

**The Project Gutenberg eBook of Chambers's Journal of Popular Literature,  
Science, and Art, No. 701, by Various et al.**

This ebook is for the use of anyone anywhere in the United States and most other parts of the world at no cost and with almost no restrictions whatsoever. You may copy it, give it away or re-use it under the terms of the Project Gutenberg License included with this ebook or online at [www.gutenberg.org](http://www.gutenberg.org). If you are not located in the United States, you'll have to check the laws of the country where you are located before using this eBook.

Title: Chambers's Journal of Popular Literature, Science, and Art, No. 701

Author: Various

Editor: Robert Chambers

Editor: William Chambers

Release date: November 6, 2014 [EBook #47299]

Language: English

Credits: Produced by Susan Skinner and the Online Distributed  
Proofreading Team at <http://www.pgdp.net>

\*\*\* START OF THE PROJECT GUTENBERG EBOOK CHAMBERS'S JOURNAL OF POPULAR  
LITERATURE, SCIENCE, AND ART, NO. 701 \*\*\*

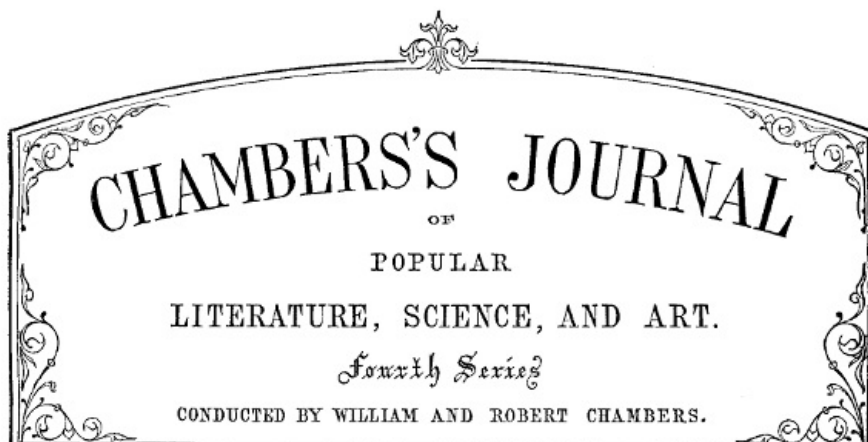
---

**CHAMBERS'S JOURNAL  
OF  
POPULAR  
LITERATURE, SCIENCE, AND ART.**

{337}

**CONTENTS**

[WINDOW WILLIE](#)  
[THE LAST OF THE HADDONS.](#)  
[THE STORY OF THE PRISM.](#)  
[THE ROMANCE OF A LODGING.](#)  
[MYSTICAL PLANTS.](#)  
[MEMORY.](#)  
[GOSSIP ABOUT TAILS.](#)



# WINDOW WILLIE

## A TWEEDSIDE TRADITION, BY W. CHAMBERS, LL.D.

CROSSING the tall and narrow old bridge of several arches which spans the Tweed at Peebles, is seen an aged gentleman riding composedly on a small white pony. His head is bent droopingly down, as if meditating on some important mission. From his general aspect, he may be a gentleman-farmer, disposed to take things easily at his time of life; or he may be some retired public official who keeps a pony, and in good weather pops about for amusement. His dress has nothing particular about it. He wears a blue coat with metal buttons and capacious outside pockets. His legs are endued in buff breeches, white rig-and-fur woollen stockings, and black spats, a kind of short gaiters, over the ankles. Any one may observe that he is no common person. At the end of his watch-chain dangle a gold seal, a Queen Anne sixpence, a small and very pretty shell, and a flexible watch-key. Instead of using a riding-whip, he has in his right hand a perfectly respectable gold-headed cane, with which he occasionally gives a gentle pat on the side of the pony. Altogether a creditable affair, as things went towards the end of last century.

This imposing personage, according to tradition, was proceeding in a southerly direction across the bridge from his residence at Cabbage Hall, on Tweed Green, in order to pursue his way down the right bank of the river to the mansion of Traquair. It is a pleasant ride of seven to eight miles; and looking to the leisurely progress of the little nag, it is not unlikely he may reach his destination in an hour and a half. So far well. But who is this venerable gentleman? His proper designation is of no consequence. Locally, and somewhat irreverently, he is known as Window Willie, a man of genial temperament, but who professionally commands a degree of respect in the neighbourhood; for he is the district inspector in relation to the tax on window-lights, and it is not surprising that with all his good humour people are a little afraid of him.

Is Window Willie going to inspect windows in that old weather-beaten château of the Earl of Traquair? Not at all. He is a chum of the old Earl, and what his particular business happens to be on the present occasion will afterwards appear. In the meantime, as paving the way for Window Willie's interview, we may run over a few particulars concerning the Traquair family. There need be the less ceremony in speaking of them, as all have gone to their rest. The family is extinct, leaving not a shred behind.

The Stewarts of Traquair come first prominently into notice in the reign of Charles I., 1628, when Sir John Stewart of Traquair, Knight, was raised to the peerage as Lord Stewart of Traquair, and shortly afterwards elevated to the dignity of Earl of Traquair, Lord Linton, and Caberston. In looking into history, we cannot discover that this gentleman had a single good quality. Like too many at that period, he was a time-server, devoid of anything like settled principle. In politics and religion he discreetly sided with the uppermost—a Puritan or an Anglican of the Laud type, whichever seemed to promise to pay best.

There is a very curious old book, which few know anything about, called the '*Staggering State of Scots Statesmen, for one hundred years from 1550 to 1650*, by Sir John Scot of Scotstarvit.' It was printed from a manuscript in 1754, and is exceedingly rare. This little book is full of amusing gossip about the wretchedly struggling noblemen and officers of state at that unhappy period of Scottish history, during a large portion of which the central ruling authority was in London, and only a delegation of subordinates, who domineered at will, in Edinburgh. These subordinates were needy Scotsmen, of whom for more than a century hardly a good word can be said. They did as they liked, plundered and tyrannised without mercy. The *Staggering State* gives an awful account of them. Among the whole, none was such an adept at looking to his own interest as the newly created Earl of Traquair. Appointed Lord High Treasurer, he 'managed matters so nimbly' that in a short time he was able, by purchase, to vastly extend the possessions of the family. He also enlarged the old mansion at Traquair, and made a handsome avenue lined with trees as an approach.

{338}

When Charles I. got into trouble, the Earl of Traquair for a time stuck to his cause, which in a half-hearted way he afterwards thought fit to desert. The Commonwealth under Cromwell proved a sore trial to every class of home-rulers in Scotland. A stern system of honesty and justice was introduced, at which the native nobility and judges stood aghast. Monopolies were abolished. Free trade was established between England and Scotland. Very hard all this on those who had been pocketing the public money, thriving on monopolies, and selling justice to the highest bidder. Turned out of office, and his estate being sequestrated, the Earl of Traquair was ruined. By some manœuvre, his son Lord Linton had the address to save for himself and his heirs at least a portion of the family property, and was able to keep house at Traquair, while the Earl was exposed to vicissitudes, uncheered by public respect or sympathy. Lord Linton can hardly be acquitted of having acted an unnatural part towards his father. He allowed him to drop into such extreme poverty that he was fain to accept an alms from an old friend, and to dine on a salt herring and an onion. Broken in spirit, he died in 1659; and as evidencing the meanness of his circumstances, it is recorded that at his burial there was no pall, but only a black apron over the coffin.

So ended the first Earl, who though not without the faults common to the period, was at least an historical personage. His son, the second Earl, was noted only for scandalous irregularities, and by him Roman Catholicism was introduced into the family, through his marriage with Lady Anne Seton. He was succeeded by his elder son, William, as third Earl; and he was succeeded by his brother, Charles, as fourth Earl, who married Lady Mary Maxwell, daughter of the fourth Earl of Nithsdale. We need say nothing of the fifth Earl. In the sixth Earl we begin to have a living

interest. He had a son, Charles, and three daughters, Christiana, Mary, and Lucy. Lady Christiana caused serious trouble in the family by what was deemed a *mésalliance*. The story is that she fell in love with a young man named Griffiths, who as a lawyer's clerk had visited Traquair on some piece of business, married him—and was disowned. There is no doubt of the marriage, whatever might have been the position of Mr Griffiths; for it is recorded in the *Peerage* of Sir Robert Douglas. Descendants of Lady Christiana are still living, we believe, in America.

The Ladies Mary and Lucy do not appear to have been married. As genteel spinsters they lived in the Canongate, Edinburgh, which even in their time had not been entirely deserted by noble families. Charles, their brother, who succeeded as seventh Earl in 1779, and was already married, dwelt for a time in Edinburgh. There to him was born a daughter, Louisa, 20th March 1776; and a son, Charles, 31st January 1781. After the birth of the two children, the Earl and his Countess spent most of their time at Traquair House. Here, for a number of years the Earl flourished, if it can be called flourishing, the more appropriate term being vegetating, at the period when Window Willie was in his glory.

There lingered some traditions of the Countess of Traquair in our young days. She was an invalid. The rumour in Peebles was that she had been afflicted with an 'eating cancer in her great toe.' Whether there was any truth in the report we cannot tell. All we know is, that the ailment of her Ladyship gave rise to a droll and popular myth. The cancer being an 'eating' cancer, required something to eat. If it was not properly provided with food, it would eat off her Ladyship's foot, and finally eat her up bodily. To avert this calamity, it was customary—so ran the legend in Peebles—to provide the cancer every morning regularly with a fresh pigeon, which it devoured with a relish in the course of the day, and so the foot of the Countess was luckily saved. The gossip about the daily consumption of a pigeon was possibly a piece of nonsense. At anyrate, the Countess having been much of an invalid, the old Earl her husband sought to amuse himself in a way, immediately to be specified.

We are now ready for the interview with Window Willie, who has been jogging on his way to Traquair. For the last hour the Earl had been expecting him, and now and then looks out from a small apartment with a low ceiling to see his approach down a side avenue. There at length he comes on his little white pony; and giving the animal to a groom, he enters the antiquated mansion.

'Glad to see you,' said the Earl. 'I've been out of work for a week; at least hardly anything to do. I hope you have brought something. How many have you got?'

'Well, my Lord,' replied Willie, 'I think I have made a pretty good haul. I have just returned from my circuit in the western district of the county, and have managed to pick up a round dozen.'

'That will do capitally. Lay them out carefully in a row, and tell me to whom they belong.'

So requested, Window Willie disburdened himself by drawing from his pockets a dozen razors in their respective cases, some of them having a very common appearance, and he proceeded to arrange and specify them as follows:

'There's one from Dickson of Hartree; one from Loch of Rachan; one from Murray at Drachal; one from Kerr, minister of Stobo; one from Marshall, minister of Manor; and one from Bowed Davie; it's sair lippit, but it will stand grunden. That makes six. Then comes one from Mr Findlater, the minister of Newlands; next one from Sir James Naesmyth; one from Robbie Symington at Edston; one from Mr Alexander at Easter Happrew; one from Toll Tammie at the Neidpath, which I got yesterday in passing; and last of all, one from your lordship's friend and adviser, Commissary Robertson, at Peebles. That makes the dozen.'

{339}

The row of razors made a splendid array, and put the Earl in high spirits. Window Willie must stay to dinner to talk over his adventures in securing the razors, for each has its story, which will furnish some amusement. Willie, of course, as he had expected, dines with the Earl, and pops home to Cabbage Hall in the evening.

Not to keep the reader in suspense: The Earl of Traquair had a profound passion for sharpening razors. Thankfully and gratuitously his Lordship sharpened not only all the razors of his tenants and their servants, but of all the landed gentlemen, farmers, and traders throughout the county who would favour him with a commission of the kind. In his time, no one in Peeblesshire needed to torture himself by shaving with a blunt razor. Of course, the razors were not sent for sharpening in a business fashion. Window Willie's professional rounds gave him an excellent opportunity of collecting razors for the Earl, and of returning them properly cuttled to their proprietors. When he brought one batch he took away another. It was a satisfactory arrangement all round. The Earl was delighted to be kept working at his favourite pursuit; people were glad to get their razors on all occasions sharpened for nothing; and Window Willie was pleased to have an employment which made him everywhere an acceptable guest, and afforded opportunities of visiting at Traquair. I happen to have an agreeable remembrance of various persons in Peebles telling me several of the foregoing particulars, and of how Window Willie used to call to ask if their razors did not want a little touching up, as he was going next day to visit the Earl.

