

**Wild flowers of Tasmania, or, Chatty rambles afloat and ashore, amidst the seaweeds, ferns, and flowering plants : with a complete list of indigenous ferns, and instructions for their cultivation / by S. Hannaford.**

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Wild Flowers Of Tasmania.

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S. Hannaford.





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BAILLIERE'S  
**AUSTRALIAN ANNUAL REGISTER,**

OR,

*A View of the History, Politics, Commercial and Social Progress*

OF THE FOUR GREAT COLONIES OF AUSTRALIA :

NEW SOUTH WALES, QUEENSLAND, SOUTH AUSTRALIA, AND  
VICTORIA.

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**H**ISTORY, for the most part, has been written after such a lapse of time that, with the most honest intention, the Historian can scarcely reproduce incidents and actors as they were. He is not in a position to estimate fairly the bias of contemporary chronicles, nor their omissions and additions. He can only become lively by becoming a partisan. If he content himself with weighing conflicting and irreconcilable narratives, he succeeds only in striking a balance dull and uninteresting, while his pages want that warmth which pervades the record of a partisan.

The Newspaper writer of the day has to pronounce an opinion, before time has been allowed him to view questions under their varying aspects. His judgment must, necessarily, be tinged more or less by his own prepossessions. The atmosphere he breathes is not favourable to many sidedness. Where mature thought is unattainable, there is no resource to fall back upon save instinct and natural or acquired bias.

But the Chronicler, who at the end of the year undertakes a retrospect of the past, combines in himself the advantages which arise from living amid the scenes and incidents and actors he describes, and the advantages of the Historian who can correct the present, which has become his past, by the light of the future which has become his present.

The plan of the AUSTRALIAN REGISTER is based upon that which has been carried out with success in the "Annual Register," originally known as "Dodsley's Annual Register."

THE WILD FLOWERS  
OF  
TASMANIA.





THE  
WILD FLOWERS OF TASMANIA;

OR, CHATTY RAMBLES  
AFLOAT AND ASHORE, AMIDST THE SEaweeds, FERNS,  
AND FLOWERING PLANTS;

WITH A  
COMPLETE LIST OF INDIGENOUS FERNS, AND INSTRUCTIONS FOR  
THEIR CULTIVATION.

BY  
S. HANNAFORD,  
AUTHOR OF "SEA AND RIVER SIDE RAMBLES," "NOTES ON THE FLORA  
AND FAUNA OF VICTORIA."

*ILLUSTRATED.*

MELBOURNE:  
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TO  
M. Q.  
THIS LITTLE BOOK OF "SUNNY MEMORIES,"  
IS  
MOST AFFECTIONATELY DEDICATED  
BY  
THE AUTHOR.

WHAT joy it is, in distant climes to meet  
Some dear old friend !  
How the heart bounds the well-known face to greet !  
Whilst crowding memories, both sad and sweet,  
Their discords blend.



## PREFACE.

---

WITH such a paucity of guides to our Native Flora, none of which are within the reach of the ordinary student, no apology is deemed necessary for the following chatty introductory notes on the WILD FLOWERS, the FERNS, and SEA-WEEDS of Tasmania. That they might have been much extended there can be no doubt, but it has been thought preferable to confine the volume to such plants as are accessible to all, and by naming the localities where they may be met with at certain seasons, and describing any external peculiarities easily recognisable, enable the collector to master them before consulting any more technical work. The expense, too, of producing such a work as even the present in these colonies, has necessarily limited the number of illustrative woodcuts, but such as are introduced, are from



the pencil of those residing amongst us, and are in every case drawn from living subjects. Nor are the rambles imaginary ones, for many of the kind friends who have thus rendered assistance, and to whom most cordial thanks are presented, have joined in them, afloat and ashore.

Most earnestly it is hoped the perusal of them may make many enthusiastic students of "those stars, which on earth's firmament do shine," and that ere long we may again wander together, to learn more of those beauties of Creation, which are now trodden under foot unheeded.

To Dr. Ferdinand Mueller, the learned Government Botanist of Victoria, the author's thanks are especially due for most valuable information on the Flora of Tasmania, whenever he has been consulted.

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THE  
WILD FLOWERS OF TASMANIA.

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CHAPTER I.

RISE up, my love, my fair one, and come away; for lo! the winter is past, the rain is over and gone; the flowers appear on the earth; the time of the singing birds is come.—SONG OF SOLOMON.

IT has been aptly said by the German poet, Goethe, that “We should do our utmost to encourage the beautiful, for the useful encourages itself;” but how prone we are, led away in the pursuit of wealth or the pleasures of the world, to pass unheeded those very many gems with which our planet is studded—or, if they do occasionally elicit a passing glance, no deeper interest is awakened. We should blush not to know the names or the habits of the animals which are our companions, or not to recognise a geranium from a fuschia, or a prim-rose from a gum-tree; and yet forms the most



varied, the most graceful, and most brilliant in colour, meet us at every step we take, in our native wild flowers—far to us above all the conventional inhabitants of stove-houses and conservatories, since we can wander amidst them “anle-deep” if we please, and hold pleasant converse of them and their fellows. To what, then, is this apathy owing? Does it really arise from an undue appreciation of these glorious works of our Creator—that of their habits, their structure, their history, and their uses, literally nothing is known? for—

—————Not a flower,  
But shows some touch in freckle, streak, or stain  
Of His unrivalled hand; He inspires  
Their balmy odours, and imparts their hues,  
And bathes their eyes with nectar, and includes,  
In grains as countless as the seaside sands,  
The forms with which He sprinkles all the earth.

Or, is it from a dread of the technicalities with which the study of Botany is invested, without a guide to unravel the mysteries of the science, if mysteries there be? Well, we will assume that it is the latter, since it is well-nigh impossible not to love flowers—for our appreciation of them commences in infancy; in youth we have our miniature gardens, with a pet daisy, or wall-

flower, or double stock; they lighten our toils and brighten our homes as we become more matured; and when we are called from this world, they are planted on our last resting-places, to keep green the memory of surviving friends.

O Heaven! permit that I may lie  
Where o'er my corse green branches wave,  
And those who from life's tumult fly,  
With kindred feelings press my grave.

So sweetly sings the country poet, Bloomfield; nor is he singular in this sentiment, for poor Davis, of the *Irish Nation*—whose early death awakened such loud and ardent grief amongst thousands to whom “his very name and being were unknown until the sad tidings awoke in them the vain regret that they had not earlier known and honoured the good, great man, who worked unseen among them”<sup>\*</sup>—in his little poem, entitled, “My Grave,” says:—

Put no tombstone there,  
But green sods, decked with daisies fair;  
Nor sods so deep, but so that the dew  
The matted grass-roots may trickle through.

<sup>\*</sup> Introduction to “Poems and Essays of Thomas Davis.”



And Keats, who, like Davis, died prematurely,  
speaks of a spot—

Where, like an infant's smile, over the dead  
A light of laughing flowers along the grass is spread.

—*Adonais*.

Well, let us endeavour, then, dear readers, to overcome some of the difficulties which present themselves, and, divesting the subject of as many technicalities as we can, make you acquainted with some of the more interesting plants of the month in which they flower; but you must ramble with us, through gullies, and over hills and in bye-ways, and see them in their native haunts to know them well, and knowing is to love them. In the Old Country every one, old and young, watches anxiously for the return of the migratory birds; and the arrival of the first swallow, or the date on which the cuckoo's voice is first heard, is duly recorded in the papers of the day; and children form small parties to gather bouquets of sweet violets, blue and white, "covered up in leaves," or huge bunches of

That bonny peasant lass,  
The bold and full-grown beauty of the green,

as Hartley Coleridge has prettily designated the primrose.

The schoolboy roams enchantedly along,  
Plucking the fairest with a rude delight ;  
Whilst the meek shepherd stops his simple song,  
To gaze a moment on the pleasing sight :  
O'erjoyed to see the flowers that truly bring,  
The welcome news of sweet, returning Spring.

It is just this feeling we long to see cherished in our own "tight little island," where our plants, in variety and beauty, will yield to those of no other part of the globe. The value of a pursuit such as we desire to see cultivated amongst us is incalculable, not only for our Native youth, but also for those who need something to make a compulsory walk less irksome, if merely in establishing that happy frame of mind, which an acquaintance with every living thing we meet with in our daily rambles must produce ; truly such knowledge brings its own reward, for

From Nature and her changes flows  
An everlasting tide of joy.

And hear again how eloquent is that genial writer, Jonathan Freke Slingsby, whose cheery



papers so long enlivened the pages of the *Dublin University Magazine*, on this intercourse with nature.—“The man who spends his life exempt from public haunts, and converses much with others of God’s creatures than his own species, will learn a lore that dwellers in cities know not of. The flowers speak of joy, and peace, and love, and their odorous breath whispers of purity of soul. If at any time I weary of the face of man, or chafe at his folly, I can betake myself to the woodlands, and hear the leafy things around whisper words of truth and wisdom, as they bend their branches towards me, while I lean against their trunks with my back, and re-absorb the peace of God’s nature.”

It cannot, however, be expected that our knowledge can be acquired without much patience, and no small an amount of application, or that our random jottings are all that are needed to attain proficiency. “In lanes and bye-ways open eyes are always learning,” says the author of “*Summer time in the Country*”—a companionable, chatty little book, which we cordially recommend to our readers. The ability to recognise forms identical in their



main structure, but most unlike externally, requires much practice and great skill, but no more difficulty exists in mastering this than any other branch of education, and eventually it becomes a labour of love. The more the energy, the greater the application, so much more will the successful efforts be prized.

It is desirable for the young student of Botany to obtain the names of a few of the commoner plants, for reference, and a herbarium of dried specimens is indispensable. To form this is comparatively an easy matter. Good specimens, with root, stem, and flower—or seed where practicable—where the plant is small, or with larger examples, a branch containing flowers or seed, or both, will suffice. The carpological value of plants in seed is scarcely yet sufficiently appreciated; a fact but lately impressed upon us by no less a person than the talented Government Botanist of Victoria, to whose friendly help and kind guidance we are indebted for much of our knowledge of the Australian and Tasmanian floras.

To collect plants, we carry with us a tin japanned box, with a lid, much the shape of an ordinary sandwich box—this is slung by a



leathern strap around the shoulders; and we have, too, a small iron spud, with which to root up small plants entire without mutilation. The tin box holds a large number of plants, and when slightly moistened they will retain their freshness until leisure is found to lay them out to dry. A specimen of each plant should be put into a vase for examination, and the remainder placed between sheets of porous paper with layers between, and then put between two or more well-seasoned boards, *clamped*, to prevent their warping by moisture, and secured by strong leathern straps with buckles. After a day or two, the papers may be changed, to hasten the process of drying, and to prevent mouldiness; and this change has one other advantage, that it admits of altering the position of leaves which have become curled, or flowers which are not distinct before they are too set.

When dry, each specimen, or all the specimens of the same species, should be placed between a sheet of white paper, of any size the collector may fancy; this again into others of a different colour, to denote genera, and again all the genera into others, which denote the Natural Order; for the chaos which exists otherwise, when



flowering plants are mixed up with ferns, rushes with algæ, and so on, is indescribable.

“Collecting plants,” says that veteran botanist, Sir William Hooker, “and forming an herbarium are at the present day regarded by many able speculative botanists as contemptible occupations. To point out the fallacy of such notions is not our function here. \* \* \* \*

Collecting for the mere sake of having specimens is an unworthy pursuit, in comparison with which collecting for sale is honourable ; but a collection made with the view of study, and an herbarium so arranged and kept as to be the depository of the student’s knowledge, and the materials for his future study, is of more importance than even books.

“‘To know plants’ in the full sense of these terms is impossible, without a large herbarium and a large experience in collecting ; and it is notorious that the love of the herbarium and its specimens amounts to a passion with some of the profoundest botanists of this century ; whilst all those who have risen to eminence as botanists in the full acceptation of the word—Linnæus, all the Jussieus, Brown, De Candolle, Lindley, Endlicher, and Asa Gray himself—founded



their knowledge upon experience in the field, herbarium, and garden. Specimens and the herbarium are means, not ends; and the true botanist should have the same pride in his *hortus siccus* that the chemist has in his laboratory and preparations, the astronomer in his observatory, and the surgeon in his pathological museum."

We will suppose that our readers are ready for a start afoot, on the first fine day which presents itself, amongst our creeks and gullies, and hill-tops, where the shrubs are poutingly and timidly as yet budding out. We promise a treat such as they never imagined in store for them; and they will, we are sure, exclaim with John Clare, who has so enthusiastically written of the pleasures of a country life—

Oh, who can speak his joy when Spring's young morn,  
From woodland pastures opened on his view;  
When tender green buds blush upon the thorn,  
And the young flowers dip their buds in dew.

## CHAPTER II.

NUNC frondent sylvæ, nunc formosissimus annus.—VIRGIL.

THE advantages which a study of Botany in the field affords over that of dried herbarium specimens in the closet must be manifest to everyone, for, in a living state, every part of their structure can be minutely examined, which facility withered plants do not present; and the result of an examination of living examples should always be carefully jotted down before they are laid away to dry, in which state, however, they will be most serviceable by-and-bye for comparison. The advantages of companionship, too, whilst afield, are very great, on the principle that two heads are wiser than one; as hints, though but slight, not unfrequently assist in the more ready identification of newly-found specimens. There are some we know who hump their backs at pursuits such as ours, and who wander through



this lovely world caring but for themselves—such people we carefully avoid; and others, who sneeringly designate a study of wild flowers as a waste of time, they being of no value, we feel sorely tempted (following the advice of an old writer) to ask to take off their hats in order that we may see the length of their ears. Such companions, however, are not for us, so bidding adieu for awhile to the cares and trials of the world, let us saunter along this glorious September morning to the low rocks near the first basin of the Cataract, at Launceston, bent on finding some of those “silver linings” which every condition of life may have for the seeking. We can quite forgive quaint old Chaucer, who, when that the Spring was come, the birds singing, and the flowers in bloom, bade farewell to his book and his devotion; for “our human souls will cling to the grass and the water-brooks,” and town life wearies us when we know how much there is to tempt us bushwards. It is scarcely credible how many of our native plants have already burst into bloom; go where we will now—in the thick scrub, the dark glen or ravine, by the margin of our rivers and creeks, or



the side of some of our majestic mountains—we have loveliness at every step, and usefulness prevailing in those plants which, to the casual observer, may be considered somewhat destitute of beauty.

All nature laughs, the groves are fresh and fair,  
The sun's mild lustre warms the vital air.

We wander along through a perfect thicket of Sweetbriar, deliciously sweet after a passing shower, until we reach the basin, and rest awhile before commencing our labours. Certainly it is a charming place, where a man may truly “possess himself in much quietness,”—the high rocks, through which the stream pours swiftly and impetuously, yet musically, into the river Tamar below; the variety of foliage which clothes them, the delicious odour of the wild plants, all remind us of some well-remembered scenes in the home country, such as Powerscourt and the Dargle; the swallows skim far above us, and anon dash down to our very feet, in search of food, which, until the sun is higher, is generally found low; the honey-suckers flit, chirping noisily, from

tree to tree, the sweet Wattles affording them plenty of sustenance just now; the bees hum cheerily in the blossoms of the Cherry and Apple, the latter so delicately pink that we are well-nigh tempted to exclaim with Ebenezer Elliot—

What virgin's cheek  
Can match the Apple bloom?

The Honey-eater (*Meliphaga Australasiana*) resorts to the thick beds of *Epacris impressa*, our Native heath, on the white and pink blossoms of which lovely plant it finds an abundance of food; and it seeks so intently for it, that a near enough approach may be made to allow of its actions being watched without disturbing it, as it clings to the stems in every possible attitude, inserting its slender, brush-like tongue up the tube of every flower with amazing rapidity. The Blue-crested Wren, on courtship intent (and a "braw wooer" he is, too), "chit-chits" merrily to his little mate, so quaker-like in her garb; and the Red-breasted Robin trills a merry little song of welcome and joyousness.

Having rested, we commence operations, and







are at once enraptured with the *Clematis aristata*, or Virgin's Bower, whose

Blossoms white, tinted with sanguine hue,

are hanging in festoons from rocks, bushes, and trees. We can conceive nothing more gorgeous than the wreaths which they form, as if for the bridal of the Spring, and even when more matured, the feathered awns or seed vessels are always objects of loveliness. It is indeed

A tendril, accustomed to cling,  
And grow where it will, cannot flourish alone,  
But will lean to the nearest and kindest thing  
It can twine with itself, and make closely its own.

And most beautifully does Mrs. Meredith, whose charming "Bush Friends in Tasmania" is so deservedly well-known to our readers, write of the wreaths,

Closely woven, intertwined,  
————— that from each tree depend  
In draperies, with thready gold and pearl,  
And emerald, crusted over, like a fall  
Of foaming water full of silver shells.

The Native Fuschia (*Correa speciosa*) is now in full bloom on all the rocks, and an interesting



plant it is with its greenish-yellow pendulous flowers, but a most variable one, for we find it assuming forms enough to make us imagine we have many distinct species, but all probably (variations in colour, and degrees of hairiness notwithstanding) referable to this one. The heathy plant with yellow flowers, growing between the stones, is a species of *Hibbertia*; and a little gem, straggling in all directions, with white flowers, is *Bæckia diffusa*, distinguished only from another species also common here and on the banks of the North Esk—*B. thymifolia*—by having narrower, smaller, flat, sharp leaves; they belong to the order *Myrtaceæ*. Our most esteemed friend, Dr. Mueller, in one of his early Reports on the Flora of Victoria, remarks that the leaves of one species (*B. utilis*) “might serve travellers in desolate localities as tea, for the volatile oil of its leaves resembles lemons in taste and odour, not without a pleasant fragrant aroma;” and no doubt our plants possess largely the same properties as the Victorian species.

A more lovely little plant than we have here as a type of the Milkworts (*Polygalææ*)



it is scarcely possible to conceive, and well deserves Mrs. Meredith's pet name of "love," coming as it does in early Spring to ornament the dead rushes, by climbing up and around them, and concealing what would otherwise be offensive to the eye, with its beautiful pale-blue blossoms. Its generic name, *Comesperma*, is an apt one, being derived from two Greek words signifying "hair-seed," the seeds having a long, delicate tuft of hairs at their margin; nor is its specific name, *volubile*, less so, the stems twisting spirally. It is said to be easily raised from seeds, cuttings, or roots; whose garden then shall be without it?

Two Shrubs, now in profuse bloom, will surely attract the attention of even the most indifferent of our party. The first, which is abundant on the high rocks at the very margin of the basin, is a handsome and showy one, four to six feet high, covered (as are the leaves) with a white or reddish down, with long leaves and dense heads of flowers. This is the *Pomaderris elliptica*, belonging to the order *Rhamnaceæ*, and the *Cryptandra ulicina*, is truly, as Hooker terms it, "a very handsome species," forming a bush four to

eight feet high, of a bright green colour, powdered with abundant white flowers, which smell like hawthorn, and are surrounded by brown scale-like bracts. It is singular that both these genera, *Pomaderris* and *Cryptandra* belong exclusively to this and the Australian colonies.

An evergreen shrub, with blue or lilac flowers in sub-terminal racemes, growing high up on the rocks, is *Veronica formosa*, and richly does it merit its appellation of "beautiful." It is an immense favourite, for few gardens are without it. We have, too, another little Speedwell, *V. gracilis*,

Looking up with gentle eye of blue,  
To the younger sky of the self-same hue.

A patch of white flowering plants across the basin of the Cataract look most tantalisingly pretty, so we hail the Charon of the place, and get boated over. Here, amidst the stones, we find many acceptable additions to our herbarium—species of *Pimelea*, *Prostanthera*, *Clematis*, &c., just as the Quaker botanist, Backhouse, in his interesting narrative of a



visit to these shores, tells us he found them thirty-one years since.

A little creek, whose ripple strikes pleasantly on our ears, we next make for, and first quenching our thirst from its refreshing waters, we wander along up the stream, over stones and fallen trees (some inconveniently large) with *Eurybias* and *Pomaderris* and Fern-trees affording a delightful shade, under which we sit down and rest awhile, and take the opportunity of removing the leeches which have adhered to our legs; first lighting a cigar, too, as a protection from the attacks of mosquitos, which are here in legions. We are reminded, as we lounge, of a passage in Alexander Smith's late work, "Dreamthorp," wherein the author tells us he loves his garden, simply because it is his own, he planted it, he the creator of every blossom, of every odour that comes and goes in the wind. A narrow sentiment surely! "Give us the wild flowers" say we, in preference to the more sedate forms of the garden, for it is just their additional charm that they are for every one of us to enjoy, from the rich to the poor, from the infant who gathers each fair flower which it meets



with, only to cast away when anything more gaudy meets its eye, to the more mature of us, who learn a lesson from these simple plants which we welcome in their due season; for as ourselves, they flourish awhile, and are struck down at their appointed time, only to bloom again hereafter.

Of the large natural order *Proteaceæ*, so called from the variety of forms which the genera it embraces assumes, we find *Hakea microcarpa*, and a not very dissimilar plant, *Grevillea Australis*, and shortly we shall find here the *Lomatia tinctoria*, with much divided leaves, and racemes of cream-coloured flowers.

The fronds of the tree fern are far too large for our collecting box, so we have reluctantly to content ourselves with *Polypodium Billardieri*, which assumes some fantastic forms—*Lomaria procera*, and the fan-leaved Spleenwort (*Asplenium flabellifolium*). We gather, too, a few plants of the native Forget-me-not for “auld lang syne,” and now notice that the white flowers which we saw from the opposite side of the basin are those of the beautiful Iris-like *Diplarrhena Moræa*, covering acres of ground with its snowy blossoms.

But as we purpose returning by the beautiful new bridge which has lately been erected across the South Esk, and have an ascent of some three hundred feet to make before getting into our homeward track, it is time we should be starting, for twilight has crept upon us whilst we have been musing. A reviewer of a recent work by a French author on "Seaside Studies," remarks, "that no sooner does a man go to the seaside, and hunt up a few of the many remarkable things there to be found, than he commences to talk about 'looking to Nature's God.'" If so, well indeed; and we fain trust that the rambles our readers may take with us may have such a beneficial influence, since we believe, with Victor Hugo, that "certain thoughts are prayers; there are moments when the soul is kneeling, no matter what the attitude of the body may be."



## CHAPTER III.

NATURE never becomes a toy to a wise spirit. The flowers, the animals, the mountains, reflect all the wisdom of his best hour, as much as they delighted the simplicity of his childhood.—EMERSON.

THERE is something particularly tantalising, as the bright summer days come creeping in, after the cold rain and gloom of Winter, and the somewhat precarious weather of Spring, to hear of the preparations which our friends are making for a sojourn in the country; some to shoot wallaby—some to the Piper's River to snare crayfish—others to watch, evening and morning, by the side of bush pools, to shoot the bronze-winged pigeons which come there to slake their thirst after the heat of our Tasmanian days—whilst many go for fresh air and quiet, and to escape from the monotony of business life, ready for anything that may turn up. The shops which deal in such wares only make the collar more galling by their tempting display



of rods and fishing tackle ; and we bethink ourselves, as we sit in our business parlour—unable to budge—of quiet hours by some river's bank, which old Isaak Walton declares (and we believe him) to be the fittest place in the world for contemplation—filling our basket with cucumber-scented herring, mountain trout, and black-fish, which abound in all our streams. Pent up as we are, and have been, for many months, is it any wonder that we sympathise with the genial-hearted Elia on his release from toil, save and except that he preferred the murky, gloomy streets of London, to the fresh breezes from hill and lake? However, “God tempers the wind to the shorn lamb,” and although unable to escape from toil to wander afar, yet we have bright nooks close at hand where we may forget our disappointment for a time ; so let some of the hills surrounding the town be our hunting ground to-day, and making a start from the South Esk bridge, which we crossed in our last ramble, clamber up the steep rocks, again towards the Cataract : our companions will require respiratory organs of the soundest, for a solitary tree at yonder summit is the first point to be attained, and it stands many hundred feet above the water's



level. On our way we are sure to fall in with a slender plant, say six to twelve inches tall, bearing a host of whitey-pink flowers on very slender stalks, generally in pairs, with yellow or purplish anthers: this is the *Arthropodium paniculatum*, and another species (*laxum*), smaller in stature, but with large violet-coloured flowers, is abundant on good soil throughout the colony. Another Liliaceous plant here is *Bulbine bulbosa*, which bears racemes of slightly orange-yellow flowers, and a sometimes bulbous root, caused by the thickening of the base of the stem in old plants. It is by no means an uninteresting plant, as it grows on tall, smooth, green stems, in rocky situations; but it is a great pest to herbarium formers, as it retains its vitality for a considerable time, even under pressure, and finally becomes shrivelled and unrecognisable.

