

THE RIVER.

"O, tell me, pretty river!

Whence do thy waters flow?
And whither art thou roaming,
So pensive and so slow?"

"My birthplace was the mountain,
My nurse, the April showers;
My cradle was a fountain,
O'er-curtained by wild flowers.

"One morn I ran away,
A madcap, hoyden rill—
And many a prank that day,
I played adown the hill!

"And then 'mid meadowy banks
I flirted with the flowers,
That stooped with glowing lips,
To woo me to their bowers.

"But these bright scenes are o'er,
And darkly flows my wave;
I hear the ocean's roar;
And there must be my grave!"

(Author unknown.)

THE PITCHER PLANT.

(By C. A. GARDNER, Government Botanist.)

Of the more curious plants which have made the flora of South Western Australia famous throughout the world, none has attracted more attention than our Pitcher Plant. This is a rare species confined to the South-West of Western Australia, and although it resembles in some respects the pitcher plants of the Old World tropics, it is in no way related to them, but is the sole representative of a widely removed and distinct family—*Cephalotaceae*.

This curious plant was first collected by Labillardière, the French botanist attached to the expedition of D'Entrecasteaux who visited our shores with the ships "La Recherche" and "L'Esperance" in the year 1792. This expedition only touched the mainland in the vicinity of Esperance Bay, so that the first specimen collected must have been growing in that region.

The range of the species extends from the Shannon River in the west to near Esperance, but it is most frequently met with between King George Sound and Nornalup, especially between the former locality and the Hay River, and as far inland as Redmond. It grows in wet country, but always in soils which are drained. The best development is attained in peaty soils on the banks of small creeks or runnels, or on the sloping banks of swamps above the winter water level,

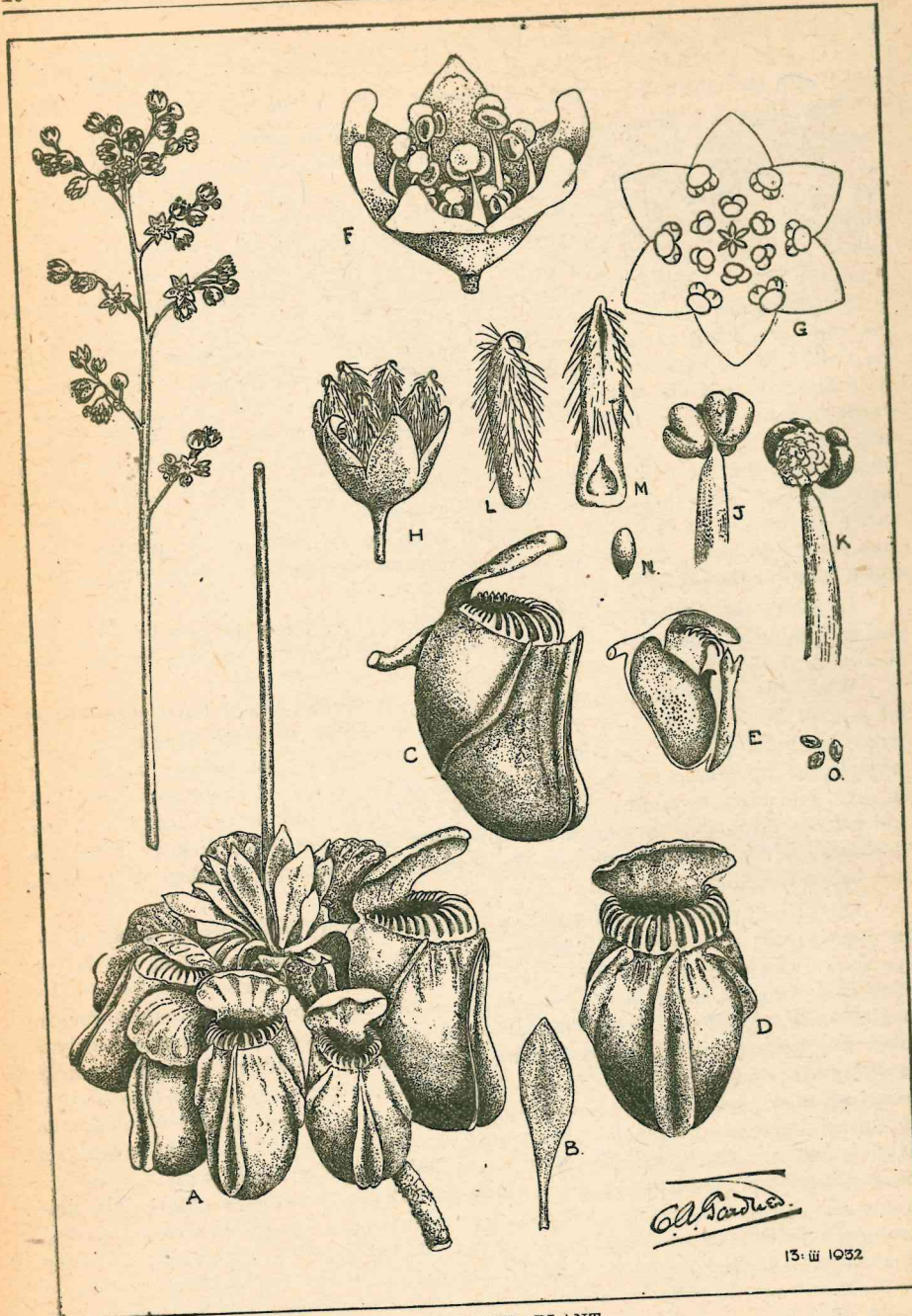
but below moist places, so that the soil constantly receives moving water. It thrives best in shady spots among rushes or small shrubs, and it is usually associated with the club moss or the red-flowered *Cosmelia rubra*.

