FOR THE FIRST WEEK IN OCTOBER.

The arid west produces many plants that are regarded as vegetable curiosities. This is not supposed to be due to the bare fact that the desert flora is simply different from that of the humid regions, and hence excites curiosity by reason merely of the contrasts. The writer is of the opinion that in the struggle for survival the semi-arid and barren land plants have actually solved more of the problems of plant life, or have solved them in more a conspicuous and open manner, than vegetation is compelled to do elsewhere, so that the wonder-like aspect of many a western species is justified by its inner history and physiological structure as well as by its odd form or unique external characteristics.

A glance at a plant is often sufficient to indicate whether it grows in the desert or, at least, in a semi-arid region, or whether it requires the large supply of moisture which is necessary for the life of most plants. The firm texture, dry stem, tough bark often covered with fine wool or resin, the spare and sparse leaves, etc., are the usual marks of the desert denizens; while the soft leaf texture, moist surface and abundant foliage to promote evaporation and transpiration of water from the leaves are the usual marks of plants growing in moist places.

The Curious Eriogonums.

Growing everywhere throughout the semi-arid regions is a group of curious looking wild plants of the order polygonaceae, called the eriogonums. They have no other, that is, no "common" name. The plants present a rigid, stick-like appearance and are commonly about a foot in height. Always slender, in some species thread-like, with swollen joints and almost woody at the base, the lower leaves forming a rosette on the ground, most of the upper being in whorls or rings at the joints, these plants bear pretty flowers in bunches surrounded by leafy involucres. The flowers are interesting under a lens, with their six marked, colored segments, three-branched styles and nine stamens. These desert species present a considerable variety amidst their unity. One of them common in Uinta county has its stem swelled out in the middle and is called the bottle plant; while the upper stems are thin and thread-like. The flowers of the various species may be white, pink or yellow. There are fifty kinds in Colorado alone, and possibly many in Utah. The eriogonums are best studied in the eighth grade.



A. Mexican Prickly Pear, one-sixth natural size.
B. Mentzelia laevicanlis, in fruiting stage, three-fourth natural size.

The Unique Torchweed.

In the valleys and on the bench lands, but not in alkaline soils, as far as I know, may be seen a little bushy plant a foot high, flat-topped and covered this week with small, dainty, bright yellow stars from five to seven rayed, one-third of an inch across, and containing about five little disc flowers in a tiny involucre formed of from nine to thirteen whitish and green-tipped scales in three rows. This is the torchweed, a unique growth found upon western hills and plains, so named from the readiness with which the dry bushes burn in the spring. Under a lens the akenes (seeds) are silky. The leaves are thickish and narrowly linear, an inch or more long, few and scattered; the stems are slender, branching, bushy and broom-like; the foliage, bitter and tough. Animals do not seem to eat this plant, and its only apparent use is to furnish bird seed and a yellow carpet upon some of our barren lands. Gutierrezia Euthamiae frequents sandy or gravelly soil, as does also its stouter relative, Gutierrezia longifolius. A seventh grade study everywhere. Out common species, dy, to be compared with the rabbit brush.

Bitterwood, or ragweed, is a curiosity Ambrosia artemesifolia, has rough, ragged leaves. On the branches are prickly burs, the pistils, and there are racemes of cup-like involucres containing the stamens or stamnate flowers, higher up. The latter are loaded with yellow dust, the pollen, to such a degree that in brushing past these weeds the clothes are showered with it. Ambrosia means foood of the gods, and so it must be, since, on account of its bitter taste, nothing on earth, unless it be insects, seems to eat it. Even the goat scruples at the ragweed. After frost comes its stems are filled with a brilliant red dye. South of us the Indians are said to use a decoction made from its leaves as a cure for the bite of the rattlesnake.

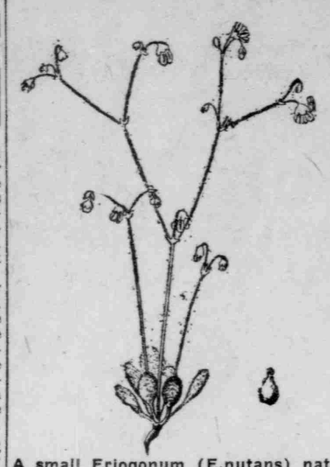
Several kinds of rabbit brush, Chrysothamus pulchellus most commonly, are now flowering in the valleys. It is a thing of beauty as well as a desert curiosity, from its smooth stems, few and thread-like leaves, showy yellow flowers and pretty parachutes of seed and pappus-down for air travel. Lift out the entire head of flowers for study and use a lens. It prefers heavy or clay land and endures some alkali, and shows plainly the marks of its struggle to survive amidst desert conditions.

