

# Weed Patches and Waste Places

*The fifteenth in Nature Magazine's series of educational inserts*

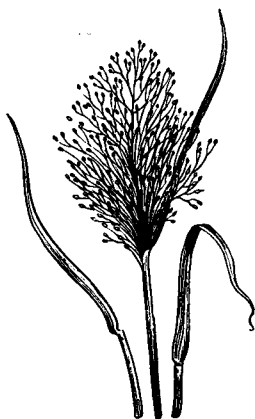
By E. LAURENCE PALMER



CRAB GRASS



BEGGAR TICKS



OLD WITCH GRASS



BARNYARD GRASS

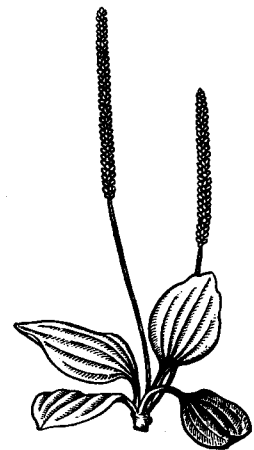
"JUST a weed patch" seems to be about all the average person thinks of a waste place. Yet, such spots afford superior opportunities for interesting studies in Nature. All one needs is a little patience, a little guidance and more than a little common sense. Once one has started to study such a place he maintains his interest indefinitely.

When I built my new home, it was on a site occupied by a glorious weed patch. As the years have gone by, the plans of the family, but not always mine, have called for increasing encroachment on the rights of those weeds. Now, the weeds have been forced off to a little corner where each year we have a fine crop of teasel, New England aster, milkweed, some startlingly beautiful evening primroses, and even some ragweed and pigweed. By keeping the garden away from that spot as much as possible, by stringing clothes lines properly, and by other devices, I have managed to keep the interest of the powers-that-be from that weed patch of mine so that I can enjoy it. It is a little game I have played with surprising success for some years now. And if this article is not read by other members of the family, the patch may be saved for many years to come.

"But why should you want to save a weed patch?" you ask. "Why don't you get rid of the things and in their place put the orthodox ornamentals?"

One reason, of course, is the little game of seeing how long I can protect them from the march of progress. Another, is that I like to look at the plants. Still another is that each year I find on them more interesting insects than I am able to find on the commonly-planted species. To be sure, some of these insects sometimes sneak down on my garden. The function of such a garden, however, is primarily to work off the energies that go with the usual garden fever of early summer.

I know that weed patches have their bad points. I do sneak in when no one is looking and pull out the ragweeds before they spread their pollen to the four winds. I break off the tops of some of the teasels and evening primroses before their fruits and seeds are shed too abundantly. Nevertheless I like those weeds. It is among them that my wild cottontails raise their litters. At the edge of the patch is a place where for years a chipmunk has survived the attacks of neighbor cats. It is in this patch that the snow stays on longest in spring and keeps the garden wet so that I will not have to spade it so soon. It is here that I go for samples of weeds when I want something for a Nature study class, a Nature broadcast, or, as in the present case, for an article in *Nature Magazine*. Why should I not protect something of such values to me? Why should I roam far for what I can have in my own backyard?



COMMON PLANTAIN



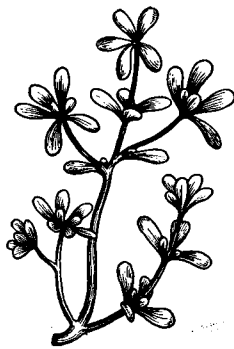
KNOT WEED



GREEN FOXTAIL



SHEEP SORREL



PURSLANE



DANDELION



YELLOW  
WOOD SORREL



SHEPHERD'S PURSE



SOW THISTLE

### Weed Patches and Wildlife Management

The two essentials sought in any wildlife management program are adequate food and shelter for the species desired. *These essentials* must be attained and *maintained* at a minimum of expenditure of funds and effort. They must exist in areas of appropriate size and location to prevent undue crowding of individuals, and so that a maximum of population may be maintained per unit of space. Within certain limits, the weed patch meets every one of these requirements for such species as quail, pheasants and rabbits.

The food situation is an interesting one. Weeds vary so greatly that one can find those that have succulent vegetative parts useful as food in summer. Also, some of them produce concentrated foods in seeds and fruits through the winter months when other foods are scarce.

We hear much in text books of how many tons of weed seeds are destroyed by the juncos of Iowa or the quail of Ohio, but what does this really mean from a common-sense standpoint? The answer can be found in any weed patch in the country. Measure out a square yard, or many square yards, in the patch nearest to you. Count the number of plants of any one species in this area. If the season is advanced, the chances are excellent that this number is not great. For example, there may be but a single teasel, or at most ten flowering teasels, to a square yard. This means that to maintain teasels in that area there should be at least ten seeds that can survive. You will find any single teasel head fairly honeycombed with pits, and in the bottom of each a one-seeded fruit. Only a small fraction of the seeds of one head are sufficient to maintain the species in the area under question. And yet each plant bears many heads and there are a number of plants.

Juncos, song sparrows, quail and many other birds could eat hosts of teasel fruits and not affect the future teasel crop. What is eaten is merely a surplus that ordinarily would be almost totally lost anyway. The tons of weed seeds eaten annually by the Iowa juncos, according to our school texts, probably had not the slightest effect on the weed crops of the State. There were many other uneaten tons, but only a relatively few tons were needed to maintain the species. The quail or juncos that thrive on these surpluses are extra profit from this weed patch

of ours. In game management, as in many other things, we are interested in profits we can get from products otherwise wasted.