The world was not then constituted exactly as it now is. Nobody thought there was anything particularly strange in an Earl sharpening razors as a recreation. It was a harmless hobby; and, besides, there was a gratification in thinking that your razor was put in trim by a nobleman. The Earl of Traquair was a general benefactor. He was a sort of artist. He should have been born and bred a cutler, in which capacity he excelled; but as he had the misfortune to be born an heir to an earldom, he had just to make the best of it. As for Window Willie, he seemed to have been born to be the Earl's provider with blunt razors to be sharpened; in which line he acquitted himself

admirably. Working to each other's hands, they in their time kept the county well and comfortably shaved, and that is saying a good deal in the way of eulogium.

The Earl had another eccentricity. He did not patronise London or Edinburgh tailors. After some experience, he had a firm belief that no man could make clothes for him that would thoroughly fit but Thorburn, a tailor at Eddleston, a small village of forty to fifty houses, close to Darnhall, the residence of Lord Elibank. We have never heard how the Earl discovered Thorburn; in all likelihood he heard of him through his factotum, Window Willie, who knew something of everybody. Having tried, he stuck to Thorburn. One thing materially guided this selection. Thorburn was exactly his own shape, body, legs, and arms. That was a great point. The Earl had an invincible hatred of putting on new-made clothes, which required some time to settle down into the required figure, and were at first a little awkward. Thorburn was an accommodating fellow. He volunteered to wear the Earl's new clothes for a day or two, to give them a set. The obliging offer was accepted. When the Earl wanted a new pair of black velvet breeches, Thorburn took care to wear them for a Sunday at church, which gave the legs the appropriately round baggy form, and then they were ready for use. By the agency of Window Willie and his little pony, the garment safely reached Traquair House.

Dear old Earl, and dear good-hearted Window Willie! Both have long since passed away. The beards of the county are said to have been sensibly affected by their decease. Charles, the eighth Earl, had unfortunately none of his father's aptitude for razor-sharpening. As a bachelor and a recluse, he was mainly noted for effecting improvements on his various farm-steadings, which was by no means a bad hobby for a nobleman. Partly perhaps on account of a stammering in his speech, he shrank from general society, and vegetated till the last in the queer antiquated mansion of his forefathers, in the society of his only sister, Lady Louisa Stuart. We had the honour of several interviews with him in relation to railways for the district, and could not help feeling pained with that distressing stammer. A very curious fact afterwards came to our knowledge. The Earl having spent a number of his early years abroad, acquired a proficiency in speaking French, which he ever afterwards retained. When he spoke French, he never stammered! At his decease in 1861, the male line and peerage became extinct; and on the death of Lady Louisa Stuart in 1875, in the hundredth year of her age, all the family had departed, the property devolving by will on a distant relative. Traquair House, which looks like two ancient feudal keeps rolled into one, remains embosomed in trees almost as it was left by the Lord High Treasurer upwards of two hundred years ago, and as it used to be visited of old by Window Willie.

W. C.

---

## THE LAST OF THE HADDONS.

### CHAPTER XXVI.—PREPARATION.

GREAT was my relief the next day when, on Lilian and I returning from a ramble in our beloved woods, we heard Robert Wentworth talking to Mrs Tipper in the parlour. But at first sight of him, I shrank back. How altered he looked, how terribly altered since we had last met! The kind little lady's hurried explanation as we entered the room, that illness had kept him away, gave me another blow, and he saw that it did.

'Only a sort of cold,' he cheerfully explained, extending his hand towards me with a smile. 'How do you do, Mary?'

My own hand shook; but he kept it long enough in his own to steady it, giving me a reassuring look before releasing it. {340}

But Lilian could not get over the shock which the first sight of him had given her, involuntarily exclaiming: 'But I fear you have been ill—very ill; and it has made you quite'— She paused, not liking to go on; but he lightly replied: 'Gray, do you mean? My dear Lilian, the gray season had set in long ago, only you saw me too frequently to notice it.'

Mrs Tipper laid her hand for a moment on his shoulder as she passed him on her way out of the room to prepare some special dainty to tempt him at tea-time; and I noticed that she was looking much graver than usual.

'And how have you been going on with your work during my absence?' he asked; 'not carelessly, I hope? I am in the humour to be very exacting and critical to-night; so you must not expect me to treat sins of omission or commission with my usual amiability.'

'Amiability, indeed!' ejaculated Lilian. 'The idea of your setting up for being amiable! I do not consider you at all considerate and good-natured to failure, sir.'

He smiled. 'I certainly have not much sympathy with failure; it would not be orthodox, you know. But get out your work, and let me find a safe outlet for my savage propensity.'

He saw that it did me good to be taken to task in the old fashion; and was quite as unsparing as I could desire, when he came upon any error. Whatever it cost him, Robert Wentworth succeeded in setting my heart as well as theirs at rest before he took his departure that night. If Mrs Tipper saw something of the truth, she shewed her consideration for me by carefully avoiding to give any expression to her thoughts. Lilian evidently guessed nothing. She openly expressed her surprise and regret at the alteration which she perceived in him.

'I really felt quite shocked for the first few moments,' she said. 'Even serious illness does not seem quite to account for such an alteration as there is in him. He looks as though he had suddenly grown old. Do not you think so, auntie?—Don't you, Mary?'

Mrs Tipper was silent, leaving me to reply, though I knew that she was watching me somewhat closely the while. It required all the nerve and self-command I could muster to make something like a suitable reply; but I did make it; and Lilian at anyrate remained in ignorance of the true state of the case, although her ignorance occasioned me almost as much pain as her knowledge of it would have done, so very closely did she sometimes approach to the truth, in her speculations as to the possible and probable cause of the change which had taken place in Robert Wentworth.

I was becoming restless and anxious from more causes than one. The time of Philip's expected arrival was drawing near, and my news remained still untold. Whilst I was ashamed of my reticence with two such friends, the difficulty of approaching the subject seemed rather to increase than diminish. My uneasiness was becoming apparent too; even Lilian and Mrs Tipper were beginning to notice a difference in me, which they could not account for.

The dear little lady once ventured a few words to me to the effect that no good man could be the worse for loving a woman, though she could not return his love; fancying, I believe, that possibly I was uneasy upon Robert Wentworth's account. I could only kiss the hand laid so lovingly upon mine.

It so happened that just at this juncture Mrs Tipper required sundry little housekeeping errands done in town; and partly to be alone a few hours, partly to do a little shopping for myself, I volunteered to go for her.

'Are you sure you would prefer going, dear Mary?' said Mrs Tipper anxiously; 'the days are so hot, and the things could be sent down, if we write, you know.'

I murmured something about wanting to replenish my wardrobe a little, and she easily acquiesced: 'To tell the truth, my dear, I *should* prefer your choosing the patty-pans,' she candidly allowed, when she found I really wished to go. 'Becky and I will think over all we require, and make a list,' she added, trotting off in high-feather to compare notes with Becky in the kitchen. If we were proud of our 'drawing-room,' Mrs Tipper was quite as proud of her kitchen. 'There is a place for everything and everything in its place, my dear, clean and ready to hand.' Becky in the evening, seated in state, surrounded by her brilliantly burnished tins, was a sight to behold. Nothing would have delighted her mistress and herself more than a sudden invasion of company as a test of their resources. Lilian and I were sometimes taxed beyond our powers, in our endeavours to shew our appreciation of the little dainty cakes, patties, &c. set before us. Indeed we had more than once consulted together upon the advisability of suggesting a party of children from the village to relieve us.

Lilian looked, I thought, a little surprised at not being invited to accompany me on my expedition to town. But if she was surprised, she was not offended; sensitive as she was, there was as little self-love in Lilian as it is possible for any human being to have. Hers was not fine-weather friendship. She was content to stand quietly aside until I should need her, without any complaints about being neglected, or what not, which half-hearted people are so apt to make at a fancied slight. She knew that I loved her, and I knew that she loved me, and we could trust each other, without the repeated assurance of it, which some people seem to require.

She was only a shade or two more tender and loving in bidding me good-bye, when I set forth in the morning, anxious to make me feel that my return would be eagerly looked for; and whispering a little jest about the necessity for bringing back a good appetite. 'Auntie and Becky will be sure to be busily engaged in preparing treats all day, you know; so you must come home hungry, whatever you do. And do not forget your promise to buy a pretty bonnet, Mary, and leave off that old dowdy thing; it makes you look as though nobody loved you, which is not fair to your sister Lilian. And oh, Mary, I had almost forgotten; if you bring any of this back, I shall say you don't care for me in real earnest;' pressing a little roll of paper into my hand.

I knew that she was genuinely disappointed when I proved to her that I had as much as five-and-twenty pounds in hand; and so I was obliged to promise to take from her store for my next need. 'Or else one may just as well not be a sister,' she said, with a discontented little shake of the head.

{341}

How cheering it was—how precious the knowledge that I was cared for in this way! And there was dear old Mrs Tipper too! I thought I knew why she was desirous just at that season to make me feel that my presence was so much required at the cottage.

'I wanted to ask you to cut out the little pinafores for Mercy Green's child, Mary; but they must wait till to-morrow, I suppose. And there's the curtains for my bed, dear; nobody would fit them to please me but you;' and so forth, and so forth, until the last moment, when Lilian accompanied me as far as the stile.

As I walked across the fields in that lovely August morning, while the bright sun was

Kissing with golden face the meadows green,  
Gilding pale streams with heavenly alchemy,

my thoughts attuned themselves to the summer sights and sounds, and I shook off the morbid doubts and fears which had so beset me of late. I resolved to be no longer so weak and unfriendly as to keep the truth from Mrs Tipper and Lilian. It really was unfriendly not to tell them what I

knew they would both be glad to hear! That very evening my secret should be told, and I would at once begin brushing up for Philip, making up my mind to overcome my shyness for finery, and render myself as attractive as possible within the compass of—five-and-twenty pounds. It appeared to me a very large sum to spend at once upon finery, and I could only hope the end would justify the means. As it chanced, I really knew very little about Philip's taste in such matters. The selection of the modest outfit which was purchased for me nine years ago, I had been only too glad to leave to my dear mother's judgment, and we had been neither of us inclined to trouble Philip with *chiffon* talk.

But I told myself that I really must make a beginning now, as I stood in the milliner's show-room, somewhat dolefully contrasting my appearance with that of the elegant-looking beings around me; wondering whether Philip would wish me to look like them, and in that case, whether it would be possible to make me do so.

I had been striving so earnestly and anxiously to make myself worthy to be his companion, and it had seemed of so little consequence what I looked like during his absence, beyond being attired with the dainty neatness befitting a gentlewoman, that I now appeared quite behind the times. I suddenly began to realise that I had carried my disregard of pretty things too far; and was seized with a desire to try what extraneous aid could do for me.

I anxiously studied my face and figure in the large glass, and then those of the obliging shopwoman, who displayed an endless assortment of pretty things for my selection. She was about my own age, and possessed no greater natural advantages than I myself could boast of; and yet how very different was the general effect of her appearance; how dowdy I looked beside her. Yes; Lilian was quite right; 'dowdy' was the proper word for me, from head to foot.

A little shyly and consciously, I ventured out of my shell, and appealed to the shopwoman for assistance, taking her so far into my confidence as to confess a desire to be modernised and made more attractive.