The plant is a perennial herb with a strong rooting system. From the stock a rosette of leaves arises, and from the centre of this rosette the solitary flowering stalk (scape) develops. The leaves are thus borne close to the soil and they rest upon it. They are of two types: in the centre are the normal leaves—soft bright green fleshy organs of oblanceolate shape, ranging in length from 1 to 2 inches. Outside these are the modified leaves which are known as "pitchers." These are pitcher-shaped but are not symmetrical. They have been aptly described as resembling the front portion of a loose slipper. The broad toes rest on the soil, and they are much narrowed towards the top which is provided with a lid. On the rim of the pitcher are close hooked processes resembling claws. These "claws" arise from the outside of the lip, but recurve over the margin and project downwards into the pitcher itself. Externally the pitcher has three wings. The front wing extends from the rim to the base, and is Y-shaped, that is, it divides into two wings which run the full length of the pitcher, but these are joined together above their junction with the pitcher. The lateral or side wings are simple and commence at the top of the pitcher, but fall away to the back and disappear before they reach the base. The lid is provided with transparent or translucent windows which admit light into this pitcher.

In colour the pitchers vary from a deep purple, through red to a bright green, and in fading assume bright colours in which orange, brown, and crimson are predominant.

When the pitchers are first formed, they are reversed, and the tightly closed lid is held down by the tips of the wings. With the increased weight resulting from development, the pitcher stalk curves over, and the pitcher assumes at maturity its upright position. The lid opens to the extent of about one quarter of an inch, and remains rigid in that position. When the pitcher is young, the wings and lid are fringed with long white spreading hairs, but these disappear for the most part as the pitcher develops. The stalk of the pitcher is attached at the back, just below the hinge of the lid.

The largest pitchers are formed during the summer, especially in shady spots. In open places they are small and usually more deeply coloured than the larger specimens which are predominantly green. The flower-stalks arise from the clumps of leaves towards the end of January, and the inconspicuous flowers borne in panicles are unfolded during February and March. Each flower has six calyxlobes which are rather thick and white inside. They resemble petals, but rarely expand, and the flowers have thus a "half-opened" appearance. In the accompanying plate the figures F and G have been artificially opened to show the stamens. There are no petals. The twelve stamens are arranged in two series, the outer whorl of six being the largest and arranged alternately with the calyxlobes. The inner whorl of six smaller stamens alternates with the outer. The filaments are thick, and the small anther cells which open longitudinally are placed facing inwards below the large purple fleshy connective. The ovary consists of six free carpels (fruitlets) placed in the centre of the flower. Each carpel is attached by its inner base to a fleshy boss, and the scar of attachment can be clearly seen in fig. M. Each contains one seed, or sometimes there are two seeds, and these are shed through a slit near the top of the carpel on the inner side. This is also shown in fig. M. The styles are recurved, and when the carpel is in the fruiting stage the style resembles a small hook at the apex. The carpels are covered with long silky hairs which serve to free the ripe carpels from the flowers. The seed is very small and yellow in colour.



