NATURE STUDIES IN AUSTRALIA

From backyard creek to sea-wrack shore: nature made personal.

WILLIAM GILLIES

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by

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Contents

"The lives of many men and women are passed in a succession of petty anxieties about themselves, and gleaning of minute interests and mean pleasures in their immediate circle, because they are never taught to make any effort to live beyond it; or to know anything of the wonderful world in which their lives are lived."

—*RUSKIN*

Red-capped Robin showing
its red frontal mark.

Flame-breasted Robin showing
a small white frontal mark.

Scarlet-breasted Robin showing
a large white frontal mark.

RECOGNITION MARKS OF ROBINS

(Robins of one species know those of another by these marks).

PREFACE

THE new world-wide movement towards Nature study owes much to the Cornell University, New York State. The Cornell conception of Nature study is that "it is seeing the things which one looks at, and the drawing of proper conclusions from what one sees." This little book is an attempt to help the reader to do this. It is also an attempt to awaken delight and wonder in the presence of Nature. The interest in living things which is born with every child was often killed by the old methods of presenting knowledge. Technical language was used, which made things that were really familiar look strange and forbidding. Anatomy and physiology were introduced at a stage when the child is interested solely in outside appearances; the single robe of Nature was torn into separate parts called Sciences, which seemed to have no connection; and a jumble of facts was presented, under the name of Natural History, culled from every part of the world except from the child's own surroundings. Delight in the beauty and wonder of life was not drawn out; and, indeed, the whole course of study was often subordinated to the needs of students who were preparing for a medical course. Little wonder that the child's interest was soon killed.

The scrappy object lessons of the past will need to be given up. The teacher must feel the unity of Nature, and treat each object as part of an organic whole. The world is not divided into thought-tight compartments. It is natural for the child to look on the world as one; and it is mischievous to check this natural feeling by presenting one part of Nature as if it had no connection with another. The good teacher of Nature study will try to foreshadow for the child that unity of Nature which the mature man finally arrives at. Study of the separate sciences will come in due time, when the child becomes the student.

It is essential, too, that a school course of Nature study should be systematic. Much harm has been done in the past by loose, desultory Nature teaching, and also by the idea that, when children are taken into garden or field, they can do good work without systematic guidance and strict discipline. The brightest Nature teaching will fail unless there goes with it a method as severe and a discipline as strict as in teaching arithmetic.

In dealing with types of life, from the earth-worm to the bird, we have carefully followed the natural order from lower to higher forms, except in one case—that of the birds. We have opened the course with the birds, because, in nine cases out of ten, a child begins his voluntary Nature studies with the observation of birds. Birds arrest his attention even more than flowers; and many a man looks back to the bird-music of his childhood as that which first awakened his soul. In the winter time, too, when the flowers are gone, the birds are still present. These beautiful creatures of the air are always with us, in town or country, in summer or winter; and no part of Nature study, therefore, gives such large and immediate reward as the study of birds.

It is the gift of God to every child that it can love all that is beautiful; but this faculty, like every other, has to be cultivated. So long as this faculty lies uncultivated, the statesman will labour in vain to put content into the heart of the people. Keeping this in mind, we have frequently given the poet's view of Nature. We cannot forget that the poet managed to interest men in Nature long before the naturalist got the ear of the people. Our ideas of birds and beasts and flowers are largely those of Chaucer and Cowper, of Burns and Wordsworth. We have to remember, too, that the poet's word is the last word, when we are seeking for the meaning of the facts and laws ascertained by the naturalist.

There is still another reason for presenting the poet's view of Nature: it is in this way that the faculty of imagination can best be trained. To do original work in Nature study it is necessary to have, not only a good eye and a clear mind, but a quickened imagination. Tyndall has told us how much he owed in his original investigations to his power of making clear mind-pictures of processes which can be seen only by the eye of faith; and he acknowledged a deep obligation to Tennyson's poems for developing this faculty of imagination. The trained imagination, in truth, is the natural extension of our powers of seeing. If, in the past, we have been narrow in our views; if we have failed to see the true inwardness of things, it is largely because we have not been trained to use this inner eye. The imagination has, therefore, been appealed to in various ways.