She displayed more interest in the matter than I had ventured to hope for; and we gravely discussed my capability of improvement. But I found that the complications would be so many, and the changes in the way of adaptation of hair, figure, &c. so endless, that I presently began to grow very impatient; and when she said something about the possibility of the present fashion only lasting another two months, I gave it up in despair. If I were quite sure it would serve for the rest of my life, I would go through it all; but for the fashion of an hour; no! I would be content with a simply made dress or two, and depend upon my own taste for the finishing touches. Some of my mother's old point, and a crimson bow or two for the pretty gray dress, and amber with the black silk, and such like, I trusted might please Philip's artistic taste as well as though I were in the latest fashion. And I pleased myself with the remembrance that he used to admire my method of dressing my hair in large coils round a comb; saying that it suited my head and Spanish style of face. 'Spanish! Yes; that certainly was the word,' I told myself, dwelling pleasantly upon the one only compliment I could recollect having received from Philip.

I tried to satisfy myself this way; nevertheless I was a little out of spirits at finding myself so different from other women whom I met as I walked through the park on my way to the railway station, and whom I scanned with curious critical eyes, trying to understand the intricacies of their toilets, and failing to obtain anything more than a general impression that the *tout ensemble* was very effective. The home dress might be compassed; but how if it turned out that Philip wished his wife to look picturesque and attractive out of doors—not in Mrs Trafford's style, but in Lilian's more refined way of being in the mode? I would take Lilian into my confidence at once, and she would help me. That very night I had determined to make the truth known to her and to Mrs Tipper; and after it was once known, the dress question could be entered upon.

---

## THE STORY OF THE PRISM.

WHEN we see the brilliant colours reflected by the glass lustres and chandeliers which are now so commonly used for decorative purposes, we seldom bestow a thought upon them, regarding them as things too common, perhaps too trivial to be worthy of any particular attention. We are content to know that a triangular piece of glass will exhibit certain bright colours—they look very pretty, and it does not matter much how they happen to be there. This is the common way of dealing with the natural phenomena which meet us at every turn in this wonderful world in which we live. The progress of civilisation, with all its triumphs of Science and Art, would indeed have been slow, if not altogether at a dead-lock, if every one had been content to treat such matters in this summary fashion. But happily, this has not been the case, for certain intellectual giants have from time to time arisen, who have grappled with these things, and have devoted their lives to their investigation.

Such a one was Sir Isaac Newton, who just about two centuries ago, with rough appliances fashioned by his own hands, inquired into the meaning of the colours to which we have just alluded. We cannot do better than quote his own words, from a letter which he addressed to the Royal Society in 1672; for his statement is so clear that a child can easily understand what he means. 'I procured me a triangular glass prisme,' writes he, 'to try therewith the celebrated phenomena of colours. And in order thereto having darkened my chamber and made a small hole in my window-shuts to let in a convenient quantity of the sun's light, I placed my prisme at his entrance, that it might be thereby refracted to the opposite wall.'

He goes on to say how surprised he was to find that the ray of light, after passing through the prism, instead of being thrown upon the wall in the form of a round spot, was spread out into a beautiful coloured ribbon; this ribbon being red at one end, and passing through orange yellow green and blue, to violet at its other extremity. Upon this experiment is founded the theory of colour, which with few modifications, still remains unquestioned.

It was not until the beginning of the present century that this experiment of Newton's (repeated as it had doubtless been in the meantime by many philosophers) was found by Dr Wollaston to possess certain peculiarities which defied all explanation. He found that, by substituting a *slit* in the shutter of the darkened room for the round hole which Newton had used, the ribbon of colour, or spectrum as it is now called, was intersected by certain dark lines. This announcement, although at the time it did not excite much attention, led to further experiments by different investigators, who, however, vainly endeavoured to solve the meaning of these bands of darkness. It was first observed by an optician of Munich that they never varied, but always occupied a certain fixed position in the spectrum; moreover he succeeded in mapping them to the number of nearly six hundred, for which reason they have been identified with his name, as 'Frauenhofer's lines.'

In 1830, when improved apparatus came into use, it was found that the number of these lines could be reckoned by thousands rather than hundreds; but their meaning still remained a puzzle to all. By this time Newton's darkened room with the hole in the 'window-shuts' had been, as we have just said, greatly improved upon. The prism was now placed in a tube, at one end of which was a slit to admit the light, while the retina of the observer's eye received the impression of the spectrum at the other end. This is the simplest form of the instrument now known as the spectroscope, and which is, as we have shewn, a copy in miniature of Newton's arrangement for the decomposition of white light into its constituent colours.

We must now go back a few years to record some experiments carried out by Herschel, which, quite independent of the spectroscope, helped others to solve the problem connected with the dark lines. He pointed out that metals, when rendered incandescent under the flame of the blow-pipe, exhibited various tints. He further suggested that as the colour thus shewn was distinctive for each metal, it might be possible by these means to work out a new system of analysis. A familiar instance of this property in certain metals may be seen in the red and green fire which is burned so lavishly during the pantomime season at our theatres; the red owing its colour to a preparation of the metal strontium, and the green in like manner to barium. Pyrotechnists also depend for their tints not only upon the two metals just named, but also upon sodium, antimony, copper, potassium, and magnesium. Wheatstone also noticed the same phenomena when he subjected metals to the intense heat of the electric current; but it was reserved for others to examine these colours by means of the spectroscope. This was done by Bunsen and Kirchhoff in 1860, who by their researches in this direction, laid the foundation of a totally new branch of science. They discovered that each metal when in an incandescent state exhibited through the prism certain distinctive brilliant lines. They also found that these brilliant lines were identical in position with many of Frauenhofer's dark lines; or to put it more clearly, each bright line given by a burning metal found its exact counterpart in a dark line on the solar spectrum. It thus became evident that there was some subtle connection between these brilliant lines and the dark bands which had puzzled observers for so many years. Having this clue, experiments were pushed on with renewed vigour, until by some happy chance, the *vapours* of the burning metals were examined through the agency of the electric light. That is to say, the light from the electric lamp was permitted to shine through the vapour of the burning metal under examination, forming, so to speak, a background for the expected lines. It was now seen that what before were bright bands on a dark ground, were now dark bands on a bright ground. This discovery of the reversal of the lines peculiar to a burning metal, when such metal was examined in the form of vapour, led to the enunciation of the great principle, that 'vapours of metals at a lower temperature absorb exactly those rays which they emit at a higher.'

To make this important fact more clear, we will suppose that upon the red-hot cinders in an ordinary fire-grate is thrown a handful of saltpetre. (This salt is, as many of our readers will know, a chemical combination of the metal potassium with nitric acid—hence called nitrate of potash, or more commonly nitre.) On looking through the spectroscope at the dazzling molten mass thus produced, we should find that (instead of the coloured ribbon which the sunlight gives) all was black, with the exception of a brilliant violet line at the one end of the spectrum, and an equally brilliant red line at the other end. This is the spectrum peculiar to potassium; so that, had we not been previously cognisant of the presence of that metal, and had been requested to name the source of the flame produced, the spectroscope would have enabled us to do so without difficulty. We will now suppose that we again examine this burning saltpetre under altered conditions. We will place the red-hot cinders in a shovel, and remove them to the open air, throwing upon them a fresh supply of the nitre. We can now examine its vapour, whilst the sunlight forms a background to it; when we shall see that the two bright coloured lines have given place to dark ones. This experiment will prove the truth of Kirchhoff's law so far as potassium is concerned, for the molten mass first gave us the bright lines, and afterwards by examining the cooler vapour we saw that they were transformed to bands of darkness; in other words they were absorbed. (In describing the foregoing experiment, we have purposely chosen a well-known substance, such as saltpetre, for illustration; but in practice, for reasons of a technical nature, a different form of potassium would be employed.) Kirchhoff's discovery forms by far the most important incident in the history of the spectroscope, for upon it are based the new sciences of Solar and Stellar Chemistry, to which we will now direct our readers' attention.

The examination of the heavenly bodies by means of the spectroscope has not only corroborated in a very marvellous manner the discoveries of various astronomers, but it has also been instrumental in correcting certain theories and giving rise to new ones. The existence of a feebly luminous envelope extending for hundreds of thousands of miles beyond the actual surface of the sun, has been made evident whenever an eclipse has shut off the greater light, and so permitted it to be viewed. The prism has shewn this envelope, or chromosphere as it is called, to consist of a vast sea of hydrogen gas, into which enormous flames of magnesium are occasionally injected with great force. (We need hardly remark that these facts are arrived at analogously by identifying the absorption lines with those given by the same elements when prepared artificially in the laboratory.) This chromosphere can, by the peculiar lines which it exhibits in the spectroscope, be made manifest whenever the sun itself is shining.

The foregoing discovery has given astronomers the advantage—during a transit of Venus—of viewing the position of the planet both before and after its passage across the sun's disc; for it is evident that the presence of an opaque body in front of the chromosphere will cut off the spectral lines in the path which it follows; so that although the planet is invisible its exact place can be noted. From a comparison of these lines with those that can be produced in the laboratory, it is rendered probable that no less than thirteen different metals are in active combustion in the body of the sun. From certain geological appearances, it is conjectured that our own earth was once in this state of igneous fusion, and although our atmosphere is now reduced to a few simple elements, it must once have possessed a composition as varied as that of the sun. As it is, the air which we breathe gives certain spectral lines. These are much increased in number when the sun is low, and when therefore it is viewed through a thicker medium. In this case the blue and green rays are quickly absorbed, while the red pass without difficulty through the denser mass of air, thus giving the setting sun his blood-red colour. It will now be readily understood how, by means of the spectroscope, the existence of atmosphere in the superior planets can be verified. What a world of conjecture is thus opened out to us! for the existence of atmosphere in the planets argues that there are seas, lakes, and rivers there subject to the same laws of evaporation as those upon our own earth. And if this is so, what kind of beings are they who inhabit these worlds? The moon shews no trace of atmosphere, so that we may assume that if there be living beings there, they must exist without air and without water. The lines given by the *moon* and *planets* being in number and position identical with those belonging to the solar spectrum, is a further proof, if any were needed, that *their light is borrowed from the sun*.

The varied colours of the fixed stars may be assumed to be due (from what we have already stated with regard to metallic combustion) to their chemical composition; and the spectroscope, by the distinctive lines which it registers, renders this still more certain. Their distance from us is so vast, so immeasurably beyond any conception of space that we can command, that the detection of their composition is indeed a triumph of scientific knowledge. It has been calculated that if a model of the universe were made in which our earth were depicted as the size of a pea, the earth itself would not be one-fifth large enough to contain that universe.

If we marvel at the extraordinary skill which has brought these distant spheres under command of an analytical instrument, we must wonder still more when we are told that the spectra of these bodies can be brought within range of the photographic camera. This has lately been done by the aid of the most complicated and delicate mechanism; the difficulty of keeping the image stationary on the sensitive collodion film during the apparent motion of the stars from east to west, having only just been surmounted. This power of photographing the spectrum is (as we hinted in a recent paper on Photographic Progress) likely to lead to very great results, for the records thus obtained are absolutely correct, and far surpass in accuracy the efforts of the most skilful draughtsman. It must be understood that in all these researches the spectroscope is allied with the telescope, otherwise the small amount of light furnished by some of the bodies under examination would not be enough to yield any practical result.

The clusters of matter which are called nebulae, and which the most powerful telescopes have resolved into stars, are shewn by the prism to be nothing but patches of luminous gas, possibly the first beginnings of uncreated worlds. Comet-tails are of the same nature, a doubt existing as to whether their nuclei borrow their light from the sun or emit light of themselves. We may close a necessarily brief outline of this part of our subject by stating that it is possible that the spectroscope may some day supplant the barometer, more than one observer having stated that he has discovered by its aid signs of coming rain, when the latter instrument told a flattering tale of continued fine weather.

We have merely shewn hitherto how the spectroscope is capable of identifying a metal; but its powers are not limited to this; for by a careful measurement of the length of the absorption lines, a very exact estimate of the *quantity* present can be arrived at. This method of analysis is so delicate that in experiments carried on at the Royal Mint, a difference of one ten-thousandth part in an alloy has been recognised. Neither must it be supposed that the services of the spectroscope are confined to metals, for nearly all coloured matter can also be subjected to its scrutiny. Even the most minute substances, when examined by the microscope in conjunction with the prism, shew a particular spectrum by which they can always be identified. Nor does the form of the substance present any difficulty in its examination, for a solution will shew the necessary absorption bands. Blood, for instance, can be discovered when in a most diluted form. To the physician the detection of the vital fluid in any of the secretions is obviously a great help to the diagnosis of an obscure case. But in forensic medicine (where it might be assumed that this test would be of value in the detection of crime) the microscope can identify blood-stains in a more ready manner.