Of course not all the weeds in a patch furnish an abundance of surplus seeds for game food. If game food is our object our weed patch should support suitable species. It should be unnecessary to list those that may be in your weed patch. I would miss many of them and you would miss the fun of discovering something for yourself. Just go out now and look over the weeds to see which of them have fruits that seem to be large enough for bird food. Probably you will find lambs-quarters, amaranth, ragweed of some sort, probably some sort of smartweed or wild buckwheat, and any number of many grasses, such as foxtail, orchard grass, quack grass or wild rye. These have seeds or fruits that, you will assume, should have value as bird food.

If you are interested in checking on this, you may do so by referring to the published lists of food plants eaten by your commoner local species. If this is not convenient, and a cat or dog brings in a dead bird, just open it to find what it has been eating. There is a good chance that there you will find materials similar to those you will find in the average quail or pheasant crop. See to it that your weed patch has a reasonable representation of large-fruited plants.

As to shelter, the weed patch is supreme for the smaller forms. Plants are so densely crowded together that we, or the hawks, the cats or foxes, can not readily see through them. Yet these plants are easily bent aside to permit the entrance of an animal the size of a rabbit, quail or even of a pheasant. All these game species have to do when feeding in the open is get to the cover of a weed patch before they are discovered and they are reasonably safe.

When much of our country was first settled, we separated our fields with huge stump fences, with rough stone walls or with rail fences. All of these were sufficiently irregular in outline to permit weeds to establish themselves in the corners. Many individual rabbits and quails lived in these weeds. Then we put up straight wire fences and cut the weeds between the posts, and had no cover, no food and practically no game. The blame for this scarcity was placed on the hawks, skunks, snakes and owls.

If you do not believe that weed patches serve such an important role in providing the necessary shelter for small



ST. JOHN'S WORT



SPOTTED SPURGE



MALLOW



COMMON CHICKWEED

game, take a walk any winter day over snow-covered ground. Where do you find the rabbit tracks most abundant? Around what kinds of places do the pheasant trails lead? Weed patches, of course. Without patches, costing nothing to maintain and available almost anywhere, game management for the smaller field species would be well nigh impossible. With the patches properly maintained to slow down the winter gales where the game is hiding, to provide concealment from enemies and for food and rest, the problem becomes much simpler.

### Weed Patches and Health

If weed patches were important only in game management, however, they might not interest many people. In the earlier days before the family doctor and the corner drug store, they provided many plants of medicinal value. Heal-all and wormwood helped us because we got well to get out of having to take the stuff. We ate the shoots of milkweed and of Indian hemp for certain ills; put the juice of wartweed or spotted spurge on our wounds to help them heal. Now we know that the spurge juice can do us more harm than good.

In more recent years, when allergies have become important topics of conversation, we again find weeds and weed patches making a place for themselves. We find hay fever coming from ragweed, and special kinds from such weed patch plants as Russian thistle, timothy, wormwood and other plants that effect their pollination with the help of the wind.

They tell us that 2000 pollen grains per cubic yard from some weed patch plants is not abnormal, but when we visit these plants and shake the pollen from them we remain convinced that this number must be abnormally small rather than abnormally large. We find that these trouble-

some pollen grains may be collected as high as 12,000 feet in the air, so if we are troubled by them we are hard put to know where to go to escape.

### Weed Patches and Landscaping

A friend who is a crank on Kodacolor recently showed me his favorite pictures of last summer, and those of which he was most proud were of weed patches. There were hills with great smears of blood-red paint brush; fields blazing with a yellow flame of wild mustard and other fields white with daisies. These, he exclaimed proudly, were the best pictures he had ever been able to get of these fields, and they told him better than anything else of the value of the fertilizers and lime that had been used on the fields. And so he raved on, pointing out the beauty of the very plants he had wished could be wiped from the landscape.

Anyone interested in impressions of great stretches of territory must, if he wishes to paint the picture correctly with a brush, a camera or a pen, know something of the color of our weeds at different times of the year. True, our tree leaves change color so effectively that we can notice the difference miles away, but when a "white-topped daisy field goes marching up a glen" it tells you a mile or so away how the soil varies on either side. It defines the delta at the base of the gorge, and it tells you that it is early summer and not late fall. Furthermore, it tells you that you are probably in the East and not in the Middle West or the South. Other plants take the place of the daisy in these other regions and tell their story with equal vigor.

Many of our weed patch flowers would be in our gardens by our choice if we merely sought beauty. Do you know of any garden flower (Continued on page 332)