Much of the book has been written in the open air; it is hoped that many will read it out of doors. We have had too much indoor study of outdoor life.

We are pleased to acknowledge our indebtedness for many figures to Mr. John Gould's *Birds of Australia*. The remaining

plates not acknowledged are by the authors' camera. Valuable help has also been received from the *Victorian Naturalist* and from *The Emu*, the journal of the Ornithologists' Union of Australasia; also from the admirable collection of specimens arranged in the National Museum under the direction of the Honorary Director, Professor W. Baldwin Spencer, and his assistants.

February, 1903.

INTRODUCTION

"NATURE study is learning those things in Nature that are best worth knowing, to the end of doing those things that make life most worth living." This quotation from Professor Hodge's *Nature Study and Life* expresses admirably the aim and purpose of Nature study, and rightly emphasises the fact that education is to be judged by its results in character, and by the expression of that character in life, rather than by any mere acquisition of knowledge, however useful or interesting. It is significant that, as soon as this truth began to influence educational practice, as soon as teachers began to feel the unreality and dead formalism of so much of school education, there should have arisen the cry—"Back to natural methods! Back to the study of Nature herself! Let our children front facts, let them deal with realities, and not with half-comprehended symbols. Let them learn to form judgments for themselves rather than blindly accept the ready-made opinions of other minds. Let them acquire habits of close observation and the added power of reflection upon the facts observed, so that what is studied becomes theirs in very truth, and must out in character and deed. Let us aim at producing men who shall be personalities, and not mere hollow-sounding shells echoing what is spoken into them." If these are the ideals towards which we are feeling our way, no better fundamental study for the elementary school can be found than the study of Nature, whose realities, go where he

will, the teacher cannot escape, and whose abundant store lies waiting round every school-house. The charm of it lies in the fact that we deal with living things in action. Every healthy child is attracted and held by the wonder and beauty of natural life. The varied movement, the glowing colour, the strong pulsating life-current, the evidence of purposeful activity, the loveliness and the mystery of it all cannot fail to interest him vitally; and, given eager interest, what cannot the teacher do? How, otherwise than by the stimulus of eager interest in Nature study, can we explain the marvel of the child's phenomenal progress in knowledge and in power of expression during the first five years of life, before we receive him into the school?

Nature study answers satisfactorily to every test the educator may apply. Are we concerned with the intellectual aspect of mental training chiefly, then no subject can give more interesting and effective exercise in close and sustained observation, in comparison and generalization, in collecting and systematising truths, and in working out the causes and results of observed facts. But, best of all, no subject satisfies so thoroughly the emotional and æsthetic necessities so strong in the child's nature, or brings him into a better mental attitude towards his Creator's work. Faulty education too often makes light of these most potent factors for good or ill, and turns out a man who is—

> *"A reasoning, self-sufficing thing,*
> *An intellectual all-in-all."*

We want more appeal in our teaching to the fine things, the enduring things, of life. These, whether found in literature or other form of art, have their roots in Nature study.

One of the soundest maxims of teaching practice is: "*Strive*

to form a body of school interests by utilising the outdoor, the **LIFE** *interests of the child.*" The day is not far distant when the facts observed in the Nature study will form the greater part of the subject-matter of all those elementary school subjects, such as reading, composition, and drawing, which are meant to develop power of expressing thought. "Let a fellow sing of the little things he cares about," says Kipling; and, if we want to cultivate the power of full and satisfactory expression, we must see to it that the impression has been clear and adequate. But an idea depends for its meaning and fullness upon the strength of its relationship to what is already in the mind, and the great mass of a young child's ideas are ideas gained from observation of Nature. It is only when impression and expression constantly act and react upon one another that the best results are achieved in either. Too many men are crippled on account of want of harmony between these in school life. Stimulating, thought-provoking impressions should precede and control expression; and, correspondingly, the desire to express a thought adequately will produce more satisfactory impressions. Given perfect response between impression and expression, and the truth of the saying "Education is not a preparation for life; it is life" becomes apparent. With this perfect response, what might not be possible in education! But we want fine impressions which will bring us out on our best side. An ever-present aim in training young children should be to give them an early interest in fine things, and then to be ever on the watch to utilize this interest in their general training. That child is little to be envied who has not been allowed to satisfy his nature by keeping pet animals, who has not been encouraged to plant a seed and wonder at the mystery of its growth, who has been allowed to grow blind