A shout from one of our enthusiastic companions assures us that some prize has been found, and on inquiry, we find it to be really a gem, which will in beauty yield only to a nearly allied plant, *Cæsia*, which brightens the otherwise barren bush early in the spring with its deep blue star-shaped flowers and orange anthers: it is a *Dianella*, with long Iris-like

leaves, of which baskets are woven, and elegant purple flowers, which are revolute, on high, slender stems.

Our landmark being reached, we rest for a few minutes before descending the precipitous hills to the gulley near the Cataract. Here we have a glorious view of the surrounding hills, sloping down into dark valleys, where Cryptogamic plants abound; and the roar of the waters of the Cataract, which rush into the deep basin, only to emerge again with additional vigour over a rocky, precipitous gorge, into the river Tamar, reminds us of some lines of Carrington, an English poet, on a river in Devonshire, for which we will substitute our own—

The voice of Esk

Is loud and hoarse, his cataracts uplift  
Their roarings to the woods; but oh! how sweet  
The music of his gentle tones, for he  
Has tones of touching sweetness.

This Cataract commences about six miles from Launceston, prior to which the "South Esk River," which rises near Ben Nevis, receives into it the "Tyne," from Ben Lomond; "Break-o'-day," from St. Patrick's Head, only four



miles from the East Coast; the "Nile," from Ben Lomond; the "Elizabeth," the "Macquarie," the "Lake River," and the "Meander" or Western River, flowing on for about one hundred and twenty miles.

But now, after sliding and scrambling, we are at the bottom of the hill, on the summit of which we were chatting but a few moments since, and again we mount a low range of rocks which run over to the dam, and we find plenty to interest us even here, although taking them only *en passant*. The beautiful pink flowering leguminous plant *Indigofera*, as a matter of course, finds its way into all our collecting boxes, and we gather huge bunches of *Bedfordia salicina*, a yellow composite bush, the leaves of which resemble somewhat those of the *Buddleya globosa* of our gardens.

None are more beautiful or welcome amongst our early flowers than the *Orchids*, and we find many of them in shade amidst the rocks: with us they are principally tuberous and terrestrial, with the exception of one epiphyte, exclusively Tasmanian, named after that skilled investigator of our fauna and flora, Ronald C. Gunn, Esq. It is found on trunks and branches of

bushes and small trees, at Emu Bay, Black River, Circular Head, Swan Port, &c., &c. The first which makes its appearance is *Diuris pedunculata*, which may at once be singled out from others by its pale-yellow horizontal flowers—one, two, or four on peduncles of one and a half inch in length; then *D. sulphurea*, about six inches high, with golden-yellow petals, a deep purple-brown claw, and yellow labellum; and still later *D. maculata*, a much taller plant, with narrower petals, which are more densely spotted. In this genus, the two lower sepals are linear and frequently green.

The Flax (*Linum marginale*) rears its tall stems, surmounted by delicate flowers,

Blue as is the sky,

here as all over the island; and on the Western Mountains, at an elevation of three thousand to four thousand feet, it is found smaller, with white (never blue) flowers; and on getting further on, a most beautiful white flowering shrub—*Epacris obtusifolia*—puzzles us at first, not having the long tubular flowers of *Epacris impressa*, which is more familiar to us. The



lovely pink flowering-shrub of the order *Rutaceæ*, is *Boronia Gunnii*, having numerous linear, slightly glandular leaves; its smell is not attractive, resembling that of Rue or Tansy. We found in our last stroll here one species of *Cryptandra*, and now we have a curious little species—*vexillifera*, one to three feet high, bushy, with heads of inconspicuous flowers, about the size of a pepper-corn, and having two or three downy white leaves under each head, which, to the uninitiated, would at first glance appear to be the flowers. Of the order *Myrtaceæ*, or Myrtle Blooms, here is first, in profusion, a handsome shrub, with healthy foliage, and tufts of pink-tinted flowers. It may be detected by the long bristles which terminate each lobe of the calyx. This is *Calycothrix glabra*, its generic name meaning “hairy-calyx.” The Bottle-brush or Swamp Tea-tree, though so common a scrub, is not a bit less worthy of our notice, bearing terminal, cylindrical heads, an inch long, of canary-coloured flowers, which smell sweetly. It is but a small bush here, some four or five feet high; but Hooker (“Flora Tasmania,” p. 129) states, on the authority of Mr. Gunn, that



trees of it attain a height of seventy feet, and four to five feet in girth; one which that gentleman had measured being unbranched for twenty-seven feet, and five and a half feet in girth, at three feet above the ground. Of the bark, he also tells us, the Natives used to make their catamarans or canoes, stitched with the bark of *Sida pulchella*, and *Plagianthus sidoides*, two of our Native shrubs of the Mallow family, generally found on the margin of rivers or in damp places, the latter chiefly on the Southern side of the Island. There is a larger Bottle-brush growing here, nearly allied to the foregoing, bearing its inflorescence in spikes in the middle of the branches. It was formerly known as a *Metrosideros*, but is now *Callistemon* (beautiful stamen) *salignum*.

However, we must not linger longer here, further than to inquire of the wife of our friend, the ferryman, if she has made any botanical discoveries of late, as last season we incurred her very serious displeasure by stating, in her presence, that the large red-winged capsules of *Dodonea salsolifolia*, which abounds here, were not, as she imagined, the flowers of that shrub; and she declared her intention



of marking a bush, to enable her to decide this Spring. Here she comes, bound townwards, with a bundle of linen snowy white, fully testifying to her skill as a laundress, if not as a botanist. "Very sorry, Sir, 'twas my husband as said so," is her only reply to our inquiries; so on we stroll by the road towards the hills, in the direction of Glen-Dhu, which we reach after a walk of about a mile; but the valley yields little of interest, so we mount the hill to gain the main road, wandering ever so slightly out of the direct path to a small spot which gives a melancholy interest to the place. It is the *Convict Burial Ground*; and here, where fences are broken down, cattle allowed to graze, and wandering steps intrude on the graves, some pious hand has erected at the base of a gracefully spreading *Eucalyptus*, whose fragrant leaves droop mournfully over the spot, a little wooden cross, bearing the inscription—

OF YOUR CHARITY PRAY FOR THE SOULS OF THE  
FAITHFUL, WHOSE REMAINS LIE HERE.

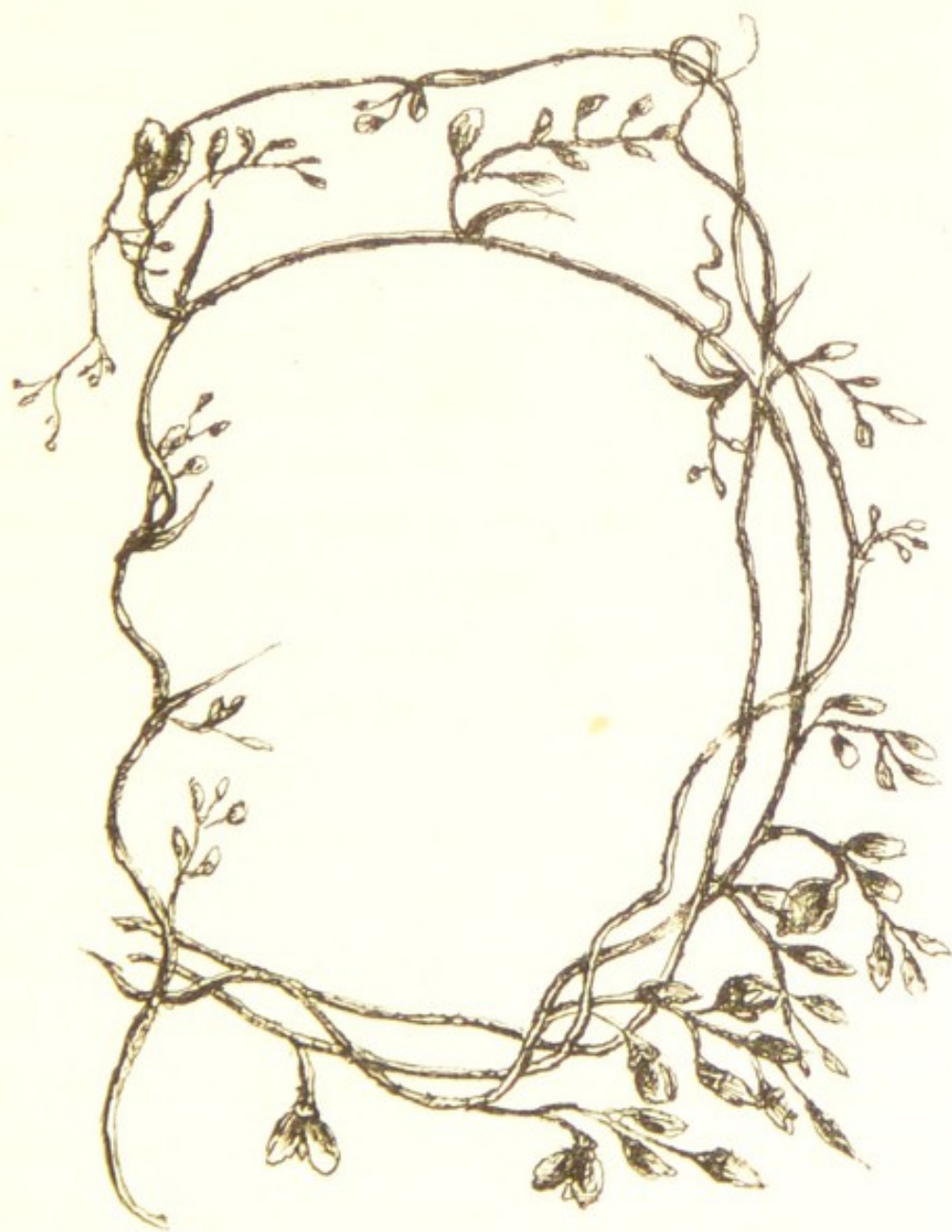
Nor can we restrain a fervent Amen. But we gladly turn away into the bush on the opposite side of the Westbury road. We could at first



scarcely credit that so beautiful, so dense a scrub, was to be met with so near town. Here, under lofty, shady gums, are wild flowers in profusion, and large bouquets are quickly made—formidable rivals to those from the florist's hands. Let us see now: first, we have a little blue-flowered pea-shaped plant creeping along near the fence, with procumbent, silky branches and coriaceous leaves; this is *Hovea heterophylla*. Another erect species, one to eight feet high, *H. purpurea*, also bearing blue flowers, with hoary branches, is common along Distillery Creek, a pretty little stream about a mile and a half from Launceston. The lovely "wax-flower," as it is here called—*Eriostemon verrucosum*—with its snowy-white flowers, rose-coloured whilst in bud, and with glaucous, fleshy, glandular leaves, covers the ground as with snow, contrasting beautifully with the heathy, pink *Tetratheca*, which bloom for ever so long, and meet with them when and where we will, *some* find their way into our collecting box, no matter how full it may be. Most variable is this same *Tetratheca*—in colour, in habit, and in almost everything. The one we have before us here so abundantly is *T. ericæ-*



*folia*, or Heath-leaved *Tetratheca*, belonging to the order *Tremandrea*, or Poreworts of Lindley. Dr. Mueller has, with much judgment, in the first volume of his most valuable "Plants of Victoria" (vol. 1, page 182), embraced under this species *T. glandulosa*, Lab.; *T. pilosa*, Lab.; *T. procumbens*, Gunn; and *T. Gunnii*, Hooker; all which were recorded, though doubtfully, in the "Flora of Tasmania" as distinct species: for although all the varieties, as that learned botanist remarks, retain their typical differences with considerable firmness, yet there is no reliable character to constitute species. The dark, blackish-purple anthers show off the pink or rose-coloured corolla. Well, now we have blue, purple, pink, white, and here is a spray of Maidenhair Fern. Put that with the rest. Some of that little, silvery, downy-leaved plant, with heads of yellow everlasting flowers (*Helichrysum apiculatum*) will furnish a yellow; now a few spikes of the pale creamy *Stackhousia monogyna*; or twiners nothing more glorious than the slender blue *Comesperma*, and deep-red trefoil creeper (*Kennedya*); a handful of that modest white Eyebright (*Euphrasia speciosa*), and if not quite out of flower, a few pieces of







crimson *Epacris*; a spike of the Native Hyacinth (*Thelymitra nuda*), and a little quaking grass, and you have a bouquet not easily matched. How much we would like to say, if space admitted, of the manner in which flowers are huddled together, not only in the houses of our friends, but in the so-called bouquets presented for competition at our horticultural exhibitions. "Have a flower in your room," says Leigh Hunt, and so say we, and do; but we earnestly protest against the indiscriminate thrusting of long and short stems into a vase, with colours harmonising ill with one another; and the same want of taste is observable in our flower beds, which, if planted with patches of well-selected colours, would be extremely beautiful, and at all times look gay and cheerful. We use the word "harmonise," but it is rather by *contrast* that we would arrange a bouquet, to make it pleasing to the eye: for example, laurestinus, red roses, heliotrope, white roses, and red verbena, interspersed with the blue creeper, *Hardenbergia monophylla*, whose large green leaves will heighten the effect, is to our mind; or, say a camellia for a centre, then a circle of mignonette, next a group of blue violets, mignonette



again, with rosebuds and leaves, syringa, and scarlet verbenas.

Very beautiful bouquets may be composed of a mass of scarlet geraniums, not forgetting the green leaves, interspersed with fairy white roses, and surrounded by half-blown white camellias; or, better still, myrtle, scarlet geranium, a tea-scented rose, jessamine (yellow and white), and blue nemophila or salvia. No bouquet is really good, remember, without a rich green and dead white.

“In disposing,” says Mrs. Loudon, in a paper on the “Principles of Colours as applied to Flower Gardens,”\* “of an assortment of plants in bloom, with a view to producing a general harmony of colouring, or even in making up a nosegay for the same purpose, the same colours should recur at least thrice in the same garden or border, or in the same nosegay. One of these masses of colour ought to be larger than any of the others of the same kind; and the other two masses or specks ought to be of different sizes, and not so far distant from the first or principal mass, as not to be easily

\* “Ladies’ Magazine of Gardening.”

recognised by the eye. This necessity for three or more portions of colour, of a principal mass and a secondary one, is derived from the principle of a whole; for, to constitute this, there must not only be parts, but predominating parts."

This is somewhat of a digression, but we needed rest after many hours rambling; and now, bouquet-laden all, we retrace our steps homewards. We have the town and picturesquely-winding river in view all the way, with the majestic mountains just discernible in the gloaming. Our walk has been at best but a limited one, yet we all regret that it is drawing to a close, for we have, indeed, felt that—

No plot so narrow, be but Nature there,  
No place so vacant, but may well employ  
Each faculty of sense, and keep the heart  
Awake to love and beauty.



## CHAPTER IV.

Oh, ye spring flowers!—oh, ye early friends!  
Where are ye, one and all?  
The sun still shines, and summer rain descends,  
They call forth flowers, but 'tis not ye they call.  
On the mountains,  
By the fountains,  
In the woodlands, dim and grey,  
Flowers are springing, ever springing,  
But the spring flowers, where are they?

W. HOWITT.

ALTHOUGH our hill sides, when last we wrote, were teeming with floral life, yet the sun's hot rays have well nigh destroyed all those beautiful forms which welcomed us in Spring, and for which now we may seek in vain; so the constant collector must needs turn his steps to more unfrequented spots, where forests are nearly in their primeval state, and are untrodden, except but occasionally, by man or beast. St. Patrick's river, about twelve miles from Launceston, we have decided upon visiting this bright November day, and

scarcely has the sun peeped out than we are away in a light spring-cart, which we take, not so much for our own accommodation, as for our fishing-baskets, botanising-boxes, and a mysterious hamper or two, "contents unknown," as the bills of lading have it, but suspected. We drive along the main road to Newstead, past Distillery Creek, until we arrive at the pretty village of St. Leonard's on the South Esk, and diverge to a narrow road on the left, where, on account of the steep ascent, we dismount. From this point, until St. Patrick's river is reached, the walk is a most irksome one; the road, besides being rocky and uneven, with trees here and there blocking up the way, being cut up in all directions by the heavy bullock-drays which convey palings and shingles into town, so that it is unsafe for vehicles, and very trying to pedestrians. For a while, too, the journey is a monotonous one, for the country is barren, the crops scanty, with nearly all the fine trees ringed, so that, had it not been for the enticing aspect of the surrounding hills afar off, we should have felt somewhat disheartened at the outset; but we plod along until the ripple of a little stream at the base of some densely-



wooded, hilly bush, which forms quite an amphitheatre, infuses new life into us, and now we find species of *Eurybia*, *Prostanthera*, etc., blooming freely; every bush, and tree, and rush is encircled by that glorious blue *Comesperma*, of which we never tire; the Euphorbiaceous *Croton viscosum* is just opening out its inconspicuous yellow flowers, and the Ferns are fairly revelling, like boys in a stream, in the moisture caused by the overflowing of a small creek, which, though concealed, affords us sweet companionship by its musical gurgling over its pebbly bed, and we are somewhat tempted to take Keats' advice, and

Linger awhile

Beside a streamlet's rushy banks,  
And watch intently Nature's doings,

but that we have many miles yet to walk. Soon this creek crosses the main road, and we learn from a bullock driver that "it's two mile to the Waterworks, and an uncommon rough road." He was right!

The St. Patrick's river, whither we are wending our way, rises from Mount Maurice and a tier to the north of Ben Nevis, then flows east-

ward about twenty-three miles to where the water is diverted through a tunnel, to supply by gravitation the town of Launceston (which covers an area of 3,340 acres) with water. The water is taken from the river about twelve miles from town, in a north-easterly direction, and at a level above high-water mark of 1196 feet. The river being partially dammed, the water is carried by shutes resting on slabs for about half a mile, with a trifling fall along a sideling hill, until it enters a tunnel, cut for two hundred yards through a saddle of the river tier. It is then drawn by an open channel into another tributary of the North Esk, called Distillery Creek, about two and a half miles from Launceston, and 314 feet above high water. The channel is contracted in this creek, from which the water is conveyed by 12-inch and 10-inch mains, and thence distributed by smaller pipes through the town. There are three storing reservoirs at an equal height of 256 feet above the sea level. One of these is on the Cataract Hill;—it is circular, with a diameter of 45 feet by 15 feet in depth, and capable of containing 148,689 imperial gallons. Another is on the Windmill Hill, and is of



similar dimensions. A third is also near the same spot, and it too is circular, with a diameter of 100 feet, a depth of 15 feet, and a capacity equal to 734,258 gallons. From these at any time, in case of emergency, an immediate supply of 1,031,646 gallons, or four days' supply for the entire town, allowing 25 gallons for each individual, can be obtained.

Before reaching the tunnel to which we have alluded, which is indicated by a stone with the inscription "Launceston Municipality" on it, we ramble through some beautiful bush, shaded by the foliage of huge *Eucalypti*, some 120 feet high, which amply repays us for previous toils. Amongst the more unpretending plants, there is a little pink Orchis, *Caladenia carnea*, only a few inches high, with hairy stem, and one long linear leaf, and a blue species (*barbata*) is equally worthy a place in our collecting-box. The various species of *Thelymitra*, also Orchids, are now beginning to flower, and they may be readily recognised by the hood-like column which encloses the anther; there is one under yonder Wattle-tree, with a splendid spike of blue, faintly pink-tinted flowers, on stems (or *handles*, as a young friend will have them to be)

a foot or more high. There is another species—*ixioides*—which, although very similar in appearance, has not the hooded column of *nuda*, but it is truncate, or abruptly cut off.

Occasionally we meet with tall, slender, naked-stemmed plants, bearing spikes of numerous greenish-white flowers, and having one long leaf half embracing the stem with coated bulbs. These belong to the genus *Prasophyllum* (leek-leaved). The discrimination of specific distinctions demands more leisure than our amateur botanists will care to devote to them, and dried specimens are of but little value. All over the rocky hill-sides the snowy white *Pimelea nivea* rears its slender stems, bearing heads of densely-silky flowers, and a variety with roseate flowers (*P. rosea*) is eagerly gathered by our party.

Whilst our companions wander along the road with the conveyance, we roam away at will, as any new object arrests our attention, and so it is we espy a very handsome tree, ten feet in height, with shining green leaves, and flowers of a mixed tint of purple and yellow. This, from the peculiar viscid pulp in which the seeds are imbedded, we know to be a *Pittosporum*, so called from two words, meaning “pitch-seed,” and



specifically *bicolor*. It is the only species in the island, although Victoria possesses three; this one, Dr. Mueller remarks ("Flora Victoria," vol. 1, p. 72), exuding, like several of its congeners, pale, useful gum. We do not go far before we detect another lowlier type of the order *Pittosporæ*, twining around some young shrubs, which it ornaments with its pale straw-coloured bell-shaped flowers. It is a *Billardiera*; and, later in the day, we find the beautiful, shining, dark-blue seed capsules, which, being glabrous and cylindrical, serve to distinguish the plant to which they belong (*mutabilis*) from those of *B. longiflora*, which are broadly oblong or square, with rounded ends.

We have abundantly here, as indeed throughout the colony, a beautiful representative of the Styleworts (*Stylidiaceæ*), a natural order which embraces a number of plants, as interesting in their structure as they are lovely in appearance. Many of the species resemble, at first glance, some heath or tiny fir, whilst others have the appearance of the Sea Thrift, and, indeed, a variety of our most common species was specifically named *Armeria*, to which genus the Sea Lavender of our English coasts belongs, by







Labillardiere. But the extraordinary irritability of the stamens, which is described by many of our botanical writers, is the most curious part of these plants. They hang down, and when the pollen is ripe, and ready to be discharged upon the stigma, have the power of springing up, and scattering it, so as to fructify and produce seeds. Whether this action is spontaneous or not, we have still to learn, but probably it is by the intervention of insects that the plant is propagated. Darwin, in his most interesting book\* has given us very valuable information as to how necessary insects are for the fertilisation of Orchids, and—as we know—the fertilisation of the common Barberry depends upon its irritable stamens being brought into contact with the pistil by the application of some stimulant to the base of the filament. Sprengel found that not only are insects indispensable in fructifying the different species of the *Iris*, but that some of them actually required the aid of the large humble-bee, as it only was strong enough to force its way beneath the style flag; and that illustrious botanist, Robert Brown,

\* "On the Various Contrivances by which British and Foreign Orchids are Fertilised by Insects."



states (Linn. Trans., xvi., 731) that there can be no doubt that the agency of insects is very frequently, though not always, employed in the fecundation of the *Orchideæ*, and that in those *Asclepiadeæ* which had been fully examined the absolute necessity for their assistance is manifest. Most wonderful, truly, are the means employed by Nature to effect her purpose.

Our most common species, *Stylidium graminifolium*, bears a spike of rose-coloured flowers at the summit of a tall reddish stem, with numerous grassy-like leaves surrounding its base. In it the anthers and stamens are so large as to admit of the interesting peculiarity to which we have referred being easily noticed. There are two other species, *despectum*, found at Circular Head and Georgetown, flowering early in Spring, and *perpusillum* in wet, sandy soil at Georgetown, flowering later in the season, but both are diminutive.

There is a little slender bush, about four feet high, by the roadside, plentifully for about a quarter of a mile, which bears very small, yellowish flowers in the axils of the leaves—it is *Pimelea pauciflora* of R. Brown—and another finer species, with leaves dark green above and

paler below, with white flowers, is *P. drupacea*, neither of them common plants.