The Astragulus.

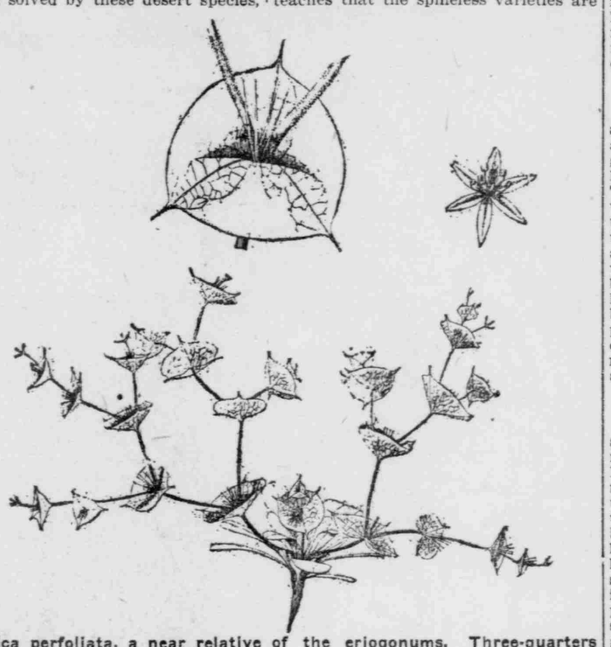
Among the pea-pod family are numerous members of an interesting native group accessible near most of the towns. Two of these pod-bearers are mat-like species, a foot in diameter, lying close to the ground; one of them, Astragulus Utahensis, being white and silvery. It has a densely woolly, curved pod and leaves compound with many leaflets. The other common kind is quite smooth and reddish green, A. jodanthus. The special point to observe is how these species have contrived to protect their seeds in strong pods from the attacks of insects. The ones shown in the cut exhibit the spare foliage that indicates where they grow on the desert. We have more than thirty of this interesting group. Others of the pea family are native mountain clovers, to be studied like the lucern and white clover. The great number of these nitrogen gathering plants may account for the high fertility of our virgin soil. The Astragular is but studied in the sixth grade. It may now be compared with leguminous plants previously studied, especially as to pods, leaves and stipules, since it flowers earlier in the season. The children call the silvery astragulus the lady fingers.

The Prickly Pear.

The prickly pear is pre-eminently the wonder of the American desert. We have perhaps a dozen kinds. Gather the prickly stems in flower or fruit. Notice that there are no leaves, but bundles of spines in their place. The numerous sepals, petals, stamens, usually in many rows, often make up the most beautiful of flowers which far surpass in splendid beauty even the rose in all its glory. Ours are species without true leaves, called Cereus and Echinocactus. Some of the Mexican forms, which may be found within our southern boundaries, have small, awl-shaped leaves that fall early, and are jointed and branching plants producing edible fruits. For fifth grade observations, show why the leaves have turned into spines and why the stems of these plants have such tough, leathery coverings. The successful conservation of the winter moisture is the problem solved by these desert species, and this is the fact that accounts for all their oddities.



A small Eriogonum (E.nutans) natural size.



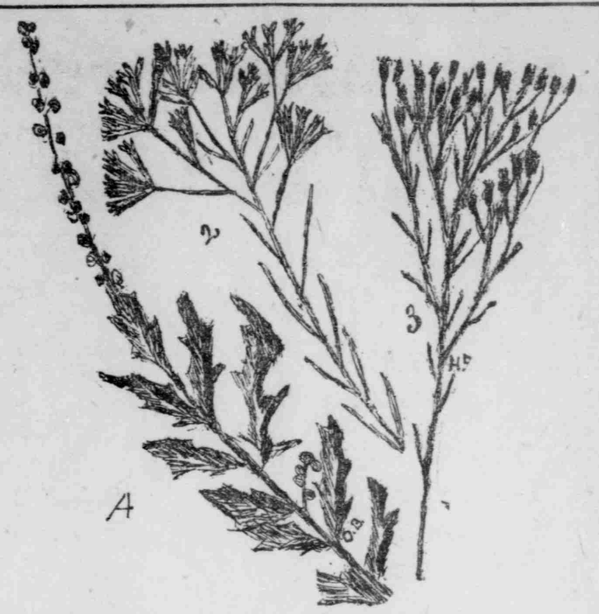
Oxythica perfoliata, a near relative of the eriogonums. Three-quarters natural size.