CATNIP

COMMON NAME SCIENTIFIC NAME	GREEN FOXTAIL GRASS Bottle Grass <i>Setaria viridis</i>	BARNYARD GRASS <i>Echinochloa crus-galli</i>	CRAB GRASS Finger Grass <i>Digitaria sanguinalis</i>	TICKLE GRASS Old-witch Grass <i>Panicum capillare</i>
DESCRIPTION	Height, to 3 feet, with a number of stems arising in tufts either directly or from sprawling bases and somewhat branched. Roots, fibrous but with a few main branches spreading horizontally through the soil. Leaves, to 10 inches long and to 1/2 inch wide, rather coarse, dark green and margined; sheaths, smooth.	To nearly 5 feet tall, although usually much smaller, forming either an open plant or a sprawling one sticking close to the ground. Leaf-blades, to 2 feet long and 1/2 to one inch wide. Sheaths of leaves, smooth and closely pressed to the culms. The whole plant appears coarse for a grass. Roots, profusely branching.	Height, to 4 feet, either erect or somewhat sprawling but usually creeping at the base and rooting at the joints where the soil is moist. Stems, slender and easily broken. Leaf-blades and sheaths more or less hairy with the blades 3 to 6 inches long and to 1/2 inch wide. Roots short and easily broken, "grubbed".	Height, to 2 feet, with stems erect or rising from curved bases, branching and spreading freely. Sheaths of leaves, densely hairy and the blades less so. Blades of leaves, to one inch wide, a foot long and relatively easily broken. Roots at the joints where these touch the ground but more commonly plant breaks.
RANGE	Throughout North America except in the far North, but a native of Europe. Has been naturalized wherever man grows temperate-zone crops. All kinds of soils either under cultivation or unused, in the open or shade; very common along roadsides.	In gardens, along roadsides, paths, barnyards, in fields, meadows and similar places but more particularly where there is a rich, moist, and relatively loose soil. Throughout the world wherever land is cultivated by man. Naturalized from Europe.	On cultivated ground and in waste places particularly where there is moisture, also in lawns. Almost world-wide in its distribution and common through most of the United States and southern Canada. Undoubtedly a native of Europe.	Common in sandy soils in fields and waste places, along paths and roadsides or in cultivated grounds such as gardens. Nova Scotia to Florida, west through British Columbia, and to Mexico. Established elsewhere; close relatives common.
RELATIONSHIPS AND LIFE HISTORY	Class Monocotyledoneae. Family Gramineae. Flowers in 2- to 4-inch spike suggesting a fox's tail, each flower being enclosed by 2 to 6 bristle bracts that are nearly 1/2 inch long and give "hairs" to the "tail"; these, more slender than in yellow foxtail. Pollination by wind. Flowers, July to September and fruits from August on. Fruits smaller than in yellow foxtail, under 1/10 inch long.	Class Monocotyledoneae. Family Gramineae. Flowers borne in open branching form but crowded thickly along the branches. Spikelets bear but one fruit or seed which appear in 3 or 4 rather irregular rows and are characterized by the little "spurs" that give the plant its name, <i>crus-galli</i> (spur of rooster). Pollination, by wind or self. Fruits about 1/8 inch long and rather conspicuous.	Class Monocotyledoneae. Family Gramineae. Flowers arranged alternately along 5 to 10 slender finger-like branches. Flowers, spikelets in pairs, under 1/8 inch long, 2 sterile parts enclose the fertile flower. Fruit, minute, light straw-colored, pitted and with cross marks and usually enclosed in the gray sterile parts.	Class Monocotyledoneae. Family Gramineae. Flowers in loose, open broom-like panicles looking like a feather duster. Flowers very small, pollinated by wind and producing each, one small shining brownish gray fruit. The fruits break loose from the panicle and drop to the ground. The flowers form from July to October and the fruits persist through the fall. Annual.
FOOD RELATIONSHIPS	Plant may be eaten by grazing animals either from fields or lawns. Supports a number of rusts and other fungus diseases. Air-dried material, 14% water; 50% nitrogen free extract; 19% fiber; 7% protein; 7% ash and 3% fat.	Serves somewhat as a ground cover. Fruits are eaten by chickens and by smaller birds and may serve a useful function in this connection. The vegetation is too coarse to be good grazing for domestic mammals but is eaten nevertheless. Some varieties used on certain types of land.	Has some forage qualities but quantity and quality inferior. About 67% water, 16% nitrogen free extract, 13% ash and crude fiber, 6% fats, proteins and albuminoids. Does not have many apparent insect enemies, but is host to a number of fungus pests also found on other plants.	Plant has a few insects that live in stems and some fungi that live on leaves but normally it is a healthy weed. Hairs and loose tops apparently make cattle avoid it and seeds do not persist in sufficient abundance in winter to provide dependable food for winter birds.
PROTECTION	Prolific as a producer of seeds which are long lived and may rest for years in soil ready to germinate when the opportunity presents itself. May occupy soil in which more useful plants cannot thrive and drive them out before they have the chance to get started.	Can be grown on flooded bottom lands better than some more valuable grasses and has been cultivated for this purpose. Indians of Arizona and southern California have used the fruits as food and consider the forage an excellent volunteer hay, particularly in its younger stages, for their animals.	Survives largely because of ability to root at joints and break leaving a portion in the ground. In moist season spreads quickly and occupies territory that might be used by other species. Pieces cut and scattered by lawnmowers take root and form new plants. Seeds long-lived.	The plant spreads itself by breaking off the part above ground and letting this act as a tumble-weed, scattering a few seeds at every turn. The seed-bearing parts are brittle and easily break off when jarred. The seeds are long lived and abundant as commercial seed impurities.
USE TO MAN	One of the worst grass pests, often ruining lawns which do not have frequent care. May be controlled in fields by fall plowing followed by disking and harrowing in spring and planting to corn which should be cultivated in mid-west at least 4 or 5 times. Serves as ground cover and to some extent as soil anchor.	The plant promises to yield useful varieties for forage that will grow under unusual conditions. This will probably center around lands that get flooded, and on which a quick-growing annual forage can be raised where perennials would be drowned out. Seeds, impurities in commercial seeds. Control by hoeing.	In the South, this plant may be used as hay where early forage is desired, but normally it is a pest that only cutting before maturity or careful hand grubbing will control. The fruits though small have a high nutritive value, and in Europe have been cooked in milk and served as a porridge.	The plant can be controlled by establishing a sod of other species. It is not a serious contender for space with most other plants and may then serve as ground cover, as shelter for small game and possibly as a not too ugly plant for fence corners. Mowing, hoeing and hand pulling will control the weed in gardens.