But our fellow ramblers are far ahead, and our “cooees” to ascertain their whereabouts are unanswered, so we think it well to follow them, more especially as we are laden with specimens—collecting-boxes full—hardy plants peering out from each pocket, and a huge bundle in either hand, of which we are anxious to be rid, and after some sharp walking we come up to the cart and disgorge; another hill—then a valley, and so on, too frequently for our comfort, until at last we have in full view the St. Patrick’s river,

In rippling song, through rushes long  
And pendent willows wending;

and in a few minutes are slaking our thirst in its pure, icy-cold waters; and then for a good coil on the grass—taking our morning smoke, as we arrange our Botanical specimens, separating the more tender from those requiring less care—whilst others are intent on their fishing-tackle. The Honeysuckers cheer us with their loud liquid notes, the Miner jabbers away noisily, the pretty Fantail (always welcome) flits from bush



to bush, and the little striped-headed Manikin (*Pardalotus affinis*) restlessly and actively creeps about the foliage of the small trees which skirt the river, examining in the most easy and graceful manner the upper and under sides with the greatest care, in search of insect food, its pretty piping note being music to our ears :—

'Tis my faith that every flower  
Enjoys the air it breathes.

Aye, and every living thing about us seems to do so with ourselves this glorious day, and a slight taste of the “pride of the morning,” as the Irish peasantry designate the few drops of rain which so often precede a fine day, has served to freshen the air, and caused some of the shrubs to emit sweet odours, and some very unpleasant ones too.

This is just such a day as induced William Howitt in one of his very many charming country books to say—that if ever he was tempted to turn angler it would be *now*, merely for the pleasure of rambling by a quiet stream away from the cares of the world, amidst the beauties of nature, even though taking not a single fin.

But our fishing-tackle is now in good order, and we ramble up-stream, amidst beautiful shrubs of *Zieria lanceolata*, with white flowers, smelling powerfully, and the Pepper tree (*Drimys*, or *Tasmannia aromatica*)—some ten feet high; the flowers of this tree are inconspicuous, but the bark, it is thought, may prove valuable for medicinal purposes. Lindley and Hogg, in their respective works on the Vegetable Kingdom, state that the Colonial name is given from the berries being used as pepper by the settlers, but rather, we should think, from their pungent taste and smell.

*Pultenea Gunnii*, *juniperina*, and *stricta*, form an impenetrable thicket for some fifty feet, so that only here and there is an available hole; but never a bite of any living thing do we get, so we try back to our bivouacking ground, gathering on our way abundant specimens of the lovely white *Epacris exserta*—a little bush which is plentiful enough on the river's banks—and two composites, *Ozothamnus thyrsoideus* and *Cassinia aculeata*, near allies. But now to business. We breakfasted at sunrise, and by this time are in good condition for something more substantial than what the usual morning



meal consists of. Down with the hamper—first the table-cloth makes its appearance, then the spoons—knives next, forks—indigestible all—the corkscrew—ah! not forgotten as usual—positively the salt!—by the blessed Saint Patrick himself, a chicken pie, tongues, jam tarts, salads, and cheese, and a case of Allsop's pale ale. Oh, the enjoyment of that mid-day lunch, with not a care on our minds, capital appetites, and a loll on the green sward afterwards as we smoked our dhudeens, and kept one another in “discoorse,” no settled formal dinner is a patch on it. Our Jehu evidently thinks the great event of the day over now that he has dined, and proceeds to harness his steed—a proceeding we decidedly object to, considering that it is not long past noon—and we have yet to try our piscatorial luck down stream before we despair of success. We find the pathway hilly, rocky, and tiresome, from the fragments of trees left unused by the splitters, obstructing us on all sides; but our ardour is not to be damped, and by-and-bye a few herring fall to our net, but too diminutive to say very much about—the season we are informed not being sufficiently advanced for much sport. This *herring*, so called by our



northern fishermen, and *fresh-water mullet* by those on the southern part of the island, has been the subject of a very interesting paper in the *Australasian* under the name of the *grayling*, and is the *Thymallus Australis* of the family *Salmonideæ*, resembling much in its habits and character its English congener, *Thymallus vulgaris*, or common grayling. He certainly is a handsome fellow, and is in his great beauty in October or November, when he is of a deep purple colour on the back, shot with copper and blue tints, the belly being silvery with a lacing of gold, the tail and fins purplish. The dorsal-fin is covered with red spots and wavy lines upon a dark ground of reddish brown. The whole body of the fish is iridescent, with blue and purple reflexions.

“The Australian grayling is almost identical with the English fish in character, in habits, and in the manner of its capture, and anyone who has been a grayling fisher at home will be at no loss to fill a basket here. In shape there is some difference between the two fish; the local grayling being smaller, of a more uniform thickness from head to tail, and with a less prominent back fin. But it possesses very strongly the



peculiar generic odour. A newly-caught basket of grayling might pass, in smell, for a plate of fresh-sliced cucumber. The Australian grayling has a very wide distribution throughout the southern half of this continent, and is found also in great plenty in most of the Tasmanian rivers. In Victoria, it is most commonly taken in the Yarra, but is believed to inhabit all our running freshwater rivers along the coast, from the Glenelg to the Snowy. The fact of this wide distribution is interesting to our acclimatisers, as indicating the fitness of our rivers to receive other members of the salmon family. Where the grayling lives it is tolerably certain that the trout will live too; for the food which maintains the one is precisely that which is required by the other. At present the grayling is the only fish in this colony which offers any sport to the fly-fisher, and as such deserves a high place in the estimation of the true angler. It is true that it rarely exceeds a pound in weight, and that it is somewhat capricious in its humours, preferring sometimes the coarse red worm at the end of a string and a stick to the most beautiful fly from Bellyard. But whilst in the mood for biting in the shallows, I know no



sport prettier in its kind than whipping for these dainty little fish in the Yarra.”\*

A few hundred yards brings us to the dam, and we scramble down the shutes into which the water is diverted, and botanise as we go. We gather a very pretty *Eurybia*, a small, stiff, upright bush, with daisy-like flowers and shining leaves; and also two interesting *Acacias*, the first, *A. verniciflua*, a large shrub, about ten feet high, forming thickets in many places, and remarkable for the abundance of viscid matter exuded by the leaves and young branches. The leaves (*phyllodia*) are narrow and linear, oblong or oblong-lanceolate, two to three inches long, narrowed at both ends, two-nerved. The flower heads (*capitula*) are solitary, on short axillary peduncles, many-flowered. The whole plant smells very unpleasantly. The other species, *Acacia stricta*, has the calyx, corolla, and ovary similar to the preceding, but it may be distinguished from it by the *one-nerved* phyllodia, and very distinct close-set veins.

But we must leave this pretty spot, as we have a very long walk homewards before our spring-

\* *Australasian*, 2nd December, 1864.



cart can be of much use to us. Our fishing creels are empty, it is true, but our botanising boxes are crammed; and although our want of success may induce a "bit of chaff" from our piscatorial friends, let us hear what a late writer says on the pleasures of the man who takes his rod with him on pretence of going a-fishing, with which we must conclude this ramble:—  
"Bustling men, who cannot work and wait, may sneer if they will at the silent patience of the angler; what know they of the still charm which creeps over the senses, helping them to take in with half unconscious appetite the blessed influence of evening, when the coolness of the earth meets the sinking fire of the sunbeam, and sends an equal pulse of life through every blade and leaf. Then the watcher who stands beside the pool receives into his being that calm which marks the brethren of his craft. He is angling, it is true; he speculates on the indecision of the fish, which—may be even now in the deep water—are circling with suspicious hunger, round his bait, loath to swallow, still more loath to leave, the luscious worm. Yet meanwhile he gathers in, through open senses, stores of Nature's truth; he seeks and marks

with tenacious observation, countless traits of life—the persevering industry of the insect, the sociable intelligence of the bird, the short history of the summer plant, the steady progress of the growing tree, the shifting architecture of the clouds, the ceaseless machinery of all around that dies to live and lives to die in perpetual succession.”\*

\* “Holiday Papers;” by Harry Jones. P. 96.



## CHAPTER V.

Now, where the streamlet bubbles into life,  
We'll twine our wreath together ;  
And far from scenes of sorrow and of strife,  
Thank God for summer weather.

NO visitor to the Northern part of our beautiful island should miss paying a visit to "Corra Linn," which stands unrivalled amidst the many picturesque and delightful bits of scenery so plentifully scattered throughout the colony. Any sketch of this lovely place would fail to convey its many charms—its soothing quiet—its gushing waterfalls—its high, flower-clad, perpendicular rocks, and the abundance of animal life, glad, apparently, like ourselves, to escape from the busy haunts of man. In all excursions at this season we need start soon after sunrise if we wish to thoroughly appreciate the many lovely forms which bountiful Nature opens out to our observation. The botanist,

too, will prefer a pedestrian tour above any conveyance, as he is enabled to make little *détours* now and again where objects of interest are likely to present themselves; so, after snatching a hasty breakfast, we are off, with two faithful dogs as companions, over the Windmill Hill to the Elphin Road, past Newstead, stopping only for a few moments near the toll-bar for a few specimens of a little plant which represents the Natural order *Haloragæ*, lying submerged in some semi-stagnant water on the banks of the Esk. It is *Myriophyllum variifolium*, and has succulent stems several feet in length, with an abundance of linear, feathery leaves, seven in a whorl (these are pectinated in young specimens), and small, white, axillary flowers. There are many other species in various places, but this is the most common and likely to be met with. The little plant, with a flat head of yellow flowers, which abounds here, as also in damp places by our streets everywhere, is the composite *Cotula coronopifolia*. It, too, has succulent, creeping stems, and leaves from one-half to two inches long, the leaf stalk embracing the stem. It is a much coarser species than *C. Australis*, the small plant with



yellowish flowers on long stalks, and pinnatifid leaves, so common amidst grass under walls and by our house sides in the streets.

Hurrying on past Hobler's Bridge, which crosses the North Esk here, we notice the *Lomaria* fern in abundance, *Juncus falcata*, *Carex appressa*, and *Desvauxia tenuior*, by the moist waysides; and leaving that delightfully shady nook, Distillery Creek, on our left, we tramp along between tall hedges of Sweet Briar, on the sides of which many of the *Geraniaceæ* are blooming, until we reach St. Leonard's, a little village raised not very many years back. It is pleasing to pause a little, out of the sun's rays, to watch the circuitous route of the Esk through the fertile valleys of Paterson's Plains, which, wherever available, have been occupied ever since the earliest settlement of the colony.

In some rocky ground by the road, we find many of the Daisy tribe—one of them (*Brachycome decipiens*) so remarkably resembling the English daisy (*Bellis perennis*) that it has led to the impression that the latter is a native of Australia. Schleiden, in his very beautiful book, ("The Plant," p. 231,) says:—"Among the somewhat better turf, a



pleasant souvenir of the far-distant home attracted my glance, the only one in this foreign land, and I stooped gratefully to pluck the solitary little daisy." The flowers of *Brachycome decipiens* are large and white, but there are other more slender species, with blue and lavender flowers, all difficult to preserve, in consequence of the rapid curling of the rays; consequently, a large number should be gathered for identification, provided notes cannot be made on the spot when found. Everywhere—in size from one to six inches—the upright *Sebæa ovata* rears its slender, four-angled stems, bearing five-parted, minute, yellow flowers, with ovate, nerved leaves, in pairs. The entire plant is intensely bitter, so much so that Dr. Mueller considers it might form a useful tonic. It is one of the *Gentianaceæ*, an order represented here by six plants—*Sebæa ovata*, a white flowering species; *Sebæa albidiflora*, found sparingly at Georgetown; *Erythræa Australis*, with pink flowers, by the Tamar; *Gentiana montana*, ascending to 4000 feet; *Villarsia parnassifolia*, abundant at Barnard's Creek, on the Georgetown road, where its broad leaves float on the water, above which its spike of yellow flowers is



very prominent ; and a plant which we have never seen, *Liparophyllum Gunnii*, said to grow on wet, sandy soil on the margin of the alpine lakes. The modest St. John's wort, a charm against spirits of evil (*Hypericum gramineum*), with square stem and orange-yellow flowers, and a cudweed (*Gnaphalium*), with silvery leaves, and other gleanings by the way, help us considerably on the road, for here we are in sight of "Corra Linn" Bridge ; and, once there, we seem tied to the spot, so enraptured are we (accustomed for so many years to the intense heat and dusty streets of the Australian metropolis) with the charming scene which presents itself. Our pen is inadequate to the task of describing it, but picture to yourselves, dear readers, a succession of grand perpendicular rocks, some hundred feet high, covered with native shrubs and wild flowers, of every size and variety of tint, and spanned by a pretty, rustic bridge. Far as the eye can see, and far, far below where we stand, the waters rush along ; now foamingly and wildly, with the impetuosity of boyhood—anon rippling along musically, ever and again seeking out some shady nook, which it passes coyly and coquettishly, with the clear joyousness



of a young girl—now it glides cheerfully but quietly away, finally subsiding into dark, quiet, deep pools, where the Loosestrife grows, the small grey heron and the bittern rear their young, and over which willows droop—significant enough of that quiet rest for which we are one and all aiming. Hours might be spent here without tiring, for there are delightful sounds assuring us of the joyousness of God's creatures, and with all that soothing peace which casts such a charm over country rambling. John Keats, in one of his poems, describes a bowery nook as an eternal book from which to copy many a lovely saying about the leaves and flowers, and it is only necessary for a true lover of Nature to wander away to such a quiet, shady haunt as this, to feel indeed how much may be learned, not only of the "wildings of Nature," but of one's self. There is no place where a man's thoughts are more completely and entirely out-turned than when sitting in meditation, with around him the merry chirp of birds, the hum of the beetles, and the skimming of the dragonflies over the stream, which—

Rippling by, where rushes sigh,



tells of contentment, and leads to reflection. A better tamer of the passions there cannot be than this hour's communing with one's "inner man" amid such scenes, and we return from them with a feeling of how much we have to be thankful for.

We turn down to the water's edge on the right after crossing the bridge, and put our fishing-tackle in order to have a cast for herring, which we can do as we sit resting quietly in the shade, meanwhile taking a whiff from our companionable pipe. The water is too bright for much sport, so after bagging a dozen or two of trout and half as many "thymies" we make for up-stream. This fishing after all is a great incentive to a country ramble: we could not for worlds take the purely constitutional daily walk, and so, as a very agreeable "Fly-fisher" has remarked—"There are times when brain and sinew, mind and muscle, call aloud for rest and change, and need recruiting ere their functions can be properly continued. An amusement, then, which draws its votaries away from the scenes of their labours into contact with external Nature in all its innocence and beauty, which supersedes



the too often "sensual pleasure" which can never be its efficient substitute, is a blessing to the individuals who adopt it, so long as it is consistently pursued."

Whistling to our dogs, who appreciate an "outing" as much as their master, and buckling on our *vasculum* once more, we saunter away towards the road again: the lovely white Lily (*Diplarrhæna Moræa*) is an enlivening object and a conspicuous one on the rugged rocks, and the cymes of russety-brown flowers of *Pomaderris apetala*, with its dark-green, rugose leaves give a sombre, softening tint to the landscape. Over post and rail fence, and we are again on the river banks; the most conspicuous object on the high rocks is the *Prostanthera rotundifolia*, a bush two to six feet high, smelling heavily, but loaded with racemes of pale purple or lilac flowers. We can scarcely conceive anything more handsome than this magnificent shrub, except, perhaps, an allied species, also common by our river sides, the *P. lasianthos*, a bush, bearing white, hairy flowers, in large and showy racemes, and with lanceolate, serrated leaves, two to four inches long; or another pretty



species which will be found higher up the river, *P. cuneata*—also with white flowers, and easily distinguished from *lasianthos* by its smaller, less pubescent flowers, and very small cuneate or wedge-shaped leaves, two to three lines long. All the species are lovely, and not likely to be overlooked, but all smell very disagreeably.

We find here, as also occasionally throughout the island, that peculiar little cocoon, adhering to many of our native trees, formed by a little insect to which the name of *Oiketicus* is given, and which it carries about with it. This cocoon is formed of small twigs, of unequal length, cemented closely together, all carefully rounded at each extremity, and resembling more than anything else the *fascies* of the Romans. Most puzzling was it to our non-entomological eyes when first we observed this bundle of twigs making its way up the trunk of a large *Eucalyptus*, but on capturing the then apparently inanimate mass, no trace of vitality could be noticed externally, and we threw it away, dubious of the correctness of our observations; but the same propensity to be up and doing being again evident, our penknife



was brought into active operations on Master *Oiketicon's* domicile, the interior of which we found lined with a coarse silk woven by the grub, intermingled with scraps of dust and leaves from the tree. The occupant is somewhat about an inch long, often more, mottled, brown in colour, deepening according to the distance from the head till it becomes nearly black. He is furnished with two powerful jaws, which we can conceive are of immense service in cutting the small twigs for the portable house, and he has, besides, suckers, or hinder feet, which enable him to adhere to his nest, and drag it along after him. The main part of his body in this case is within the nest, whilst his head and forefeet protrude beyond. These forefeet are furnished with claws, by means of which he firmly secures his footing in the bark of the tree. He is not, however, wholly dependent on the sharpness of these members for ascending objects, for they would not avail him much in ascending a pane of glass—a feat which he can accomplish in the same fashion as a blackfellow walks up a gum tree without branch or limb for a hundred feet. He constructs from out his silky resources a series of



steps, and swaying his head from side to side, glues his tiny ropes to the surface of the glass, and forms a ladder, on which he supports himself, constructing step after step, and pulling himself upon each as it is made. As may be imagined, an immense deal of labour is expended on this same ladder, from which he may be seen suspended—house and all—hanging on by one claw, and no taxes to pay !

To prepare for the dormant, chrysalis stage, the upper part of the nest is rendered watertight and strongly fastened to a tree, and our friend—like ourselves—not exempt from the “ups and downs” of life, turns himself round, so as to prepare for the change with his head downwards. When fully developed, say in January, he is but a small, dark-brown moth, with feathery antennæ, and is, after all the interest he has awakened, but short lived, and is soon destroyed by one of his many foes, or the heavy rains which to us during the oppressive heat of Summer are so grateful.\*

\* We are indebted for much information on this subject to our friend, F. C. Christy, of the Victorian Railways ; and to an able article which appeared in the “Standard Magazine” on the same subject.



Some little distance above the bridge,

By the side of a wall,  
But take care you don't fall—

for the rocks are precipitous here, and a descent into the water below not desirable—is a little plant which is exciting some discussion in botanical circles. It is called *Clematis gentianoides*, and instead of being a climber, is dwarf and *erect*, with long *entire* leaves, and very large white flowers; such is the form we meet with in several parts of the island (in the bush on the Westbury-road, opposite the Traveller's Rest, it is in profusion), but it is said there are intermediate forms, scandent and trifoliate, which link it to *C. aristata* (the common climbing species) of R. Brown; these forms we have yet to meet with. It is worthy of remark that *C. gentianoides* is blooming freely when not a flower of *C. aristata* can be found. Mrs. Meredith\* remarks :—"The plant must possess great tenacity of life; for it frequently appears beside a newly-made road, where every green thing and every vestige of 'bush' has been eradicated, or

\* "Bush Friends in Tasmania." P. 80.



smothered with earth, or stoned to death with angular road-metal, and the fair white flowers spring up in a pearly crown on the sordid dusty pathway, as if to tell us that purity, and holiness, and truth, are sent of God's gentle mercy to comfort and brighten the darkest and barrenest ways of this toiling world."

Not unfrequently in some of the quieter portions of the stream, a pretty species of *Chara* occurs, an interesting pellucid little plant, serviceable in fresh-water *Aquaria*: to the microscopist it is invaluable, for divesting it of the stony matter with which it is generally covered, he finds that it affords him a very beautiful illustration of sap circulation. The *Characeæ* observes Hassall ("British Fresh-water Algæ," Volume I., p. 92), "are most universally distributed; they are found abundantly both in fresh and stagnant waters in all parts of the world. They form an important link in the economy of nature; in life, purifying by the liberation of oxygen during respiration, the impure and almost pestilential waters in which they are frequently and especially encountered; and in death, yielding by their decomposition elements which impart fertility to the soil, and render it



fit for the growth and nourishment of plants of an order higher in the scale of organisation than themselves, and of more direct utility to man, the destined recipient of all Nature's bounties, and for whose benefit every natural contrivance directly tends." The *Characeæ* are not inaptly called "*Stoneworts*," from the quantity of calcareous matter with which they are often incrustated, or, perhaps, which they evolve—this property rendering them still more important agents in the foundation of soil.

There is also another water plant said to be common in the river, which microscopic observers will hail with delight, viz.: the *Vallisneria spiralis*, the economy of whose fertilisation (as Dr. Hooker remarks) is one of the most curious in the vegetable kingdom. It is a submerged fresh-water herb, generally diffused in the warm, temperate, and tropical parts of the world, with fibrous roots, a very short stem, (sending off lateral suckers), and very long, flat, linear, green leaves, serrulate at the tips. The male and female flowers are on different plants: the *male* inflorescence is an almost sessile spathe, containing a small, short spadix, covered with little globose, sessile, white, almost microscopic



flowers ; these become detached from the spadix, ascend to the surface of the water, expand by three valvate segments, and expose one to three minute stamens. The *female* flower is solitary at the apex of a very long spirally-twisted filiform peduncle, which, by unrolling its spire, allows the flower to reach the surface of the water and there expand. The pollen, detached from the floating male flowers, fertilises the female, after which the spiral peduncle again contracts, and the female is carried to the bottom of the water, where it ripens its fruit.\* Collectors will do well to search for this extraordinary plant: it may be readily grown in a glass jar, such as confectioners use for sweetmeats, having at the bottom a couple of inches of mould, which after the roots have been inserted into it, should be closely pressed down, the jar being then filled with water, of which a portion should be occasionally changed. Impurities in the jar—such as confervoid growths—are most readily got rid of by allowing a water-tap to run occasionally into it, thus causing a constant overflow.†

\* Hooker—"Flora of Tasmania." Vol. II., p. 37.

+ Carpenter—"The Microscope." Pp. 412, 413.







A very curious plant, somewhat resembling the Dandelion, is now in flower—*Podolepis acuminata*—with large, irregular, yellow rays; and the pet little *Convolvulus erubescens* creeps far and near through the grass; but the sun is high, and we are glad to coil under some shady bushes of *Zieria lanceolata*, and partake of our frugal lunch—a crust of brown bread, Story's cheese, and a draught of cool icy water from the little creek lying at our feet, and the finest dinner procurable, or even the "hundred-guinea dish" mentioned by Mr. Abbott in his capital "Australian Cookery Book" has no charms for us; and then the subsequent half-hour's musing, as we lie with our head on our dog's back, watching the curling smoke as it rises fragrantly from the mid-day pipe, and recalling the vision of poor Dr. Dodd, whose "prison-thoughts" no doubt are well-known to our readers—

In a lowly vale

Myself I found, whose living green was deck'd  
With all the beauteous family of Spring;  
Pale primrose, modest violet, harebell blue,  
Sweet-scented eglantine, of fragrance rich,  
And permanent the rose: golden jonquil  
And polyanthus variegate of hue,  
With lilies, dale delighting. Through the midst  
Meandering, of pure crystal, flow'd a stream,  
The flowery banks reflecting,



And now, thoroughly invigorated, we saunter along beside the stream, amidst white-flowering *Bæckia*, and the coarse ensiform-leaved *Bossiaea* (*B. ensata*), and *Epacris exserta*, until a dense scrub of *Croton viscosum* and *Leptospermum* prevents further progress, and so we retrace our steps to the bridge for the evening fishing, and soon fill our basket with trout and herring, winding up only when the setting sun reminds us that we have eight miles on a dusty road to walk before we can dine. It must have been in such a frame of mind as we were, on our homeward track, that Wordsworth wrote of *Nature*—

She has a world of ready wealth,  
Our minds and hearts to bless ;  
Spontaneous wisdom breathed by health,  
Truth breathed by cheerfulness.

## CHAPTER VI.

WHAT says our Christmas morning  
In this glorious sunny clime ?  
Bright blue sky !  
Sun up high !  
Come under the Eucalypti,  
Come to our joyous Christmas,  
The blythesome, merry time.  
Plenty showers  
Her gifts and flowers  
In perfumed bowers,  
Around the Eucalypti.

WILLIE WILDFLOWER.

