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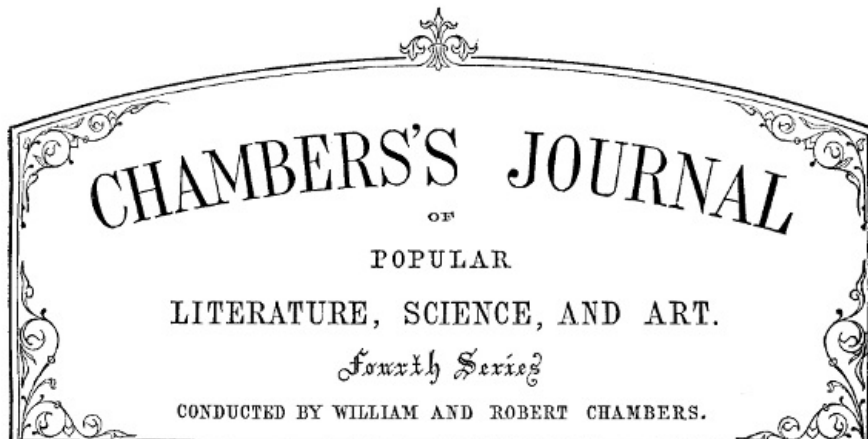
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**CHAMBERS'S JOURNAL
OF
POPULAR
LITERATURE, SCIENCE, AND ART.
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TREATMENT OF ANIMALS.

IN our youthful days in the early years of the present century, little consideration was given to a systematic kindness to animals. Horses were overwrought without mercy, when ill-fed and with wounds which should have excited compassion. If they sunk down in their misery, they were left to die, the chances being that, in their last hours, they were inhumanly pelted with stones by boys;—no one, not even magistrates or clergymen, giving any concern to the cruelties that were perpetrated. All that we have seen, without exciting a word of remonstrance. A wretch who habitually turned out his old, overwrought, and half-starved horses to die on the town-green, never incurred any check or reprobation. His proceedings were viewed with perfect indifference. People, while passing along in a demure sort of way to church, would see a crowd of boys pitching stones into the wounds of a dying horse, and not one of these decorous church-goers endeavoured to stop these horrid acts of inhumanity. Like the Pharisees of old, they passed on the other side. Such within recollection is a small sample of the unchecked atrocities of our young days. Cats were pelted to death. Birds' nests were robbed. Dogs had kettles tied to their tail, and were hounded to madness by howling multitudes. Oxen were overdriven to an infuriated condition, and their frantic and revengeful career formed an acceptable subject of public amusement.

Barbarous in a certain sense as these comparatively recent times were, there had already been shewn instances of a kind consideration for animals. The poet Cowper, it will be recollected, wrote touchingly of the hares which he had domesticated. Sir Walter Scott's tender regard for his dogs has been recently noticed in these pages. There was here and there a glimmering consciousness that animals had some sort of claims on the mercy of mankind. What strikes one as curious is that society had retrograded in this respect. The oldest laws in the world, found in the early books of the Old Testament, enjoin a kind treatment of animals. If we see an ass fall which belongs to some one with whom we have a cause of difference, we are to throw aside private feelings, and hasten to help the animal. We are not to take a bird when sitting on its eggs, or on its young; a most humane injunction. In various texts the Hebrews were enjoined to have due regard for the comfort of the ox, the ass, or any other animal which laboured for them. In these venerable records, mercy is enjoined towards all living creatures.

The modern world, with all its pompous claims to civilisation, strangely drifted into an entire neglect of these beneficent obligations. Throughout Christendom, any laws enforcing a kind treatment of animals are few in number, and of very recent date. Even within our remembrance, clergymen were not usually in the habit of inculcating that species of kindness to domesticated creatures which we read of in the Old Testament; nor were children ordinarily taught lessons of humanity within the family circle. The oldest statutory laws concerning animals are those for the protection of game; but these laws proceeded on no principle of kindness. They were intended only to protect certain birds and quadrupeds during the breeding season, with a view to what is called 'sport,' the pleasure of killing them by licensed individuals—the license for indulging in this species of luxury being, as is well known, pretty costly. It is not our wish to hold up 'sport' of a legitimate kind to ridicule. The chief matter of regret is the coarse way in which game is sometimes pursued and killed even by licensed sportsmen: their operations in what is known as a *battue*, when vast numbers of animals are driven into narrow spaces, and shot down and maimed without mercy, being, as we think, no better than wholesale butchery; and not what might be expected from persons of taste and education.

Although in the early years of the present century there were no laws for the specific purpose of preventing cruelty to animals, thoughtful and humane persons were beginning to give attention to the subject. In 1809, Sir Charles Bunbury brought into the House of Commons a bill for the 'Prevention of wanton and malicious cruelty to Animals.' Mr Windham, a cabinet minister, little to his credit, opposed the bill, and it failed to pass. The next attempt at legislation on the subject was made by Lord Erskine in the House of Lords in 1810. His measure was opposed by Lord Ellenborough, and had to be withdrawn. There the matter rested until 1821, when Mr Richard Martin, member of parliament for Galway, brought a bill into the House of Commons for the 'Prevention of Cruelty to Horses.' It encountered torrents of ridicule, and after passing a second reading in a thin house, was no further proceeded with. Mr Martin, however, was not discouraged. He felt he was right, and returned to the encounter. In 1822, he introduced a new and more comprehensive bill. Instead of horses, he used the word 'cattle;' this bill passed through all its stages, and became an act of parliament. This act of 1822 was the first ever enacted against cruel and improper treatment of animals. Let there be every honour to the memory of Richard Martin for his noble struggle on behalf of defenceless creatures. In 1825, he brought in a bill for the suppression of bear-baiting and other cruel sports. Not without surprise do we learn that Sir Robert Peel met the bill with determined opposition, and that it was thrown out. To think that so eminent a statesman as Peel should have been a supporter of bear-baiting! No fact could better present an idea of what was still the backward state of feeling among educated persons on the subject of cruelty to animals.

