

very slight vibration serves to roll these drops to the edge, and then off through one of the depressions in the margin.

We should naturally expect the structure of such a leaf, as revealed by the microscope, to show considerable differences from the foliage leaf of a land plant. This, indeed, is the case. A section shows that the lower part contains numerous large air-spaces, much larger than those present in an ordinary spongy parenchyma, for the cells merely form slender strands at wide intervals. The spaces, too, are not connected with stomata on the under surface since air pores would be of no use in contact with water. The chief function of the cavities is undoubtedly to render the leaf buoyant, though the adjacent cells are no doubt able to do some assimilation from the gases of the space. Stomata are present on the upper surface of the leaf, and beneath them is a layer of palisade tissue of the usual kind. It is interesting to note that in *Nelumbium*—a closely-allied genus—in which the leaves are thrust out of the water instead of floating upon it, rudimentary stomata are found on the underside in addition to the functional ones on the upper surface, as though the plant were endeavoring to conform once more to aerial conditions.

The leaf-stalks, like other parts of the plant, are full of air-spaces. It is noteworthy that throughout the plant we find curious star-shaped hairs projecting into these spaces, with walls stiffened with calcium oxalate. Their function is not very clear, but it has been suggested that they serve as a protection against the gnawing of water-snails or similar animals.

The Yellow Water Lily (*Nuphar*) differs from the white one in having

submerged leaves in addition to floating ones. These are bright green and wavy, and of a much more delicate texture. They have no stomata and no cuticle, thus affording an easy passage to diffusible substances. Their presence is explained by the habit of the plant, which grows in shallow water. Sufficient light can penetrate to them to enable them to carry on some assimilation, and they are probably especially useful to the plant early in the year, before the floating leaves have made their way to the surface.

The flower, which attracts most attention from the casual observer, is by no means lacking in interest for the botanist. The family *Nymphaeaceae*, to which the water lilies belong, is a very ancient one—the flowers show what must be regarded as a very primitive structure. On the outside are four green sepals, which enclose the more delicate parts in the bud and serve for their protection. Next come the petals, which are quite free from one another, and variable in number. They are not arrayed in whorls, but in a spiral, like the foliage leaves of most plants, but with the axis of the spiral much shortened. Within the petals are the very numerous stamens, also arranged spirally and variable in number. The most curious character of the flower, however, lies in the fact that there is no clear line of demarcation between petals and stamens, one passing gradually into the other. In the center we have typical stamens with round filaments and large anthers full of pollen. Further out we find the filaments flatter and broader and the anthers less perfect. These are succeeded by petaloid stamens with abortive pollen sacs at their tips, and these again, by what are apparently, true petals. This gives us an indica-