**A**GAIN has the festive, joyous season of Christmas come round, and it is at this time we, who hail from other lands, are apt to recur to the customs of the old country, to which, from youth up to our migration here, we had been accustomed — the social gathering together of friends and relatives, the carol singers, the waits (ah, who can forget them ?) the churches decked with evergreens, the altars with flowers, the houses with mistletoe, and the



pudding!—such a pudding it always was, and no wonder, for some dozen or more anxious eyes were anxiously intent upon it. But much as we at first miss such scenes, we have here, to make amends, sunshine and plenty, the trees laden with fruit, and the corn just assuming a golden tint. Indeed, everywhere are signs of abundance and prosperity, and as for the misletoe, even though we are wanting its Australian prototype, which there ornaments the gum, the wild cherry, the she-oak, and the tea-trees, we find many a substitute which permits our native youth to insist on the same privileges which are supposed to belong only to the *real* thing itself. No chilling blasts meet us now as we wander forth, but we are amidst the wild flowers wherever we turn our steps—the blue-bell (*Wahlenbergia gracilis*), the forget-me-not, the St. John's wort, the small pink-flowered convolvulus, the silver weed, on which the bronze-wing pigeon feeds, and a host of others, are in full bloom. The young broods of the swallow and quail are now strong on the wing; the note of the wattle-bird is heard in the morning above all others; the rivers swarm with fish; and the burr of the locusts is almost deafening. Contrast this with



home! There, but few songsters are left to gladden, except the companionable robin; no signs of vegetation, everything being covered with snow; and, alas! poverty and starvation on all sides.

As for social gatherings over roast beef and plum-pudding, they are simply absurd, with the thermometer at  $90^{\circ}$  in the shade; and "as the hart panteth for the water brooks," so do we long for a ramble by

"The sea! the sea! the open sea!  
The blue, the fresh, the ever free!  
Without a mark, without a bound,  
It runneth the earth's wide regions round,—  
It plays with the clouds, it mocks the skies,  
Or like a cradled creature lies."

and so after packing up sundry reams of blotting paper, well strapped between thoroughly seasoned, well-clamped boards, a dozen or so of wide-mouthed bottles such as chemists use for pomade, and a bottle of spirits of wine for such of our captures as may need stimulants—which, being "glass with care," is stowed away in small canvas pockets put into the sides of our ordinary fishing-basket—we, early the following morning, find ourselves on board the fine steam-



ship, "City of Launceston," which sails between this port and Melbourne, *en route* for the Tamar Heads, "where the stormy winds do blow;" and a most delightful trip we have for some forty miles down the meandering river Tamar, picturesquely studded here and there along its margin with pretty villa residences amidst most romantic bush, to which the magnificent mountains form a background grand in the extreme; we hail too as old friends little tufts of seaweed and odd jellyfishes coming up to welcome us once more amongst them, until a rough hail alongside warns us that a boat is waiting to convey us into Georgetown, a quiet, pretty little village—not over inhabited or provided with creature comforts—about four miles from the Tamar Heads. Landing at the jetty steps, on the piles of which, at low water, Professor Harvey tells us the elegant *Callithamnion violaceum* may be found, we at once make our way to the hostelry (the Pier Hotel), where we obtain comfortable quarters; to wit, a large well-lighted room, a good-sized, strong table (indispensable to seaside workers), and a double-bedded room, with beds of the snowiest white. After unpacking our baskets, and laying everything so as to be ready



at hand when wanted, being provided with a letter of introduction to the Rev. John Fereday—a gentleman who, as well as Mrs. Fereday, has been immortalised by Professor Harvey, of Trinity College, Dublin, in his recently-concluded most beautiful work, the “*Phycologia Australica*”—we sally forth to make his acquaintance; and scarcely are we ensconced within his hospitable domicile before his extensive collection of algæ is laid before us; but we are reminded that “time and tide wait for no man,” and as the latter will soon be again rising, we defer until a more convenient season the examination of his bulky volume of the “treasures of the deep;” and, hiring a boat, with a most obliging man as pilot, and our kind friend as our guide, we sail away to “Seaweed Point,” about two miles from Georgetown. Without some local knowledge, many days might have been wasted in detecting a good hunting-ground, but here, on looking over our boat’s side, we are literally enchanted with the fairy-like scene which presents itself to our longing eyes. Have you ever, dear readers, seen the bed of the ocean left by an extraordinarily low tide? No! Well, then, hear this eloquent description of it



from the pen of a delightful writer. It is painted to the very life :—

“ We dive down into the liquid crystal of the ocean, and it opens to us the most wondrous enchantments of the fairy tales of our childhood’s dreams. The strangely-branching thickets bear living flowers ; dense masses of *Meandrinæ* and *Astræas* contrast with the leafy, cup-shaped expansions of the *Explanarias* ; the variously-ramified *Madrepores*, which are now spread out like fingers, now rise in trunk-like branches, and now display the most elegant array of interlacing branches. The colouring surpasses everything ; vivid green alternates with brown or yellow, rich tints of purple, from pale red-brown to the deepest blue. Brilliant rosy, yellow, or peach-coloured *Nullipores* overgrow the decaying masses, and are themselves interwoven with the pearl-coloured plates of the *Retipores*, resembling the most delicate ivory carvings. Close by wave the yellow and lilac fans, perforated like trellis-work, of the *Gorgonias* ; the clear sand of the bottom is covered with the thousand strange forms and tints of the sea-urchins and star-fishes. The leaf-like *Flustras* and *Escharas* adhere like mosses and lichens to the branches







of the corals; the yellow, green, and purple-striped limpets cling like monstrous cochineal insects upon their trunks. Like gigantic cactus blossoms sparkling in the most ardent colours, the sea anemones expand their crowns of tentacles upon the broken rocks, or more modestly embellish the flat bottom, looking like beds of variegated ranunculuses. Around the blossoms of the coral shrubs play the humming birds of the ocean: little fish, sparkling with red or blue metallic glitter, or gleaming in golden green, or in the brightest silvery lustre. Softly, like spirits of the deep, the delicate milk-white or bluish bells of the jelly-fishes float through this charmed world. Then comes the fabulous cuttle-fish, decked in all colours of the rainbow, but marked by no definite outline, appearing and disappearing, intercrossing, joining company and parting again, in most fantastic ways. And all this in the most rapid change, and amid the most wonderful play of light and shade, altered by every breath of wind, and every slight curling of the surface of the ocean. When day declines, and the shades of night lay hold upon the deep, this fantastic garden is lighted up in new splendour. Millions of glowing sparks, like



microscopic *Medusas* and *Crustaceans*, dance like glow-worms through the gloom. The sea-feather, which by daylight is vermilion-coloured, waves in a greenish phosphorescent light, every corner of it is lustrous; parts which, by day, were, perhaps, dull and brown, and retreated from the sight amid the universal brilliancy of colour, are now radiant in the most wonderful play of green, yellow, and red light; and to complete the wonders of the enchanted night, the silver disc, six feet across, of the moon-fish (*Orthogoriscus mola*) moves, slightly luminous, among the crowd of little sparkling stars."

Who would not be a "Water-baby" with such a vivid picture as this before him? And take our word for it, it is under rather than over-drawn; but we have no time to lose, so we set to work in right earnest—one at the bow with a long rake—another aft with a long-handled landing-net—whilst a third is midships to receive such of our *rejectamenta* as are likely to harbour *Diatomaceæ*, which he quietly bottles for boiling hereafter. All amateur seaweed collectors know pretty well how that *Algæ* are either olive-brown, or green, or red in colour, or of various shades of those same colours; and



so are classed as *Melanosperms*, *Chlorosperms*, and *Rhodosperms*.

Now, as we pull up our nets, we necessarily find many of each tint; and as some species, though lovely and bright, by intermixture rapidly decompose others, it is well to separate them as we go on, so let us speak of our findings somewhat systematically. The *Melanosperms* (olive coloured)—not generally favourites we may remark—are found on rocks, but increase in luxuriance with increasing depth. The Green (*Chlorosperms*) are met with near high-water mark, fringing rock pools left by the retreating tide, or clinging to piles or stones; whilst the red (*Rhodosperms*) are more numerous and pure in colour as they recede from high-water mark.

Commencing, then, with the least attractive, we stow away *Sargassum Raoulii*, *paradoxum*, and *Tasmanicum*; and a singular flat, linear frond, with a thick midrib, from which branch off somewhat falcate toothings, the margins of which are fringed with necklace-shaped (moniliform) receptacles, is *Seirococcus axillaris*—the generic name meaning “Chain-berry.”

As we implied before, ladies, who are our most



assiduous seaweed collectors, generally despise these dark-coloured Algæ, and so, no doubt, many fine species are born to blush unseen—especially some splendid *Cystophora*, or bladder-bearers—of which there are many varieties on the coast.

But we have here a fragment of a rare fellow, of which neither here nor in Port Phillip have we succeeded in getting a fine specimen. It is a wiry-stemmed plant, with small mop-like tufts, which hold water like a sponge. This is *Bellotia Eriophorum*, the specific name derived from its resemblance to the cotton-grass. Harvey mentions its colonial name as “*Tagrag and Bobtail*,” and if it will enable collectors the more easily to recognise it, let it be retained.

The plants of the family *Sporochnoideæ*, of which Tasmania has four species, are very interesting, having their branches tipped with small brush-like filaments, visible to the naked eye, and especially beautiful under a low magnifying power; both Georgetown species, *Sporochnus apodus* and *Herculeus*, are very rare, so that collectors must consider good specimens a great desideratum.

The huge *Macrocystis pyrifera*, whose cord-like stems, often 1,500 feet in length, are so well-



known to all seaside visitors under the name of "kelp" needs no mention, so we go on to another family, the *Dictyotaceæ*, of which there are many fine species, and none more so than the "Sea Endive" (*Haliseris*), named specifically after that indefatigable and talented botanist, Dr. Ferdinand Mueller, who first sent fruiting specimens to England; it is a flat, light olive-coloured weed, much divided, with a strongly-marked midrib throughout, and forked at the determination of each segment. The membrane is of a thick, leathery substance, everywhere dotted with muciferous spores. The representative of this family in Tasmania is *Dictyota dichotoma*, a plant widely distributed over the world, its name meaning "net-work," in allusion to the reticulation of the fronds. It also has a flat, membranous frond, irregularly cleft.

We haul up a bladdery bag, some six inches long, and three inches in circumference, which is the *Asperococcus Turneri*, not a sightly specimen by any means, but still we retain it, since we remember Dr. Landsborough's unavailing search for it, and "a bird in the hand is worth two in the bush," is an adage which we must not disregard,



Then here is *Leathesia tuberiformis*, of which Landsborough remarks—"after a breeze in summer it may be seen in heaps in the little bays, not unlike bunches of hops, were it not for irregularity of size;" and as slight hints such as these, to enable observers to recognise plants by externals, are invaluable, it is unnecessary to describe it more scientifically.

But we come now to plants which have a greater interest for our readers, the Red, or *Rhodospirms*, "whose hidden beauties would almost make us wish that we could occasionally take a morning walk in the rocky submarine valleys where they grow; or that we could not only call, but bring up from the 'vasty deep' some of these splendid treasures."\*

Call us not weeds,—we are flowers of the sea,  
For lovely, and bright, and gay-tinted are we;  
And quite independent of culture or showers:  
Then call us not weeds,—we are Ocean's gay flowers.

Many years since a botanical friend sketched in our note-book, roughly enough as we now know, the outline of a seaweed of which he was anxious

\* "Popular History of British Seaweeds," by Dr. Landsborough. P. 173,



to obtain specimens, under the name of *O'Neillya elegans*, but although a diligent search was made along the Victorian coast, it never fell to our lot to detect it—Dr. Harvey only recording Western Port as a locality for it. Imagine, then, our joy soon after arriving in Tasmania, at seeing in profusion in the album of almost every collector glorious fruiting specimens of it under its new name, *Claudea elegans*, and the delight of soon finding ourselves, through the kindness of a friend, the actual possessor of what we had so long been anxious to obtain. This, too, was amongst our earliest finds here—two young plants, but both in fruit. It is well-known to Tasmanian collectors; and Dr. Harvey's splendid figure of it in the first volume of his magnificent "*Phycologia Australica*"—a lasting monument of his industry and talents—is so accurate, that no description of it is necessary. "This," remarks Dr. Harvey (Volume I.), "the most beautiful of all Algæ, though known to botanists for upwards of half a century, was scarcely to be found in any herbarium, except in fragments, previous to 1844, when Mr. Ronald C. Gunn discovered a copious habitat in Tasmania, in the deep and



rapid estuary of the Tamar, at a considerable distance above its mouth, and where the water, though still very salt, is not so much so as on the open coast."

*Martensia Australis*, a plant not much less lovely than the foregoing, of a full, bright carmine colour, with a delicately membranous frond, its margins entirely or remotely denticulate, has been discovered here, but fortune did not favour us with specimens.

In abundance, plants of *Lenormandia marginata* find their way into our basket, for each one appears to have some beauty which its predecessor had not, and those "scurfy" spots with which it is invariably covered, although somewhat unsightly, possess charms untold for our friend of the microscope, being innumerable microscopic species of *Polysiphonia*. In our specimens, small globose fronds, pale blood-red in colour, grow up from a common centre, bordered with small offshoots. Locally it is known as the "*Cactus*."

Of the *Polysiphoniæ*, weeds which, though dark-red whilst fresh, generally turn black when dry, Harvey records no less than twenty as Tasmanian, and Georgetown as the habitat of



*Tasmanica*, *succulenta*, *mollis*, and a small fine variety in the Tamar.

The genus *Dasya* yields certainly some of the most glorious specimens it is possible for an amateur algologist to select, so light, and feathery and graceful, so brilliant in colour, yet withal so delicate, as to need being laid out almost immediately after gathering, or decomposition sets in. Of the species found here, we may only briefly particularise *D. capillaris*; the elegant *hapalathrix*, with lovely rose-red lanceolate fronds; *Feredayæ*, named in compliment to Mrs. Fereday, in whose collection Dr. Harvey first saw specimens; *Tasmanica*; *Archeri*; *hormoclados*; and *verticillata*. There are many other Tasmanian species which will be more easily determined when a few commoner ones have been mastered, but commend us to *D. Muelleri* as the most beautiful of them all, bearing as it does such charming rosy-red feathery plumes, much pinnated. It originally bore the name of *D. plumigera*—Harv., one which is certainly more appropriate, and better locally known.

The family *Lawrenciaceæ* embraces many particularly interesting genera, as for example,



*Delisea*, of which two very beautiful forms are not uncommonly met with as we rake, the first *elegans*, the other *hypneoides*; the latter having much resemblance to the *Hypnæa reticulosa*. Of *Asparagopsis*, so called from the resemblance to the well-known and delicious vegetable, the Asparagus, we occasionally find *A. armata*; it has long, slender, feathery stems, and a characteristic feature of it is, that the lower naked branches are closely set with retrorse hooks, by which it lays hold on the neighbouring Algæ. The colour is a pale or bright purplish rose-red, fading to orange and yellow, turning darker, however, in drying. It bears immersion in fresh water for a considerable time without injury.

But the rapidly rising tide puts an end to our raking for to-day, and if we would escape a long pull, we must needs set sail homewards at once. It is only a few hours since we escaped from city life and business, yet already we have regained spirits, appetite, and believe more earnestly than we ever did, that,

Not lost the time in seaside ramble spent  
Braced is the frame, and mental health is gained :  
Knowledge is gained of *Him* who made the deep,  
And blissful love acquired of Nature's works.

## CHAPTER VII.

THE ocean old hath my deep reverence,  
And I could watch it ever. I love  
To see it gently playing on loose rocks,  
Lifting the idle seaweed carelessly.

WE found abundance of occupation for our Christmas eve in arranging the specimens which we gathered in our last-mentioned cruise ; and after only a few hours' rest, are again away to explore the coast towards Low Heads, whereon is situated the lighthouse at the entrance to the River Tamar. This is decidedly the most enjoyable part of the day, as the sun has not yet attained any power ; and walking, which a few hours later would be irksome, is now positively enjoyable, especially when preluded by a dip into the "briny." The tide is rising rapidly, and the currents, as they glide swiftly by, give a most musical ripple. The shag sticks lazily to his stump in the middle of the river,



where, perchance, he has passed the night; but the gulls fly joyously overhead, occasionally darting down, hawk-like, into the water, which is bubbling with the gambols of myriads of fishes. The rushes are covered with small, snowy-white moths, which fly by night, and are now in slumber deep; and the little red-breasted robin trills his sweet, merry song almost at our elbow. We cannot pass by Windmill Point, with its clear water and dense beds of *Sargassum*, and other olive weeds, without spending half an hour there, peering down into

Fairy baths and mimic wells,  
Richly embossed with choicest weed and shells,  
As if her trinkets Nature meant to hide,  
Where nought invaded but the flowing tide;

and here it is we occasionally meet with stray gems wafted in by the tide. Not long before some glorious examples of *Wrangelia nobilis* find their way into our collecting pouch, the fronds clothed with very delicate rosy-red ramelli, or little branchlets, two lines long, which give a feathery appearance to the branches. This, according to Hooker ("Flora Tasmania," Vol.



II., p. 308), is the normal summer form of this beautiful and common plant.

We hold our breath hard for a moment, as a brilliantly-coloured weed floats rapidly by, making a dozen escapes from our net, with which we endeavour to secure it, dodging down amongst its more sedately-clad fellows; but here it is at last, and well worthy the trouble it has cost us. It is the *Delesseria Tasmanica*. The primary fronds are from one to two inches in length, obtuse at each end, membranous, and traversed by a strong mid-rib, the membrane marked with pellucid striæ, running obliquely from the mid-rib to the margin. By continuous hypophyllous branchings, the compound frond at length becomes six, eight, or twelve inches long, and as much in expansion, and is excessively branched and bushy, consisting of oblong obtuse leaves, similar to that of the primary frond. The leaves are frequently opposite. Colour, a full carmine-lake; substance membranaceous, resisting the action of fresh water. The fructification is borne on minute accessory frondlets, which spring from the midribs of the larger leaves.\*

\* "Flora Tasmania," Vol. II., p. 311.



Another magnificent species of this handsome genus is found abundantly about Georgetown, and known by collectors there as *Hemineura frondosa*, but latterly referred to *Delesseria*. It is a most variable plant, putting on, as Hooker remarks, a thousand different forms in different localities; nor is it less protean in its size, substance, and colour. But under all its varieties, Harvey tells us,\* the species may be known by its peculiar nervation, the midrib failing *below* the apex of the frond, and every *lateral* nerve disappearing *opposite* the base, and below the apex of the lobe of the frond through whose centre it runs.

Here, too, is a fragment of a weed, of which we have lately received splendid fruiting examples from Point Rapid in the Tamar—the *Phacelocarpus Labillardieri*—with fronds two feet long, and a strong raised midrib, with coarse pectinations. These fragments are evidently only recently detached from the parent stem, as they are deeply red; whilst those specimens which are long exposed fade to pale green, or brown, or orange. The fruit is club-shaped, inserted be-

\* "Phycologia Australica," Vol. III, table 179.



tween the pectinations of the frond. A plant which we rake in—the *Melanthalia obtusata*—does not appear to be as common as in Victoria. It scarcely, at first glance, appears to belong to the red Algæ (*Rhodosperms*), seeing that it is black, and resembles thin whalebone in substance; yet, when fresh, it has really a purple hue, and only becomes black after drying or exposure, and hence its scientific name, meaning “*black branch*.” It has a number of narrow flat fronds, radiating from one central stem. These fronds are obtuse at the apex, and bifid for about a quarter to half an inch. At Port Phillip Heads and at Warrnambool it is frequently found so imbedded in the sands at high-water mark that fragments are only with difficulty detached.

Now with united rakes—a strong and long pull, and one altogether—we detach huge masses of Olive weeds, which we are soon on our knees to examine. There is a mysterious silence for awhile—a sure sign that there is work being done—every man to his own hobby! Whilst one collects *Diatomaceæ*, or rather disentangles such weeds as may yield them, and pockets such animals which congregate thereon as may be likely to disgorge them after undergoing the



process familiar to all microscopists of "boiling down," another is quietly putting away into small bottles minute parasitical Algæ, whose beauties only a good microscope will reveal; whilst anything that turns up is welcome to *our* capacious maw, we have bedding and board for them all, and a kindly welcome moreover. It is on such large detached pieces of seaweed that we find so many minute forms of marine animal life—little delicate plumes of *Polyzoa*, such as *Catenicella*, *Salicornaria*, *Menipea*, *Canda*, *Hippothoa patagonica*, *Membranipora perforata*, *Flustra*, *Plumularia*, and a host of others, which can easily be worked out with Busk's beautifully illustrated book, and a microscope of ordinary power. "They excel" (says Johnstone, in his interesting work, "British Zoophytes") "all other zoophytical productions in delicacy and the graceful arrangements of their forms; some borrowing the character of the prettiest marine plants, others assuming the semblance of the ostrich plume, while the variety and elegance exhibited in the figures and sculpture of their miniature cups and chalices is only limited by the number of their species." And the great painter, Hogarth,



in writing to a friend, remarks, "As for your pretty little seed-cups or vases, they are a sweet confirmation of the pleasure Nature seems to take in superadding an elegance of form to most of her works wherever you find them. How poor and bungling are all the imitations of art! When I have the pleasure of seeing you next, we will sit—nay, kneel down if you will—and admire these things." Here, now, is a pretty little fellow—a real prize! It is somewhat similar in form to that beauty of some parts of the English coast called the "Sea-lemon," from its pale, yellow colour, its rounded back, and warted surface. Our find is of a dull strawberry colour. It is a *Doris*—one of the naked-gilled slugs (*Nudibranchiata*). In spite of its beauty though, it is not only fierce, but carnivorous, assaulting Anemones (those delicate red, jelly-like forms on the rocks), ferociously tearing away their tentacles, or gnawing great holes in their sides.\* After such evidence, it is doomed—confinement for the remainder of the term of its natural life—so pop him into the bottle; a stern sense of duty leaves us no

\* "Year by the Shore"—Gosse.



alternative. But we must be moving, and as the water shallows here, we may as well divest ourselves of as much clothing as will enable us to wade at any rate knee-deep; but the stones over which we have to scramble are treacherously slippery—a false step may send us into deeper water than we bargain for—so, as a precautionary measure, we retain our shoes, which are sufficiently nailed to prevent slipping, old enough to admit of the water having free egress if it should get in, and so avoid that disagreeable “slish, slosh” which water-logged boots produce; and as for spoiling them, sure they’re not worth a “thraneeen,” so we shall have no misgivings on that head any way. Some prefer fishermen’s boots, but they are cumbrous, and the feet are apt to get chilled when they have been wet for any time.

A bright-green beady string hanging down over some low rocks tempts us into deeper water, treading in our course on Ascidians, which squirt up at us as we pass, Corallines, Zoophytes, and Sponges of all colours, and our prize is well worth the venture, as it is one certainly of the prettiest of our Chlorosperms.

or Green weeds. It is *Conferva Darwinii*, and is often found on Algæ.

We wade along, adding at every step to our stock, until we find that the bottom is getting somewhat soft and muddy, so we have to betake ourselves to *terra firma* for a little, and we find in flower abundantly a little plant with pinkish-white blossoms and spathulate leaves, called the "Shore Brookweed" (*Samolus littoralis*), and belonging to the Natural order, *Primulaceæ*. This green, globular plant, adhering to stones just at high-water mark, is *Rivularia nitida*, or "Shining Rivularia"—an Alga it is true, but of a lower type than those previously gathered, belonging to a most interesting family—the *Oscillatoria*. Very fine specimens may be obtained at the Kelso side of the river.

We pause for a few minutes not only to rest, but to gaze on the beautiful scene before us—so charming, so thoroughly enjoyable, so peaceful, as to confirm Wordsworth's line—

The gentleness of Heaven is on the sea,

and God's hand is in everything around us—in



the delicate Algæ we have but now met with, affording sustenance to myriads of his creatures, beautifying the depths of ocean, and rendering it a wholesome habitation for them. In the varied animal forms which abound—creeping here, darting arrow-like away there, or crawling slowly wherever duty or fancy may call, all have their destined uses—

Each shell, each crawling insect, holds a rank  
Important in the scale of Him who framed  
This scale of beings : holds a rank, which lost,  
Would break the chain, and leave a gap behind  
Which Nature's self would rue.