The simple glass prism as used by Newton, although it is the parent of the modern spectroscope, bears very little resemblance to its gifted successor. The complicated and costly instrument now used consists of a train of several prisms, through which the ray of light under examination can be passed by reflection more than once. By these means greater dispersion is gained; that is to say, the resulting spectrum is longer, and consequently far easier of examination. A detailed description of the instrument would be impossible without diagrams, but enough has been said to enable the reader to understand theoretically its construction and application.

It will be understood that we have but lightly touched upon a phase of science which is at present quite in its infancy. It is probable that many more remarkable discoveries will in course of time be due to the prism. Already, within the past twenty years, four new metals have by its aid been separated from the substances with which they were before confounded; and although they have not at present any commercial value, we may feel sure that they have been created for some good purpose not yet revealed to us. There are signs that the spectroscope will some day become a recognised adjunct to our educational appliances. It is even now included under the head of Chemistry in the examination of candidates for university honours, and there is no doubt that it will gradually have a more extended use. Many years hence, when generations of School-Boards have banished ignorance from the land, the spectroscope may become a common toy in the hands of children, enabling them to lisp:

Twinkle, twinkle, little star;  
We know exactly what you are.

---

## THE ROMANCE OF A LODGING.

### IN TWO CHAPTERS.—CHAP. I.

'WHERE to, ma'am?' inquired cabby as he opened the door of his vehicle to a lady and her son who had just arrived by the evening train at Victoria Station.

'I want apartments somewhere in the neighbourhood of Chelsea; drive on until you find them: they are procurable, I suppose?' the lady replied as she took her seat.

'I do hope we may find a lodging,' she remarked to her companion, after they had been driving what appeared to her a very long time. The lad made no reply, being of a phlegmatic temperament, that finds speech an exertion unless distinctly necessary.

The lateness of the hour together with the influx of visitors, owing to the London season being then in full swing, made the search a difficult one; they were about to give up its continuance and go to an hotel, when the cabman good-naturedly proposed making one more attempt, and drove down a fresh street. Stopping at a baker's shop on the way, he invited the assistance of those serving, as it was growing too dark to discern the cards of advertisement.

They directed him to a private house in a street adjoining, but added: 'The chances are they are let; still you might just as well try, as Mrs Griffiths has a yearly lodger who allows her to sublet sometimes; perhaps he is away now.'

'Shall we chance it, ma'am?' inquired the cabman.

'Do; I am so weary. She may be able to give us a corner for the night at least.'

When they reached the house, Mrs Griffiths—late cook in a nobleman's family, who had married the footman—appeared, and in answer to the appeal, asked hesitatingly: 'For how long?'

'We should take them for a week of course,' said the lady.

'I cannot let for so long,' she replied, after a brief calculation; 'but I can accommodate you for a couple of days, if you please; that will give you time to find other rooms.'

'Thank you very much,' said the wearied traveller gratefully, as she followed the landlady into a good-sized room on the right of the entrance-hall, and begged for lights and tea as soon as Mrs Griffiths could make it convenient to send them.

'How very fortunate we are to have found a night's lodging,' she said to the lad, who now joined her. 'I think I see an easy-chair in that corner; what a comfort!' and she sat down to rest, removing some of her heavy wraps as she spoke. 'Now at least we shall have breathing-time to consider what is best to be done after your examinations are over. I can go in search of rooms to-morrow while you are at them. I wish she would hasten with the light and tea; this darkness is oppressive. Where are you, Fred?'

'Here,' he replied, from the opposite side of the room. 'Can I do anything for you? I've seen to the luggage and paid the cabman, and now am quite ready to do justice to some tea.'

They were soon put out of their discomfort by the entrance of the landlady, bearing a handsome lamp which gave a brilliant light.

'I've brought you my gentleman's lamp, ma'am; he is away just now; that is why I have been able to accommodate you; for he's most obliging, and don't mind my letting his rooms—this one and the one inside behind the folding-doors, together with the one I have given the young gentleman up-stairs, which belongs to his man-servant. May I ask what name, ma'am?'

'Mrs Arlington; and the young gentleman is my son.'

Mrs Griffiths glanced at the tall elegant woman in widow's weeds, and thought to herself: 'She looks more fit to be his sister than his mother; and is a sweet-looking lady anyway, whoever she is;' and she was glad she had taken her in and her son, if such he were. And then she bustled out of the room to prepare their meal.

As soon as they were alone, Mrs Arlington gazed around the room indifferently. It was of the usual stamp of lodging-house apartment, furnished according to the taste and means of those who take to letting for a livelihood. A dismal horse-hair suite were the chief articles of furniture, supplemented by others which stood out in contrast against the horse-hair background—a good piano, an harmonium, a bookcase with glass doors filled with a choice selection of the best works, and an easel. On the walls hung several good paintings, one of which was the portrait of a beautiful young girl. {345}

'Some artist must live here, I imagine,' said the lad, as he went from picture to picture examining them, finally stopping before the portrait of the young girl, that hung immediately over the chair in which Mrs Arlington sat.

'I daresay,' she replied wearily, as though it were a speculation which could not possibly concern her; and too glad of repose to be roused to any sense of curiosity upon the subject.

'Just look at this, mother; it is so pretty.'

'I cannot, Fred; I am too exhausted to turn round. I cannot possibly think of or look at any thing until I have had a cup of tea.—Ah! here it comes. Go and pour it out for me, and never mind the picture. But I forget. I am unfeeling and unnatural to tell you not to mind, for you are just at an age when young girls are beginning to possess a powerful attraction for you; but you must put the pleasing delusions out of your head until you have passed your examination for Sandhurst; that is the move-in-chief towards which all your energies must now be directed. I long to see your poor father's wishes fulfilled; and shall not feel quite contented until you are gazetted into the army; then my trust will have been accomplished. How many years is it now, Fred, since you first became my child?'

'Ten.'

'Yes; you were a little fellow when I first took you in hand as your governess, and you learnt to love me so well that your father asked me to be your mother.'

'Was that why you married him?' inquired the lad, as he brought her a cup of tea. 'Didn't you care for him for his own sake? You always seemed to.'

'Yes, since you could observe; but not at first, Fred—not at first. I had no heart for any one or anything just at that time but mayhap for a little child like yourself, who was motherless and needed tenderness. It was just such an uncared-for flower which alone could have saved me then, for I had gone through a bitter sorrow, born of my own caprice and foolishness; and through it I lost what could never be mine again. I must have died of despair, had I not set myself the task of working out my wrong-doing in atonement, if not to the person—that was impossible—at least to some one of God's creatures who might need me; and it was at that very time I took up the paper containing your father's advertisement for a governess. It served me for a suggestion and a field wherein I might find that for which I sought. I had never been a governess; but I determined to become one, notwithstanding the opposition of my family, who could not comprehend, and strongly disapproved of my taking such a step; but I carried my point through our doctor telling my mother she was wrong to oppose me, as my mind needed distraction after all I had gone through; and that my choice, so far from being reprov'd, ought rather to be commended, since I had preferred it to the injurious remedy of a round of amusements, so invariably prescribed for distraught spirits; which need instead the healthy medicine of some reasonable duty to restore them to their former mental composure. Thus I became free to answer your poor father's advertisement, and was accepted by him for the post, oddly enough. And that is how I became your mother, Fred. I have tried to fulfil my trust; perhaps that has atoned.'

'Atoned for what?'

'Ah, never mind! I was only a young girl then, vain and imperious, because I found I possessed a most dangerous power—the power of making whom I would love me—a precious gift, which I did not know how to value rightly until— But never mind. I hate recalling by-gones. Life is such a perpetual stumbling up hill with most of us, it is no use retarding our journey by useless retrospection; so when I am inclined to indulge in vain regrets, I always think of that heart-stirring line of the poet's, "Act, act in the *living* present;" and therefore, Fred, please to cut me another slice of bread and butter and give me another cup of tea, my child;' and she laughed at the application she had given to her words, which was commonplace enough to destroy all their poetry.

The way in which the boy watched and waited on her, and the look of quiet amusement and interest on his face as she spoke, shewed how thoroughly she had won his heart, and was indeed his mother, sister, friend, all in one. Yes; whatever might have been the fault of her girlhood, her subsequent years had fully atoned for it; she had used her gifts rightly in the case of her step-son, and his father, who had died about a year ago, blessing her for her unwearied devotion, and the happiness she had given him, leaving her the undisputed guardianship of his only child.

As soon as their meal was concluded she went into the adjoining room, divided by folding-doors from the one in which they had been sitting. It bore no traces of a previous occupant like the other, save for a few perfectly executed pictures which hung above the mantel-piece. She had her

travelling bag in her hand as she entered, which she was about to deposit upon a table, when her eye caught sight of one of the pictures, and the bag fell to the ground as she started forward to examine the pencil-sketch.

'Impossible!' she exclaimed; and she gazed around the room helplessly, to see if she could by any means find aught therein that would throw a light upon the mystery before her; but all was void: tables, chairs, wardrobe, and dressing appliances were what met her gaze; while, like one fascinated, she continued standing before the sketch as if spell-bound.

'Are you coming soon?' inquired Fred, knocking, who, notwithstanding his disinclination to free converse, could never bear her long out of his sight when they were together.

'I will be with you in a moment,' she returned, recalling herself with no slight effort.

'What is the matter?' he exclaimed as soon as she joined him. 'You look as white as a ghost; you are over-tired, I suspect: had you not better get to sleep as soon as you can?' he inquired with concern, as he noticed that she was suffering from an amount of nervous exhaustion that alarmed him.

'It is nothing,' she returned: 'the journey was fatiguing;' and then her eye stole round the room with suppressed interest. {346}

'Is that the pretty girl you wanted me to admire, Fred, just now when I was too hungry to oblige you?'

'Yes. Is she not a picture? What I should call a "stunner!"'

'When shall I ever knock the school-boy out of you, Fred?' she cried, laughing. 'You are a long way off from that refined phraseology I am labouring to inculcate. But you are right in this case. It is a beautiful picture, of what I should call a detestable character. She is, as you remark, a "stunner." There is not the least soul in her face; nothing but proud self-consciousness, as if she were saying: "I am a beauty, and I know it." Poor thing! she is to be pitied, if that is a true picture, and it looks as if it were.'

'How is she to be pitied? I don't see that at all.'

'Because you can't see yet, Fred, from your brief study of her face, that a girl like that may learn to *feel* at some time or another; and when she does, the lesson is generally such a painful one that few have the courage to rise above it. The artist who drew her was in no lenient mood; he could detect nothing in her but the stern facts which possibly made him suffer,' she added in an undertone, accompanied by a long-drawn sigh.—'I wish we had a book to read; try the bookcase; it may be unlocked.'

He did as she bade him; and shook his head negatively as he went first to the bookcase and then to the piano.

'"The gentleman," as our landlady calls him, is a cautious man evidently,' said Mrs Arlington. 'Well, we must not find fault with him, for his amiability towards his landlady has secured us a night's repose. I wonder if he is the artist of these pictures? I am ashamed of my curiosity, but I have a wish to know. Could you be diplomatic, Fred, and find out for me?'

'Why not ask the landlady straight out?'

'I dislike to appear so inquisitive, as it is of no moment to us who he is.'

'I don't know that. If he is an artist, he would no doubt be much obliged to us for asking. Act on that presumption. You admire the pictures, and may possibly wish to order some, or to sit for your portrait.'

'How magnificent you are, Fred! We look a likely pair—don't we?—to order pictures or sit for portraits! A hundred guineas or so are nothing to us; are they, my poor boy? Rein in your fancy. I am afraid of you in this respect, when you are once fairly launched on your own resources, as I cannot always be at your elbow, to control your lavish ideas, and our means are not large.'

'Well, I was only suggesting, you know, a ready mode of solving your difficulty about finding out who is the artist of these pictures,' said the boy as he wished her good-night.