<b>KNOT-WEED</b> <b>Doorweed</b> <i>Polygonum aviculare</i>	<b>SHEEP SORREL</b> <b>Field Sorrel, Sour Grass</b> <i>Rumex acetosella</i>	<b>SHEPHERD'S PURSE</b> <i>Capsella bursa-pastoris</i>	<b>PURSLANE</b> <b>Pussley</b> <i>Portulaca oleracea</i>	<b>COMMON CHICKWEED</b> <i>Stellaria media</i>
<p>Stems, to 2 feet or more in length but usually prostrate and profusely branched and radiating from a common, central, deep, white, woody, tough root system. Stems are pale green, ridged, tough, and bear at "knots" or joints clusters of pale green sheathing structures and elliptical blue-green leaves ¼ to 1 inch long.</p>	<p>To 6 inches or rarely more, but normally lower, with erect, tough, rather slender stems branching above. Leaves, mostly basal, on long petioles and with blades shaped like an arrow head. Rootstocks, much branched, creeping, yellowish, tough and with tufts of rootlets at intervals.</p>	<p>To nearly 2 feet high, with slender, tough, sparsely and openly branching stems commonly recurving upward from a rosette at the base. Leaves, alternate and varying from slender, upper, clasping leaves to rather deeply-toothed basal ones, perhaps some distance up stem. Root, a deeply penetrating taproot.</p>	<p>Plant is prostrate close to ground, having a number of thick, rounded, easily broken stems from 3 to 10 inches long which commonly radiate from a central root system. Stems and leaves are succulent. Leaves small, dark green, thick, fleshy, rounded wedge-shape. Roots spring from a strong deep central taproot.</p>	<p>To nearly a foot high, with slender, weak, branching stems, which creep or ascend and have a fringe of pale, weak hairs down one side. Leaves, opposite, to about ½ inch long, on slender petioles with the lower leaves, and without these above. Forms loose mat that breaks easily leaving root system unharmed.</p>
<p>Cultivated ground, yards where soil is beaten hard, paths, waste places, between cracks in sidewalks usually in the sun. Wherever man is found in North America, Europe and Asia but a native of North America. Commonest mid-summer.</p>	<p>In fields, meadows and roadsides where the soil is acid or sour and where it is relatively dry. Found in all parts of North America except the extreme North and in other parts of the world. Naturalized here from Europe.</p>	<p>In gardens, roadsides, waste places, fields, and meadows, usually where there is good sun, and it is not too wet. Throughout the world wherever land has been cultivated by man. Naturalized from Europe and widely established in America.</p>	<p>Gardens and dooryards where the soil is loose, or where there are cracks through hard soil. Through most of North America where there is cultivated soil. Native of Europe but established throughout world where man grows crops.</p>	<p>In gardens, lawns, waste places, fields, meadows and woodland borders. Throughout the world where conditions are suitable, going as far North as the Arctic Circle. Was probably naturalized from Europe.</p>
<p>Class Dicotyledoneae. Family Polygonaceae. Flowers, small, greenish white with pink margins borne in axils of leaves from June to October. Probably self-pollinated, producing one seeded per flower and going from seed to seed in a few weeks. Seedlings much like small plants, the seed-leaves being small and narrow. Annual.</p>	<p>Class Dicotyledoneae. Family Polygonaceae. Flowers either staminate or pistillate, the two kinds being borne on separate plants. The staminate flowers are conspicuously yellow and the pistillate, either mature or immature, are rather conspicuously red. Pollination by wind. Fruits, somewhat like three-sided spheres or broad spindles, brown and easily seen on the pistillate plants.</p>	<p>Class Dicotyledoneae. Family Cruciferae. Flower, small, relatively inconspicuous with stamens and pistils about equal in length, permitting self pollination when not effected by insect visitors. Flowers appear and function through most of the year, less conspicuous than the 3-cornered heart-shaped fruits, 2-celled, and crowded with seeds. A normal plant may produce 2,000 seeds.</p>	<p>Class Dicotyledoneae. Family Portulacaceae. Flowers, about ¼ inch across, solitary, inconspicuously yellow, 5-petalled, open only in bright sunlight from July to September, pollinated by bees and butterflies and producing from July to frost urn-shaped fruit capsules which bear many minute flat wrinkled dark seeds, which shake out. Leaves of seedlings about ¼ inch long. Axillary branches.</p>	<p>Class Dicotyledoneae. Family Caryophyllaceae. Flowers, small, greenish-white stars with five petals so deeply cut as to seem to be 10 and borne on slender stems. Flower through the year wherever there is a place where the snow has melted. Stamens, 3 to 7, and styles of pistil, 3 or 4. Fruits, egg-shaped and longer than calyx. Seeds, numerous, small, red-brown, rough. Self- or insect-pollinated.</p>