Although some of our friends may smile, we recommend a pair of thick leathern gloves to be worn whilst ashore, as a protection from the sharp, tubular pipes of the *Serpulæ*, which cover every stone we turn over. A crowbar we know is a capital thing, but somewhat a nuisance on a long journey. Pretty as the inhabitants are of these dirty-coloured pipes when just covered by a rising tide, inducing them to protrude their scarlet fans, we cannot resist speaking “a bit of our mind,” as our fingers are gashed with deep incisions, into which the salt water has found its way, causing intense pain and



inflammation. Still these petty annoyances are soon lost sight of when game is plenty. That little annelid wriggling away there, really not very unlike the *Phacelocarpus* weed we found a little ago, or perhaps more resembling a centipede, having a vast number of bristly legs on each segment of its body, is a *Nereis*; and as we disturb some of the larger boulders, away scuttle in a very lopsided fashion hundreds of small crabs, whilst the Limpets cling tenaciously to their temporary hunting grounds, evidently thinking our intrusion most ungracious. We have been in error all along in imagining that these fellows adhere so firmly to the rocks by muscular energy, or by the production of a vacuum on the principle of a leathern sucker. Instead of this, it is by means of a strong viscid, glue-like secretion, deposited at the will of the animal, which, when all cause for alarm is passed, is moistened again by water pressed from the foot, and the animal is again free to roam at will.

How very beautiful are these dark-red Anemones, with their tentacles unfurled. Is it any wonder that Lewes thus records the delight of getting his *first* specimen?—"No rare



species can give that peculiar thrill. There is a bloom on the cheek which the first kiss carries away, and which never again meets the same lips. No partridge is worth the first which falls by your gun; no second salmon is ever landed with the same pride as the first. Even the printer's ink has a perfume when your 'first' proofs arrive. There is something sad in the fugitive keenness of pleasure."\*

Peep down now at these sea-eggs, sea-urchins, or *Echini*, clambering up the sides of that rock-pool, by means of their numerous suckers which protrude between each row of purple spines. Few persons who know of sea-eggs only by means of the empty shell, denuded of its skin and suckers, and dental apparatus and spines, with which they occasionally meet on the sands, will believe all we have, or had to tell them, for Mr. Gosse's beautiful book—"A Year on the Shore"—has just come to hand; and one of his chapters contains so graphic a description of the *Echinus* and its shell, that we shrink from putting our own less perfect observations to paper. Our readers will thank us for sub-

\* "Seaside Studies." P. 13.



stituting those of that learned and indefatigable naturalist :—

“What a wonderful piece of mechanism is a sea-urchin! Accustomed as I am to the multitudinous contrivances and compensations that present themselves at every turn to the philosophic naturalist, often as surprising and unexpected as they are beautifully effective, I am yet struck with admiration at the structure of an *Echinus* whenever I examine it anew. \* \* \*

The globular box, some three inches in diameter (its shell), the walls of which are scarcely thicker than a wafer, is not made in one piece, nor in ten, nor in a hundred; six hundred distinct pieces go to make up the hollow case, all so accurately fitted together that the perfect symmetry of the outline is not broken; and yet, thin as their substance is, they retain their relative position with unchanging exactness, and the slight brittle box possesses all requisite strength and firmness.

“Each of these symmetrical pieces of shell is enveloped by a layer of living flesh, a vascular tissue of exceeding thinness, which passes up between the joints where one meets another, on every side, and not only so, but actually spreads



itself over the whole exterior surface. So that, when you take an urchin up into your hand, and having rubbed a small space clear of spines, look on it—you have not, as you may suppose you have, exposed the surface of the shelly box, but only the flesh that covers it; yet this is so transparent and colourless, so inconceivably thin, so absolutely adherent at every point, that its presence will not be discernible to feeling or sight without the aid of high microscopic powers.

“This being so, the glands of the investing fleshy tissue secrete lime from the sea-water, which holds it in solution, and constantly deposit it, after a determinate and orderly pattern, on every part of the surface of each shelly piece; the inner face, the outer face, and each of the sides and angles of the polyhedron grow together, and all so evenly, that while the dimensions increase, both of thickness and superficies, the form characteristic of that individual piece is maintained with immutable mathematical precision. Thus the volume and capacity of the box grow with the growth of the individual segments, and it ever keeps the globose-shape at first imposed upon it.







“ But this is but a small part of the mechanism of this interesting tribe. If you put one into a basin of sea-water, you will presently observe it marching majestically along by means of the hundreds of sucker-feet, which it possesses in common with the starfish. Now, if you have in your cabinet the empty box of an urchin of this same kind, and taking it into your hand, hold it up to the light, and look into the cavity from the under or mouth side, you will have a very interesting spectacle. The light streams in through a multitude of minute holes, as smooth and regular as if drilled with a fairy’s wimble ; and these holes are arranged in a pattern of elegant symmetry. They run in lines, like meridians, from pole to pole of the flattened globe ; but instead of being set at uniform intervals, they constitute five principal sets or bands, with blank intervals between about twice as wide as the drilled bands. Then each band comprises two series, each of which contains a double row of orifices. These last again do not constitute a single unbroken line, but an interrupted or zig-zag line, which is, in fact, made up of a number of short diagonal rows ; three holes in each diagonal.



“Put the living and the dead together. These tiny orifices, as minute as the point of the finest cambric needle could make in a bit of paper, afford exit to the suckers, which are, of course, equally numerous. Through these pass the slender pellucid tubes, filled with elastic fluid, which carry at their tips a flat ring of calcareous shell, affording to each the form and fitness to make each one an adhesive sucking disk, in the centre of which a tiny vacuum is created at will by muscular retraction.

“Let us once more observe the empty denuded box from the cabinet, and now on the exterior. Between the principal bands of pores, as also between the two series which constitute each band, the space is studded with hemispherical warts, of very diverse size, which look, as if turned in ivory, unpolished; and each wart is crowned with a smaller wart of like material, but bearing the most perfect polish.

“At the bottom of each spine there is a cavity exactly fitting this second wart, and equally highly-polished in its interior. During life the spine was seated on the wart, not united to it, but moving upon it in all directions, with perfect smoothness and freedom, a ball-and-socket joint

in fact. It was held in its place by an investment of muscle, which completely enclosed both the wart and the base of the spine, having one insertion in the unpolished wart, and the other in a remarkable ring or shoulder of the spine, visible just above the socket.”\*

But we must leave Mr. Gosse and his pleasant gossip, which may easily be confirmed, now that specimens, in the flesh and out, are before us, for before reaching the Heads we must again betake ourselves to the water; nor are our lady companions a bit deterred by hints of wet boots and rough boulders, and so they join us—not without a welcome—for, as Lover says:—

If all the young maidens were ducks in the wather,  
Oh, if all the young maidens were ducks in the wather,  
Oh, if all the young maidens were ducks in the wather,  
Sure it's thin the young men would jump in and swim  
afther.

Ladies, by the bye, are always capital collectors, accurately discriminating between species, and sure to find the prettiest and most delicate of everything (our very gracefulest of herbarium

\* “Year by the Shore,” Gosse, P. 76.



specimens of "Lace Pattern," "Leather Pattern," or "Claudea," we owe to lady friend collectors). So we arm them with rakes, and march away, bent on mischief be sure. We miss here, it is true, the beautiful deep sea-pools wherein (as in Victoria) you may bathe in the morning, and algologise later in the day. "No ponds," truly says our pet author, Mr. Lewes,\* "are as rich and lovely as rock-pools, the heath is less alluring than the coast—the dearly-loved coast, with its gleaming mystery, the sea, and its sweeps of sand, its reefs, its dripping boulders;" still, there are charming, insinuating little nooks here and there where something is sure to be found. The shouts of laughter yonder tell that somebody has come to grief, and discovered that hard rocks, despite their pretty covering of seaweed are not the softest cushions in the world; ah! there's nothing like bloomer costume for the seashore after all, if one doesn't want to be besopped and bedraggled; never mind the feet and the ankles, sure the cockle shows hers, and pretty enough they are, with scarlet stockings to

\* "Studies in Animal Life." P. 46.

cover them ; and the *Fusus* or Spindle-shell has charms too, which

'Twould take me a week  
Its beauties to speak, as I'd rather.

In the first pool we come to, are some nice specimens of *Chiton*, or Boat-shells, but they are so similar in appearance to the stones on which they are located, that our companions cannot readily discern them.

“ Can't see anything ” (says one).

“ What ! not that thing with a lot of shelly-plates, bound together, armour, Armadillo-like, beset all round with bristles ? ”

“ Oh, the nasty things ! ” adds comforter No. 2.

“ But surely that's not a Shell-fish ! ” (says another.)

Wait now till we detach him ! Ah, see how he rolls himself up, like the woodlouse ! How can he manage this with such a covering to his body you will ask if not forestalled. Well look, this armour is composed of eight narrow transverse, calcareous plates, overlapping one another, and strongly implanted on each side in a thick and fibrous border of the mantle, which surrounds



the whole body, and is sometimes hairy, sometimes spiny, and often leathery and naked. These pieces are not immovable, for were they so, the animal could not have rolled itself up as we have seen, or stretch itself out again, for the purpose of progression or adhesion. To work this machinery, however, there are muscles given off from one plate to the other, so as to make its mechanism more complete. There are many species here, but all easily recognised, when acquaintance is made with one of the family, so "nasty thing" finds its way into our spirit bottle. According to a naturalist, quoted by Swainson ("Malacology," page 246), these animals are distributed nearly over the whole globe. Many species are constantly remaining under water, while others ascend even above high-water mark, spending the day exposed to the hottest sun, or resting in spots occasionally moistened by the rude and restless surf. They seem to feed entirely by night, and remain stationary during the day, yet when disturbed, they will often creep away with a slow and equal pace, sometimes sliding sideways, and creeping under rocks or stones for concealment, or if accidentally reversed, they soon



recover their position by violent contortions and undulations.\*

Here oftentimes in patches will we find many of the *Caulerpas*, which generally grow in rock-pools at low-water mark. Fragments float up, as we turn over a mass of *debris*, of what was termed by the late Mr. Charles Henty, of Kelso, the "sensitive plant," from the fact, that the frond on being slightly moistened on one side, after having been once dried, will curl up like the sensitive fish-toys made out of horn shavings.† It is a flat, green, lanceolate weed, with pectinations of the form of a surgeon's scalpel, so that it is called *scalpelliformis*; and, then, there is *simpliciuscula*, with a cylindrical stem, minutely covered with scale-like papillæ, and *sedoides*, with imbricated leaves. As for *Codium tomentosum*, it is well-known to all collectors, being nearly cosmopolitan, abounding on the shores of the Atlantic, from the North of Europe to the Cape of Good Hope, equally common in the Pacific, extending along the whole western coast of the American continent, in the Indian Sea, and on the shores of New Zealand.

\* Guilding—"Zoological Journal." Vol. XXIX.

+ "Phycologia Australica." Vol. I.



It may be known by its green colour, and spongy texture; its much branched cylindrical filaments being covered with a downy coat, which expand when floating in the water. *Bryopsis plumosa* is another favourite, few of our marine plants being more beautiful when its silky branches are opened out. It is also widely distributed. Harvey tells us that he has collected and received multitudes of Australian specimens of many varieties, which he sees no reason to separate, as many collectors do, into species.

We have elsewhere \* mentioned some of the freaks which the starfishes play collectors, and we manage, by groping, to secure some really nice specimens for examination, and subsequent preservation for the cabinet. There is a large, spiny fellow which may frequently be met with, as large pieces of rock are turned over, probably a *Uraster* or spiny crossfish; for which, with its hundreds of worm-like suckers, we confess we have a repugnance. Still, there are others which we cannot but admire. There is a pretty violet or purple-coloured one, hexagonal, slightly convex,

\* "Sea and River-side Rambles."



which is doubtless a species of *Goniaster* or sea pincushion, so called from its being covered with minute pins'-head tubercles; another of a paler colour, often brickdust-coloured when dry, pentagonal, and covered with tessellated plates (*Asterias tessellata*); another, with eight short rays, and convex disk, is a sun-star or *Solaster*; but the prettiest we meet with is of a deep vermilion, or brickdust colour, with a stellate five-rayed body, bordered with marginal plates, not unlike in shape the ears of Indian corn. It is no doubt identical with the "Butt-horn" of some of the southern parts of England and Ireland. This species is not unfrequently covered with a glutinous substance, which prolongs the process of drying for the cabinet. On the upper surface of a living specimen—less distinctly when dead—may be seen a number of pincer-shaped bodies, which open and shut continually, and literally "shut up" when touched. In vain have we watched these peculiar organs in order to throw some light on their nature and use; nor are we singular, since learned naturalists are yet undecided on the subject. The learned authors of the "Micrographic Dictionary," article *Echinodermata*, consider them



organs of prehension; others, that they are distinct animals; others, again, that they are parasites; and Forbes, who devoted much of his attention to the consideration of everything connected with these creatures, confesses that he knows not what they are, and adds—"This is one of the many mysteries of natural history, one of those unaccountable things which we know and know not—of those many facts in nature which teach us how little is man's knowledge, and how wondrous and unsearchable is God's wisdom;"\* and Professor Harvey, in a later work, states that "Their use to the animal is wholly unknown, and by some writers are described as parasitic creatures of different species. I can hardly so regard them; and whatever their organs may be, must suppose them a part of the animal on which they are found."† We certainly agree with him in so thinking, but cannot believe that animals so well provided with organs for locomotion and obtaining their food can need any such adventitious aids, since they are known to destroy animals larger than themselves, and

\* "British Starfishes," 1841, P. 98.

+ "Seaside Book." P. 173.



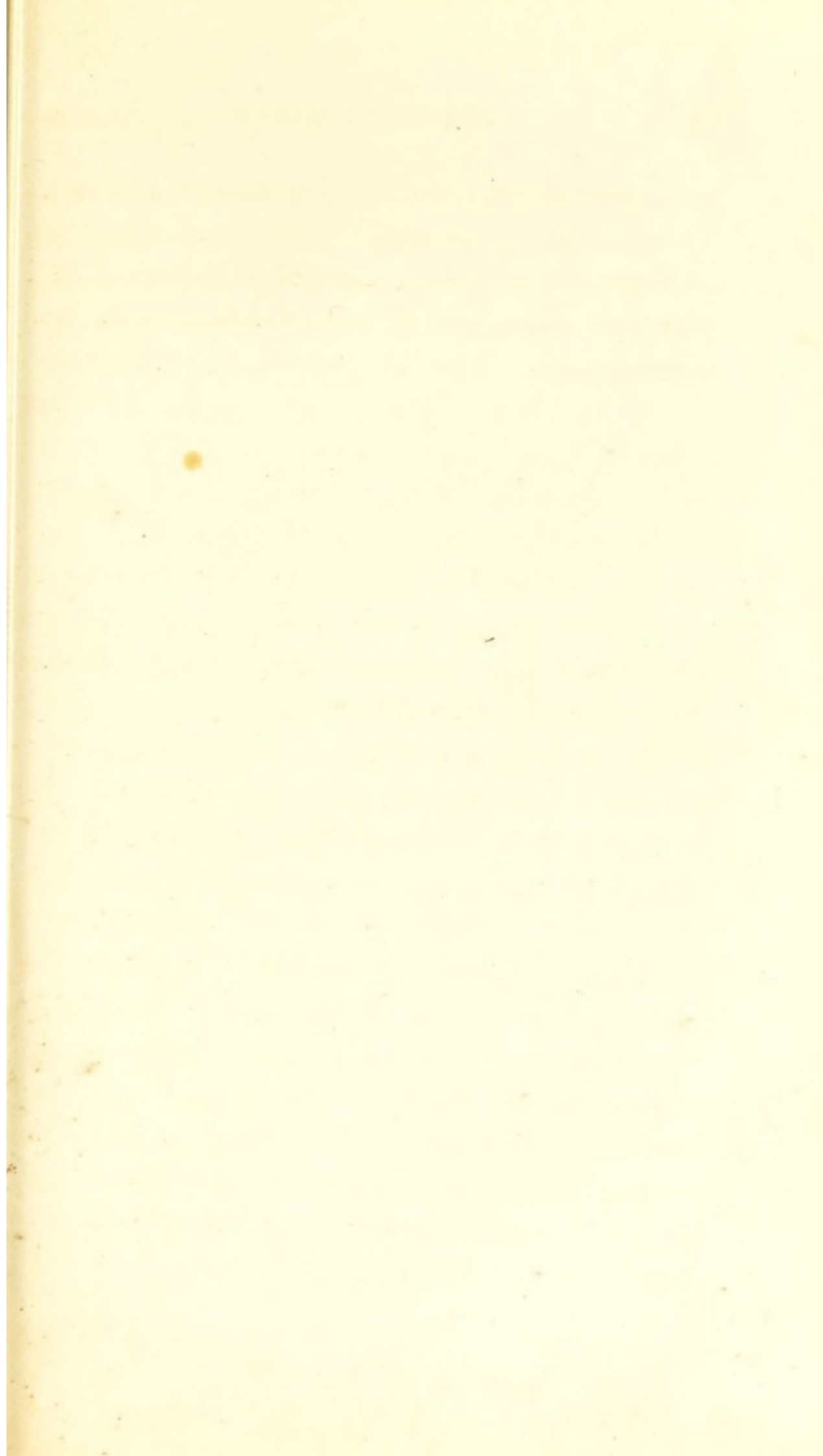
are said to be the most destructive enemies of oyster beds.

The power which starfishes have of throwing off their limbs at pleasure, or rather in displeasure, has been amusingly told by poor Forbes in his endeavours to capture a species of *Luidia*, which just came to the surface of the water, winked derisively at him, and then sent his rays flying. Nor, are they less remarkable for reproducing them, and one drawer of our cabinet is specially set apart as a hospital for maimed specimens, and we have them in all stages—grotesque enough some of them are—one with a long ray, and four short; another with two short and five long; another a perfect cripple. We have often heard of “leg-bail”—this is an exemplification of it with a vengeance.

But these matters cannot be cleared up without much patience, and as our pots and baskets are pretty well filled, we will hie homewards to disgorge, and resume our ramble to-morrow. Meanwhile, bear in mind that “He who would learn the exquisite delight Nature has for those who ardently pursue her, and would acquire a deep sense of reverence and piety in



presence of the great and unfathomable mysteries which encompass life, must give his mornings to laborious searchings on the rocks, and his afternoons to patient labour with the microscope."







## CHAPTER VIII.

BEFORE us lay the sea ;  
Broad heaving billows murmured carelessly  
O'er wave-ribb'd sands, with lulling, peaceful sound ;  
While snow-white sea-gulls sailed athwart the sky.

WE parted but yesterday just as we had reached the Tamar Heads, where, what with pilot-houses, light-houses, and telegraph-stations, there is quite a little township ; and to-day we resume our ramble from this point, where we are at mid-day, sheltered from a scorching sun under a shady box-tree, surrounded by shrubs of *Rhagodia*, yellow flowering *Senecio*, and climbing *Muehlenbeckia*. We partook of an early breakfast, and have been wading since in search of that beautiful shell, the *Scaphella*, of which we have some good specimens, so that we can appreciate pretty keenly the "snack" which our good hostess prepared for us, the bottle of "John Scott and Co.'s" particular brew, and the



subsequent delightfully-soothing pipe, as we lounge here, gazing out upon the wide expanse of ocean, with just breeze enough to curl the tips of the waves, and to waft in a delicious seaweedy smell to refresh us. And, as we sit, we turn out the contents of our *vascula*, or collecting pouches, which shall speak for themselves. Scrambling about on the huge boulders at the Heads, which requires an active body and cool head, if one does not seek for a fractured tibia or fibula, we meet deep down in the recesses of the rocks, where hardly any light appears to penetrate, with a long, trailing plant, much blanched, which, on hauling up by means of our long collecting-rakes, turns out to be *Lobelia anceps*. It has leaves one to three inches long, varying much in shape, generally spathulate, and bearing inconspicuous, pale blue flowers ; and, in peering down the fissures into which the spray dashes, we espy, what to us (who, in the home country, have walked a distance of forty miles to procure the smallest frond of its English prototype, the Sea Spleenwort or *Asplenium marinum*) is a real prize, in fine fronds a foot and more long of *Asplenium obtusatum*. It is indeed a beauty, of which we were first rather chary of taking many



specimens, but subsequently discovered that it abounds here, and probably in similar situations, all along the coast. We searched eagerly for shrubs of *Alyxia buxifolia* or box-leaved *Alyxia*, but were obliged to content ourselves with sections of the weed kindly given to us by Mr. Henry, superintendent of the telegraph department, taken from some large specimens growing about here. It is recorded\* as attached to the sunny sheltered sides of trap and slate rocks along the northern coast of Tasmania, the stem rarely attaining a diameter of more than three or four inches, and as occurring in considerable abundance, and of the largest size, about "Five-mile Bluff," eastward of Georgetown. The aroma of the wood is more agreeable than that of sandal-wood, and less volatile, and much resembles the well-known perfume of the fruit of the *Dipterix odorata*, or "Tonquin Bean." The flowers are white, half an inch long, in pairs, and are remarkable for having the limb of the corolla quite flat and the segments contorted, as if suddenly arrested during a rapid rotatory motion. It yields a small red berry, and its

\* Papers Royal Society of Tasmania. Vol. 2, p. 1.



leaves, bark, and succulent twigs, when cut or broken, emit a viscid, milky juice, as, indeed, do most of the *Apocynaceæ* or "Dog-banes," to which natural order it belongs—one especially interesting, moreover, since in it is embraced the "forbidden fruit," at least so say the sages of Ceylon. The proof they find of this discovery consists in the beauty of the fruit (of *Tabernæmontana dichotoma*), said to be tempting, in the fragrance of the flower, and in it still bearing the marks of Eve's teeth. Till the offence was committed, which brought misery to man, the fruit was delicious, but from that time forward it became poisonous, as it now remains.\*

The only other Tasmanian plant of this order is *Lyonsia straminea*, frequenting deep shaded ravines, which we have not met with, but Hooker describes as "an immense climber, scaling trees thirty to forty feet high, its pendulous whip-like branches rooting when they reach the ground. The inner bark is silky, and used as a substitute for hemp. Flowers half an inch long, dull yellow in many flowered cymes, and fruit three inches long, ripen-

\* "Lindley's Veg. Kingdom." P. 601.



ing at the same time as the flowers of the following seeds open.

The ground about us is stony, with the gay pink flowers of the "Pig's-faces," *Mesembryanthemum æquilaterale*, the fruit of which—about the size of a gooseberry—is said not only to be edible, but agreeable—an assertion which we cannot corroborate; a nearly too, *Tetragonia expansa*, abounds here, which, in New Zealand, is used as spinach. And by the fence, as we mounted the hill from the beach, we gathered a few specimens of *Zygophyllum*, with pale orange flowers and fleshy leaves.

Our collecting bottles contain an infinity of treasures; for instance, to a brilliantly coloured specimen of Pheasant-shell (*Phasianella*) are adhering, by means of their long, fleshy peduncles, several snowy-white barnacles (*Lepas antiferæ*); and we have popped them into our bottle of spirits before they have had time to withdraw their beautiful plume-like *cirrhi*, or feelers, with which they sweep anything they may fancy within their reach. The allied Acorn Barnacle (*Balanus*) is probably found here, which is attached by its base, not by



peduncles, although from out of its truncated cone-like shell (composed of six different pieces) also emerges, at the rising of the tide, an equally beautiful plume, to waft creatures they may affect into what Gosse (and he knows them well, be sure) designates "its cavernous maw."

Here also are some "little pets" in almost microscopic specimens of Starfishes (*Ophiocoma* or Bristle Star), which were turned out from the roots of some gigantic Algæ cast ashore—always a sure hunting ground; tiny *Echini* or Sea-urchins, not much larger than a pea; Hairy Crabs, Whale-lice (*Cymothoa?*), and a variety of other gems, as the auctioneer says, "too numerous to particularise."