The year 1826 found Mr Martin still at his post. He framed a bill to extend protection to dogs, cats, and other domesticated animals from cruelty. In this it might have been expected he would have been successful. But no. His arguments to move the House of Commons were unavailing. Mr Martin died in 1834. Not until 1835, when more enlarged ideas prevailed, was there an Act to throw a protecting shield over cattle in the market, on the way to the slaughter-house, and in the roads and streets generally; over all such animals as dogs, bulls, bears, or cocks, kept for purposes of baiting or fighting; over all animals kept in pounds or inclosures without a sufficiency

of food or drink; and over all worn-out horses, compelled to work when broken down with weakness or disease.

It was reserved for the beneficent reign of the present Queen to see a comprehensive Act of Parliament for the prevention of cruelty to animals. This was the Act of 1849 (which was extended to Scotland in 1850), that now forms the basis for prosecuting cases of cruelty, and may be called the charter which conferred on domesticated animals a right to protection. Lamenting the backwardness of England in establishing such a charter, it is not without pride that one knows that England was after all the first country in modern times to enforce the principle that the lower animals are entitled to be protected by law. That principle, as we have shewn, is not new. It was recognised by the ancient Hebrews, and it is pleasing to feel that at length modern common-sense has legislatively assumed its propriety. Latterly, there have been several additional Acts of Parliament, chiefly as concerns protection to sea-birds and small land-birds; but while well meant, these Acts are very imperfect. The eggs of sea-birds not being protected, the nests of these animals may be rifled with impunity. As regards small birds, a number are left out in the list of protected animals—the skylark for one. These deficiencies are unfortunate. Sea-birds, though generally looked on with indifference, are of great public utility. They benefit agriculturists by eating the worms and grubs in newly ploughed land; they hover over parts of the sea and point out where there are shoals of herrings and other fish; they are useful to the mariner in foggy weather, by their warning cries near the rock-bound coast. How beautiful that arrangement of Nature, in making provision for birds to live on shelving rocks by the sea-shore, there to act like beacons, in warning off the bark of the mariner from a coast that would cause its destruction! Considering that wonderful provision, how scandalous, how short-sighted the practice of rifling the nests of sea-birds! A supplementary Act to protect the eggs of sea-birds cannot, as a matter of public duty, be too soon passed. Already, on some parts of the coast, sea-birds are said to be rapidly disappearing.

As every one knows, dogs are often lost in large towns, and roam about miserably in search of their master or mistress. A sight of them in such circumstances is exceedingly pitiable. In the Metropolis, a humane plan for succouring lost dogs has been established. Some years ago, a benevolent lady, Mrs Tealby, was enabled, by the aid of public subscriptions, to set on foot a temporary Home for Lost and Starving Dogs, which has existed since 1860. It is situated at Battersea Park Road. Any dog, when found and brought to the Home, is taken in and succoured under certain necessary conditions. If a dog, after being housed and succoured, is applied for by the owner (with satisfactory proof of ownership), the animal is given up on payment of the expenses of its keep. If no owner comes forward, every unclaimed dog is sold for the benefit of the institution, or otherwise disposed of according to circumstances. The Home is growing in usefulness. In one year recently more than three thousand three hundred dogs were restored to their former owners or sent to new homes. Many owners who recover their favourites through the agency of this institution, not only refund the expenses incurred, but assist the funds by subscriptions in the name of their recovered pets—as for instance, 'In memory of Pup,' 'For little Fido,' 'In name of darling Charlie,' 'The mite from an old dog;' and so on. This deserving and well managed institution is well worth visiting. Only, the visitor must be prepared to see painful demonstrations from some of the unhappy inmates. On the approach of the visitor, each animal eagerly hastens to see if he be his dear master. And when a sniff and a glance render too evident the fact that you are not the person wished for, something like a tear steals from the poor doggie's eye. The happiness shewn when one of the animals finds his lost master is equally expressive. Looking to the great good done in the cause of humanity by this meritorious Home for Lost and Starving Dogs, it may be hoped that efforts will not be wanting to establish similar institutions elsewhere.

There is another admirable establishment worth referring to. It is known as the Brown Institution, from having been founded by the bequest in 1851 of a large sum of money by Mr Thomas Brown. Its design was the advancement of knowledge concerning the diseases of animals, the best mode of treating them for the purpose of cure, and the encouragement of humane conduct towards animals generally. The Institution combines the quality of an infirmary and a dispensary for animals belonging to persons who are not well able to pay for ordinary medical attendance, and therefore does not trench on veterinary establishments. Several thousands of animals are treated annually. The Institution, which is under the direction of the Senate of the University of London, is situated in Wandsworth Road, near Vauxhall Railway Station. As an hospital and dispensary for poor horses, dogs, and other animals, the Brown Institution is unique of its kind. As far as we know, there is nothing like it in the world. What a prodigious step in advance is the Home for Dogs, and the Institution now described, from the condition of things at the beginning of the nineteenth century!