As soon as he was gone, Mrs Arlington went cautiously round the room making a minute survey of every article, with a look of intense interest in her face, as though she were searching for a clue she could not find. Every vase on the mantel-piece she subjected to a close scrutiny, to see if possibly a card or old envelope lay concealed therein. But everything was dumb, and refused to bear the least witness as to the name or calling of the previous occupant. Quite foiled, she sat down and fell into a profound reverie, which continued until the landlady knocked at the door, and entered to inquire if there was anything more she wanted, and when she would like her breakfast in the morning.

'Thank you; nothing more to-night; and breakfast at nine. By the way, have you any other lodgers in the house?'

'Yes, ma'am; the first floors are taken by a lady and gentleman for a month, leastways so they told me when they came; but the lady has got a maid who is that vexing I can't abear her; and I would be glad to give them notice to go if I could be sure of another party for the same time; but you see, ma'am, we who live by letting can't afford to have our rooms empty.'

'You cannot let me have these rooms, you say, beyond a couple of days?'

'No, ma'am. Mr Meredith—the gentleman—takes them by the year on the condition that they are

always to be ready for him when he writes; and only this afternoon he sent me a letter to say he would be here on Wednesday.'

'Mr Meredith, did you say, was his name? An artist, I suppose? if I may judge by the pictures and the easel.'

'Dear, no, ma'am!' exclaimed the landlady, as if a discreditable imputation had been cast upon the character of her lodger by the question. 'He's got no call to earn his living, not he! He's got a place in the country, which he has let for I don't know how many years, and he keeps himself free to come and go as he likes. Such a fine noble-looking gentleman as he is! He took these rooms of me some eight years back, when I first married and set up housekeeping, because he said he liked the quiet of the place; and he keeps them by the year; but he lets me take in lodgers when he is away, so long as I don't bring children into the rooms. He has been here for a whole year at a spell; and then again he is off, and maybe we won't see him for months at a time. He is a most excellent lodger as ever was; and his man a nice civil, handy fellow, with none of them airs and graces as these minxes of girls give themselves; but then, "Like master, like man," say I, and I've always found it so.'

'And your first floors, you tell me, you would be glad to re-let, were you sure of another tenant?'

'Yes, ma'am.'

'Very well then; as I have no maid likely to disturb you, I will take them for a month certain, if I can have them on Wednesday morning; and I will further pay you the week's rent you will have to forfeit by giving the present lodgers notice to quit summarily; but remember I only take them on this one condition. It is now Monday night, and I must move in on Wednesday morning.'

'I'll manage it for you, ma'am, even if I get a summons for it.'

'You shall be no loser in any case; I will pay all expenses;' and she drew out her purse to deposit a week's rent in advance.

'Never mind it, ma'am; you look a lady as one may trust, and I'll see that you are in the rooms on Wednesday morning. I can easily put the blame on Mr Meredith, if they become very unpleasant, by saying he takes the rooms by the year; they are not to know whether he may not want the first floors this time.'

Mutually satisfied with their bargain, landlady and lodger parted for the night. On the face of the latter could be discerned a compression of the lips, which bespoke a sudden resolve she was bent upon carrying out, even though it failed in the end to prove successful.

{347}

---

## MYSTICAL PLANTS.

HUMAN cunning and human credulity have dowered with mystery certain plants which are worthy of being considered the most beautiful and passive of created objects. One plant at least has been said to utter shrieks on being torn from the earth, and to have avenged the violence by causing the death of him who removed it. This plant was the mandragora of the poets, the mandrake of Scripture, a species of the *Solanæ* or Nightshade tribe; the belief in whose qualities as a sedative or a charm was as old as the days of the childless Rachel. Indigenous to the East, where probably its uses as an anodyne and soporific were early known to the initiated, it may be that in order to enhance the wonder of its effects, and prevent the extirpation of the root by its too common use, miraculous powers were imputed to it, and superstition hedged it round with fabled terrors.

The evil reputation of the plant procured it subsequently the name of *Atropa mandragora*, by which our oldest botanists distinguish it; a name borrowed from the most terrible of the Fates, *Atropos*, and since transferred to its relative *Atropa belladonna* (*Dwale*, or 'Deadly Nightshade'). So potent and valuable were the medical uses of the root at a time when few anodynes were known, that the ancient Romans made it the subject of a weird ritual, without which they would have deemed it impious to have taken it from the earth. The operator stood with his back to the wind, drew three circles round the root with the point of a sword, poured a libation on the ground, and turning to the west, began to dig it up.

The root of the mandrake, a plant with a tap-root, frequently forked, as we see that of the radish, and covered with fibrous rootlets, was easily convertible into a grotesque likeness of the human form. In the times of Henry VIII. and Elizabeth, little images made of mandrake roots, called *abrunes*, were imported in large numbers from Germany, and found a ready sale in England. The fable of the wondrous powers of these vegetable idols was easily accepted by our superstitious ancestors; and the pedlers who travelled about from place to place with cases of them drove a brisk trade. Sir Francis Bacon had them in his mind's eye when he wrote: 'Some plants there are, but rare, that have a mossy or downy root, and likewise that have a number of thread-like beards, as the mandrake, whereof witches and impostors make an ugly image, giving it the form of a face at top of the root, and leave those strings to make a broad beard to the foot.' It is to the credit of the old herbalists Gerard and Turner, that they both essayed, without fear of consequences, to dig up and examine for themselves the dreaded mandrake, and lost no time in publishing the fallacy of the weird stories told of it.

Saturnine and poisonous plants were those most affected by necromancers and witches—plants dwelling in shady groves like that described by Dryden in *Ædipus*:

Nor tree nor plant  
Grows here but what is fed with magic juices,  
All full of human souls, that cleave the bark  
To dance at midnight by the moon's pale beams;

or on wild heaths, like the potent moonwort, which opened locks and unshoed horses; or amidst solitary churchyards and old ruins, like the deadly nightshade and fetid henbane, hound's-tongue, and digitalis. Plants with dusky or sad-green leaves, and lurid-coloured flowers for the most part, and an ill-favoured soporific scent. Nature herself distinguishes hemlock from all others of the umbelliferous tribe by the pink or purplish spots with which its tall smooth stem is variegated. It grows by hedgerows and in waste places; its large-winged, finely-cut leaves and white umbels of flowers give no indication of its dangerous nature; but its speckled cuticle betrays it, and prevents its being rashly meddled with by rustic herb-gatherers and children.

Wolf's-bane or monk's-hood, a herb of Saturn, sacred to Hecate, and which has since figured in the floral calendar of witchcraft, had its first name from the use the Anglo-Saxons made of the juice, in which they dipped their arrows, and literally kept the wolf from the doors of their wattled huts. It was and is a brave herb for all evil purposes. Its root resembles the tail of a scorpion; its flowers, of lurid purple, have the form of a helmet; features sufficiently significant for those who sought such dangerous simples. The very scent of the flowers on some sensitive persons has produced swooning and loss of sight for several days; others it has deprived of speech; and there are instances on record of persons who have eaten of the root being seized with all the symptoms of mania. Imagine such powers in the hands of a reputed witch, malevolent enough to exercise them for reward or malice, in days when medical science itself was not without faith in magic! Dreadful as are its proved effects, the monk's-hood is a common plant in cottage gardens, where we have seen it flourishing three feet in height, crowned with its handsome spikes of purplish flowers, and little children playing with them.

Black hellebore had also a place in the category of mystical plants; the Romans removed the root with the same ceremonies as were observed in taking up the mandrake, with this distinction, that prayers were humbly offered to Apollo and Æsculapius for permission, and the operator turned to the east instead of to the west, on commencing to dig it up.

No wayside plant is more simple in appearance than the vervain, the 'holy herb' of so many nations. Its pale lilac spike of minute flowers scarcely attracts attention, except from those who know its ancient history and uses. In the sun-worship of the ancient Persians, their magi carried branches of vervain in their hands when approaching the altar. So did the pagan priests of ancient Greece and Rome; and ages subsequently, the Druids in the forest temples of Gaul and Britain. With the Greeks and Romans, it was never absent from their religious rites. The plant was long considered to be good against witchcraft and the bites of venomous creatures; and being under the dominion of Venus, was a great beautifier; and when used in the baths of delicate women, made a fair face and took away freckles. It were 'perhaps well,' as Lord Bacon would say, to notice the agreement between various writers as to the cephalic virtues of the plant, and its remedial efficacy in taking away headache, and the 'pin and web,' or clouds and mists which darken the optic nerve. From medical to magical uses was but a step in those days, sometimes a very short one; and accordingly we find a spray of vervain used as a charm to keep houses and persons from harm, and especially from evil spirits and witchcraft. A relic of the later superstition lingers in the rhyme—

Vervain and dill hinder witches of their will.

St John's wort, by virtue of its dedication to the saint, whose birthday, according to the religious calendar, is the anniversary of the summer solstice, was said to have the power of putting to flight ghosts, demons, and even Satan himself. Jeremy Taylor, in his *Dissuasions from Popery*, enumerating certain specifics used by the priests to discover the presence of the evil one, adds, 'and specially St John's wort, which therefore they call "Devil's Flight,"' which is an anglicised rendering of the old pagan name *Fuga Demonium*, which Pliny tells us it received from its property of scaring demons; and retained in more modern times in allusion to its supposed virtues in the cure of distraction and melancholy. The Irish peasant at the present day firmly believes in the powers of St John's wort which his Church originally endorsed; and on the vigil of the saint's day, gathers bunches of the bright yellow, starry, almost scintillating flowers, and after sprinkling them with holy water, hangs them at the bed's head, and over the door, with a firm faith in the potency of the plant to preserve him and his household from evil spirits, fairies, and witchcraft. Armed with this floral charm, the wanderer through the most solitary places is as safe as on the fire-lit hill, amidst the youth of a whole village, who are dancing and making merry, and leaping through the fire to Moloch—without an idea that the revels of the sainted summer's night once meant the worship of the sun-god Belus. In days when the occult powers of certain plants were universally believed, it made part of the champion's oath, that he carried not about him any *herb*, spell, or enchantment, by which he might procure the victory.

Nowadays, the mistletoe generally affects old crab and apple trees, and the boughs of beech and ash; but in so-called Druidical times it appears to have flourished in the oak-groves, which these strange worshippers are said to have made their temples, and under the name of the 'All-heal plant,' was, we are told, severed from these trees with solemn ceremonies. The mystery of its appearance—its aerial place of growth—the pale green antlered branches putting forth their pearly berries in honour, as it were, of the high festival of the winter solstice, 'the mother of the nights'—probably conduced to render it a miraculous plant. Long after Druidism was but a name,

the plant retained its healing and protective properties for the populace, whose teachers strengthened their superstitious reverence for it, by calling it *Lignum Sanctæ Crucis* (wood of the holy cross). Amulets were made of it, and worn round the neck, to defend the wearer from enchantment and other dangers; and in more modern times, as a charm against the falling-sickness and the plague.

The yew, like the oak, was sacred to the Druids. Branches of it were anciently carried by the mourners at funeral processions, and were thrown into the grave before the coffin was lowered. The awe in which it was originally held is traceable in the traditions yet extant of its dangerous and even deadly properties. The beautiful crimson drupes scattered amongst its dark-green linear leaves were reputed poisonous if eaten. In clipping the tree, the greatest care was necessary that the operator might not inhale its dangerous fumes; while to sleep under the shade of its widespread branches, ragged and dusky as a raven's wing, was to risk sickness and even death.

The mountain-ash or rowan-tree has for ages been endowed with mystical properties in Scotland. The custom of carrying sprigs of it in the pocket still obtains in the Isle of Man, where it is extensively grown and cherished for warding off demons, witchcraft, and the evil-eye. There, on St John's Eve, crosses are made of it and hung upon the cattle, and placed over the doors, and in the eaves of barns and houses, to avert the evil influences supposed to be preternaturally active on that night. Not such the reputation of the *Lunaria*, described by Chaucer, Spenser, and Drayton as one of the most powerful of vegetable charms, and an ingredient in the most subtle spells of night-hags and enchanters. This, the homely 'Honesty' of the cottage garden, the satin flower that our grandmothers cherished, is a plant than which none more apparently harmless is to be found in the floral calendars of herbmen and gardeners. But in days when plants were supposed to bear witness in many instances to their own attributes, when certain features were sought for and believed in, as affording a key to the sympathies and properties of herbs, its round flat silvery frond shewed it to be under the dominion of the moon, and endowed with magic influences.