We purpose returning by the bush, and so bid farewell, somewhat reluctantly, to the very beautiful panorama which for an hour or so past we have been quietly enjoying. For awhile now we trudge through bracken and brushwood, altogether uninteresting ground, until we pass some freshwater lagoons, on which, had time permitted, we were sure to have discovered some glorious desmids, and perchance a duck or two. We were not sorry to get out of the scrub, for



snakes *have* been seen there, and our boots were low, and an unpleasant feeling attacked our lower extremities all the way, which to some extent marred our enjoyment. Yet all dread is past as we find employment again in examining a most lovely species of *Hibbertia*, with linear leaves, and bearing yellow flowers, larger than any we had hitherto met with; so we gather abundantly. Common, too, is a delicate, pale winged, lemon-coloured flower on slender stems, and with thick, woody roots (*Gompholobium Huegelii*), and a lovely species of *Billardiera*, called *scandens* or climbing, readily distinguished from *B. longiflora* of Distillery Creek, and such like situations around Launceston, by much larger foliage—which, as well as the younger branches, is covered with silky hairs—by shorter, more campanulate flowers, with acuminate petals and larger sepals; its fruit, too, is green, and cylindrical when ripe. It makes a really beautiful herbarium specimen. Of other papilionaceous or winged flowers we may briefly record *Dillwynia glaberrima* and *Pultenea daphnoides* as being common, as well as the sweet-smelling *Acacia suaveolens*. A small species of willow-herb (*Epilobium*), with pale pink flowers, and



an angled stem, is our next find, and of *Melaleuca* or "tea-tree," no less than three species—*Ericæfolia* (or heath-leaved), with sweet-smelling, sulphur-yellow flowers, in terminal cylindrical or oblong heads (sometimes having the branch produced beyond them) an inch or more long. It is but a dwarf shrub here, but Mr. R. C. Gunn describes one which he measured as unbranched for twenty-seven feet, and of a girth of five and a half feet, at three feet above the ground. *Melaleuca squarrosa* is an exceedingly pretty species, erect, smaller here than its average, which is six to nine feet. The flowers are in cylindrical, terminal spikes, and yellow, each subtended by a bract. *M. gibbosa* is a small scrubby bush, bearing purplish or dingy puce-coloured flowers in terminal or lateral heads. There is another myrtaceous plant not uncommon here, also called "tea-tree," the *Leptospermum lanigerum*, the leaves of which were used by the early settlers as a substitute for tea. A most interesting and singular composite is *Leucophyta Brownei* (Brown's white plant), a little rigid, tortuously-branched, snowy-white herb, from one to two feet in size, with small, alternate leaves, covered with silvery down; and



of the pretty, heathy *Leucopogons*, two abound—*Australis*, with its rather sickly smell of new-mown hay, and *collinus*, which we have also gathered on the Esk and Piper rivers. The generic name, *Leucopogon*, or “White Beard,” is an apt one, since it marks out a peculiarity in the flower, viz., the white-bearded tufts of the corolla. That gem of Epacridaceous plants, *Sprengelia incarnata*, although now out of flower, is so freely distributed all about, that its gay, flesh-coloured blossoms alone must make the bush enchantingly beautiful in their season.

“What is that little plant climbing on all the shrubs?” asks one of the most enthusiastic of our party. Ah! you will scarcely believe that so tiny a thing, with stems no thicker than pack-thread, and adhering by sessile suckers parasitically to such of its neighbours as are most “convenient,” is included in the same order (*Laureneæ*), as such lovely shrubs as the Cinnamon, the Camphor, and the Nutmeg trees, as well as the common Laurel of our shrubberies—yet so it is. It is called *Cassytha glabella*, and may readily be known by its resemblance to the “Dodder,” which proves so destructive to our clover crops. There is another much coarser



species, *melantha*, abundant about Launceston, principally on Wattle-trees, creeping up thirty feet or more, with stems as thick as a stout cord.

Who does not love the snowy, delicate-scented  
“Lily of the Valley?”

Whiter still than Leda's love,

emerging from its dark-green leaf, or its companion, the Solomon's Seal? Well, you have a lovely representative of both these growing amidst the Ferns here, over at Ilfracombe, and on the summit of Mount Wellington, in *Dryophila cyanocarpa*. It has slender stems, with delicate pale-green leaves, one to three inches long, and bears white flowers on curved, solitary stalks, at the axils of the leaves. Later in the summer it has beautiful bright blue berries, very variable in size, from which its specific name is derived. “Turquoise berries” Mrs. Meredith calls them, and they, as well as the entire plant, have been exquisitely rendered in her very pretty “Bush Friends,” to which we have so frequently referred in these papers. “One day (says she) in the winter, during an excursion on Mount



Wellington, whilst awaiting the reassembling of my scattered party, everybody having gone to look for somebody else, leaving me in charge of sketch-books, botanic boxes, and commissariat, I, as usual, amused myself in collecting ferns, leaves, flowers, grasses, moss, finding

Infinite treasures in a little room,

when, as I dived below the boughs of a bending *Acacia*, the long-sought blossoms of the Azure berries stood revealed before me. Not one, nor two only, but dozens of the slender stems were there. When the wanderers returned, expecting something like remonstrance at their defection, they might have thanked the gentle flower for delighting me too much in its discovery to leave me the inclination to complain that I had had the opportunity of finding it."

Here's a pretty go! In our eagerness to transfer specimens of this plant to our collecting-box, we have smashed one of our collecting-bottles, and whilst telling you what a kindred spirit had said of it, out have crept all the contents, *Crabs* and *Planariæ*, the pretty red-stock-ing *Fusus*, with no end of parasitic fellows; and



as we dive down into the recesses of our shooting-coat pockets, we meet with cold blobs of Anemones and Ascidians, and we pull out fragments of Star-fishes, wriggling about most unsociably and uncomfortably, so we must fain pop all in amongst our Algæ until we arrive at our domicile; never mind, its just the season for companionship, and we may get an insight into how "seaside things" spend their Christmas.

One half the charm of companions in bush-ramblings such as these is the scattering of the party every now and then, each to follow the bent of his own inclinations, and anon turning up with something of interest, which a single pair of eyes perhaps might not have detected. An enthusiast in *Fungi* brings in some pretty specimens of *Geastrum*, or "Earth Star," a kind of puff-ball with a pointed recurved collar all round it; and a further glance at her basket reveals others, brilliant with more radiant hues than the rainbow itself, some claret-coloured, blue-tinted, deep purple cinnamon, and crimson with dark spots—making a great many converts to the study of them. The *Fungi*, as the Ferns, produce no seeds, properly so called, reproduction in their case being performed by means of



cells or spores, each of which is a receptacle for a number of granules, which, at the appointed time, escape from the cells where they have been confined, and thereafter make their own way in the world. They have been called the "Scavengers of Nature," and we may so regard them in many instances, as they doubtless clear away many nuisances which would otherwise be offensive; but we have others, affecting our crops—as Dr. Mueller in his able lecture, delivered under the auspices of "The Bendigo Agricultural and Horticultural Society," has shown—our houses, our books, and even ourselves, which we can scarcely regard under that head. Animals, birds, fishes, and insects, are also not unfrequently attacked by these minute forms, as we have noticed in pet gold-fish, in the white rings which are surrounding the bodies of dead flies as they hang to our walls and window-panes in winter, and in the interesting specimens of Caterpillar Fungus (*Sphæria*) so frequently found in this island, and of which Mr. Gray, of the British Museum, has printed so beautiful a monograph. So much diversity of opinion has been expressed as to when and how the spores of this fungus obtain access into the



body of the caterpillar, that we gladly quote here Mr. Gray's ideas on the subject. "Life," he says, "is certainly not extinct when the animal first becomes the basis of these vegetable parasites, although this is now a very generally received opinion. It may be further noticed, that most of the insects thus affected are solely vegetable feeders, although there are a few which feed on animal matter. It is also supposed that the spores or seeds of the parasites may become connected with the insect in two ways; either by the insects swallowing the seed with their vegetable food, or by its settling on some portion of the exterior surface, and thus finding its way into the interior. That the seed is taken in the former mode is most probable; it is so infinitely minute, that it can only be seen by the most powerful lenses, and therefore so light, as to be wafted through the air by the slightest motion of the wind. When thus floating about, it may either settle on the vegetation or fall on the ground, where it would become mixed with the soil or vegetable matter, in which most of the insects in their earlier stages of life seek for nourishment, and by these means the seeds may be taken in with the food, which is thought to be



the most frequent way by which the fungus becomes connected with aerial animals. The idea that the seed finds or bears its way into the interior, after it became attached to the external surface, is one which cannot be entertained when it is taken into consideration, that not the slightest sign of any such operation on the outer surface of the insect can be observed, although various kinds of insects have been obtained, completely filled internally with the *thallus*, and without any external appearance of the parasite; nor can it be so with caterpillars which have changed their skin on assuming the chrysalis state, after burying themselves in moss, etc., and which are found in the latter state to form the basis of the *fungi*. It is now allowed by most writers that the germination of the seed commences in the interior of the insect, and it is also evident that it does not altogether depend on 'being nourished by the warmth and moisture of the interior of the insect;' but rather on the insect becoming sickly and feeble by the effect of the heavy rains that fall at stated periods in most intertropical countries. This is especially applicable to those insects which reside in the earth, or in decayed vegetable matter, or in an



exposed nest, as they must at such times be saturated by the water, and thus become completely enfeebled by its influence, after which the seed rapidly germinates, and then the *thallus* eventually expands itself throughout the interior of the insect, and thus the plant gradually predominates over the vital principles of the animal. The insect retains its natural form, although its internal parts are dried up by the growth of the fungus. The outer portion of the plant then forces its way through the skin or tissue at various places through the joints of the body, and even in some cases through the hard surface of the head, thus exhibiting very great powers of development, whilst progressing towards maturity."

We certainly did not anticipate this long digression when we alluded to the *Fungi*; but the pamphlet from which our extract is made having been privately printed, and so, scarcely accessible, leaves no reason for apology. We have, in our "Sea and River-side Rambles," entered more fully into the subject, and figured there specimens from Tasmania, Victoria, and New Zealand.

The great authority on *Fungi*—the Rev. M. J.



Berkeley—in a recent paper in the *Intellectual Observer*, has pointed out that they are divided into six great groups, and each species may be easily referred to its own by the colours of the spores, thus : the *Leucospori* have white spores ; the *Hyporhodii*, pink ; the *Dermini*, ferruginous ; the *Phæoti*, brown ; the *Pratellini*, purplish black ; the *Coprinarii*, black ; and to obtain these spores, etc., he suggests the placing of the *Fungi* in a vessel, with the air excluded, on clean white paper, whereon, in a few hours, they will be deposited.

But a glance at the declining sun reminds us that we must take to the road in “double-quick” pace, for already our fair hostess must be under some apprehensions on our account, as, on leaving home in the morning, dinner was ordered at four precisely ; and yet we add to our spoils in a “dear little thing” (so the ladies said), and no wonder, for it is a near friend and ally of the “love” which we have already mentioned. It is called *Comesperma calymega*, a distinct and very pretty species, the only one in Tasmania, except *C. volubile*, with blue flowers. It has a woody root, with erect, slender stems, bearing racemes of flowers. A much stouter species, *C.*



*ericinum*, a shrub, two or three feet in height, bears terminal racemes of pale purple or puce-coloured flowers, and is to be met with in the bush hereabout.

Passing on towards the Cemetery, we welcome, amongst the low scrub, the yellow flowers of *Xyris operculata*, of which Mrs. Meredith remarks :—"The long, very slender stem bears on its summit a small head or ear, of closely-folded, dark-brown scales, each of which guards an embryo blossom, which in due time appears, expands for one day, withers, and still hangs to its cradle calyx—a shrivelled, dark little rag of a ruin—whilst one, or, perhaps, two new flowers spread their golden petals to the sun above its poor remains. The flowers have creases in their delicate texture, as if their thin silk dresses had been too tightly folded up. The stamens, anthers, and pistil are all alike yellow, but of a deeper tone, and finely fringed with tiny hairs."

We could not have described it half as prettily, so our readers will readily pardon us for the extract. We clamber over the rustic stile, and wander homewards through the Cemetery, with its graves overgrown with wild flowers, which

When the dead awake, or walk in sleep,  
—— Hear their thoughts, and write them on their leaves,  
For Heaven to look on; and their dews come down  
From the deep bosom of the blue, whereon  
The spirits linger; sent by them, perchance,  
With blessings to their friends.

It would be sacrilege, indeed, to pluck even one tiny bloom, so we pass quietly and reverently away. May our final resting-places be so besprinkled with these beauties of creation, which, whilst living, we have ever regarded as so many records of the wisdom and goodness of the Almighty.

. . . Wonderful, indeed, are all his works,  
Pleasant to know, and worthiest to be all  
Had in remembrance always with delight.

MILTON.



## CHAPTER IX.

A GIANT tree, long prostrate lain,  
Bridged a small stream across;  
Covered all o'er with creeping ferns,  
Lichens, and cushioned moss.

THE “poetry of earth is ceasing never,” says one of our English poets, and in truth, though—as the Autumn steals on us, we miss many of the flowering plants—yet we have, in all their quiet beauty and grace, the *Ferns*, which now clothe our rocks and valleys with their leafy fronds.

Our horticulturists have been strangely apathetic in their notice of this lovely tribe, and it is only lately, especially in Tasmania, that they have become attractive objects of cultivation and inquiry. No matter! for sooner or later they will win a place in every garden. Every drawing-room will have its fern case, and even into our hospitals and bedchambers they

may beneficially be introduced to soothe the cares and pains of suffering invalids, taking the hearts and thoughts of many of them back to those rural haunts wherein, whilst in health and vigour, they had, perhaps, been accustomed “ankle-deep in flowers” to wander.

Besides being objects of great interest, and, moreover, easy of culture, the gay, flowering plants of our gardens and bush, for the most part, blossom to-day and to-morrow are not; but these “aristocrats of their race,” whose mission on earth it seems to be that they should live and be lovely, we may meet with at almost all seasons—some in our dense scrubs, others on rocky ranges by our river sides—the hollow trunks of trees or dark caves afford concealment to many, but the gems of the family delight in damp, dark valleys, as those of Mount Wellington or the basin of the cataract at Launceston, luxuriating in the decayed vegetation which such localities afford them in abundance, and

In deep, green, silent glens—  
Silent, except the fall  
Of tinkling streams, that make  
A monotone most musical—  
The feathery fern-trees dwell.

Indeed, no one who has wandered through the



narrow, green lanes of the home country—where the hazels on the hedgerows meet so as almost to exclude the sunlight, and the stout male, and delicately-fashioned lady ferns intermingle lovingly below—through the thick copses, where the “hart’s tongue” is unfurling its broad, leafy fronds, and the decayed oaks and ash seem alive again with quaint varieties of the common “Polypody”—over weather-beaten, lichen-stained rocks, in search of the “Rock brake” or “Parsley piert” (*Allosurus crispus*)—by the seashore, with the spray dashing over you as you peered into dark caverns for ever, so weeny a bit of the rare and beautiful “Sea spleenwort,” or that very perfection of all, the “Maidenhair;”—but must agree with Edward Newman, whose monograph of the “British Ferns” many of our readers doubtless are familiar with, that “Ferns constitute so beautiful a portion of the creation, whether they ornament our ruins with their light and graceful foliage, wave their bright tresses from our weather-beaten rocks, or clothe with evergreen verdure our forests and our hedgerows—that it seems next to impossible to behold them without experiencing emotions of pleasure.”



Amongst the many interesting characteristics which Ferns possess, is one which we have spent hours, even days in watching—and that is, the uncurling of their crozier-like unexpanded fronds. The arrangement by which this is effected is most beautiful—each little segment being rolled up towards the rib which supports it, that rib in its turn being coiled up towards the midrib, and the midrib towards the footstalk. As the spring advances, the coiled up fronds take courage, and begin gradually to unfold; the larger divisions shaking themselves out first, then the smaller ones following their example, until the whole frond is uncoiled, and under the influence of light and air becomes gradually brighter in hue.\*

“Years before Ferns had become to be as friends with ‘old familiar faces,’ I could not pass them without turning to feast my eyes on what I thought their excessive loveliness; and there is something to me peculiarly gratifying in watching the growth of each frond when under cultivation—in tracing it from its first button-like appearance at the head of the root-

\* “A Chapter on Flowerless Plants.”



stock, and circinate growth, to its fully developed and expanded maturity.”\*

Of the beauty of Ferns we should never tire, but must necessarily be somewhat concise; so let us say a few words on their structure and means of reproduction, which everyone desiring to be a fern cultivator must become acquainted with. Most of our readers will have sufficient botanical knowledge to understand something of what is termed the “*morphology*” of plants—that is, a knowledge of the relative value, one to the other, of the various parts of which a plant is composed; for instance, its seed, stamens, pistils, ovules, and so on: all these the Phænerogamic or Flowering plants have, but the Ferns possess no such organs. They, in common with mosses, fungi, and lichens, are aptly called *Cryptogamic*—a word compounded of two Greek words, signifying “hidden marriage,” from their having their sexes concealed, or, perhaps, wanting. All these Cryptogamic plants are multiplied by small, almost microscopic particles, thrown off by the plant when mature, to reproduce its kind; these particles are of various

\* “British Ferns:” Introduction.—NEWMAN.



shapes, and are termed *spores*. It has probably not escaped notice how remarkably soon *Fungi* spring up when their spores, which are everywhere wafted about in the air, have found conditions favourable to their development; the *Mosses*, too, of which we have so many lovely representatives everywhere within grasp, contain in their tiny urns myriads of spores, which are sent flying in all directions at the appointed time, by means of elastic spiral filaments which had previously been coiled up like a watch spring; and in *Ferns* the spores are contained in little capsules called *thecæ*, each of which is furnished with a jointed ring, by the elasticity of which the capsule is torn open and the spores dispersed. These *thecæ*, or spore capsules, are collected into clusters, which again are termed *sori*; some of these *sori* are naked, and others are covered with an *indusium*, or scale-like covering, called an *involucre* by some writers.

It would be out of place to note of what value is the situation of these spores in the classification of Ferns, since any student of them may refer to some one of the many works treating specially on the subject; still, it may not be uninteresting to note a few examples.



To commence with the zigzag, climbing *Gleichenia*—of which we find a beautiful variety at Doctor's Creek, Georgetown, by a brookside at Yorktown, Mount Wellington, and other places throughout the island—the *sori* consist of one to six sessile capsules, that burst longitudinally, each surrounded by a complete ring, and placed at the end or middle or axil of the simple or forked veinlets. In the “grove-loving” *Alsophila*, a handsome tree-fern found about Georgetown, the Macquarie, etc., attaining a height of thirty feet, and conspicuously differing from *Dicksonia Australis* in the black trunk being covered with the persistent bases of the fallen fronds—twelve to fourteen feet long—the *sori* are globose, on an elevated receptacle, often mixed with jointed hairs, and without an *indusium*. *Dicksonia*, again, our other tree-fern, has marginal, globose *sori*, the capsules enclosed in a two-valved *indusium*.

Of the delicate pellucid genus, *Hymenophyllum*, or “Filmy Ferns,” species may be met with at Distillery Creek, the Cataract at Launceston, on tree-ferns at Ringarooma, and on damp rocks or shady spots in many places elsewhere through Tasmania. Here we find the *sori* at



the axils or ends of the dichotomously-branched segments, through which a stout midrib runs, sunk in the substance of the frond, which forms a cup-shaped or box-like, often flattened, two-valved, *indusium* over them. Sometimes this indusium is produced beyond the frond and stalked; its two valves or lips, entire or toothed, opening outwards.

In a closely allied genus, *Trichomanes*—also a gem-like, pellucid little fern, generally growing on the trunks of fern-trees—the technical mark which distinguishes it from the preceding is this—that it has a tubular or trumpet-shaped *indusium*, which is less obviously two-lipped, often quite circular at the mouth. The veins often project beyond the fronds, so as to give a bristly appearance to them—hence they are called “*Bristle Ferns*.”

In the “Maidenhair” (*Adiantum Æthiopicum*), a common fern with us nearly the entire year, behind logs, in rocky places, or under the shade of low bushes, such as the wild raspberry and the flowering box—the prototype of the true “Maidenhair,” or Venus-locks, so sparingly found in the caverns of Torquay and a few other places in England—the *indusium* is formed



by the margin of the frond, which turns over in a kidney-shaped form, and covers the *sori*. To a casual observer, the difference between the English plant and its antipodean sister is but trifling; but the fern investigator will discover that in the Tasmanian species the pinnules are larger, more delicately pale, the stems of a browner tint, and the *indusium* kidney-shaped instead of linear. It will grow freely in pots, and is a great ornament in the conservatory. The name of "Maidenhair" is said to have been given to the English plant on account of its being supposed to promote the growth of the hair; but more probably, we think, from the glossy, hair-like appearance of the stems when denuded of the green pinnules. In the *Lomarias*—not unlike the *Blechnum*, or "Hard Fern" of England—the fructification is borne on some only of the fronds, and it often covers all the under surface of the pinnule—the barren fronds having much broader *pinnæ*.

The "Spleenworts" (*Asplenium*), a widely-diffused genus, is distinguished by bearing on the back of the fronds linear *sori*, covered with a linear, membranous, involucre. It is named







from the Greek *Asplenon*—the spleen, from some supposed important medical qualities. We have in all directions the *Asplenium flabellifolium*, or “Fan-leaved” variety—a slender, prostrate species, from three to five inches long, with a black stem (the apex of which is naked), pinnate fronds, and small pinnæ on very short stalks, placed alternately on each side of the stem; and, again, *A. obtusatum*, which in our former chapter has been recorded as at the Tamar Heads.

The smooth, shining *Polypodium Billardieri* is a good type of the Polypodies, bearing its fruit in yellow clusters on the back of the fronds, and it is especially interesting, from the abnormal forms which it assumes. It is abundant on low rocks and on trees in our creeks, growing in dense patches, and has thick, creeping, scaly *rhizomes*, or root-stalks.

In the neighbourhood of Georgetown, and in healthy places, probably, elsewhere, frequently may be found the curious *Schizæa bifida*, on long, wiry stems—sometimes dichotomously branched—having at their apex a small, inclined pinnatifid limb or comb, upon whose divisions the capsules are arranged. Looking at our



herbarium specimens as we write, the comb singularly resembles the plumose *cirrhi* of the barnacle, to which we have called attention.

Of *Todea*, we have but one Tasmanian species, truly a noble fern, with a stem often five feet high, and six to nine in circumference, having fronds eight and a half feet in length. It fringes the banks of the Yorktown rivulet on the Tamar, but is scarce elsewhere. Its pinnules are linear-oblong and serrate, and the lower pinnae are generally covered with large, crowded fructification.

We have a pretty representative of the "Adder's Tongue" or *Ophioglossum*, with the fructification at the summit of a long spike, and consisting of two rows—opposite one another—each containing six to thirty globose capsules, which burst separately. Our specimens are a little more than an inch high, so the plant will need careful searching for in the grass.

Of *Botrychium* ("Moonwort"), we have two species, one identical with *B. lunaria* of Britain; and it may, as Moore, in his much to be commended "British Ferns," remarks, be easily known by two circumstances—"first, it has two fronds, or rather two branches of its frond,



the one of which is seed-bearing, the other leafy ; and, secondly, the pinnæ of the leafy branch are crescent-shaped, with the outer margin jagged. There is no other native plant which has these peculiar features, and hence the 'Moonwort' is a plant very easily recognised when met with. There is another peculiarity in this fern, which also serves to distinguish it, and its near ally, the *Ophioglossum*, from all other native species—the venation is straight, not circinate ; that is, the fronds before they are developed are not rolled up spirally, unrolling as they expand, but in the incipient state the parts are merely folded together by a flat surface."

According to fanciful old Gerarde, "It hath been used among the alchymists and witches to *doe* wonders withal, who say that it will loose locks, and make them to fall from the feet of horses that graze where it doth grow."

The lunate shape of the leaves may have given rise to its popular name, although it is well-known how, in days gone by, great powers were attributed to plants gathered at nightfall or by moonlight ; the very fern-seed itself, the existence of which was doubted by some ; and



by others, to obtain it at a certain hour on Midsummer's Eve enabled them—the lucky finders—to render themselves invisible at will. I have the receipt of fern-seed to walk invisible. The Yarrow gathered on May Eve gave our Irish girls—so it is said—the power of dreaming of their future spouses; and the “Moonwort,” be sure, had some such properties to recommend it and tempt the colleens out,

To cull each tempting flower that grew  
Beneath the moonlight's hallowing beams.

The “gentle, uncomplaining, sorrow-stricken”  
Ophelia, with her fantastic garlands

Of crowflowers, nettles, daisies, and long purples,

has invested wild flowers with interest.