and deaf to "all the mighty world of eye and ear," and to whom the procession of the seasons calls up no "time of the singing of birds" or "season of mists and mellow fruitfulness," but merely a few diagrams of ellipses on a school blackboard and a few facts of mathematical geography. There is still too much of the teaching that touches real life nowhere and allows the scholar to think justifiably that school tasks are merely some conventional stuff which must be held for examination purposes, but which may be jettisoned as soon as the hateful school period is over. Contrast with this a teaching which is as real and as rational as the life outside, which makes constant appeal to this life, which insists upon first-hand impressions, and which gives power of expression in order to satisfy a real need. This is the education which is "life itself."

So far, I have emphasised only the disciplinary value of Nature study; and it cannot be doubted that a sensitive child trained in a stimulating way would not only have received valuable and strengthening mental exercise, but would have approached much nearer to that harmony with his environment which is the aim of all education. He should have the power of responding to the wealth of stimulus pouring in upon him from every side, he should have a fine background against which to set his thoughts, he should have a wealth of suggestion to occupy such odd moments as he can devote to "leisurely delights and sauntering thoughts," he should have a heart to sympathize with every mood of Nature, and a determination—

> *"Never to blend his pleasure or his pride*
> *With sorrow of the meanest thing that feels."*

And through all he should see clearly that natural beauty is not

all, but that one should look through Nature up to Nature's God. But, besides all this, Nature study can claim the highest economic value. This is especially true in Australia, where so much of our national prosperity depends directly upon our natural resources. Knowledge of, or ignorance of, a few facts of Nature may mean the difference of millions of pounds to us. A single insect pest may lay waste the national harvest, a fungous disease may blight a national industry, a noxious weed ignorantly introduced may mean the expenditure of thousands to keep it in check. That we realize this is shown by our legislation, wherein we prescribe courses of action designed to keep such evils in check. But no such laws can be efficiently administered until the community as a whole understands more fully what it is that must be guarded against. It is useless to expect the trained orchardist to keep his orchard clean when every cottage garden in his vicinity is a breeding ground for the pests against which he is battling. Nature study in the elementary school cannot deal with the economic side to any great extent, but it can and ought to direct attention to a class of facts now ignored by fairly well educated men. It will undoubtedly give a great stimulus to the study of the beneficent and the injurious agencies in Nature. In the future, we may hope that the youth who is just leaving school shall no longer feel his fingers straying towards a stone whenever he sees an innocent bird, that his first impulse will not be to plant his heel on every creeping thing that crosses his path, and that the sickly rose-bush in his cottage garden will not be left to struggle unaided against mildew or aphis. At present there is still a disposition to regard the penalties inflicted upon our ignorance or our carelessness as inscrutable mysteries, or as plagues sent to chastise national

wrong-doing. They are chastisements, but not in the sense popularly attributed.

Nature study as a school subject is comparatively new in Australia, and it requires most careful handling in its inception. It is so fatally easy to run off the right rails on to the wrong rails. Nature study is so bound up with science that the mistake is often made of confounding it with systematic botany, or zoology, or entomology. These sciences may undoubtedly be treated just as interestingly as Nature study, but they are not elementary school subjects; and, in their elaborate classifications, the study of the living creature often becomes subordinated to other ends, so that the work becomes an affair of dried specimens and diagrams rather than of life in action.

Again, it must not be forgotten that it is for its reaction upon our own development, upon our own practical needs, upon our own lives, that we study the life-history of Nature. The grand result aimed at is to relate Nature-knowledge to ourselves, to show how it helps us materially, how it may brighten our lives and enkindle our thoughts. John Burroughs, one of the truest and most sympathetic writers upon Nature subjects, puts the case admirably: "If I name every bird in my walk, describe its colour and ways, &c., give a lot of facts and details about the bird, it is doubtful if my reader is interested. But if I relate the bird in some way to human life, to my own life—show what it is to me, and what it is in the landscape and the season, then do I give my reader a live bird and not a labelled specimen." This added human interest is the most difficult factor for the average writer or teacher. Among our Australian authors, Mr. Donald Macdonald appears to me to have this gift in a high degree. His Nature articles should be studied by teachers.