Most of the edible Mexican species belong to the genus Opuntia, to which also our commonest species belongs.

The Edible Tunas.

The Mexican tuna, as the fruit of many of the cactus family is termed there, is the product of various prickly pear species that are often tree-like in dimensions, the different kinds ranging from a few inches to ten or fifteen feet or more in height. They are always of singular appearance and of great diversity in the color of flowers, nature of the prickles, and in the abundance and palatableness of the fruit. The average American traveling in Mexico can see no value in the tremendous stretches of prickly pear that cover the plateau, but the native peon grows these plants and similar ones in his orchard, and gives them as much attention as he bestows upon other cultivated crops. In some cases the diet of the peon herdsmen is made up for a time entirely of tunas, which constitute both food and drink, and he may then consume from 100 to 200 of the fruits per day. These fruits vary from one to three inches in diameter, and are usually pear or fig-shaped, or sometimes nearly spherical. They weigh from an ounce to half a pound each, and vary in color from a yellowish green to a dark purple. The rind and seeds constitute on an average a little more than half the weight, only the pulp being eaten.

By several different processes these fruits are preserved in various forms as food. Bulletin 64 of the New Mexico station points out that while enthusiastic magazine writers would revolutionize conditions in the arid regions, converting the most arid deserts by means of plantations of prickly pears without spines, into populous and prosperous communities, yet experience teaches that the spineless varieties are not hardy under natural desert conditions. They require much water and a winter temperature above 10 degrees Fahrenheit. Spines have been eliminated by selective propagation from many of the plant bodies, but not yet from the fruits. The spineless economic kinds are less hardy than the spiny natives, and it is to the latter that we must look for the future spineless desert fruits able to endure cold winters.



1. Branch of the Bitterweed, three-fourths natural size.
2. Branch of the Rabbit Brush, one-eighth natural size.
3. Branch of the Torchweed, three-fourths natural size.

The Mentzelias.

Another group of remarkable semi-arid fall plants flowering late, often in autumn, and assigned to the fifth grade, are the mentzelias, of which we have several species on the dry lands. The foliage is rough, in some kinds very sticky with barbed hairs, so that the leaves when touched cling tightly to the hands or clothing. The petals are large, showy, yellowish, orange, or white, and either five or ten in number; sepals and stamens numerous. The kinds common here have a striking, bold and silvery appearance. The seed pods are large and cylindrical, and are cut off square at the apex. The power of resistance to drought is apparent on inspection of this interesting plant.

A Lace-Like Mat.

Common on almost every dry bench and just now coming into flower and fruit is the daintiest of all matweeds. Forming a lace-like pattern a foot or more in diameter, and spreading flat on the ground with its thread-like stems, the pretty and curious little thing may be found on hillside or in canyons. It has small leaves less than half an inch long, and very oblique at the base. The seed pods are exserted on slender pedicels, are three-sided and somewhat pyramidal in shape. The plant is very smooth. Euphorbia serpyllifoliaa is a good object for observation in the fourth grade. It has a milky, acrid juice, pistillate flower single, the staminate in a little calyx or involucre containing numerous stamens.

The lace-like mat of the Euphorbia may be compared with those of the storksbill, the dandelion and the little wild and woolly verbena, and with the "rag carpet" of the common knotweed, which it somewhat resembles.

For first and second grade observations, the common sunflower, Helianthus annuus, is unsurpassed. It looks like the sun and tries to face the sun. Have pupils count its ray and disc flowers, and notice its rough, bristly, gummy stems, which repel the crawling insects; also its sandpaper leaves, and the curious mechanism of the disc flower. The petunia or the four-o'clock of the gardens may be observed for colors and forms.

Third grade pupils may make observations this week on grasshoppers, which will be the main subject of the next paper.

University of Utah, Sept. 26, 1907.