<p>The small dull brown, sharp-pointed, 3-angled fruits are finely ridged and appear in the diets of many ground feeding birds like minute buckwheat. It is commonly covered in late summer with a conspicuous white mildew that makes the whole plant appear to be gray.</p>	<p>The fruits are eaten to some extent by small ground birds and resemble minute buckwheat, to which the plant is closely related. The leaves are too sour to be favored by most animals but are eaten by chickens. Presence indicates subnormal amount of lime in soil.</p>	<p>Serves somewhat as a ground cover but is eaten by chickens and by some other animals. Has a mildly peppery taste which is not bad. The seeds are large enough to serve as food for some of the smaller birds while the whole fruits are commonly eaten by others.</p>	<p>Food to larvae of a saw-fly and a leaf-miner; harbors melon plant-lice and corn-root lice when cultivated host is not available; is also eaten freely by chickens, pigs and other animals. Has a white mold. 92% water; 3% protein and fat; 3% fiber and ash; 2% nitrogen free extract.</p>	<p>Serves as food for grazing animals where something better is not available. Chickens eat it. Seeds probably too small to be important as bird food. Plants relatively free of insect and fungus enemies. May serve as salad for humans.</p>
<p>The abundance of seeds produced, and their vitality, help the plant survive. The ability of the plant to grow in hard soil where others cannot grow, and to spread out and occupy territory, frees it from competition with others. The seeds are spread as impurities in commercial seeds.</p>	<p>Plant persists and spreads because of abundance of seeds and particularly because of the branching and creeping rootstocks. It can survive on exceptionally shallow soil and on poor soil but cannot well stand competition of other plants in rich soil.</p>	<p>Can withstand severe drying and cold, and because of quick growth and maturing properties quickly fills open ground unoccupied by other plants. The seeds may remain vital and dormant for many years buried or otherwise. Many rosette plants winter over and bloom in earliest spring.</p>	<p>Survives by abundance and vitality of seeds, and by resisting "weeding" by breaking apart and letting parts establish themselves. Seeds are probably spread as dust by wind. They are too small to be eaten by birds and are not present in winter. Seed to seed in a few months.</p>	<p>Can stand being frozen and so persists through year in any stage. With abundance of seeds, sprawling habit and general hardiness bound to spread. The seeds may remain vital while dormant for many years either buried or otherwise, and thus a supply is always ready to sprout.</p>
<p>The plant is a good ground cover for waste places but a pest along paths. Nevertheless it probably does help somewhat in holding soil, and serves as food for birds. One of the commonest of impurities in cheap commercial seeds.</p>	<p>Control either by fertilizing the soil to encourage competitive plants, by cultivation to destroy the creeping rootstocks or by using an iron sulphate spray. Seeds found commonly as impurities in many kinds of commercial seeds.</p>	<p>The plant is a common weed with some salad-making properties but always inferior to other plants collected as easily. Seeds common impurities. Hoeing which cuts the taproot or a spray of iron sulphate or copper sulphate serves as adequate check, and plant cannot survive competition.</p>	<p>Plant formerly cultivated for use as a potherb; may be used as a salad and pickled; tastes not unlike string beans. It has a slightly sour taste when cooked and in Mexico is even offered for sale in the public markets. In Europe a number of cultivated varieties developed for soups, salads and as greens.</p>	<p>The plant is excellent if cooked like spinach and tastes not unlike it. It may be a weed in lawns and gardens. Cultivation drives it from gardens. A spray of 100 pounds of iron sulphate to a barrel of water applied 2 to 5 times in the season will eliminate it from lawns where it may otherwise cause bare spots.</p>