No teaching can be of the highest rank unless it is stimulating and suggestive. It opens up fields for research, and at the same time implants the eager desire to seek. Any teacher can be a collector and imparter of facts. A better teacher goes further and reaches the relationship existing between the facts. The best teacher, however, does all this and, in the doing, prompts the exclamation—How fine! I never thought of that before! Wonderful! These last are the teachers who will make Nature study the subject of all others destined to work a beneficent revolution in our school practice—the change from unreality to reality, and a determination to make school education not merely a poor preparation for a life ten years ahead, but an active agent in producing a full and abounding interest in life in each present year.

This book makes no pretence to outline any systematic course of Nature study. It is a reader designed to interest the senior boys and girls of elementary schools, and I heartily commend it to the goodwill of teachers as embodying the essential aims of genuine Nature work. They will find it not only instructive but full of suggestion, and withal most inspiring. The authors have the keenest sympathy with their subject, and their human-heartedness is felt throughout. Nature does not yield her secrets to the unsympathetic. The thoughts "that often-times lie deep" come "thanks to the human heart by which we live." Let me commend to readers the aim set forth in the chapter on *Method in Nature Study*:—"The fact, the meaning of the fact, and the wonder and beauty of the fact—these are the three elements in every full observation of nature."

I began with a quotation from Professor Hodge's valuable "Nature Study and Life." I may appropriately end with an appli-

cation, from the same book, of a beautiful saying, which sets forth what I believe to be the real position of Nature study rightly introduced into elementary schools:—"I am come that they might have life, and that they might have it more abundantly.[1]"

FRANK TATE.

31st January, 1903.

1 John 10:10

CHAPTER I.
The Return of the Birds.

My friend Mr. Gray was coming to spend a few weeks with me at my home in the country. It was a fine afternoon in September when I waited for him at the railway station.

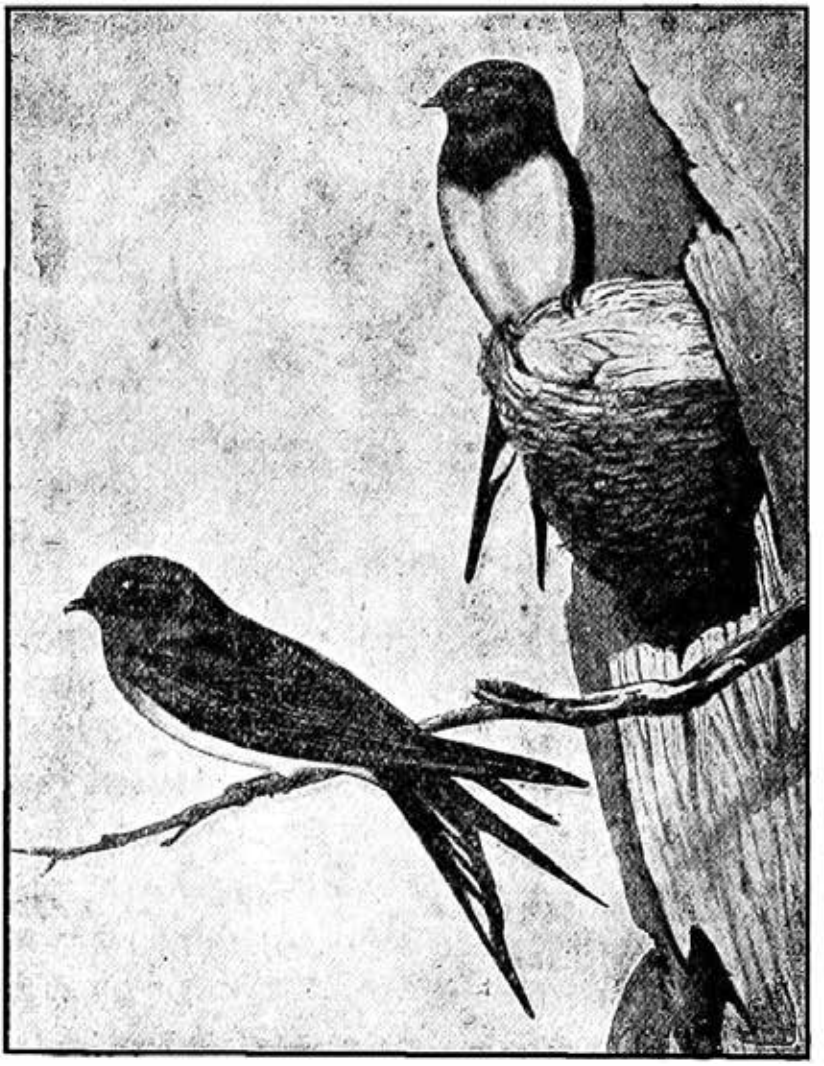
Mr. Gray, a remote descendant of the poet Gray, was a city man. We sometimes called him the poet; for, while he was keenly alive to the beauty of Nature in its general aspects, he was not yet conscious of the charm of knowing the face of Nature in detail. We would quarrel in a good-natured way about this, and I had gleefully laid my plans to make the poet into a naturalist.

