

THE STORY OF THE PLANTS

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The story of the plants by Grant Allen

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GRANT ALLEN

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OF THE PLANTS**

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STORY OF THE PLANTS

BY
GRANT ALLEN

WITH MANY ILLUSTRATIONS

NEW YORK
D. APPLETON AND COMPANY
1903

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PREFACE.

IN this little volume I have endeavoured to give a short and succinct account of the principal phenomena of plant life, in language suited to the comprehension of unscientific readers. As far as possible I have avoided technical terms and minute detail, while I have tried to adopt a more philosophical tone than is usually employed in elementary works. I have treated my readers, not as children, but as men and women, endowed with the average amount of intelligence and insight, and anxious to obtain some sensible information about the world of plants which exists all round them. Acting upon this basis, I have freely admitted the main results of the latest investigations, accepting throughout the evolutionary theory, and making the study of plants a first introduction to the great modern principles of heredity, variation, natural selection, and adaptation to the environment. Hence I have wasted comparatively little space on mere structural detail, and have dwelt as much as possible on those more interesting features in the interrelation of the plant and animal worlds which have vivified for us of late years the dry bones of the old technical botany.

My principle has been to unfold my subject

by gradual stages, telling the reader one thing at a time, and building up by degrees his knowledge of the subject. My treatment is, therefore, to some extent diagrammatic, especially in the earlier chapters; but I endeavour as I proceed to correct the generalisations and fill in the gaps of the first crude statement. I trust that advanced students who may glance at this little book will forgive me for such concessions to the weaker brethren, especially when they see that at the same time I have ventured to lay before untechnical readers all the latest results of the most advanced botanical research, as far as could be done in so small a compass. I have even made bold to speak at times of "carbonic acid," where I ought strictly to have said "carbon dioxide," and to glide gently over the distinction between hydro-carbons and carbo-hydrates; which could interest none but chemical students. I have been well content to make these trivial sacrifices of formal accuracy in order to find room for fuller exposition of the delightful relations between flowers and insects, birds and fruits, soil and plant, climate and foliage. In one word, I have dwelt more on the functions and habits of plants than on their structure and classification. At the same time I have tried to lead on my reader by gradual stages to the further study of plants in the concrete; and I shall be disappointed if my little book does not induce a considerable proportion of those into whose hands it may fall to pursue the subject further in our fields and woods by the aid of a Flora.

G. A.

THE CROFT, HINDHEAD.
April, 1895.

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CHAPTER I.

INTRODUCTORY.

I PROPOSE in this volume to write in brief the history of plants, their origin and their development. I shall deal with them all, both big and little, from the cedar that is in Lebanon to the hyssop that springeth out of the wall. I shall endeavour to show how they first came into existence, and by what slow degrees they have been altered and moulded into the immense variety of tree, shrub, and herb, palm, mushroom, and seaweed we now behold before us. In short, I shall treat the history of plants much as one treats the history of a nation, beginning with their simple and unobtrusive origin, and tracing them up through varying stages to their highest point of beauty and efficiency.

Plants are living things. That is the first idea we must clearly form about them. They are living in just the same sense that you and I are. They were born from a seed, the joint product of two previous individuals, their father and mother. Plants likewise live by eating; they have mouths and stomachs, which devour, digest, and assimilate the food supplied to them. These mouths and stomachs exist in the shape of leaves, whose business it is to catch floating particles of carbonic acid in the air around, to suck such particles in by means of countless lips, and to extract

from them the carbon which is the principal food and raw material of plant life. Plants also drink, but, unlike ourselves, they have quite different mouths to eat with and to drink with. They take in their more solid constituent, carbon, with their leaves from the air; but they take in their liquid constituent, water, with their roots and rootlets from the soil beneath them. "More solid," I say, because the greater part of the wood and harder tissues of plants is made up of carbon, in combination with other less important materials; though, when the plants eat this carbon, it is not in the solid form, but in the shape of a gas, carbonic acid, as I shall more fully explain when we come to consider this subject in detail. For the present, it will be enough to remember that *Plants are living things, which eat and drink exactly as we ourselves do.*

Plants also marry and rear families. They have two distinct sexes, male and female—sometimes separated on different plants, but more often united on the same stem, or even combined in the same flower. For flowers are the reproductive parts of plants; they are there for the purpose of producing the seeds, from which new plants spring, and by means of which each kind is perpetuated. The male portions of plants of the higher types are known as *stamens*; they shed a yellow powder which we call *pollen*, and this powder has a fertilising influence on the young seeds or *ovules*. The female portion of plants of the higher types is known as the *pistil*; it contains tiny undeveloped knobs or ovules, which can only swell out and grow into fruitful seeds provided they have been fertilised by pollen from the stamens of their own or some other flower.