THE PITCHER PLANT.

A. Plant in summer, showing normal leaves (centre), "pitchers," root-stock and scape bearing the flowers. B. Normal leaf. C. Lateral view of a pitcher. D. Anterior view of pitcher. E. Section of a pitcher showing the glands of the interior surface, the front wing, the "collar" and the "claws" of the rim below the lid. F. Flower (much enlarged). G. Diagram of flower showing the arrangement of the stamens and carpels. H. Carpels at maturity. I. Diagram of flower showing the arrangement of the stamens (much enlarged) showing (in K) the large connective. J. and K. Views of stamens (much enlarged) showing (in K) the large connective. L. Dorsal view of carpel. M. Anterior view of mature carpel showing the point of attachment at the base, and the slit through which the seed is shed. N. Seed (enlarged). O. Pollen grains (much enlarged). A-E. About half natural size. F-O. Various enlarged. (Icon. origin.)

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The most interesting feature of the Pitcher Plant is the pitcher itself. The pitcher lies on the soil with its top tilted backwards so that the lid projects slightly upwards, and the broad front wing affords an excellent ascent for any small passing animal or insect. Once at the top of this wing, the creature sees an inviting interior which promises a cool retreat and offers a hiding place. It is a simple matter to climb over the coil of claws on the rim and slip into the interior, down into the base of the pitcher well. It is, however, a different matter to escape, for it will be seen by an examination of fig. E that the internal lip or flange forms a funnel past which no small insect can climb; and even were this possible, the claws present a formidable barrier. In addition the wall of the pitcher is smooth and polished, and the lid with its opalescent windows would cause a flying insect to fly upwards only to meet the claws if it attempted to climb out. One can imagine a small insect such as a small beetle or ant trying the almost impossible task of climbing out. Were the creature endowed with imagination surely one glance upwards towards the "stained glass" of the dome of the lid, revealing in the obscure light the projecting funnel and the terrifying obstacle of the claws above it, would resign the creature to the death-dealing liquid of the well amongst other victims in various stages of decomposition.

The pitcher exudes juices from glands below the "funnel," and these are capable of digesting the greater portion of its victims, absorbing the "meat extract" through small pores which lie in two bands near the base of the pitcher. The capture of insects is not necessary for the development of the plants; since they can be grown in places to which insects do not have access, but it would appear that the capture and digestion of insects provides a method of obtaining nitrogen—a necessary element which is procured with difficulty from peaty soils.

ENCOUNTER WITH AN OCTOPUS.

The following is an extract from "The Toilers of the Sea" by Victor Hugo (1802-1885), a famous French poet, novelist, and dramatist. Owing to his political beliefs he was forced to fly from France, and took refuge in Brussels. Afterwards he lived for some time in Jersey and then in Guernsey, where he wrote his great novels including "Les Miserables."

Gilliatt, the character mentioned in the following extract, is alone on one of the rocky islets near Guernsey in the English Channel. For two months he has lived on crabs and crayfish which he has managed to catch. One morning, after a storm, he has difficulty in finding any of these creatures. At last he catches sight of a large crab which swims off into a cavern. Gilliatt plunges his arm into the cavern where the crab has taken refuge, only to be seized by a terrible monster which tries to pull him into the water.)

Near the moulded arch, Gilliatt remarked some low, dark grottoes or smaller caves, within the cavern, which he had already observed from a distance. He now stood nearer to them. The entrance to the nearest to him was out of water, and easily approachable. Nearer still than his recess he noticed, above the level of the water, and within reach of his hand, a horizontal fissure. It seemed to him probable that the crab had taken refuge there, and he plunged his hand in as far as he was able, and groped about in that dusky aperture.