After all, a child's hand might have clasped the plants that were under the ban of our ancestors. Amongst the most potent of these herbal talismans were the trefoil and the wood-sorrel, the triple leaves of which symbolised the Trinity, and were on that account noisome to witches. Hence arose the custom in Ireland for the lord of the soil as well as the peasant to wear the shamrock as a preservative from evil influences, a custom annually returned to, without distinction of creed or rank, by all true Irishmen on the anniversary of St Patrick's Day—a saint it will be remembered so pure that all venomous things fled before him. In that country, as in this, there still lingers in shady, rustic places an aged moribund belief in the occult power of plants in the hands of weird women who know how to use them.

{349}

---

## MEMORY.

It is maintained by many psychologists that if an impression is once made upon the memory, it remains for ever. And it is undoubted that there are certain seasons of life or certain circumstances when memory is peculiarly susceptible, and when the impressions made are deep and sharp and definite. The objects familiar in childhood and youth, the texts, the hymns, and lessons then mastered become a lifelong bequest; the memory has petrified them on its tablet for ever. Sometimes the memory is in a state of spontaneous receptivity, and without any trouble on the part of the subject, the mind retains its interesting objects for years, perhaps through the whole life.

Memory develops in every sound mind almost as early as the powers of observation; and the objects about which it is employed in the earlier stage are much alike in all individuals. But very early we discern a difference in the natural affinities: one youthful reminiscent evinces a talent in finding his way to the infant school; whilst a bewildered companion of the same class uses leading-strings.

In glancing through the records of all ages and all nations, we meet with certain individuals who have been celebrated for their extraordinary powers of memory; and some of these would appear to us so wonderful, that we are tempted to disbelieve them, and place them in the list of human impossibilities. But it cannot be denied that there are numberless instances upon record, both ancient and modern, and also in our own day, of persons retaining an almost incredible recollection of a great diversity of matters, consisting in some cases of long lists of dates and names, or in others, countenances and circumstances, long since forgotten by the majority of mankind, through a lapse of time intervening.

We propose in this paper to submit to the reader a few of the many most authentic examples of retentive memory on record.

Within the range of their own experience, many of our readers must have noticed examples of quick or retentive memory. Frequently, however, these powerful memories are filled with matters of questionable value. Of such we may mention an individual well known in London by the name of 'Memory-Corner Thompson,' who was remarkable for an astonishing local memory. In the space of twenty-four hours and at two sittings, he drew from memory a correct plan of the whole parish of St James. This plan contained all the squares, streets, lanes, courts, passages, markets, churches, chapels, houses, stables, angles of houses; and a great number of other objects, as

wells, parapets, stones, trees, &c., and an exact plan of Carlton House and St James's Palace. He made out also an exact plan of the parish of St Andrew; and he offered to do the same with that of St Giles, St Paul, Covent Garden, St Clement, and Newchurch. If a particular house in any given street was mentioned, he would tell at once what trade was carried on in it, the position and appearance of the shop, and its contents. In going through a large hotel completely furnished, he was able to retain everything and make an inventory from memory. He possessed a most mechanical memory; and he could, by reading a newspaper overnight, repeat the whole of it next morning. He died in February 1843, at the age of eighty-six. Mr Paxton Hood knew a man in London who could repeat the whole of Josephus; and William Lyon, like Thompson, could read the *Daily Advertiser* overnight, and repeat it word for word next morning.

As a contrast to this, on the other hand we know an individual who travelled through a considerable extent of country, and passed through several towns he had visited before, yet was ignorant of the fact until informed of it by another traveller!

Pliny, in the seventh book of his Natural History, makes mention of one Charmidas or Charmadas, a native of Greece, who was the possessor of so singular a memory that he was able to deliver word for word the entire contents of any book which might be called out of a library, *without having read it*. This, however, we should be inclined to take *cum grano salis*.

Some cases are quoted of persons having a remarkable gift of learning any number of foreign languages in an incredibly short time. Mithridates king of Pontus had an empire in which two-and-twenty languages were spoken; yet it is asserted that he had not a subject with whom he could not converse in his own dialect. But in later times the royal linguist has been eclipsed by the late Cardinal Mezzofanti, who died in 1849. He had a wonderful memory for the retention of words, and with a grammatical intuition which has never been properly explained, he went on acquiring languages, till at the age of seventy he could converse in upwards of fifty, besides having an acquaintance with at least twenty more. He was at home in both of the dialects of the Basque language, the most difficult in Europe; also in the different dialects of German; with Englishmen he never misapplied the sign of a tense. Besides the foregoing, he was so far master of at least one Chinese dialect that he delivered a set speech to Chinese students at the Vatican. So conversant was he with all the dialects of each tongue that he could at once detect the particular county, province, or district to which a speaker belonged. He himself was upon several occasions mistaken for a native of totally different countries. According to his own words, as related to his friend Cardinal Wiseman, his method of studying a new language was to read straight through the grammar, and when he had arrived at the end he was master of the whole. He never forgot anything he had once heard or read.

Sir William Jones, in spite of his many duties as a legal student, had before his death acquired so intimate a knowledge of fourteen languages, that he translated from the most difficult and obscure. Dr Alexander Murray, the learned author of *The History of European Languages*, was another of Britain's greatest linguists, who remembered every word he ever read; he had the whole of Milton by heart. The Emperor Claudius was another great memorist, also repeating by heart the *Iliad* and *Odyssey*. {350}

It is recorded of Dr Leyden the distinguished oriental scholar, that when at Calcutta, a case occurred in which it was necessary, before deciding the issue, to know the exact wording of an act of parliament, of which, however, a copy could not be found in the Presidency. Leyden had had occasion before leaving home to read the act, and undertook to supply it from memory; and when nearly a year afterwards a printed copy was obtained from England, it was found to be identical with what Leyden had dictated.

Richard Porson had a remarkable memory. Being one day in the shop of Priestly the bookseller, a gentleman came in and asked for a particular edition of Demosthenes. Priestly did not possess it; and as the gentleman seemed a good deal disappointed, Porson inquired if he wished to consult any particular passage. The gentleman mentioned a quotation of which he was in search, when Porson opened the Aldine edition of Demosthenes, and after turning over a few leaves, put his finger on the passage. On another occasion he happened to be in a stage-coach; presently there entered into it a young undergraduate with two ladies. This young gentleman endeavoured to make himself seem very learned; presently quoting a Greek passage, which he said was from Euripides. The great Greek scholar, who was dozing at the other end of the coach, awoke at the familiar sounds, and drawing a copy of Euripides from the folds of his cloak, politely asked him to favour him with the passage. The student could not; and the ladies began to titter. Reddening, the youth said that on second thoughts, the passage he was sure was in Sophocles. Porson thereupon produced a copy of Sophocles, and again asked him to favour him with the passage. The undergraduate again failed; the ladies tittered greatly. 'Catch me!' said he, 'if ever I quote Greek in a coach again.' Stung by the laughter of his fellow-passengers, he said: 'I recollect now, sir; I perfectly recollect that the passage is in Æschylus.' His inexorable tormentor, diving again in the capacious folds of his cloak, produced a copy of Æschylus, and again asked him to favour him with the passage. The boiling-point was now reached. 'Stop! stop!' shouted he to the coachman. 'Let me out! There is a man inside who has got the whole Bodleian library in his pocket!' On another occasion, calling upon a friend, Porson found him reading Thucydides. Being asked casually the meaning of some word, he immediately repeated the context. 'But how do you know that it was this passage I was reading?' asked his friend. 'Because,' replied Porson, 'the word only occurs twice in Thucydides; once on the right-hand page in the edition which you are now using, and once on the left. I observed on which side you looked, and accordingly I knew to which passage you referred.'

Once when in the house of Dr Burney at Hammersmith, with some friends, examining some old

newspapers which detailed the execution of Charles I., he came across various particulars thought by some of them to have been overlooked by Rapin and Hume; but Porson instantly repeated a long passage from Rapin in which these circumstances were all recounted. Upon one occasion he undertook to learn by heart the entire contents of the *Morning Chronicle* in a week; and he used to say he could repeat *Roderick Random* from beginning to end. His stupendous memory, however, on account of his excesses, failed at last.

Dr Thomas Fuller, the worthy historian and divine, was said to have been able to repeat five hundred and nine strange names correctly after having twice heard them; and he was known to make use of a sermon verbatim if he once heard it. He once undertook to name exactly backwards and forwards every shop-sign from Temple Bar to the extremity of Cheapside, on both sides of the way—a feat of no ordinary magnitude, when we consider that in his day every house had its sign.

'Memory' Thompson boasted he could remember every shop from Ludgate Hill to the end of Piccadilly; and another person who had earned for himself the prefix of 'Memory' was William Woodfall, the printer of the famous Letters of Junius, who used to relate how he could put a speech away upon a shelf in his mind for future reference; and he was known to be able to remember a debate for a fortnight, after many nights' speaking upon other matters.

Dr Johnson was in the habit of writing abridged reports of debates for the *Gentleman's Magazine* from memory.

Two noted frequenters of the Chapter Coffee-House in Paternoster Row, in the last century, were Murray and Hammond. Murray had read through every morning and evening paper published in London for thirty years, and his memory was such that he was always applied to for dates and facts by literary men and others.

Jedediah Buxton, who resided for some weeks at St John's Gate Clerkenwell, in 1754, had such a memory that 'he could conduct the most intricate calculations by his memory alone, and such was his power of abstraction that no noise could disturb him.' Singular to relate, he never learned to read or write, though he was the son of a schoolmaster.

Eugenia Jullian, a precocious child, well known to the writer of this, at the age of five years had a book given her to read; and looking through it, she at length read a poem of several hundred lines (it must be mentioned she knew her alphabet at eleven months old, and could read at three years of age) once through; and being asked what she had read, she handed her mother the book, and repeated the whole without a mistake. Unfortunately, like most precocious children, her mind proved too powerful for a delicate constitution, and she died at an early age.

Among other possessors of very retentive memories may be mentioned the learned Pope Clement VI.; Dr Monsey, who died at Chelsea at the age of ninety-five; and Mozart, who almost in every case composed his pieces before he committed them to paper.

At the present time, Elihu Burritt possesses a remarkable memory. Born in America in 1811, he had, at the age of twenty-seven, and while working at his trade, learned fifty languages. In 1846 he came to England, and was for some time United States consul at Birmingham. Gustave Doré is the owner of a good memory; and we have it from a reliable authority, that Thomas Carlyle, 'the philosopher of Chelsea,' lays a book aside when he has read it, it being of no more use to him, having abstracted and stored up in his mind all the contents which he deems worthy of retention.

{351}

Every one has a memory, but every one has not the same natural affinities, and therefore every one does not retain with equal facility the same sort of thing. One man, from taking a glance at an object, will sketch it correctly; another could not give a correct representation were he to labour for a month. The mind of another is more for living objects, and like Cuvier or Knox, he carries in his memory the names and forms of hundreds of plants and animals. A third has a propensity for the faces of his fellow-creatures, and like Themistocles, he can name each of the twenty thousand of his fellow-citizens; or like Cyrus, he could remember the name of every soldier in his army; the like being related of L. Scipio and the Romans. The day following the arrival of Cinaes, ambassador of King Pyrrhus, in Rome, he saluted by name all the senate and the gentlemen of the city. Our own George III. had an extraordinary power of recollecting faces. The taste of a fourth is for languages, and like Mezzofanti or Alexander Murray, every word he hears or reads in a foreign tongue becomes a lifelong heritage. Another retains mathematics, the symbols of which require a peculiar cast of memory. Such a mind is generally destitute of love of colour, music, &c.; it wrestles with the artificial symbols that express the most extensively important truths of the world. The natural history memory has to do with artificial symbols, but with these it mixes the consideration of actual appearances to the senses. The taste of another is for choice, emphatic, and sublime diction; like Wakefield, he can repeat the whole of Virgil and Horace, Homer and Pindar.