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In speaking of the improved treatment of defenceless creatures within recent times, a prominent place is due to the Royal Society for the Prevention of Cruelty to Animals, located in Jermyn Street, London. Standing at the head of all organisations of the kind in the United Kingdom, this Society may be considered the watchful guardian of the rights of animals, and without whose agency the laws we have enumerated would, as regards England, stand a poor chance of being enforced. The business of this Society is conducted mainly by the employment of persons all over the country to find out cases of cruelty, and to bring the offenders to justice. The Society diffuses hand-bills and placards in places where they may come prominently under the notice of persons likely to infringe the law. It further has issued various publications calculated to stir up the feelings in behalf of animals.

The hand-bills and placards deserve special notice. Sheep salesmen are reminded that

convictions have been obtained against persons for ill-treating sheep by cutting and lacerating their ears, as a means of identifying them from sheep belonging to other consigners. Shepherds are warned, by a cited example, to abstain from a specified mode of treating sheep for certain maladies; because pain is inflicted, which a veterinary surgeon knows how to avoid, but which an ignorant though well-meaning shepherd may not. Farmers are reminded that it is a punishable offence to crowd too many sheep together on going to market; instances being cited in which eleven sheep were crammed into a small cart, with their legs tied tightly together. Captains of freight steamers are informed that penalties have been enforced against a captain for so overcrowding his vessel, on a voyage from Holland to the Thames, as to cause the sheep much pain and suffering; carriers and cattle-barge owners are under the same legal obligations.

In regard to cows, one placard cautions persons sending them to market with the udder greatly distended with milk, and from which the poor animals evidently suffer much pain. Cattle rearers are told that penalties have been enforced against one of their body for sawing off the horns of fourteen heifers so close to the head as to cause blood to flow in considerable quantity, and to make the animals stamp and moan; the object of such a mode of cutting being to increase the market value of the horns. Butchers are reminded that it is a punishable offence to bleed calves to death merely for the sake of giving additional whiteness to veal. Consigners and carriers are alike reminded that the Act of 1849 imposes fines or imprisonment as a punishment for conveying animals in such way as to subject them to unnecessary pain or suffering; the neglect to give proper food and water to the animals, whether coming to market, at market, or in removal from market, is announced in another hand-bill to be an infringement of the same statute.

Drovers, by another hand-bill or placard, are cautioned against urging on cattle which by lameness are unfitted to travel along the roads and streets; and against striking animals on the legs so violently as to lame them: both are practices to which drovers are too prone, and both are punishable. Farmers, graziers, and salesmen are alike warned that the season of the year should be taken into account in the transport of shorn sheep. 'It is hardly conceivable that respectable farmers and graziers, merely for the sake of profit, can in the months of December, January, February, March, or April, cruelly strip a dumb animal of that warm woollen coat which the goodness of God has provided more abundantly in winter to protect it from the cold weather; or that any English salesman will lay himself open to a criminal charge of aiding or continuing the offence by exposing shorn animals for sale at such inclement seasons.'

Horses and donkeys find a place in the safeguards which the Society endeavours to provide, by disseminating placards and hand-bills pointing out the penalties for cruelty or neglect. It is an offence against the laws to work a horse in an omnibus, cab, or other vehicle when in an infirm or worn-out state. It is an offence to beat a horse in a stable with a degree of severity amounting to cruelty, merely to make it obedient, or still worse, through an impulse of angry passion. It is an offence to set a horse to drag a cart or wagon loaded with a weight beyond his strength; many coal-merchants and their carmen have been prosecuted and fined for this unfeeling conduct. It is an offence to cruelly beat and over-ride poor donkeys; useful animals which seem fated to be the victims of very hard treatment in the world. It is a significant fact that one placard is addressed to 'excursionists and others:' those who have witnessed the treatment of donkeys by their drivers, at Hampstead Heath, Blackheath, and the humbler grades of sea-side places where holiday people assemble, will know what this means. The Society aid the inspectors of mines, or are aided by them, in bringing to justice truck-drivers and others for working horses and ponies in an unfit state in coal-pits.

It was not likely that dogs would be left out of sight by the Society; the maltreating of such animals is the subject of some of the cautionary placards, especially in localities where rough persons, prone to dog-tormenting, are known to be numerous. Cats are the subjects concerning which other warnings are given, in regard to torturing or cruelly worrying. Fishmongers are reminded that it is a punishable offence which many persons commit of 'putting living lobsters and crabs into cold water, and then placing them on a fire until the water is heated to boiling temperature, thereby causing them to endure horrible and prolonged suffering.'

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That the feathered tribes should share the protection which the issuing of these placards is intended to subserve, is natural enough; seeing that the Sea-bird, Wild-bird, and Wild-fowl Acts were due in great measure to the Society. One placard states that it is a punishable offence to kill or wound any such birds (including the young in nests) within the prohibited period; and that those who sell such killed birds are also punishable. Another placard administers a similar warning in regard to wild-fowl, enumerating thirty-six species, all of which are to be safe from the gun, the snare, and the net from the 15th of February to the 10th of July, under penalties which are prescribed in the Act of 1876. Bird-fanciers are reminded that one of their fraternity was imprisoned for fourteen days for depriving a chaffinch of its sight as a means of improving its singing. Poultry-dealers are, in another hand-bill, cautioned against plucking live poultry, a cruel practice which, if proved, subjects the offender to three months' imprisonment. Carrying live fowls to market by their legs, with their heads hanging downwards; and exposing fowls to hot sunshine with their legs tied together—have brought the offenders into trouble. In another placard the patrons of pigeon-matches are warned that occasional cruelties practised by them or their servants come within the scope of the law. In one of the Society's publications, the cruelty of bearing-reins for carriage-horses is significantly pointed out.