On our way from the station we saw a gathering of house-swallows on the roof of the school-house. There was much twittering and restless movement.

"Look at the travellers," I said, "just arrived from Queensland!" "Ah!" said Mr. Gray, "the bird that chases the summer o'er the earth." "And what is all the talk about?"

"Who knows? They may be comparing notes of travel and adventure, or making plans for the summer. The younger birds may be busy wooing; for most of them nest in this month."

Crossing the river, we stopped to look at the swallows that were catching flies below the bridge. Besides the house-swallow, with its rust-red throat, there was the fairy martin, white-bellied and touched with white above the tail.



House-Swallows.

We stood for some minutes enjoying their graceful flight, and then we scrambled down to the water-edge to see the nests of the fairy martin. There they were, under the bridge, a colony

of thirty nests, from three to seven inches apart! I had known the colony for years.

"The birds came back from the north last week," I explained, "and started at once to get the old nests in order. They work in the cool of the morning, or, as now, in the cool of the evening."

Watching closely, we saw that about half a dozen birds had been told off for each nest needing repair. The nests were bottle-shaped and made of mud. "The bottle-swallow is the name the bird goes by among the farmers here."

With a long stick I broke off the neck of one of the finished nests, and, almost at once, the whole colony of martins set about repairing the damage. In less than a quarter of an hour hundreds of mud-pellets had been carried up and the neck restored.

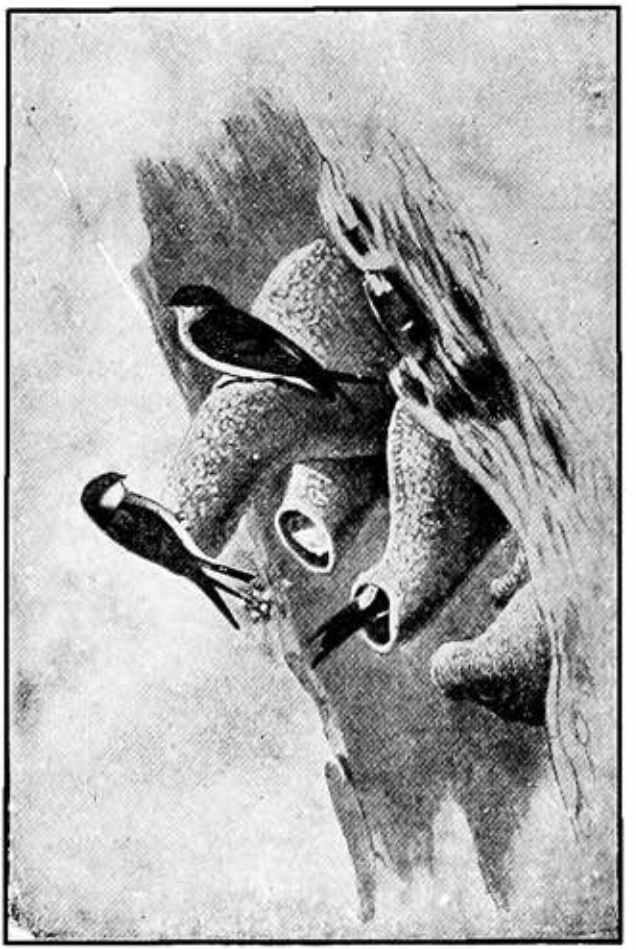
When the ordinary work had been resumed, we noticed that the six birds that were working at one of the nests were all bringing grass or feathers to line it.