There's rosemary, that's for remembrance—pray you love  
Remember; and there is pansies, that's for thoughts.

Of the Fern allies we have many pretty types in the “notch-fern” (*Tmesipteris Forsteri*) which hangs from rocks and the Tree-ferns, and many species of the mossy *Lycopods*, or “Wolf's-feet,” generally in boggy places; *uliginosum*

being common about Georgetown and Hobart-town, and *Selago*, on Mount Wellington; the porcupine quill-like *Isoetes*, is said to be common at the bottom of lakes; and of *Marsileaceæ*, we find in some of our marshes and rivers, the velvety *Azolla rubra* floating on the surface of the water, with pendent, hair-like roots; and also, in marshy ground, the singular "Pillwort," or "Pepper grass," *Pilularia globulifera*; this plant has thread-like stems, with, at the lower end, small tufts of fibrous roots, which descend almost perpendicularly into the muddy soil beneath, and with small, frill-like spore cases, attached by a very short stalk to the stem at the points whence the leaves and roots proceed. The *Marsilea*, or "Nardoo," of the Australian rivers, is not recorded as a Tasmanian plant.

We had well-nigh omitted to mention that many examples of the tribe are *Epiphytal*, that is, grow on other plants, without deriving any nourishment from them. *Parasites*, on the contrary, not only grow upon living plants, but actually live upon them; the fibres of both the Parasite and its supporters being almost united. As an example of an Epiphytal Fern we may name the Stagshorn Fern, and of a Parasite,



the Mistletoe and our native Dodder. These Epiphytal Ferns derive their nourishment in a great measure from the atmosphere.

In order to cultivate ferns successfully, of course the great secret is, to imitate as far as practicable, their natural habitats, and a little perseverance will soon enable the amateur to overcome many little difficulties, which at first appear insurmountable. "Whenever," says Newman, "I found a fern which I thought would be worth removing, I invariably noticed the situation in which it grew, whether it was exposed naturally, to the sun, rain, and wind, whether it grew on a horizontal or perpendicular surface, and whether its fronds were erect, horizontal, or pendulous—whether its roots enjoyed depth of earth, or were simply

Moored in the rifted rock,

and having thus minutely observed every natural peculiarity, my next object was, when the fern had reached home, to copy Nature as closely as I could, by supplying to each, as far as possible, the adjuncts which it naturally enjoyed."

By these means, he, an amateur then, suc-



ceeded, and so many of our readers may succeed, provided his advice is followed.

As already stated, there is this great advantage in ferns, that they may be cultivated everywhere ; if the ground at disposal be not sufficiently large for rearing flowering plants, surely there will be some little out of the way shady nook, for rockwork, wherein any number may be grown successfully, if but their several wants and caprices are humoured. This rockery may be of any size or shape, and may be tastefully ornamented with mosses and lycopods. Soft, peaty earth, rotten wood, or leaf-mould, are essentials in fern-growing ; but for rock-work, a good foundation of sandy loam, old lime, and brickdust, surmounted with good heath mould, will do for almost all species, except those requiring constant moisture, and this can be easily supplied by allowing water to drop on the stones which surround the plant from a suspended pipe or vessel, in which a few holes have been bored, and so the moisture is scattered around for the benefit of such as it may concern. Newman suggests that the only effectual way to supply moisture constantly, is to plant the fern in a vessel filled with bog earth, and immerse it in



the ground, by which means any degree of moisture may be retained for a considerable time, the vessel preventing its rapid absorption by the surrounding earth. Those species delighting in dry places, or interstices of rocks, will very soon adapt themselves to their new home.

But some may not have available space even for a rockery; then, the fern lover who is pent up in town should have one of those admirable cases invented by Mr. Ward, known as "Wardian cases," wherein he may grow, in health and vigour, for an indefinite period, ferns, or any other plants he may have a kindness for

To serve him as a hint  
That Nature lives.

It was a merely accidental circumstance which some few years since led to the reflection which ultimately matured these Wardian cases. Mr. Ward, the inventor, had for years striven to rear in his house in London the more beautiful of the wild flowers which met his eye when rambling in the country districts of England, but he was unable to inure them to the cold, dry winds,



which, carrying the vapour from their leaves, and the moisture from the earth in which they were planted, caused them to wither. The soot and dust, too, clogged up their tender lungs and impeded respiration; no amount of cleaning and sponging availed, their delicate machinery was disordered, and they prematurely drooped, and ultimately died. This, as may be supposed, was a source of great annoyance to Mr. Ward, whose only resource was on each occasion of a visit to the country, to bring back a fresh relay of plants.

One day, however, he placed the chrysalis of a moth in some mould in a glass bottle, covered with a lid, in order to obtain a perfect specimen of the insect when its transformation took place. In this mould, after a while, vegetation commenced, a mere speck at first, but this eventually turned out to be a fern and a grass; his interest was awakened, the bottle was placed in a favourable situation, and its contents continued not only to grow, but to flourish; nor was this to be wondered at, since within this bottle were all the requirements of the plants—air, light, and moisture. This interesting circumstance led to experiments, the result of which was the Wardian case.



The Wardian case is but a simple contrivance after all, and within the means of everyone. It is nothing more than a box, of any shape which may be considered suitable or fancied by the cultivator, about five inches in depth, with a ledge all round the top. On this ledge rests a glass frame, which should be carefully puttied to exclude entirely soot and dust. The glass part should be separated from the bottom, to allow of anything necessary being done to the inhabitants, cleansing of the glass, etc.; and to prevent the condensation of the moisture on the inside to too great an extent—which would render the plant invisible—a small door will be found of service by permitting evaporation; but on dry sunny days it is desirable this moisture should be retained. Some recommend that the case containing the soil should have a perforated bottom, and be made to fit into, not to touch, the bottom of a water-tight outer one, having an appliance for removing the drainage water occasionally.

A very inexpensive case, although with some imperfections which could readily be improved, is thus described by Mr. A. H. Burkitt, late of Kyneton, who devoted some of the tedious



hours during a prolonged sickness to its construction :

“ Having got a board, of the size required for the floor, I fixed four upright supports ; against these uprights I fixed, with putty, glazier’s cuttings, which formed the four walls. The floor was spread over with a coat of thin putty, on which more cuttings of glass were laid, forming a floor quite impervious to water. The roof was made in two frames, glazed in the same way as the sides, one of which was moveable, and the other fixed. The angles of the ends were also glazed in, and when the putty was well dry, the case was complete. The roof should be made to open with a hinge for the removal of dead leaves or plants, and the substitution of new plants from time to time.”

The soil for the Wardian case should be rough, fibrous peat, or any similar soil, with the finer parts sifted out, and the remainder, broken by the hand into small pieces, must be raised above the rim of the case, and rest on at least an inch of large cinders or other pieces of broken porous material.

An admirable plan, in lieu of a glass-house, is recommended by Mr. Heyne, of the Botanical



Gardens at Melbourne, who is an adept in fern-culture. This is a light frame-work, covered and surrounded with reeds or branches (such as those of the tea-tree), and sufficiently high to admit of walking underneath it; the branches are to be laid on thinly, so as to break the fierce rays of the sun, but not exclude the light altogether. Instead of covering in the top with bushes, as Mr. Heyne recommends, we would prefer calico, but this, of course, will depend on the whim of the party constructing it. Well, in this shed, beds filled with sand or ashes (which are preferable) should then be prepared, for use by-and-bye.

Ferns are propagated not only by their spores, but also by division. In the former instance, the spores, which retain their vitality for a considerable period, and so may be obtained from any dried specimens in the herbarium, should be shaken out carefully on white paper, and then sparingly scattered over the soil, which should be an inch or so below the rim of the pot; then cover with a piece of glass, or, better still, a bell-glass, and place the pot in a shady place, standing in a saucer, which must be kept full of water. Very soon you will see little green patches, like



liverworts, springing up, and then you may admit a little air ; and soon transplant them, as otherwise they are sure to be too thick, and fog or kill one another.

To propagate by *division*, which, after all, is, perhaps, the easiest plan for the amateur, break the ball or root into several pieces, taking care that each has a crown, or, if a creeping fern, some eyes, and plant these pieces in pots. In the first potting, use very small pots, repotting into larger ones, and renew the soil when necessary.

Having potted your ferns, plunge them to the rim in the beds of ashes which you have previously prepared in your shed ; and some moss or lycopods placed on the top of the pot not only make it look more graceful, but assist the quick growth of the plant.

If a *close* frame is available, newly-potted plants will form their fronds and roots by being placed in it for a few weeks.

On the very important subject of watering ferns, we may quote a few apt remarks from the "Cottage Gardener," which, although relating principally to plants in the Wardian case, are equally applicable to those under shelter :



“How often to give water is somewhat a difficult matter to answer, so much depends upon whether the sun shines on the case, whether the plants are growing and in health, and the retentiveness of the peat in which they are planted, that our answer is rather a vague one, only amounting to this—that if the earth is dry inside, or below the surface, it requires water. If the plants are growing luxuriantly they require more water than when the fronds are matured or going to rest. If the sun shines on the glass, we may expect moisture will be drawn up from the soil by the heat, and, consequently, a small quantity of water will be required. In all the operations of gardening there is not one that requires such nice discrimination, such good judgment, as the timely and proper application of water. It is impossible to give such minute instructions in regard to watering so as to be quite sure we have well informed the operator. *Observation and experience are the best and safest guides.*”

Ferns, when *growing*, will, of course, require a regular supply of water, and what is probably of greater importance, a regular syringing on their fronds.

Here, then, are instructions, as concise as we can make them, on the cultivation and collection of ferns; and we earnestly hope that some of our readers, at any rate, may follow them, if only, as a very popular writer suggests, "to keep alive the remembrance of pleasures and of scenes which keep a coolness in the brain and a freshness in the heart—breathings of fragrance from a green world that sweeten the resting-places in the march of life."

Deep in the side of a mountain dell,  
Where wild flow'rs lurk and zephyrs dwell,  
And insects hum midst the apple's bloom,  
There it is that the wild ferns grow.

And tinkling streams, with music sweet,  
The mosses fair and willows greet;  
And the joyous birds in chorus join,  
Down in the vale where the wild ferns grow.

The "Filmy fern" is the most we prize,  
As its tender fronds meet our wond'ring eyes;  
And we think how sweet with them to dwell,  
Here in this vale where the wild ferns grow.

For bed and food we the "Bracken" seek,  
O'er the hill, and the dale, and the flowing creek;  
And the "Gleichen" rare, with its twining stem,  
Is a dear old friend where the wild ferns grow.



But the "Maidenhair" is our brightest gem,  
With its pale green leaves and its ebon stem,  
And we think of its type in our native land,  
And of days we have spent where the wild ferns  
grow.

And whenever we tire of the world and its din,  
And long to escape from the cares therein,  
There is peace to be found by the bright creek's flow,  
Down in our vale where the wild ferns grow.

## CHAPTER X.

THERE we'll meet  
An old bush friend of mine—the brook  
That babbles o'er its pebbly bed, and sings  
In dreaming cadence unto drowsy ears  
Low modulated stanzas about cool  
Green bowery forest depths through which it came.

MRS. MEREDITH.

**B**UT “all that's bright must fade”—all pleasures must have an ending; and our rambles with so many near and dear friends are drawing to a close; for, not being a crustacean or marsupial, we cannot well subsist on seaweed or gum leaves, and work must be attended to. Yet we plan one more excursion before leaving the seashore, and part at midnight from our companions, each giving the other the strictest injunctions to be sure to “be in time;” but knowing how soon good resolutions are forgotten when the drowsy god has us in his power, we trust no one, and soon after daylight



on a bright March morning are scrambling over fences and bursting open refractory gates, disturbing the usual serenity of Georgetown by knocking with a will at the domiciles of our friends, and not content to leave either until they were convinced that it wasn't "only the milk," or an early visit from the butcher, and were fairly "turned out." A hurried breakfast over, and a steady half-hour devoted to the packing a certain mysterious hamper—(sea-breezes are provokingly appetising, let us again remark *en passant*)—we get our little party in marching order, arrayed in fit costume for fine weather or foul, each bearing his or her insignia of the order in the shape of a basket and rake, and at the jetty we find our small craft awaiting us. A few minutes spent in arranging our cargo, so as to make all trim—(what a nuisance crinolines are in a boat!)—and we pull heartily away, a crisp, refreshing breeze giving more power to our elbows. We look in at Point Effingham, where such glorious *Claudeas* may be found, at the risk of being immersed in the soft, treacherous mud whereon they are left by the tide (from which cause the place has been called "Stick-in-the-mud Point"); and we pull about



Middle Island, picking up stray specimens which lurk amongst the oak-leaved olive *Sargassum* beds surrounding it. But we must not linger long on the way, for our destination is “Yorktown,” on the Tamar, the site of the earliest settlement, now, however, deserted. No one seems to have a care this glorious day, and snatches from “Maritana” and “Trovatore” and our dear old home melodies enliven us as we glide along the still, glassy river, down into which you might peer and hold converse with the inhabitants as they move busily to and fro. But here we are at our landing-place; and now comes some deliberation as to where to bivouac; but a shady nook is soon found (not “*sub tegmine fagi*,” but “*eucalyptorum*”) whereon to lay the luncheon. There is great fun, let us assure you good townsfolk, who remain “in city pent” from year to year—never seeing the wild flowers as they bloom in their respective seasons, or getting a sniff of fresh air at the seashore—and an entire *abandon* connected with an out-of-door luncheon. Everything has to do duty for something else; but for our own part, a hunch of bread (if brown and coarse so much the better), a slice of ham (not cut Vauxhall



fashion), a pocket-knife, and a couch of fern to recline on, and let who will have the luxuries of life. Tin pannikins and empty jars do duty well for cut-glasses. We *might* a tale unfold how, when our hopes were at the highest, at the prospect of having these same pannikins filled!—however, we will only say, “never forget the corkscrew.” Soon we are at peace with all the world—for we are puffing away at our faithful bush friend—with scarcely a sound to disturb us, and recalling old memories and friends, which will spring up at such moments; but we are soon roused from our reveries by cries for “water.” Alas! we are surrounded by it, it is salt; so away we start to reconnoitre, breaking through dense thickets of *Acacia discolor* and honeysuckle, and thick bushes of *Persoonia juniperina* laden with yellow flowers, marshy groves of pinky-white flowering *Cassinia*, low clumps of the “Bracken” fern, under which the modest little *Lycopodium uliginosum* abounds. The place is almost dark with the forest of tall *Eucalypti*, from amidst which we startle wallabies and bandicoots, which afford capital sport for our dogs, who enjoy the run as keenly as ourselves. Many of our early Spring plants—







loath to leave this beautiful world—are again springing up—the pale pink *Caladenias*, the yellow *Hypoxis*, reminding us of the description of one of our poets—

In the woods

A second blow of many flowers appears—

Flowers faintly tinged, and breathing no perfume.

But fruits, not blossoms, form the woodland wreath

That circle autumn's brow.

True enough, for we have the purplish-tinted berries of the Violaceous *Hymenanthera*, the deep purple, pouch-like fruit of the *Billardiera*, which bears such pretty primrose bell flowers early in the season, the blue berries of *Dianella*, the pink clusters of the *Cyathodes*, the peach-coloured ones of *Lissanthe*, the various-tinted olive (*Notelea*) berries, the white of *Leucopogon*, and myriads of others, all combining to impart gaiety to Autumn. Nor should we omit to mention a few Alpine plants from the summit of Mount Wellington, which are bright features in vegetation when almost all else has succumbed to the cold winds and frosts, which make us, indeed, feel that Winter, “old, and cold, and frore,” will soon be with us. The first of these, *Gaultheria hispida*, is most especially



interesting, from its being one of two plants which represent in this island the Natural order *Ericææ*, or true Heaths, and only comparatively recently discovered by Dr. F. Mueller, of Victoria, in the Cobboras mountains. "The replacement," remarks Hooker, in his "*Flora Tasmanica*," "of the *Ericææ*, of all other temperate regions of the world, by *Epacrideæ* in Australia, is one of the most singular phenomena in the geographical distribution of plants; and what is even more singular, the few Australian *Ericææ* which do exist, are confined, with the exception of one of them, to the mountains of Tasmania."

A more beautiful plant than this *Gaultheria*, it is scarcely possible to imagine, particularly when bearing its "wax cluster" of snow-white berries. The flowers, it is true, are small, white, in six to ten-flowered terminal racemes. The plant grows to a height of three to five feet, with woody, hispid stems, having elliptical, oblong, dark green, deeply-toothed leaves, with a small spine arising from each tooth.

Nor is *Aristotelia peduncularis* (originally *Friesia*) one whit the less worthy of admiration; it is the only representative here of the order



*Eleocarpeæ*. The genus is confined to Chili, New Zealand, and Tasmania, and the Chilian species bears an acid, eatable fruit. Our plant grows in shady alpine situations to a height of two to four feet, with slender, tapering stems, leaves opposite or ternate, very variable (as is, indeed, the entire plant,) sometimes one, often four, inches long; and in shape of all forms from elliptical, oval, or oblong, to linear or lanceolate, coarsely toothed, on short stalks, flowers a quarter to half an inch long, white, solitary or fascicled. The berry is obcordate, nearly as large as a cherry, and of a delicate pink tinge. We must not pass over the smallest—though, perhaps, able to hold its own with the largest—of the Epacrids, the *Decaspora thymifolia*, also a Mount Wellington plant. It forms there matted patches of a deep green colour, enlivened by the comparatively large spikes of red flowers.

A loud “cooey” from one of our pioneers proclaims that water is at hand, and we break away through the thick scrub, until we espy him astride a huge tree, refreshing himself from a tin pannikin (he carried the “materials,” we may add,) whilst the pure, bubbling water rippled away under him towards the sea. But our thirst



was almost forgotten in the extreme beauty of the little dell wherein we found ourselves. There were tall bushes of that most lovely of all our native plants, the *Bauera rubiæfolia*, around which twined the zigzag *Gleichenia* fern high overhead ; whilst *Lomarias* and the large graceful fronds of *Todea* formed a dense undergrowth. We seemed never to tire of gathering, incessantly wanting, like Oliver Twist, for "more," and were, with hands and boxes crammed, still unwilling to leave the beautiful pink blooms. "These," remarks Mrs. Meredith, "are not unlike tiny Eglantine roses, on very tender foot-stalks. The leaves, which are placed in whorls all up the stem, are bright green and polished, like the small-leaved Myrtle, the young shoots being of the tenderest yellow green, and the unexpanded buds are the veriest cherubs of flower-angels that can be conceived, so plump and round, and smiling rosily between the slender green points of the calyx." A most charming description !

Creeping with some difficulty, and clearing a path here and there with a tomahawk, we take note of many plants, which, though now out of flower, must, earlier in the season, make this a very paradise on earth. It is our turn now to



“cooey” to the stragglers of our party, for we have discovered a deserted garden, fenced in with a bramble hedge, on which *Blackberries*, real jet Blackberries, were growing in profusion. How the fun of scrambling for the ripest and finest; the scratched, bleeding fingers; the shouts of happy laughter, brought back the days of our boyhood, and made us feel young again, we will leave our readers to imagine.

Ah! those were happy days of yore,  
And, pondering on their pleasure,  
Who would not be a child once more,  
The wild wood-fruits to treasure.

Although we started at early morning, yet a glance at the sun warns us that it is time to wend our way homewards, so we “make tracks” for our boat, and re-embark—after pacing the shore for a few hundred yards to admire the elegant bushes of *Cyathodes divaricata* with its coral-like berries, and here we met with some other interesting shrubs, *Cyathodes Oxycedrus* and *Monotoca elliptica*, both of the Epacridaceous family.

It is agreed on all hands that we must stay awhile at the famous Seaweed Point on our



homeward route, just to see what might turn up; so we pull all we know to arrive before the tide shall be too high to admit of an overhaul of the treasures lying there. Here we are at last—"Steady there, and keep her afloat well into the shore;" now then for business! Scattered as our party is at various distances through the entire length of the boat, it is well-nigh impossible that anything can escape; here are fragments of the pretty green moss-like *Caulerpa hypnoides*; long fronds of the feathery, rose-coloured *Dasya hapalathrix*, so exquisitely figured in Harvey's *Phycologia*, at plate 88; tangled masses of olive, brush-tipped *Sporochnus*; long slender stems of the *Sargassum Raoulii*, with its beautiful golden vesicles; and others of which mention has already been made; but vainly do we search for the delicate, rosy *Martensia Australis*, or the "Holy coat," and so must rest content with our sport, as the sun is setting, and we have yet some distance to go. "There is so much," says Harvey, "to be enjoyed on the seashore, when the mind is once opened to the pleasure afforded by the study of natural history, that no other stimulus is wanted to keep the interest of the visitor constantly awake. Instead



of finding his time hang heavy, he will often wonder how rapidly the long summer day has flown by, whilst he has been occupied with some investigation, in the midst of which darkness overtakes him." So "give way my lads," for all our gatherings must be laid out to-night. Here we are at last at the jetty, not very presentable truly—but a thorough change of attire, a comfortable pair of slippers, and the least taste in life of a fire, and we sit down to our kind host's evening meal with as much energy as ever; that over, the deep dishes and pails of fresh water are brought in, thick cartridge paper cut into squares, and piles of blotting paper set by our side. It is a merry party—each one vieing with the other to produce the greatest novelties, hair-breadth escapes of being drowned in the mud, distressing tales of goloshes lost, irretrievably lost, related, yet all working busily the while. "What a long time they must have taken you to prepare," is a common remark of friends on looking through our Algæ; but it is not the laborious task which some persons imagine, to anyone at least possessing a particle of patience; and then again, every specimen unfolds its own beauties as it expands in the water. Watch the



process now for a few minutes. We carefully sort, you see, on a piece of white paper spread at our side, the olive from the green, and the green from the red, carefully keeping together the smaller ones which are likely to be mislaid, and those which experience has taught us decompose rapidly, and consequently need immediate attention. A few specimens are then thrown into fresh water, of which a large bowl stands near, and after cleansing them well from sand and other extraneous matter, a single specimen is selected and placed in a large deep dish, also filled with clean fresh water; and at a glance we see as it opens out what to preserve; if too large, small portions are detached, care being taken always to select specimens with fruit on them. Now, then, it is within the prescribed limits, and is pretty naturally expanded, so we place underneath it one of our squares of cartridge paper, and with the fingers or a soft camel's hair brush lay out refractory branches, until it is quite flat on the paper; then placing a small piece of perforated zinc under all, we lift it gradually from the dish, so as not to disarrange it, and when the water has drained off, it is placed on a sheet of white blotting paper. This



process goes on until the sheet of blotting paper is filled, and over it we place lightly half-a-dozen more; then more specimens, another layer of paper, and so on, until our basket is emptied. There are gelatinous specimens, and experience alone will be a guide as to which they are, that require small pieces of fine muslin or linen placed over them, so as to prevent the blotting paper adhering; and it may be freely done to a large number, as it is too late to remedy the mischief when, on turning over our plants some morning, we discover that some of the most valuable are totally destroyed by neglecting this precaution.

The pressure for the first twenty-four hours should only be gentle, but uniform; then the blotting-papers should be changed for dry ones, and greater pressure used. Many persons press the specimens under a screw-press; but we find that two or three well-seasoned boards, secured at top and bottom by wide leather straps and buckles, answer every purpose, and have this recommendation—that they are easily transported from place to place, and the pressure can be gradually increased by tightening the straps. When the specimens are thoroughly dry they



may be taken out; and the date, and place where gathered, should at once be placed in ink on them, for guidance hereafter, when a more critical investigation of them is desired. Never trust to memory—jot down all you wish to record at once; for the great Humboldt, in his charming work, “Aspects of Nature,” tells us, “That which is written down on the spot, either in the immediate presence of the phenomena, or soon after the impressions which they produce, may at least lay claim to more life and freshness than can be expected in recollections.”

In collecting specimens to send home, should the previous process be deemed too tedious, Professor Harvey, in his “*Nereis Australis*,” recommends that they be spread out thinly to dry, without squeezing or washing, until completely shrivelled, but sufficiently dry to prevent fermentation; the salt preserves them from decay, and keeps them, by its slight deliquescence, in a pliant state; but they cannot ever be compared with those done at once in the manner we have described.