The Society has been encouraged in its benevolent exertions by a letter from Her Majesty the Queen, addressed in 1874 to the Earl of Harrowby, in his capacity as President. There was an assembly in London of foreign delegates representing similar associations, on the occasion of the holding of the half-century jubilee of the parent Society. Her Majesty requested the President to

give expression publicly to her warm interest in the success of the efforts made here and abroad for the purpose of diminishing the cruelties practised on dumb animals. 'The Queen hears and reads with horror of the sufferings which the brute creation often undergo from the thoughtlessness of the ignorant, and she fears also sometimes from the experiments in pursuit of science. For the removal of the former the Queen trusts much to the progress of education; and in regard to the pursuit of science, she hopes that the advantage of those anæsthetic discoveries from which man has derived so much benefit himself, in the alleviation of suffering, may be fully extended to the lower animals. Her Majesty rejoices that the Society awakens the interest of the young by the presentation of prizes for essays connected with the subject, and hears with gratification that her son and daughter-in-law shew their interest and sympathy by presenting those prizes at your meetings.'

Looking to the distinguished patronage of the Society from Her Majesty downwards, its vast array of supporters, and the large number of Societies which it has helped to originate at home and abroad, we naturally rely upon it for promoting a consolidation and expansion of the laws against cruelty to animals. These laws, as has been seen, are composed of shreds and patches, brought into existence with difficulty, and in many respects imperfect. The time appears to have come when the whole should be combined in a statute applicable to all parts of the United Kingdom. That certain actions should be deemed cruelties punishable by law in England and not in Scotland, is anything but creditable, and not a little ludicrous. This is a point to which the attention of legislators should be seriously invited. From the fragmentary and confused condition of the statutes, we have experienced much difficulty in ascertaining what, as a whole, the law really is. This chaotic state of things detracts, we think, not a little from the glory which may be freely claimed by the English for their legislation in behalf of animals. A consolidated Act with all reasonable improvements, would be something to point to with satisfaction, and probably go far to insure a legalised system of kind treatment of animals all over the globe.

W. C.

FROM DAWN TO SUNSET.

A STORY IN THREE PARTS.

BY ALASTER GRÈME.

INTRODUCTORY.

EVERY man loves the land where he got life and liberty. The heart of the mountaineer is chained to his rugged mountain-home; he loves the wild and whirling blast, the snow-storm and the brooding clouds. Every true heart beats truly for country and for home. Thus the 'children of the peat-bog' and the fen cling to the illimitable wolds and the 'level shining mere,' beautiful even now.

Beautiful *then*, when long ago, primeval forests clothed the land. When in later times the bells of minster towers sounded far and near, and the deep bay of the Brunswald hounds awoke the echoes of the wold; when old Crowland's towers gleamed through mist; and the heights of that far-famed isle, the Camp of Refuge, where, amidst blood and battle, and beneath the 'White Christ' uplifted, the gallant Saxon fought the wild Viking; where the Saxon made his last dread stand for England's liberty, while men fell dead, and bones lay bleaching on every island and valley of the fen.

Beautiful *now*, O Fen-land! where still I seem to hear the wild shout of your outlaw hunters, hunting the red-deer and the wolf; where still I seem to hear the war-cry of the men of Danelagh, or imagine the great fires sweeping the boundless plains. Wide are your marshes still, and dark and deep your woods; the keen winds bring the driving snow; dense fog and mist and drenching rains sweep strongly from the sea; dark and capricious are the autumn days, and full of storm; yet overhead stretches a free heaven, boundless and open; underfoot stretch the free plains, wide and open; and over all sweeps the magnificence of the cloud-scenery, unbroken and unopposed; and the splendour of the sunrise and the sunset lights the low isles like flame.

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PART I.—DAWN.

CHAPTER THE FIRST.

Thus did the suns rise and set in glory across the level lands of Enderby; old Enderby manor, where the Flemings had dwelt for centuries; old Enderby, with its 'clanging rookery,' its grand timber, its turrets and its towers. Under that arched gateway has swept many a gay cavalcade with hawk and hound; has passed slowly many a hearse with sable plumes and horses; has stepped many a brave bridegroom leading his blushing bride, while the far-famed bells of Enderby pealed out loud and clear.

It is nearly two centuries ago, and it is evening; the sun is setting. Sir Vincent Fleming stands under the gateway; he is booted and spurred; his jaded horse stands in the court-yard, and has been ridden fast and far. Sir Vincent puts a whistle to his lips and whistles loud and shrill; he is

looking across the wide holt with a smile—his eyes laugh under his thick black brows, and his long white hair is flowing free in the wind. He opens his arms wide, and there come flying towards him two little dark figures neck and neck, shrieking with laughter and with glee. Panting, breathless from their long run, a boy and girl rush through the gateway, and leap boisterously into Sir Vincent's arms.

'My two little pets of Enderby!' he cries, and there is a wail in his voice, half of sorrow and half of joy.