COMMON NAME SCIENTIFIC NAME	ST. JOHN'S-WORT <i>Hypericum perforatum</i>	YELLOW WOOD SORREL Lady's Sorrel <i>Oxalis stricta</i>	SPOTTED SPURGE Milk Purslane <i>Euphorbia maculata</i>	ROUND-LEAVED MALLOW Cheeses <i>Malva rotundifolia</i>
DESCRIPTION	To nearly 3 feet tall, with tough, wiry, slender, stems, which branch towards the top and many of which may rise from a common base. Stems appear flattened. Leaves, opposite, smooth-margined and when held to the light show minute translucent dots. Leaves, to an inch long, usually light green and speckled. Roots, tough and strong. Runners.	Height, up to 1 foot with slender, pale green stems, which may root at the joints and be weak. Roots, woody or roots fibrous and finely branched. Leaves, alternate, long-stemmed, with 3 radiating, heart-shaped, deep or pale green leaflets with the notch at the outer edge, sensitive and quickly wilting when picked.	Sprawling with stems to a foot long and branched, finely hairy. Leaves, opposite, from 1/4 to 1 inch long, finely toothed, with central purple-brown spot, finely hairy. Roots, rather deep and many branched but hardly coarse. The whole plant, roots, stems and leaves gives a milky juice when broken.	Height, to 2 feet but usually sprawling by round, smooth, branched stems. Roots, deep penetrating about depth the stems spread. Leaves, round-heart-shaped with rounded, toothed, 5- to 9-lobed margins, which are waved and with long petioles. Whole plant rather tough and roots and stems are not always easily separated.
RANGE	In fields and meadows and other waste places and particularly in pastures, from which it is not easily removed. Throughout Canada except in the far North and throughout the United States except in the far South.	Fields, roadsides, waste places, sidewalk borders, gardens, woodlands, usually where there is moisture. Eastern United States and Canada with related species to the west but not in northern half of Canada. Native of America.	Roadsides, paths, in crevices in sidewalks and waste places generally where the soil is relatively poor. Through North America except in the far North except for a few places. Native to North America but established in other parts of world.	Waste places, cultivated grounds, poor lawns but usually in relatively dry areas. Through North America except in the North. A native of Europe and Asia but widely established in other continents.
RELATIONSHIPS AND LIFE HISTORY	Class Dicotyledoneae. Family Hypericaceae. Flowers, yellow, crowded, nearly 1/2 inch long, rather attractive with 5 petals and a great tuft of stamens which are black dotted and more or less separated into 3 groups. Fruits, persistent small capsules filled with enormous numbers of small, cylindrical tan seeds, which shake out and help in perpetuating the plant.	Class Dicotyledoneae. Family Oxalidaceae. Flowers, yellow, about 1/2 inch broad, five-petalled, in clusters of 2 to 6. Pollinated by small bees, syrphid flies and even butterflies. Fruits, pointed cylinders which twist in maturing, expelling the red-brown seeds in all directions. Seed to seed in a few months. Seedlings, with small, egg-shaped, smooth leaves.	Class Dicotyledoneae. Family Euphorbiaceae. Flowers are whitish inconspicuous clusters in leaf axils. Both staminate and pistillate flowers are found on the same plant from June to October. Pollination by insects or sometimes self-pollination. Fruits, angled pods containing 3 4-angled gray, slightly pitted seeds. Seedlings, red and soon sprawling. Seed to seed in a few months.	Class Dicotyledoneae. Family Malvaceae. Flowers, five-parted with pale lavender or white petals. Stamens fastened together at base and at first enclosing the pistils, which emerge from the top of stamen tube. Pollination by insects or by self. Seeds formed in disc-shaped fruits, which are easily split into sections when mature. Flower, May-October; fruit, June to November.
FOOD RELATIONSHIPS	The juices are sour and blistering and make the plant unpalatable for cattle. Therefore the plants are left undestroyed in pastures. If cut as hay, the stems prove too tough to be eaten by cattle except as a last resort. Unwelcome in pastures.	Sour taste may make it distasteful to many animals; the seeds have been found in birds and must therefore be edible to them.	Relatively free from insect or fungus pests, apparently avoided by grazing animals probably because of the milky juice. This believed to be poisonous, since it will irritate skin, forming a red rash that soon turns into small blisters.	The green "seeds" are mucilaginous and are enjoyed by children as "cheeses" because of their sweetness. The fruits are also eaten by some birds, both domestic and wild. Few fruits destroyed by insects. Two flies live in leaves as miners.
PROTECTION	Protects itself by its enormous numbers of seeds and more than this by the persistent runners, which spread out in all directions and take over new territory for the parent plant. Has some artistic beauty but this can hardly compensate for bad qualities, particularly as flowers wilt quickly after being picked.	Seeds are shot from fruits for considerable distances to spread the species. Some plants extend themselves by runners and by rooting at the joints. The plant may act as an annual or as a perennial and so can survive varying conditions. It matures quickly and can survive a short season. It may produce seeds at any time.	An annual plant that reproduces by seeds that may lie dormant more than one year and which are produced in such quantities that they are probably present in most waste soil. The plants succumb to crowding by other plants such as occur when the soil is rich and otherwise suitable for cultivated plants.	Seeds are long-lived and may persist in soil for many years ready to germinate when conditions are right. The deep root system helps plant persist through drought.
USE TO MAN	Can best be controlled by hand-pulling, or if necessary by plowing the field under and using a well-tilled crop until the runners have been destroyed. The seeds are common as impurities in commercial seeds but are so small that they may easily be sifted out with any considerable care.	The plant is a weed in garden but succumbs to any reasonable cultivation and to crop rotation. The leaves may be eaten by children or may help in a salad where a mild sourness is desired. The seeds are found not infrequently as impurities in commercial seeds.	A persistent weed, which by maturing quickly may crowd out more desirable plants where they may be undernourished. Persistent hoeing and cultivation will control it but it is easier to enrich soil and let desired plants crowd it out. Serves as a cover for waste land but seeds probably too small for bird food.	Plant is reported to have medicinal properties. It forms a not unattractive cover for waste spots. Tender shoots are eaten as salad in Italy and France and the Greeks, Romans and Egyptians use the whole plant as a pot-herb like spinach. If the plants are young and are well cooked, they serve well in this capacity.