As to the subsequent arrangement of Algæ, we refer our readers to a chapter on the subject in “Sea and Riverside Rambles,” (Walch and



Sons), as we have other matters to speak of in the little space left us.

Many of our beautiful Starfishes remain uncollected, from the often repulsive appearance which they present when lying cast up on the shore; but the process of preservation is a simple one. It is merely necessary to plunge them into cold fresh water, which rapidly kills and cleanses them from all sliminess; then have them wiped dry and placed in an open window, where they will get air and sun, occasionally throwing a few drops of spirits of wine into the furrows wherein the suckers lie, to correct any unpleasant smell which may arise; and in a day or so they will be fit for the cabinet. Sea Eggs (*Echini*) must also be killed by plunging into cold fresh water, which also fixes the spines; and the inside should be carefully and frequently rinsed after removing the large teeth, and sweetened by a little spirit. When dry the dental apparatus may be restored, and the specimen placed in the cabinet.

A great number of valuable shells may be found among the rocks and pools near the shore, and under overhanging ledges of rock, all which should be carefully preserved, no matter



how small or how ugly—they have all their allotted place. *Univalves* are easily preserved, after immersion in boiling water, to remove the animal, which, if needed for examination, or for its lingual plate, may be put into glycerine; but *Bivalves* require more care, as it is essential that the valves should not be separated. The *opercula* of Univalve-shells should always be carefully preserved, and attached to the shell to which it belongs.

The best plan to remove Chitons, Barnacles, Limpets, etc., is suddenly to slip a thick paper or flat-bladed knife underneath them, and so jerk them off. The only way to preserve *Chitons* is to place them between two boards, under sufficiently heavy pressure to prevent their curling or twisting. According to an experienced Conchologist, the *Haliotideæ* can only be detached by pouring warm water over them, giving them a sharp push with the foot sideways at the same time.

Sponges may best be preserved by merely soaking them for a few hours in fresh water, and then drying them in the air. *Polyzoa* can be generally dried like seaweeds; but when living specimens are dredged, or found, on

Algæ, fragments may be placed in a small bottle of spirits.

And now, then, dear friends and readers, we must part! May we, in conclusion, most earnestly hope that some good has resulted from our bush rambles together; that much as we have all admired the manifold beauties of Nature, we have still borne in mind the great Author of all, who, in these humble plants, teaches us the great lesson, that we grow up and flourish for a season, and die; but, like the spring-flowers, bloom again hereafter, where no cold winds shall disturb us, but there shall be an everlasting summer with Him on high. If this end has been attained, we are satisfied. FAREWELL!

Shall he, who 'mid such beauty walks,  
Say, shall he longer doubt  
That if such glory has been lent  
To clothe the humblest flower,  
Much more God's mercy shall be sent  
To keep him hour by hour.





# Journal

At the University of  
Chicago, Illinois, U.S.A.  
The following is a list of  
the names of the persons  
who have been associated  
with the University of  
Chicago, Illinois, U.S.A.  
in the past few years.  
The names are arranged  
in alphabetical order.  
The names are as follows:  
Name: [illegible]  
Address: [illegible]  
Occupation: [illegible]

## TASMANIAN FERNS.

---

Gen. I. GLEICHENIA. Smith.

*Gleichenia microphylla*. Brown. Zig-zag Fern.

Common in loose forest land, creeks  
at Georgetown, Yorktown, Piper's  
River.

„ *dicarpa*. Brown.

Abundant, especially in subalpine  
districts.

„ *flabellata*. Brown.

Damp, shady places ; not very com-  
mon. Yorktown.



## Gen. II. ALSOPHILA. Brown.

*Alsophila Australis.* Brown. Australian grove-loving fern.

Shady forests, Macquarie Harbour,  
Asbestos Hills, Georgetown.

## Gen. III. DICKSONIA. L'Hérit.

*Dicksonia Antarctica.* Lab. Tree Fern.

Abundant in damp, especially sub-alpine forests.

„ *dubia.* Gaud.

## Gen. IV. HYMENOPHYLLUM. Sm.

*Hymenophyllum Tunbridgense.* Sm. Tunbridge Wells Filmy Fern.

Shady places on rocks and trees.  
About Launceston, at Distillery  
Creek, on rocks at the Cataract, and  
on the Tree Fern at Ringarooma.

„ *unilaterale.* Willd.

On trunks of trees in damp forests;  
common.

*Hymenophyllum rarum.* Brown.

Abundant in damp forests, often clothing trunks of *Dicksonia Antarctica*.

„ *crispatum.* Wall. Crisped-wing Filmy Fern.

Damp woods; abundant on stones and trunks of trees.

„ *flabellatum.* Lab. Fan-leaved Filmy Fern.

Damp forests, abundant, especially on Tree Ferns.

Gen. V. TRICHOMANES. Sm.

*Trichomanes venosum.* Brown. Forked-veined Bristle fern.

Abundant, clothing the trunks of Tree Ferns.

Gen. VI. CYSTOPTERIS. Bernh.

*Cystopteris fragilis.* Bernh.

Moist rocks.



## Gen. VII. LINDSÆA. Dry.

*Lindsæa linearis.* Sw.

Abundant in heathy places.

,, *trichomanoides.* Dry.

Dense forests near Macquarie Harbour.

## Gen. VIII. ADIANTUM. Linn.

*Adiantum Æthiopicum.* Linn. "Maidenhair."

In rocky places, behind logs of wood, etc.; common.

## Gen. IX. HYPOLEPIS. Bernh.

*Hypolepis tenuifolia.* Bernh.

Not uncommon in forests.

## Gen. X. CHEILANTHES. Sw.

*Cheilanthes tenuifolia.* Sw.

Abundant in crevices of rocks everywhere.

## Gen. XI. PTERIS. Br.

*Pteris falcata*. Brown. Falcate-leaved Brake.

Common in forests, etc.

„ *esculenta*. Forst. Common Brake Fern.

Abundant everywhere.

„ *tremula*. Brown.

In shady places.

„ *incisa*. Thunb.

Common in damp woods.

„ *Endlicheriana*. Agardh.

Damp, shaded ravines in the forests.

## Gen. XII. LOMARIA. Willd.

*Lomaria Patersoni*. Spr.

Port Dalrymple.

„ *procera*. Spr.

Abundant in wet, shady places  
through the island.

„ *fluviatilis*. Spr. Water-loving Lo-  
maria.

Covering shady places near the  
Acheron River.



*Lomaria Vulcanica.* Blume.

Franklin River, and other mountainous parts of the colony.

„ *lanceolata.* Spr. Lanceolate Lomaria.

Abundant in subalpine moist forests, etc., by streams of water.

„ *discolor.* Willd.

Abundant in damp forests. In a creek at the Cataract, Launceston.

„ *alpina.* Spr.

Abundant in boggy places, and tops of all the mountains.

### Gen. XIII. ASPLENIUM.

*Asplenium flabellifolium.* Cav. “Fan-leaved Spleenwort.”

Common everywhere in stony places.

„ *Trichomanes.* Linn. Trichomanes-like Spleenwort.

In rocky places.

„ *obtusatum.* Forst. Blunt-leaved Spleenwort.

On maritime rocks, Tamar Heads, etc.

*Asplenium lucidum*. Forst. Shining Spleenwort.  
Mount Wellington.

„ *bulbiferum*. Forst. Bulb-bearing  
Spleenwort.

In damp woods throughout the  
island.

„ *flaccidum*. Forst.

Not uncommon on exposed rocks.

„ *Brownii*. J. Sm. Brown's Spleenwort.  
Not rare in dense shaded forests.  
Fingal and Circular Head, Huon, etc.

Gen. XIV. DOODIA. Brown.

*Doodia caudata*. Brown. Tail-fronded Doodia.  
Abundant in dry, stony places, as  
well as in shaded situations.

Gen. XV. POLYSTICHUM. Schott.

*Polystichum coriaceum*. Schott.

St. Patrick's River, Mount Wel-  
lington, etc.

„ *vestitum*. Presl.

Mount Wellington, Punch Bowl,  
near Launceston, etc.



## Gen. XVI. NEPHRODIUM. Br.

*Nephrodium decompositum.* Brown.

Woods near Hobart Town.

## Gen. XVII. POLYPODIUM. Presl.

*Polypodium rugulosum.* Lab.

Abundant in damp woods.

„ *Grammitidis.* Brown.

Forming matted patches on rocks.

## Gen. XVIII. PHYMATODES. Presl.

*Phymatodes Billardieri.* Presl. }

*Polypodium* ——— Brown. }

Abundant on rocks and trunks of trees. Punch Bowl, Cataract, Distillery Creek, and about Launceston; equally common about Hobart Town.

## Gen. XIX. GRAMMITIS. Sw.

*Grammitis Australis.* Brown.

Abundant on damp rocks and trunks of trees throughout the island.

## Gen. XX. GYMNOGRAMMA. Desv.

*Gymnogramma rutæfolia.* Hook et Grev. Rue-  
leaved Gymnogramma. Common  
in shaded, dry, stony places.

„ *leptophylla.* Desv.

Spring Bay, in a cave near the  
Tamar. Gunn.

## Gen. XXI. SCHIZÆA. Sm.

*Schizæa bifida.* Sw.

Heathy places at Georgetown and  
elsewhere.

## Gen. XXII. TODEA. Willd.

*Todea Africana.* Willd. }  
*Osmunda barbata.* Brown. }

Fringing the banks of the York-  
town rivulet, where it is abundant.  
Recherche Bay.



Gen. XXIII. OPHIOGLOSSUM. Linn.

*Ophioglossum vulgatum*. Linn. Common Adder's  
Tongue.

Common amongst grass, but easily  
overlooked.

Gen. XXIV. BOTRYCHIUM. Linn.

*Botrychium Virginianum*. Sw. } Australian  
„ *Australe*. Br. } Moonwort.  
„ *Lunaria*. Sw. Common Moonwort.  
Both in grassy, shady, moist places.

NAT. ORD. LYCOPODIACEÆ. D.C.

Gen. I. PHYLLOGLOSSUM. Kunze.

*Phylloglossum Drummondii*. Kunze. Drummond's  
Leaf Tongue.  
Georgetown.

Gen. II. TMESIPTERIS. Bernh.

*Tmesipteris Fosteri*. Endl. Foster's Notch Fern.  
Hanging from trunks of Tree Ferns,  
Rocks, &c.

## Gen. III. LYCOPodium. Lin.

*Lycopodium Selago*. Linn. Selago-like Wolf's foot.

In bogs, at Mount Wellington.

„ *varium*. Brown. Variable Wolf's foot.

On the ground and trunks of trees.

„ *densum*. Lab. Dense-leaved Lycopodium.

In heathy places throughout the island.

„ *laterale*. Brown.

„ *Carolinianum*. Linn.

Boggy situations ; not uncommon.

„ *clavatum*. Linn. Nail-shaped Wolf's foot.

Moist, boggy, subalpine places ; frequent.

„ *scariosum*. Forst.

Common in boggy places on the mountains.

## Gen. IV. SELAGINELLA. Beauv.

*Selaginella uliginosa*. Spreng.)

*Lycopodium uliginosum*. Lab.)

Hobart Town, Georgetown, etc., in marshy places.



## Gen. V. ISOETES. L.

*Isoetes.* Quill-wort.

At the bottom of Alpine lakes;  
abundant.

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## NAT. ORD. MARSILEACEÆ. BR.

## Gen. I. AZOLLA. Lam.

*Azolla rubra.* Brown. Velvety red Azolla.

Floating on the surface of marshes  
or ponds.

## Gen. II. PILULARIA. L.

*Pilularia globulifera.* Linn. Pillwort.

Marshy ground near Penquite.  
Gunn.

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## NAT. ORD. CHARACEÆ.

## Gen. I. CHARA. L.

*Chara Gymnopitys.* A. Braun.

Derwent, Rivulets at Launceston,  
South Esk.

*Chara myriophylla.* F. Mueller.

South Esk River, ponds at Georgetown, etc.

„ *Australis.* Brown.

South Esk River.

„ *leptopitys.* A. Braun.

Mixed with *Triglochin.* Georgetown, near the sea; in places dry in summer.

„ *Hookeri.* A. Braun.

South Esk River, near Perth.

„ *mollusca.* A. Braun.

Lake St. Clair; abundant.

„ *fragilis.* Desv.

Derwent River at Glen Leith.

„ *macropogon.* A. Braun.

Brackish water, at Georgetown, with *Ruppia.*

Gen. NITELLA. Aq.

*Nitella glæostachys.* A. Braun.

South Esk River.



*Nitella Hookeri.* A. Braun.

York Town, Lake St. Clair.

„ *penicellata.* A. Braun.

Tasmania.

„ *diffusa.* A. Braun.

Distillery Creek, Launceston, rivulets near Penquite.

„ *gelatinosa.* A. Braun.

Rivulets near Launceston, St. Patrick's River, etc.

„ *Gunnii.* A. Braun.

South Esk River.

John W. Blair

1832

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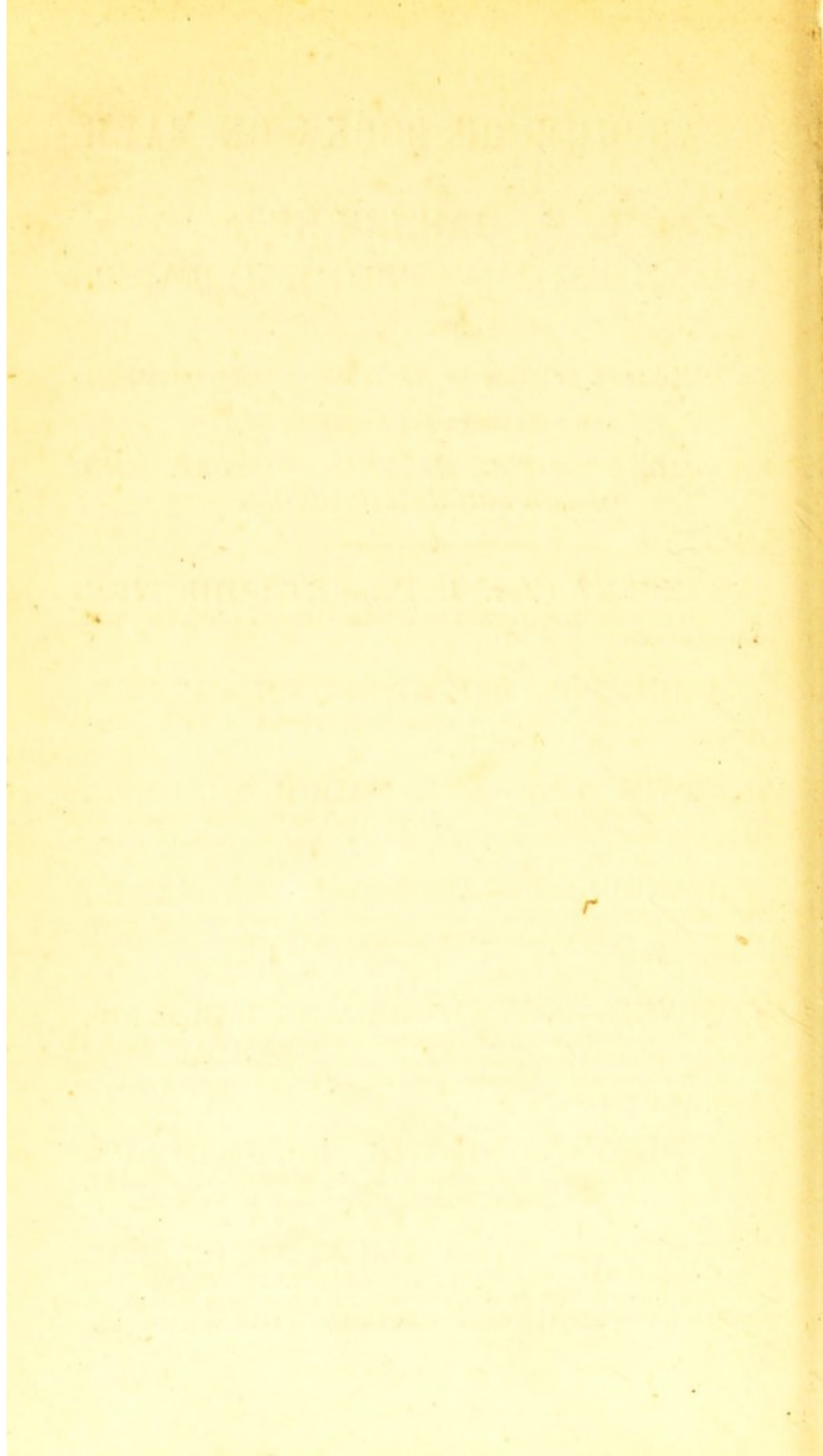
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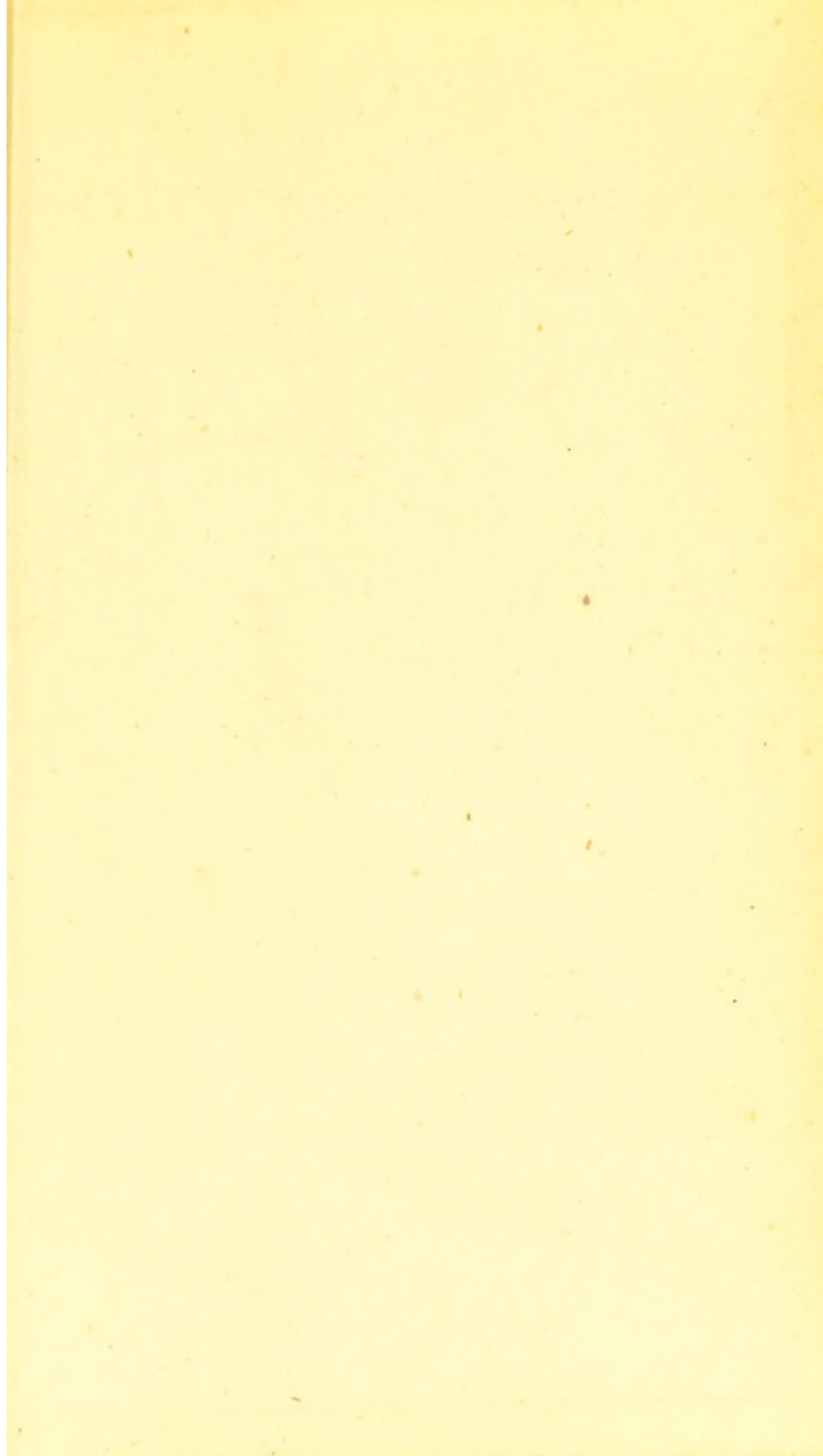
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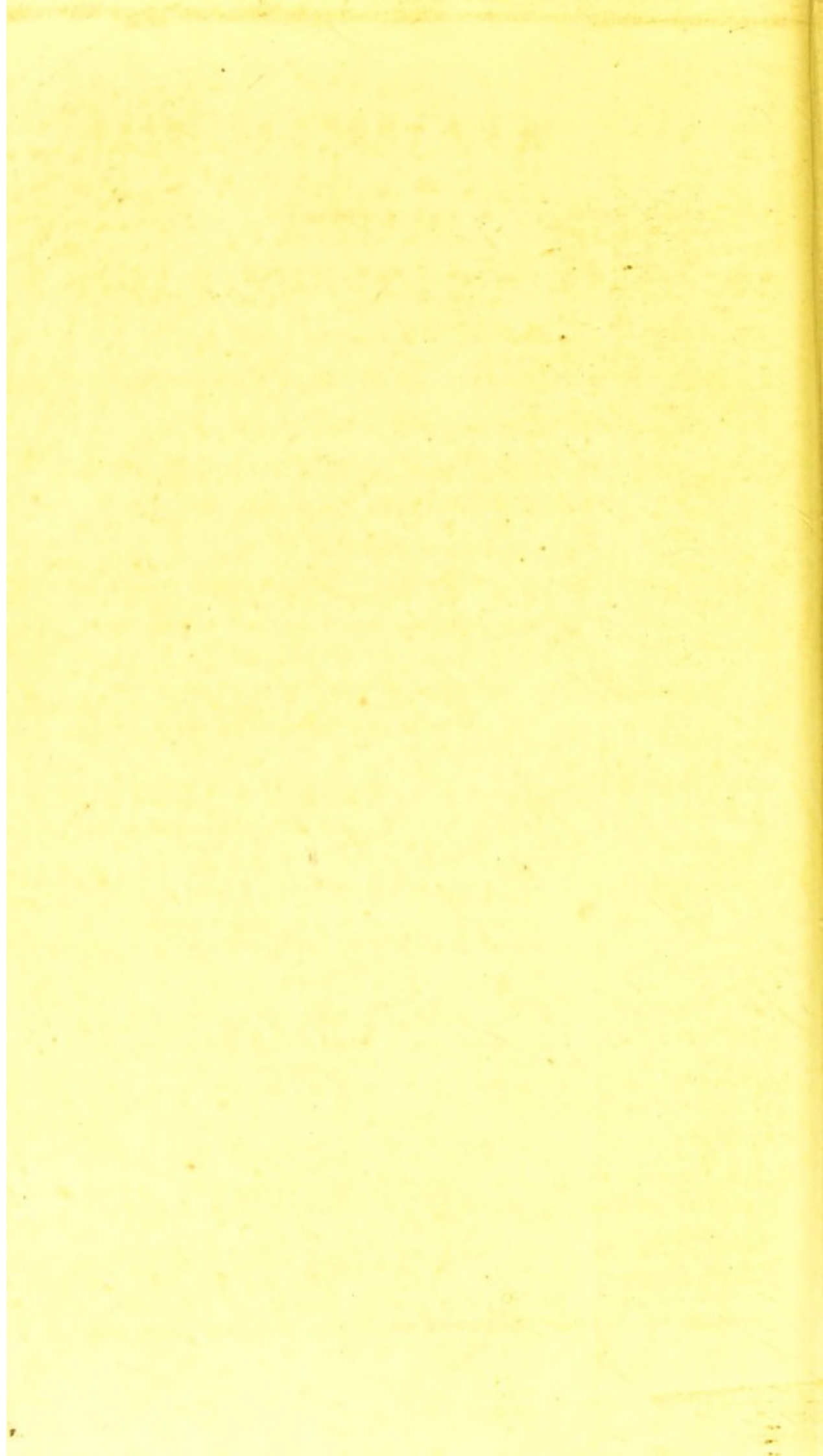
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