'An' what have you brought us, father?' asks Deborah, leaping and dancing in her gladness. 'I see your flaps are full!—Nay, Charlie; get away; you shall not have father all to yourself!'

But the boy fights hard. 'You are a greedy Deb!' he cried. 'Your thoughts are ever o' sweetmeats an' o' toys.'

'Nay; it is not so,' retorted Deborah shrilly and scarlet as a rose. 'I am glad when things come.—But father, I am gladder to have *you* come.'

'I believe thee, sweet heart!' and Sir Vincent, lifting little Deborah to his shoulder, and taking his boy by the hand, turned towards the house.

In those days many a care pressed hard on Sir Vincent Fleming. His beautiful wife, the mother of his children, lay dead in the little churchyard. For a short time the children had run wild; then for a time Sir Vincent gave them a hard, hard step-mother, and the children went from bad to worse. Little Deborah cut her hair like a boy, and the two ran away from home. But ere long the hard step-mother died, leaving Sir Vincent free and the children like two mad colts. Sir Vincent tried the experiment no more. He could not cope with his two wild ones; they were beyond him; they were given over entirely to old Dame Marjory, and she voted them 'a handful.' Never wilder youngsters trod the earth. The hot blood of the Flemings and the Stuarts, with a dash of cast not so easily pedigree'd, coursed in their veins, and they could not brook a word of opposition or reproof. Dearly did they love their father, and dearly loved they one another—in a wild way more intensely than either knew.

One day they were running in one of their mad games, 'Hare and Hounds,' with all their village crew behind them, when their course led straight through the churchyard of Enderby. Vaulting over the low wall, they rushed bounding over the graves with yell and whoop and laughter. Soon the whole gay thoughtless throng passed away. But an hour after, in the twilight, a boy and girl came gliding back alone hand in hand; half-wistful and half-scared, they opened the churchyard gate, Deborah urging forward Charlie.

'What do you want?' asked the boy half sullenly. 'I'll not come!'

'I do want,' said little Deborah, 'to go to mother's grave! Dost know what we did, Charlie? An' my heart has ached ever since, nor could I hunt the hare for thinkin' of it. We trampled over mother's grave! When we jumped over yon wall, I tell you, Charlie, we ran on mother's grave! Come with me, Charlie, an' kneel down to her to forgive you an' me!' In the highest state of excitement, the little child caught his unwilling hand.

'But she won't hear us,' said the boy; 'mother's gone to heaven, Marjory saith. Thou art a girl!' he cried, as they stood beside the grave. 'These be bones that lie here. It is like your fancies! Mother's gone to heaven, I tell you.'

'That's true,' said Deborah; 'but mother sees her grave, an' she looks down an' has seen us run over it this day, an' laugh! Maybe she thinks we have forgot her; maybe she thinks we have forgot the prayers she taught us.—O mother, it is not so!' With unconscious and most exquisite fervour, the little Deborah fell on her knees, and raised her eyes and clasped hands to heaven: 'We are naughty, but we've not forgot you, sweet mother. Charlie has not forgot you, mother; an' Charlie an' me look up to you as you are lookin' down, an' ask you to forgive us for treadin' on your sweet grave. Mother, dear mother, forgive us!'

The boy stood looking on in dogged silence, knitting his brows; but when he saw Deborah's tears, tears rushed to his own bright eyes. With a cry of passionate sorrow and remorse, he flung himself on his mother's grave and cried as if his heart would break. Charlie Fleming had idolised his mother. He was two years older than Deborah; he remembered the mother better. He never forgot her memory. Proud, reserved, and shy, he hid that memory in his heart, and would let no hand drag it forth. In his mad freaks, when old Dame Marjory, driven to distraction, solemnly upbraided him about his 'poor dear mother' and what *she* would have thought, he mocked, and ran away shouting his derisive laughter. Seldom would a tear dim those bright roving eyes; neither rod, nor threat, nor lecture made Charlie Fleming quail; clenching his teeth and his hands, he stood his ground like a little demon: his stubborn heart would have broken rather than yield a whit.

And what of Deborah Fleming? she who, at eight years old, cut her flowing locks like a boy, and ran away from home. She was not behind her brother in mischief, wit, or daring; wondrously bold was the spirit of the little Fleming. But the caprices of the child shall speak for themselves.

CHAPTER THE SECOND.

One afternoon Deborah was playing by the lodge-gates with little Margaret Dinnage, the bailiff's child, when a tall gipsy woman strode to the gate and looked through. Meg ran away with a scream of terror, but Deborah stood and stared up at the gipsy.

She was a tall woman, dressed in faded red, with a yellow and scarlet shawl tied over her head; long glittering rings in her ears, and black, black eyes. Deborah never all her life forgot that woman looking through the gate; the vision was riveted on her childish memory.

'Come to me, pretty one,' said the woman, tossing her head backward; then imperiously: 'Come!'

'Where?' asked Deborah.

'Over yonder—to the camp. We want a pretty one like thee. I am gettin' old, child, an' I want you to come run arrands an' tell the fortunes o' the qual'ty.'

'I am the quality,' said Deborah gravely.

'*You!*' retorted the gipsy, with sudden and savage scorn. 'You are o' the scum o' the airth!' Then in a moment the wild passion passed, she resumed her half-coaxing, half-imperative manner: 'Come, come, pretty love!'