<b>CATNIP</b> Catmint <i>Nepeta cataria</i>	<b>COMMON PLANTAIN</b> <i>Plantago major</i>	<b>BEGGAR'S TICKS</b> Bur Marigold <i>Bidens frondosa</i>	<b>DANDELION</b> <i>Taraxacum officinale</i>	<b>SOW THISTLE</b> Milk Thistle <i>Sonchus oleraceus</i>
<p>Height, to 3 feet, erect with spreading branches with opposite leaves, dark above and light beneath, downy beneath and with rather deeply scalloped or notched margins; leaves sometimes clustered close to the ground if the plant has been cut. Stems, square, stout, brittle to tough, downy, with longitudinal ridges and flutings.</p>	<p>Height, to 18 inches. Stemless, but with rosettes of leaves that are egg-shaped in outline, with 5 to 7 lengthwise veins and with long channelled petioles. The roots are strong and fibrous, springing from a thick coarse rootstock. The whole plant seems relatively coarse and tough.</p>	<p>Height, 2 to 5 feet with slender, branching, strong stems which are smooth or nearly so, purplish to dark green. Roots, shallow, branching and fibrous. Leaves, opposite, usually smooth, 3- to 5-lobed, sharply toothed on slender petioles, often rank; upper leaves, not lobed but sharply toothed, with rather slender pointed tips.</p>	<p>Stemless plants, with long, tough tap roots, which penetrate soil to depth of 4 feet. Leaves, all basal, 3 to 12 inches long, blunt lance-shaped, deeply toothed or lobed, forming permanent rosette close to ground except when surrounded by other vegetation. Juice, milky. Color, varying from light to dark green or reddish green.</p>	<p>Height, to 6 feet. Stem, smooth, hollow, light green, milky-juiced, angled, branched. Root, a tap root, white and fringed with fine rootlets. Upper leaves, somewhat triangular with clasping bases; the lower, with margins toothed and with weak spines; milky-juiced like the stem.</p>
<p>Roadsides, neglected grounds, and waste places, usually in rich soil. New Brunswick to Georgia and west through Quebec, Minnesota, Kansas and the eastern prairie country, probably still spreading. Native to Europe.</p>	<p>Common in lawns, fields, wastelands, roadsides and to some extent in meadows and fields. Throughout North America except in the far North but is a native of Europe and Asia and has established itself wherever man has lawns.</p>	<p>Low moist places, meadows, thickets, fencerows, woodlands and waste places where moisture is always abundant. Throughout the United States and southern British America. A native of America but established elsewhere in the World.</p>	<p>Lawns and waste places particularly where the soil is not too rich. Newfoundland to British Columbia and south through Virginia and Utah with less abundance throughout the continent and on other continents. Native of Europe.</p>	<p>Waste places, roadsides, gardens, fields commonly where ground is relatively loose. Throughout North America except in extreme North. A native of Europe but generally established in other continents.</p>
<p>Class Dicotyledoneae. Family Labiatae. Flowers relatively small, in coarse spike-like clusters at ends of branches; clusters, 1 to 4 inches long; flowers, small white or pale blue with purple markings in dots, insect-pollinated or self-pollinated, two-lipped with slightly swollen base. Flowers June to September. Bears four brown nutlets per flower from July through the winter.</p>	<p>Class Dicotyledoneae. Family Plantaginaceae. Flowers, tiny, greenish structures, closely set in slender spikes from 5 to 18 inches long. Flower May to September and fruit June through to December. Cross pollination assured by the stigmas maturing before the stamens. Pollen may be carried by wind or insects or by gravity. Seed, 8 to 18 per flower, sticky when wet. Perennial.</p>	<p>Class Dicotyledoneae. Family Compositae. Flowers in July and September in numerous bristly heads, each flower of center about 1/2 inch long and surrounded by leafy bracts but without ray flowers. One seed per flower. Fruits, flat black, wedge-shaped, ridged with two prongs each with backward pointing barbs. Seed to seed in a few months. Seedlings with 1-veined oblong seed-leaves.</p>	<p>Class Dicotyledoneae. Family Compositae. Flowers in dense clusters on the ends of a coarse hollow stalk a foot or more long. Pollination by self or insects but the pollen is sterile and no fertilization takes place though fertile seeds are produced. The fruits in clusters appear like loose white balls though individuals look like little parachutes. Flower all summer. Seedlings, spiny margined.</p>	<p>Class Dicotyledoneae. Family Compositae. Flowers, yellow and crowded 50 or more to a head in heads nearly an inch across, in summer and early fall. Fruits supplied with a downy parachute attached directly to end of fruit rather than to a stalk at end of fruit as in most wild lettuces. Fruits brown, somewhat flattened. Annual.</p>
<p>Not bad tasting, but cats are fond of it. Relatively free from insect or fungus pests. Composition, 94% dry matter; 63% nitrogen free extract and fiber; 22% crude protein; 13% ash and 3% ether extracts.</p>	<p>Serves as food for the larvae of 1 beetle, and 5 flies use the leaves for their mines. The seeds are picked from the tops above the snow in winter by some birds. The plant is 81% water, 11% nitrogen free extract, 2% fiber, 2% ash, 3% protein, fat.</p>	<p>Serves as food for the leaf-mining larvae of at least two flies, but is not commonly itself eaten by grazing animals even where easily available.</p>	<p>Flower heads support a few small insects like thrips. Cattle will sometimes eat the leaves, but do not choose them. Water, 86%; nitrogen free extract, 7%; protein, 3%; fat, 1%; ash, 2%. Goldfinches particularly fond of the fruits.</p>	<p>May be eaten by many domestic animals including pigs, chickens, sheep, goats, and horses, and supports a number of small insects that feed in the heads. 15% ash; 5% potash; 2% nitrogen; 2% sodium; 2% lime and 1% phosphoric acid.</p>
<p>The plant survives by production of enormous numbers of fruits and ability to survive cutting when not too close. Fruits are too small to be of any considerable food value to winter birds. Plants are apparently more common near dwellings than in wild places which may mean they do not spread widely and easily.</p>	<p>The weed spreads itself by its sticky seeds, because seeds are common impurities in seed mixtures and by getting an early start and crowding out possible competitors. Its seeds are very long-lived and persist in soil for years. The plant cannot survive competition with taller plants that rob it of needed sun, nor in rich soils.</p>	<p>An annual that spreads itself by the fruits, which break off and cling to passing animals, particularly sheep and dogs, or to the clothing of men. The fruits have been noted in the food of some birds and may because of this get a wide distribution.</p>	<p>Survives because of persistent perennial tap root, abundance of fertile seeds which are widely spread and abundance of suitable ground.</p>	<p>Persists because of easily broken rootstocks, and because of abundance of virile fruits that may be widely spread by the wind.</p>
<p>No value to man except that some are grown for production of oil used by government agents in trapping members of the cat family. Dried leaves and slender tops have had commercial value of 2 to 8 cents a pound for use in producing a mildly stimulating tonic. Control by close cutting and cultivation. Seed impurity.</p>	<p>The plant has been used in China as a pot-herb and is often used for spring greens in America. It may be controlled by cutting plants below the crown, salting the crown and persistent digging, but the best control is enriching soil so that competing plants can crowd it out. Does not survive cultivation.</p>	<p>Of no known value to man directly and often annoying as "stick-tights" on walkers' clothing. Flowers not unattractive. Sometimes troublesome weeds in the garden but usually may be destroyed by reasonable cultivation of the ground. Plants should be cut before flowering to avoid reseeding in gardens or elsewhere.</p>	<p>Beautiful flowers but leaves make inferior lawns. Control by frequent cutting, by encouraging other plants, by adding abundant fertilizers, by starving rootstocks with mulches, and by use of iron sulphate spray (100 pounds to a barrel of water). Leaves used as greens and flower heads in making dandelion wine.</p>	<p>Is used for greens and in soups in England and Germany and considered valuable. As a weed it yields to continued cultivation and should not be allowed to form seeds. Sheep will keep it under control. While some suggest its control by an iron sulphate spray, others contend that spraying is of no use.</p>