The faculty of recollecting places is very large in some of the inferior animals; pigeons and some sorts of dogs have it very prominently. The falcon of Iceland returns to its native spot from a distance of several thousands of miles. And it seems likely that this has at least something to do with reference to those birds which migrate from one country to another. It seems indispensable to a successful traveller. Columbus, Cook, Park, and Livingstone must have been largely endowed with this faculty. These diversities have not been sufficiently kept in view in the important business of education, and the principle of cramming the same things into every sort of memory still too extensively prevails.

The memory may be strong where the intellect is weak; but without the former faculty there can be no intellectual growth; for is not memory the power of the mind by which it retains its



possessions? If Sensation, Perception, and Attention are the collecting faculties, Memory is 'the conservative faculty'—the retainer of the collected treasures.

With the power of throwing our whole mental vigour into any given act for the time being, a strong will can generally insure a strong memory; and for understanding then and retaining afterwards, half an hour of such absorption and concentration is worth more than the longest day of day-dreaming—though day-dreaming, as an occasional relaxation, is not to be despised.

Nowadays we are not at all surprised to see placarded about our towns large announcements of an 'eminent professor' about to arrive, under whose tuition we may be initiated into the 'Art of Memory,' whereby we may be taught to remember at will the heights of mountains, rows of dates, chronological events, and all things coming within the range of memory. It may be interesting to learn that this is no new art, for by reference to Pliny we find that the Art of Memory was invented by Simonides des Melicus, and afterwards perfected by Metrodorus Sepsius, 'by which a man might learne to rehearse againe the same words of any discourse whatsoever after once hearing.'

It does not fall within the scope of this paper to enter upon the merits or demerits of this art; but we may conveniently bring our subject to a close by relating a couple of anecdotes that bear upon it.

Upon one occasion, Fuller said: 'None alive ever heard me pretend to the *art* of memory, who in my book have decried it as a trick, no art; and indeed, is more fancy than memory. I confess, some years since, when I came out of the pulpit of St Dunstan's East, one (who since wrote a book thereof) told me in the vestry, before credible people, that he, in Sidney College, had taught me *the art of memory*. I returned unto him: *That it was not so*, for I could not remember *that I had ever seen him before!* which I conceive was a real refutation.'

Not very long ago, a lecturer upon the art of memory, whilst dining at an hotel in one of our provincial towns, was inquired for and called away suddenly; upon which he immediately finished his repast and hurried from the room. A moment or two afterwards, the waiter coming round to the chair lately occupied by the professor, held up his hands and exclaimed in astonishment: 'Goodness gracious, the memory man has forgotten his umbrella!'

---

## GOSSIP ABOUT TAILS.

EVERYBODY knows that tails serve a great variety of purposes. To mention a few: The horse and ox use their tail to drive off troublesome insects. Some kinds of apes have long prehensile tails with which they swing themselves from branches or reach distant fruit. The kangaroo's tail forms a kind of extra leg, and is also serviceable in jumping. The beaver is said to beat with its tail the mud of which its house or dam is built, as well as to use the organ in swimming. The tails of fishes act like rudders, and in whales, for example, they are powerful propellers, as also a means of attack or defence. Birds of high flight have their tail feathers adapted as a steering apparatus; while the tails of parrots, toucans, and climbers generally, incline downwards, and aid in laying hold of trees. The tail in some reptiles is important for locomotion. Scorpions have in their tail a formidable weapon; and the noise made by the rattlesnake when roused is given from its tail.

There is a good deal of expression in tails. A cat when unexcited has her tail bent towards the ground and quiet; but when the animal is under lively emotion, the tail shews movements which are not of chance character, but predetermined by nature—such and such an emotion causing such and such a movement. When the cat feels afraid when seized, for example by the neck, the tail goes down between her legs. On sight of an agreeable morsel of meat, the tail is raised straight up. When angry, the cat bends her tail into two curves of opposite direction—the greater curve at the base, the lesser at the extremity—while the fur is erect throughout. When on the alert for prey, she lashes her tail from side to side. On the other hand, the dog wags his tail to testify joy; while (as with the cat) fear sends it down between his legs. We are all familiar, again, with the comical appearance of a herd of cattle, driven to despair by insects, rushing about a field on a hot day with their tufted tails erect as posts. Dr John Brown, in one of his racy sketches, tells of a dog of his whose tail had rather a peculiar kind of expressiveness. This tail of Toby's was 'a tail *per se*; it was of immense girth, and not short, equal throughout like a policeman's baton; the machinery for working it was of great power, and acted in a way, as far as I have been able to discover, quite original. We called it his ruler. When he wished to get into the house, he first whined gently, then growled, then gave a sharp bark, and then came a resounding mighty stroke, which shook the house. This, after much study and watching, we found was done by his bringing the entire length of his solid tail flat upon the door with a sudden and vigorous stroke. It was quite a *tour de force* or a *coup de queue*, and he was perfect in it at once, his first *bang* authoritative having been as masterly and telling as his last.'

There seems to be good reason for believing that rats sometimes use their tails for feeding purposes where the food to be eaten is contained in vessels too narrow to admit the entire body of the animal. A rat will push down his tail into the tall-shaped bottle of preserves, and lick it after he has pulled it out. A gentleman put two such jars of preserves covered with a bladder, in a place frequented by rats; and afterwards found the jelly reduced in each to the same extent, and a small aperture gnawed in the bladder just sufficient to admit the tail. Another experiment was more decisive. Having refilled the jars to about half an inch above the level left by the rats, he put some moist paper over the jelly and let it stand in a place where there were no rats or mice, till

the paper got covered by mould. Then he covered the jars with a bladder and put them where the rats were numerous; as before, next morning the bladder had again been eaten through, and on the mould there were numerous distinct tracings of rats' tails, evidently caused by the animals sweeping these appendages about, in the fruitless endeavour to find a hole in the circle of paper which covered the jelly.

An example of the practice of vivisection (which is happily less common in this country than on the continent) is presented in an experiment made lately by an eminent French physiologist with the tail of a young rat. Readers are doubtless aware of the curious results that may be obtained by skin-grafting. The experimenter referred to skinned a little portion of the tip of the rat's tail, made an incision in the back of the animal, inserted the skinned tip in this hole, and fixed it there. In course of time the wound healed, and the animal went about with its tail thus transformed into something like the handle of a teapot. After eight months the savant cut the handle in two; then on pinching the end of the part left in the back, the rat appeared to feel pain, and tried to escape. It was thus shewn that the sensitive nerves in the end of the tail had formed a true connection with the nerves in the back issuing from the spinal cord; and that they conveyed an excitation in an opposite direction to that in which they convey it normally.

The trick which came under the notice of the French correctional police will perhaps here recur to recollection. A person complained that he had been imposed upon by the purchase of an animal represented to be 'an elephant rat;' that is, a rat with a trunk and tusks resembling those of an elephant. The trunk was nothing more than part of a rat's tail stuck into the snout of the animal, where it grew as if natural. As for the tusks, they were two of the teeth in the upper jaw which had been suffered to grow by removing the two corresponding teeth in the lower jaw against which they used to grind and be kept short. More ingenious than honest, the fraud was duly punished.

Crocodiles have enormous tails; of sixty vertebræ there are more than forty which are caudal. The organ is rather cumbrous to them on land, and this fact affords an opportunity of escaping from them by making quick turns, which they do not readily follow. But their powerful tail must be of immense value to them in swimming.

There is strong probability that the tail of some animals covered with fur serves the purpose of a protection to the air-passages of mouth and nose during sleep, as also the retention of heat. This will be apparent to any one who observes the position into which the tail is curled in such cases, and the face brought into contact with it.

Frogs have no proper tails, but in the tadpole stage they have, and their locomotion by means of them is familiar to everybody. A similar mode of locomotion is observable in the minute animals termed Flagellata, which advance by lashing their tails from side to side. The motions of several of those microscopic organisms known as *Bacteria*, found in putrefying infusions of organic matter, are at present somewhat enigmatical. But they are to a certain extent explained by an interesting observation made lately by MM. Colin and Warming. With sufficient magnifying power these naturalists have found tails in several of the Bacteria. They vary in number from one to three, are situated at one end of the axis of length, and capable of rapid motion; by which the movements of these minute creatures may fairly be accounted for.

The last thing we have to say on the subject is to express our gratification at the change which has taken place in treating the tails of horses. The odious and cruel practice of, docking them, once so prevalent, has been happily abandoned, and the horse's tail is now left to attain its natural graceful dimensions.

---

Printed and Published by W. & R. CHAMBERS, 47 Paternoster Row, LONDON, and 339 High Street, EDINBURGH.

---

*All Rights Reserved.*

---

[Transcriber's Note—The following correction has been made to this text: on page 348, "perternaturally" changed to "preternaturally".]

\*\*\* END OF THE PROJECT GUTENBERG EBOOK CHAMBERS'S JOURNAL OF POPULAR LITERATURE, SCIENCE, AND ART, NO. 701 \*\*\*

Updated editions will replace the previous one—the old editions will be renamed.

Creating the works from print editions not protected by U.S. copyright law means that no one owns a United States copyright in these works, so the Foundation (and you!) can copy and distribute it in the United States without permission and without paying copyright royalties. Special rules, set forth in the General Terms of Use part of this license, apply to copying and

distributing Project Gutenberg™ electronic works to protect the PROJECT GUTENBERG™ concept and trademark. Project Gutenberg is a registered trademark, and may not be used if you charge for an eBook, except by following the terms of the trademark license, including paying royalties for use of the Project Gutenberg trademark. If you do not charge anything for copies of this eBook, complying with the trademark license is very easy. You may use this eBook for nearly any purpose such as creation of derivative works, reports, performances and research. Project Gutenberg eBooks may be modified and printed and given away—you may do practically ANYTHING in the United States with eBooks not protected by U.S. copyright law. Redistribution is subject to the trademark license, especially commercial redistribution.

START: FULL LICENSE  
THE FULL PROJECT GUTENBERG LICENSE  
PLEASE READ THIS BEFORE YOU DISTRIBUTE OR USE THIS WORK

To protect the Project Gutenberg™ mission of promoting the free distribution of electronic works, by using or distributing this work (or any other work associated in any way with the phrase “Project Gutenberg”), you agree to comply with all the terms of the Full Project Gutenberg™ License available with this file or online at [www.gutenberg.org/license](http://www.gutenberg.org/license).

**Section 1. General Terms of Use and Redistributing Project Gutenberg™ electronic works**

1.A. By reading or using any part of this Project Gutenberg™ electronic work, you indicate that you have read, understand, agree to and accept all the terms of this license and intellectual property (trademark/copyright) agreement. If you do not agree to abide by all the terms of this agreement, you must cease using and return or destroy all copies of Project Gutenberg™ electronic works in your possession. If you paid a fee for obtaining a copy of or access to a Project Gutenberg™ electronic work and you do not agree to be bound by the terms of this agreement, you may obtain a refund from the person or entity to whom you paid the fee as set forth in paragraph 1.E.8.

1.B. “Project Gutenberg” is a registered trademark. It may only be used on or associated in any way with an electronic work by people who agree to be bound by the terms of this agreement. There are a few things that you can do with most Project Gutenberg™ electronic works even without complying with the full terms of this agreement. See paragraph 1.C below. There are a lot of things you can do with Project Gutenberg™ electronic works if you follow the terms of this agreement and help preserve free future access to Project Gutenberg™ electronic works. See paragraph 1.E below.

1.C. The Project Gutenberg Literary Archive Foundation (“the Foundation” or PGLAF), owns a compilation copyright in the collection of Project Gutenberg™ electronic works. Nearly all the individual works in the collection are in the public domain in the United States. If an individual work is unprotected by copyright law in the United States and you are located in the United States, we do not claim a right to prevent you from copying, distributing, performing, displaying or creating derivative works based on the work as long as all references to Project Gutenberg are removed. Of course, we hope that you will support the Project Gutenberg™ mission of promoting free access to electronic works by freely sharing Project Gutenberg™ works in compliance with the terms of this agreement for keeping the Project Gutenberg™ name associated with the work. You can easily comply with the terms of this agreement by keeping this work in the same format with its attached full Project Gutenberg™ License when you share it without charge with others.