Deborah had been half startled; now she knew not what to make of the gipsy woman. Did the gipsy really like her, and wish to be kind? Deborah had never moved her large wondering eyes from the gipsy's face.

'I will not come,' she said, 'without Charlie.'

'Well, fetch Charlie, quick!' answered the gipsy with intense eagerness, and stooping forward to whisper the words. Deborah drew back; something within her rebelled; the woman was too imperious and too bold.

'Charlie will not come,' she answered; 'he hates gipsies.'

'Then *thou* shalt come alone.' Quick as thought the long arm was thrust through the half-open gate and the iron hand round Deborah's wrist, as if to draw her out, when Deborah cried at the top of her voice: 'Jordan, Jordan, Jordan!' An old man in a red waistcoat and his shirt sleeves came running round the lodge from the wood, and at the same moment the gipsy woman, pushing Deborah violently backward, darted away. Deborah was thrown on the back of her head; she got up at once, and stood looking up at old Jordan in silence, with her hand at the back of her head.

'She hath hurt thee, the jade!' said the old man indignantly. 'What has she been a-sayin' and a-doin' to thee?'

Deborah gazed at her fingers: there was blood on them; she raised her clear gray eyes to Jordan's face.

'Why, she hath cut thy head open, my lassie, and badly too! I know them cussed gipsies! Spiteful demons! See ye never meddle with them agen. This comes on it.' And assuming a scolding tone, the old man took Deborah's hand and hurried her angrily into the lodge. He was frightened, very pitiful and very angry, all in one; now he coaxed, now he threatened.

'Let me bind up thy broken head, my lassie; it is broken badly. But thou'rt a brave little lady! This comes o' meddlin'; thou'rt all too inquisitive by half. Leave them gipsies alone; or sure as thou'rt alive, I'll tell the master. Now then, thou'rt a brave little lady. Doth it pain thee, Lady Deb?' He stooped to peer anxiously with his old gray eyes into his little mistress's face.

Deborah was sitting on a high chair in the middle of the table, looking very white and grave. 'I should think it doth,' she said; 'you are a gaby to ask it, Jordan Dinnage. Finish to tie my head; and see that you do not tell father who cast me down,' she added with dignity.

The little Margaret was standing below, gazing upward at the operation in affright, with her round eyes and mouth wide open.

'*Tell thy father!*' retorted old Jordan with supreme disdain as he finished his surgery. 'Why, he would burn the camp and all the varmin in it for this. Fine times there'd be for Enderby with them revengeful cats. They'd be burnin' Enderby. Where wouldst thou be then?'

'In the flames, Master Dinnage,' said Deborah coolly.

Old Jordan Dinnage laughed loud and long. 'Thou art a little bold wench!' he said; then turning to his little daughter, added with mock gravity: 'Mistress Dinnage, well mayst thou gape an' stare. Thy young mistress will be the death o' me; for floutin' an' for scorn, I never knew'd her equal.'

The little maiden went quietly home, rather proud of her bandaged head than not; and the sight was so little novel to Dame Marjory's eyes, that well as she loved the child, she scarcely asked a question. That night Deborah tossed in her little bed and could not sleep. The pain in her head she heeded not; her wild and fitful fancy was conjuring up the gipsy camp. A hundred tall figures went trooping by, all with yellow and scarlet shawls tied over their heads; and tall men with black eyes, and little children, little boys with beautiful black eyes and curly hair. Dogs were lying about, and great pots full of meat were slung on poles over fires, and the red watch-fires blazed over all. She fancied all these men, women, and children came and kneeled to her, and said she was their queen. One little boy, more beautiful than the rest, said he was destined for the king, and she would be his wife. Then they hung about her necklets and bracelets, and set a crown upon her head, and the little maiden saw herself queen of the gipsies. Deborah loved power, and knew the power of beauty. She fancied herself dancing before the gipsies, in the light of the fires, in a glitter and blaze of beauty.

On the other side of the room slept Dame Marjory; she was snoring loudly. Deborah, hot and excited, sat up and gazed round; she could not rest. She started up, and sped like a little ghost into the next room, to Charlie's bedside; she seized his arm, and shook it: 'Charlie, Charlie!' The

boy gave a cross snort. 'Charlie, art well awake? I have somewhat to tell, love. The gipsy camp is out on the fen, an' to-morrow I am goin' to visit them! You will come too Charlie, for there be dogs an' horses in plenty. An' mayhap you will be made the king. *I* mean to be the queen; for the gipsy woman has been to the gate this afternoon, an' invited me to go an' bring you along.'

Charlie stared in the dim light, well awake then, yet very cross. '*You!* You are always "bringin' me along," forgettin' you are the youngest by two years. You are very wise an' grand. *I* am not so fond o' gipsy folk; they are sneaks and cowards.'

'Nay; they are not! If you are afeard, I'll go alone; an' I'll ride on the vans from one end o' the world to the other. So good-e'en.' {551}

'Stay!' cried the boy. 'You say I am afeard. Then you know it is a *lie!* A Fleming never knew fear. So father tells you. Dost say I am afeard?'

But Deborah, feeling the grasp of his hands on her arm, cried: 'Nay, nay; you are not afeard! Belike you are wise, an' that is why. But I will go alone.'

'Nay; that you shall not!' cried the boy, glad to see a way to change. 'Why, they would kill you,' he said, with an air of superior wisdom and scorn. 'If you *will* go, I go too. I will take my big stick, an' (say not a word) a knife under my clothes, for the gipsy folk be sly as foxes, an' in one minute might stick you through. I must be fully armed.'