A sparrow, on its way to a neighbouring farm, perched for a minute on a beam of the bridge. The martins seemed to be disturbed.

"Are they afraid of him?" asked Mr. Gray. "Yes," I replied, "the fairy martin is a gentle bird, and is easily bullied by sparrow or kingfisher, or even by the little diamond bird. The kingfisher is fond of young martins, and will break off the neck of the bottle bit by bit till it reaches the nest."

"Last year," I went on, "I found a sparrow in possession of a nest just completed. The whole colony joined in an effort to eject him. Failing in this, they plastered him in!"

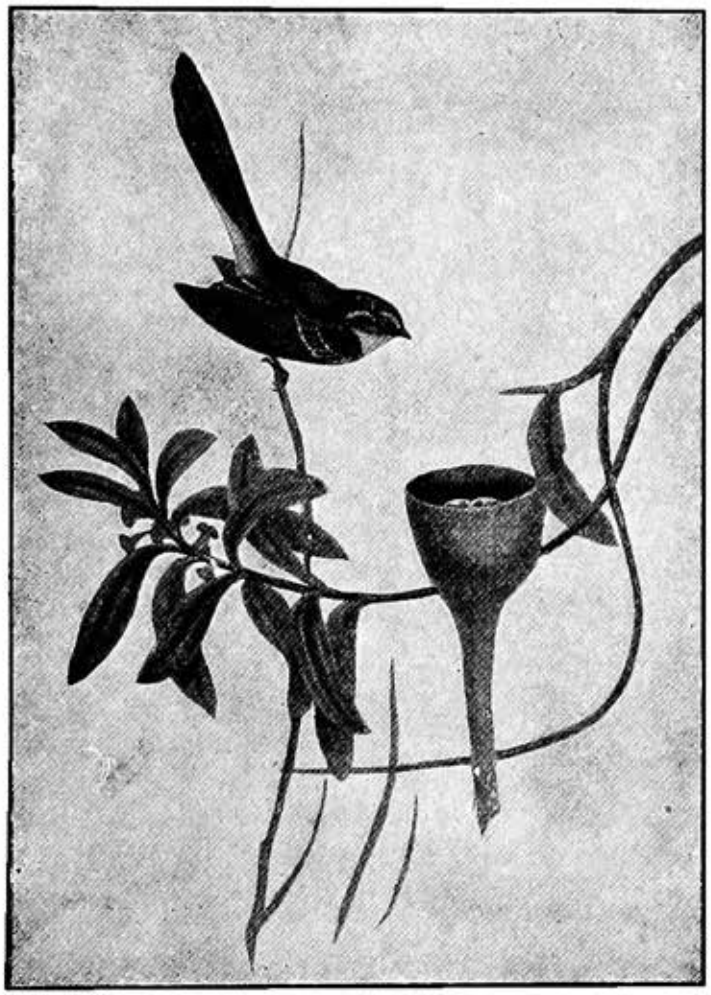
We found that the eggs of this swallow vary somewhat in colour, some being white, while in others the white is spotted with tawny brown.



Fairy Martins.

Mr. Gray would hardly believe that we had been half an hour at the bridge. "Yes," I said, "the day is too short for the naturalist or the poet who insists on seeing Nature with his own eyes." "For the poet?" said Mr. Gray, inquiringly.

"Yes," I replied; "Browning would sit quite still in a wood for an hour, and the birds would hop about his feet. Tennyson would spend an afternoon in watching how the lark rose into



White-shafted Fantail.

the air and dropped to the ground. Nature will not give up her secrets to the man in a hurry."

Skirting the river, I heard the call of the white-shafted fantail. "Here," I said, "is another bird that has come back from the north. The farmer has few better friends than this little flycatcher." While we waited to see the bird, Mr. Gray said: "What