1.D. The copyright laws of the place where you are located also govern what you can do with this work. Copyright laws in most countries are in a constant state of change. If you are outside the United States, check the laws of your country in addition to the terms of this agreement before downloading, copying, displaying, performing, distributing or creating derivative works based on this work or any other Project Gutenberg™ work. The Foundation makes no representations concerning the copyright status of any work in any country other than the United States.

1.E. Unless you have removed all references to Project Gutenberg:

1.E.1. The following sentence, with active links to, or other immediate access to, the full Project Gutenberg™ License must appear prominently whenever any copy of a Project Gutenberg™ work (any work on which the phrase “Project Gutenberg” appears, or with which the phrase “Project Gutenberg” is associated) is accessed, displayed, performed, viewed, copied or distributed:

This eBook is for the use of anyone anywhere in the United States and most other parts of the world at no cost and with almost no restrictions whatsoever. You may copy it, give it away or re-use it under the terms of the Project Gutenberg License included with this eBook or online at [www.gutenberg.org](http://www.gutenberg.org). If you are not located in the United States, you will have to check the laws of the country where you are located before using this eBook.

1.E.2. If an individual Project Gutenberg™ electronic work is derived from texts not protected

by U.S. copyright law (does not contain a notice indicating that it is posted with permission of the copyright holder), the work can be copied and distributed to anyone in the United States without paying any fees or charges. If you are redistributing or providing access to a work with the phrase "Project Gutenberg" associated with or appearing on the work, you must comply either with the requirements of paragraphs 1.E.1 through 1.E.7 or obtain permission for the use of the work and the Project Gutenberg™ trademark as set forth in paragraphs 1.E.8 or 1.E.9.

1.E.3. If an individual Project Gutenberg™ electronic work is posted with the permission of the copyright holder, your use and distribution must comply with both paragraphs 1.E.1 through 1.E.7 and any additional terms imposed by the copyright holder. Additional terms will be linked to the Project Gutenberg™ License for all works posted with the permission of the copyright holder found at the beginning of this work.

1.E.4. Do not unlink or detach or remove the full Project Gutenberg™ License terms from this work, or any files containing a part of this work or any other work associated with Project Gutenberg™.

1.E.5. Do not copy, display, perform, distribute or redistribute this electronic work, or any part of this electronic work, without prominently displaying the sentence set forth in paragraph 1.E.1 with active links or immediate access to the full terms of the Project Gutenberg™ License.

1.E.6. You may convert to and distribute this work in any binary, compressed, marked up, nonproprietary or proprietary form, including any word processing or hypertext form. However, if you provide access to or distribute copies of a Project Gutenberg™ work in a format other than "Plain Vanilla ASCII" or other format used in the official version posted on the official Project Gutenberg™ website ([www.gutenberg.org](http://www.gutenberg.org)), you must, at no additional cost, fee or expense to the user, provide a copy, a means of exporting a copy, or a means of obtaining a copy upon request, of the work in its original "Plain Vanilla ASCII" or other form. Any alternate format must include the full Project Gutenberg™ License as specified in paragraph 1.E.1.

1.E.7. Do not charge a fee for access to, viewing, displaying, performing, copying or distributing any Project Gutenberg™ works unless you comply with paragraph 1.E.8 or 1.E.9.

1.E.8. You may charge a reasonable fee for copies of or providing access to or distributing Project Gutenberg™ electronic works provided that:

- You pay a royalty fee of 20% of the gross profits you derive from the use of Project Gutenberg™ works calculated using the method you already use to calculate your applicable taxes. The fee is owed to the owner of the Project Gutenberg™ trademark, but he has agreed to donate royalties under this paragraph to the Project Gutenberg Literary Archive Foundation. Royalty payments must be paid within 60 days following each date on which you prepare (or are legally required to prepare) your periodic tax returns. Royalty payments should be clearly marked as such and sent to the Project Gutenberg Literary Archive Foundation at the address specified in Section 4, "Information about donations to the Project Gutenberg Literary Archive Foundation."
- You provide a full refund of any money paid by a user who notifies you in writing (or by e-mail) within 30 days of receipt that s/he does not agree to the terms of the full Project Gutenberg™ License. You must require such a user to return or destroy all copies of the works possessed in a physical medium and discontinue all use of and all access to other copies of Project Gutenberg™ works.
- You provide, in accordance with paragraph 1.F.3, a full refund of any money paid for a work or a replacement copy, if a defect in the electronic work is discovered and reported to you within 90 days of receipt of the work.
- You comply with all other terms of this agreement for free distribution of Project Gutenberg™ works.

1.E.9. If you wish to charge a fee or distribute a Project Gutenberg™ electronic work or group of works on different terms than are set forth in this agreement, you must obtain permission in writing from the Project Gutenberg Literary Archive Foundation, the manager of the Project Gutenberg™ trademark. Contact the Foundation as set forth in Section 3 below.

1.F.

1.F.1. Project Gutenberg volunteers and employees expend considerable effort to identify, do copyright research on, transcribe and proofread works not protected by U.S. copyright law in creating the Project Gutenberg™ collection. Despite these efforts, Project Gutenberg™ electronic works, and the medium on which they may be stored, may contain "Defects," such as, but not limited to, incomplete, inaccurate or corrupt data, transcription errors, a copyright or other intellectual property infringement, a defective or damaged disk or other medium, a computer virus, or computer codes that damage or cannot be read by your

equipment.

1.F.2. LIMITED WARRANTY, DISCLAIMER OF DAMAGES - Except for the “Right of Replacement or Refund” described in paragraph 1.F.3, the Project Gutenberg Literary Archive Foundation, the owner of the Project Gutenberg™ trademark, and any other party distributing a Project Gutenberg™ electronic work under this agreement, disclaim all liability to you for damages, costs and expenses, including legal fees. YOU AGREE THAT YOU HAVE NO REMEDIES FOR NEGLIGENCE, STRICT LIABILITY, BREACH OF WARRANTY OR BREACH OF CONTRACT EXCEPT THOSE PROVIDED IN PARAGRAPH 1.F.3. YOU AGREE THAT THE FOUNDATION, THE TRADEMARK OWNER, AND ANY DISTRIBUTOR UNDER THIS AGREEMENT WILL NOT BE LIABLE TO YOU FOR ACTUAL, DIRECT, INDIRECT, CONSEQUENTIAL, PUNITIVE OR INCIDENTAL DAMAGES EVEN IF YOU GIVE NOTICE OF THE POSSIBILITY OF SUCH DAMAGE.

1.F.3. LIMITED RIGHT OF REPLACEMENT OR REFUND - If you discover a defect in this electronic work within 90 days of receiving it, you can receive a refund of the money (if any) you paid for it by sending a written explanation to the person you received the work from. If you received the work on a physical medium, you must return the medium with your written explanation. The person or entity that provided you with the defective work may elect to provide a replacement copy in lieu of a refund. If you received the work electronically, the person or entity providing it to you may choose to give you a second opportunity to receive the work electronically in lieu of a refund. If the second copy is also defective, you may demand a refund in writing without further opportunities to fix the problem.

1.F.4. Except for the limited right of replacement or refund set forth in paragraph 1.F.3, this work is provided to you ‘AS-IS’, WITH NO OTHER WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PURPOSE.

1.F.5. Some states do not allow disclaimers of certain implied warranties or the exclusion or limitation of certain types of damages. If any disclaimer or limitation set forth in this agreement violates the law of the state applicable to this agreement, the agreement shall be interpreted to make the maximum disclaimer or limitation permitted by the applicable state law. The invalidity or unenforceability of any provision of this agreement shall not void the remaining provisions.

1.F.6. INDEMNITY - You agree to indemnify and hold the Foundation, the trademark owner, any agent or employee of the Foundation, anyone providing copies of Project Gutenberg™ electronic works in accordance with this agreement, and any volunteers associated with the production, promotion and distribution of Project Gutenberg™ electronic works, harmless from all liability, costs and expenses, including legal fees, that arise directly or indirectly from any of the following which you do or cause to occur: (a) distribution of this or any Project Gutenberg™ work, (b) alteration, modification, or additions or deletions to any Project Gutenberg™ work, and (c) any Defect you cause.

## **Section 2. Information about the Mission of Project Gutenberg™**

Project Gutenberg™ is synonymous with the free distribution of electronic works in formats readable by the widest variety of computers including obsolete, old, middle-aged and new computers. It exists because of the efforts of hundreds of volunteers and donations from people in all walks of life.

Volunteers and financial support to provide volunteers with the assistance they need are critical to reaching Project Gutenberg™’s goals and ensuring that the Project Gutenberg™ collection will remain freely available for generations to come. In 2001, the Project Gutenberg Literary Archive Foundation was created to provide a secure and permanent future for Project Gutenberg™ and future generations. To learn more about the Project Gutenberg Literary Archive Foundation and how your efforts and donations can help, see Sections 3 and 4 and the Foundation information page at [www.gutenberg.org](http://www.gutenberg.org).

## **Section 3. Information about the Project Gutenberg Literary Archive Foundation**

The Project Gutenberg Literary Archive Foundation is a non-profit 501(c)(3) educational corporation organized under the laws of the state of Mississippi and granted tax exempt status by the Internal Revenue Service. The Foundation’s EIN or federal tax identification number is 64-6221541. Contributions to the Project Gutenberg Literary Archive Foundation are tax deductible to the full extent permitted by U.S. federal laws and your state’s laws.

The Foundation’s business office is located at 809 North 1500 West, Salt Lake City, UT 84116, (801) 596-1887. Email contact links and up to date contact information can be found at the Foundation’s website and official page at [www.gutenberg.org/contact](http://www.gutenberg.org/contact)

## **Section 4. Information about Donations to the Project Gutenberg Literary Archive Foundation**

Project Gutenberg™ depends upon and cannot survive without widespread public support and donations to carry out its mission of increasing the number of public domain and licensed works that can be freely distributed in machine-readable form accessible by the widest array of equipment including outdated equipment. Many small donations (\$1 to \$5,000) are particularly important to maintaining tax exempt status with the IRS.

The Foundation is committed to complying with the laws regulating charities and charitable donations in all 50 states of the United States. Compliance requirements are not uniform and it takes a considerable effort, much paperwork and many fees to meet and keep up with these requirements. We do not solicit donations in locations where we have not received written confirmation of compliance. To SEND DONATIONS or determine the status of compliance for any particular state visit [www.gutenberg.org/donate](http://www.gutenberg.org/donate).

While we cannot and do not solicit contributions from states where we have not met the solicitation requirements, we know of no prohibition against accepting unsolicited donations from donors in such states who approach us with offers to donate.

International donations are gratefully accepted, but we cannot make any statements concerning tax treatment of donations received from outside the United States. U.S. laws alone swamp our small staff.

Please check the Project Gutenberg web pages for current donation methods and addresses. Donations are accepted in a number of other ways including checks, online payments and credit card donations. To donate, please visit: [www.gutenberg.org/donate](http://www.gutenberg.org/donate)

## **Section 5. General Information About Project Gutenberg™ electronic works**

Professor Michael S. Hart was the originator of the Project Gutenberg™ concept of a library of electronic works that could be freely shared with anyone. For forty years, he produced and distributed Project Gutenberg™ eBooks with only a loose network of volunteer support.

Project Gutenberg™ eBooks are often created from several printed editions, all of which are confirmed as not protected by copyright in the U.S. unless a copyright notice is included. Thus, we do not necessarily keep eBooks in compliance with any particular paper edition.

Most people start at our website which has the main PG search facility: [www.gutenberg.org](http://www.gutenberg.org).

This website includes information about Project Gutenberg™, including how to make donations to the Project Gutenberg Literary Archive Foundation, how to help produce our new eBooks, and how to subscribe to our email newsletter to hear about new eBooks.