'An' so must I,' quoth Deborah.

'*You!*' said the boy in loud derision; 'you are a *girl!* though I ne'er knew the like for tomboyin'. Run to bed; an' we will see what to-morrow brings.'

CHAPTER THE THIRD.

The morrow saw Master Fleming and Mistress Deborah speeding along the fields. Charlie carried a mighty stick, cut from a tough ash-tree, and a knife beneath his skirts; Deborah too, secretly, had a long blade concealed, to her own heart's satisfaction. Drawn to danger like moths to candle-flare, these little hardy Flemings sought an adventure after their own hearts. When they reached the level downs and the long expanse of shining water, the gipsy camp burst full on view. It was a sight familiar to their eyes; the dauntless Charlie knew it well. Many an hour, when Dame Marjory, shut in with her pickles and preserves, thought Master Fleming intent over his books, he was riding a bare-backed pony on the downs amidst a ragged crew. Many a raid on those same camps had Master Fleming dared; and twice, hunted by them, had the bold boy fled for liberty, or life. So that, knowing the gipsy nature, he did not approach the camp with Deborah without misgiving or unprepared for flight.

'Now see; if the gipsies curse or hunt us,' he said to Deborah, as they paused, 'that you do not lay hold on me, but run for your life; you can run like a hare; so can I. They may not be best pleased to see us.'

With a heart that beat somewhat faster at her brother's words, Deborah gave assent, and they advanced hand in hand. But in another moment their approach was seen by one ragged sentinel, and with shrill cries of delight they were surrounded by a weird elfin band. Their eyes were beautiful and black, as in Deborah's vision; but upon close quarters, they were all rags and dirt. They swarmed round their old playmate, staring in dumb amaze at Deborah's fair loveliness. Charlie clutched his stick.

'Now stand back!' he cried, in a loud authoritative voice, 'an' I will give you copper pence.' He struck his stick on the ground, and the ragged boys and girls all started back and stood in a circle round them. Deborah was abashed and overwhelmed with admiration at her brother's potent sway; her eyes were riveted upon him. The youthful captain was aware of this, and with added dignity turned upon his troop: 'First, first,' quoth he, 'you must catch two ponies for Mistress Deborah an' for me, the biggest an' the best, an' we will race you. The first one who wins gets the prize; an' if *I* win or Mistress Deborah wins, we win the prize, an' give it to the first man in: an' that is fair play, seein' our ponies must be the biggest an' the best. But stay. Come on the common, and let them not see us in the camp. After the race is done, we will go an' speak to your grandam, old Dame Shaw, and stay the night mayhap.'

With yells of glee the whole troop rushed hooting over the common, tearing hither and thither after colts as tameless. Deborah's hat was off and her hair flying, the soul of glee was dancing in her eyes. They caught one restive steed; in a moment she was across his back like a boy, and in another minute they were off! Thus the hours fled away, all too fast for them; all the largess of the young captain was thrown away and scrambled for. Deborah's dress flew in tatters round her; she looked the wildest gipsy of them all.

Night came, and vainly through the shades of evening did old Dame Marjory, shading her eyes in the doorway, look for her truants. Sir Vincent was out, and not likely to return. At last she sought Jordan Dinnage, her ancient lover and Enderby's right hand. 'Jordan, hast seen Master Charlie and Lady Deb? A pretty kettle o' fish to fry if they return not to-night, an' the master comes home i' the mornin'. Go seek them, for heaven's sake, man. I am distraught!'

'Why, this comes, Mistress Marjory, o' lettin' the young Master run wild; he's a handful for thee! I know'd how 'twould end, when he's day an' night out gipsyin'. *There's* where they be, Mistress Marjory, with the gipsies; an' thank yer stars if ye ever set eyes on them agen!'

Old Marjory turned as white as her apron. 'Now, don't ye be goin' to frighten me, Jordan. But if

ye speak truth, man, run with all the men you can get along, an' hunt them gipsies down, an' find my two poor dears. O their poor mother! O Jordan, Jordan, Jordan Dinnage!' And Marjory, with her apron to her face, cried as if her true heart would break.

This was too much for Jordan; he was arming already. Snatching a short rusty sword from the wall, and with one comforting hand-thud on Dame Marjory's back, and a 'Comfort thee, my lass!' the active old man was off. The hue-and-cry was raised—all Enderby rang with it. But behold the gipsy camp was gone! Smouldering fires blackened the common; no other trace of the fugitives was visible. But old Jordan rode and rode, with all his men behind him; some on horseback, some on foot, they scoured the country far and near. In vain did Dame Marjory and the servants sit up till morning dawn. It was only late on the following day that the bailiff rode up the avenue with another horseman, one carrying a boy before him, the other a girl; the dresses of both men and children were torn and travel-stained, and the head of Jordan Dinnage tied up. At this sight Dame Marjory ran forward and screamed, and all the women screamed.

'Here be thy childer,' said Jordan; 'an' a hard fight we made for it. Keep a tight hand on 'em, Dame Marjory; but no scoldin' *yet*.'