(Continued from page 327) that can beat the color and the grace of the goldenrod? Blue sailors cost nothing and are prettier by far than some of the expensive rock garden plants. Can anyone seriously argue that sweet alyssum is any more beautiful than a dandelion, or that mignonette is, as it stands, more attractive than ordinary wild mustard? If it were not for the undeniable beauty of my New England asters, my little weed patch would have gone the way of the other weeds long ago. I give the regular flower garden a lot of back-breaking work, periodically, but I doubt if even with all that effort it can match the weed patch at its best. Surely there is beauty going to waste if we fail to recognize the value in weed patches.

### Weed Patches and Agriculture

When we consider the role of weed patches in agriculture, we feel less kindly towards them. Many of the weeds serve as temporary hosts for enemies of our garden crops. Some of these enemies are insects such as the plant lice, squash bugs and grasshoppers. Others are fungus enemies of various sorts. Because of these many farmers have adopted the methods of clean farming. They do not give these plants the chance to support enemies of cultivated plants. If their only concern is the production of plants free from these enemies, they probably have been well advised. However, this is not all there is to the multiple-use agricultural philosophy.

Since many weeds produce fruits and seeds that may be blown by the wind for considerable distances, farmers and others have adopted the practice of cutting the plants before they have time to form mature seeds. Otherwise fields in the lee of a weed patch would become overloaded with weed seeds. Once certain seeds have matured, and have been shed from the parent plant, they may lie dormant for many years buried in the soil.

Weed patches provide forage of a sort to many farm animals. Even the wiry Russian thistle is eaten readily by cattle. Not all weeds are palatable or safe for cattle. The loco weed of western areas and ergot are dangerous. Some injure the pelts of sheep by clinging fruits; some affect the taste of milk; some are indigestible, and form undesirable cuds. But weed patches still have a positive value in some phases of agriculture.

### Weed Patches, Soil Erosion and Water Loss

Weeds, of course, cannot provide a ground cover superior to clovers and the commoner forage grasses, but weeds are better than bare ground if one wishes to hold soil where it is, and to keep as much as possible of the rainfall where it reaches the ground. With a greater amount of water entering the soil, there is a greater reserve for time of drought, and weeds help water into the soil.

Many weed roots penetrate deeply and form passageways along which water may seep, thus penetrating deeper than would be possible through impervious soil.

When the weed root penetrates the soil it not only helps moisture enter the ground but it lets in some air. The oxygen in it has some effect on substances that can be oxidized. Soils that have been oxidized have been

"weathered", which helps to make a valuable topsoil.

And still we have not exhausted consideration of the services rendered by those plants that are "just weeds". The roots of some plants penetrate deeply. Others sprawl horizontally and interlock with the roots of adjacent plants. This interlocking system serves efficiently to hold soil from washing. Soil is the most important part of a farm and anything that will help keep it, or store it, has value.

The ground cover our weed patch provides also serves to keep the temperature cooler in summer and warmer in winter. This means less loss of water by evaporation and more water available for use by the plants when sorely needed. Again we must admit weeds are inferior to the better cultivated forage plants, but are better than nothing.

So we come to weed patches in winter as they affect soil erosion. There will be shade under the weeds, where the snow will melt less rapidly. Snow that melts quickly, as it does when exposed to direct sun, may run off over the bank or may run rapidly off, taking some soil.

When some weeds stop snow from blowing in the wind, they do not stop it in its tracks. Rather the snow drifts on to adjacent territory before it comes to rest. This resting blanket of snow serves splendidly to prevent frost damage to the roots of such delicate cultivated plants as winter wheat. In this way, a weed patch with the tops still sticking up through a snow bank may help the wheat crop for the next year as much as it would damage the crop by rival seeds or by insect and fungus pests.

So we see that weed patches are rather important parts of our landscape after all. They give touches of beauty not necessarily associated with cultivated plants. They help to control temperature at and below the surface of the soil. They hold water. They let water get to the subsoil and they help weather soil into valuable topsoil.

These weeds of ours may feed our cattle and ourselves. They may yield a variety of medicines and some dangerous food elements. Unquestionably, they are responsible for the continued presence of such delightful birds as the quails, which most like to hear, but some like to shoot.

The story of how these weeds and the associated meadow plants may prosper or fail because of the presence of fertilizers in the soil, of how the prosperity of these plants may affect the whole prosperity of a state, will have to wait for another article. Little has been said about the encroachments these weeds make in our lawns, of the far parts of the earth from which many of them came and how they got here. Nothing has been said of the travels made to other parts of the world by our native species, or of the possible commercial returns that may come from a wiser use of the fiber of weeds to produce textiles and of the juices of some of them in making rubber or rubber substitutes. Still we hope that enough opportunities for a wider appreciation of weeds have been presented to make them inviting to the amateur naturalist. If this article leads a few of the readers of *Nature Magazine* to look twice at the neighborhood weed patches and to cease saying of the plants there that they are "just weeds", it will have served its purpose. What such a change in attitude may eventually produce is only a matter of speculation.