So Charlie and Deborah, looking penitent and demure, but rejoicing madly in their hearts at seeing home again, ran in. They were feasted royally in the servants' hall that day! {552}

For many days Sir Vincent did not return, and Jordan Dinnage kept a sharp watch on the gate, to see that the children did not stir beyond. The old vicar called on the little culprits; he looked to daunt them by his words and presence. He was a sad-looking man with a long fallow face; yet some quaint humour lurked in his nature too. Severely he bade Dame Marjory send 'Master and Mistress Fleming' to him. The boy stoutly rebelled; but at last hand in hand, scrubbed and ruffled, they were ushered into the room where the awful vicar sat. Charlie was dressed in a little black velvet doublet and hose, with silk stockings and buckle-shoes, and ribbons at his knees; his long red-brown hair was cut square on his white forehead, and flowed loose on his shoulders; his lips were set firm, his brown brows were knit, and his eyes, large dark and sombre like a stag's, glowered defiantly beneath them. Mistress Deborah was dressed in pale blue silk, pointed to her fairy shape, and trimmed with rose-coloured ribbons; her hair was in hue like her brother's, and cut the same in front, but falling lower behind, and tied at the end with a bow; her lips were apart, and her white teeth gleamed with irrepressible humour; her large bright eyes, gray like a falcon's, gleamed with laughter too; she half hung behind her brother, with her head upon his shoulder, saucy yet shy.

The vicar, in his long black clothes, gazed upon the pretty picture from a high-backed chair, stern, melancholy, resigned. The little Flemings stood before him just as they had entered. 'Children,' quoth the vicar of Enderby, 'it hath afforded me great grief to hear of thy misdeeds; they have been reprehensible in the extreme. Thou hast encouraged vagabondism, and run near becoming vagabonds thyself; in fine, thou hast outraged propriety and set all social laws at defiance. To thee, Charles, I should have looked, in thy father's absence, to set an example to thine inferiors, to guard the house, and to protect thine infant sister (or little better than an infant, either in years or discretion). Thou hast proved thyself, Charles, incapable of either charge; indeed, if thou art not sent to school, to feel a master's rod, I entertain great fears for thy future, and so I shall inform thy father. To thee, Mistress Deborah, I say little; thou art young and inexperienced, though much given to vanity, it is said, both in dress and person; but though thou art as yet incorrigible, I would have thee reform, and entertain some hopes of thee. Thou art the future mistress of this house; how then, when thou comest to years of discretion, wilt thou fulfil thy duties of mistress and of hostess, if thou dost now run wild amid grooms and gipsies? Mistress Fleming, Mistress Fleming, I have much against thee! What induced thee the second time to run away from such a home as this?'

But Deborah only hung her head and smiled.

Then quoth Charlie sturdily, glowering with his red-brown eyes: 'She loves the gipsies, like to me.'

'Charles, Charles!' said the vicar, 'I will not bandy words with thee. Forsake such evil company, and stick to thy Latin more.'

'I don't love Latin, Master Vicar, an' never shall.'

'Goodsooth, thou wilt and shall. What wouldst thou be? Wouldst idle here all thy days?'

'I'd be a soldier.'

'A soldier? An ungodly set!'

'Father says the priests are the ungodly ones.'

At this the vicar held his peace in despair.

'I'd be a gipsy queen,' chimed in Deborah's treble voice. 'Dost not love the gipsies, Master Vicar? When I am a woman grown I'll run off and travel over the world—I will! Charlie does not love Latin; no more do I love Dame Marjory's lessons.' And forgetting her fear, she nestled up to the vicar's side and gazed up with her laughing dauntless eyes. At that moment the clank of horse's hoofs resounded on the stones of the court-yard.

A TYROLESE CATASTROPHE.

MANY and varied are the calamities to which those people are exposed who have their abodes among the grim mountain fastnesses of Switzerland and the Tyrol, or indeed who live in any similarly situated region, where Nature still reigns in undisputed majesty, and manifests her power by those swift and awful catastrophes which strike terror to the hearts of all who come within their influence. In winter the snow falls heavily and constantly, and forms a huge overhanging mass, that overtops the often narrow pass below, and is suspended, like the sword of Damocles, by the slightest possible retaining hold; a trifling noise, such as the discharge of a rifle or even the prolonged blast of the Alpine horn, being sometimes sufficient to dislodge the vast snow-wreath, and send it gliding on its silent but deadly course towards the valley beneath. The destruction caused by the overwhelming avalanche is too well known to need description. Scarcely a Swiss hamlet or mountain pass but has its record of some sad calamity caused by the resistless force of those fatal snow-falls. Single travellers, parties varying in number, châteaux, and even entire villages, have on different occasions been buried under the snow; no warning having been afforded to the hapless victims till the icy pall of death descended relentlessly upon them, and hid them, sometimes for long months, sometimes for ever, from their fellow-men.

Those who live on the banks of the narrow, swift-running torrents that intersect the valleys, have another danger to encounter. Those little streams, greatly swollen in summer by the melting of the snow on the higher ranges of the mountains, frequently overflow their boundaries and spread destruction and death around. If, as occasionally happens, the stream becomes choked by débris from the overhanging precipices, it is turned aside from its natural channel, and flows in quite another direction; sometimes forming in its progress a lake or a small tarn, which never again subsides, and which may destroy in a moment the long and arduous labour of the husbandman.

A third and even more tremendous catastrophe is that known as a berg-fall or mountain land-slip; when an overhanging portion of some steep precipice becomes loosened from its foundations, and on some unusual impetus being given to it, topples suddenly over and hurls itself upon the plain beneath it. These berg-falls occur very frequently in the Tyrol, sometimes occasioning comparatively little damage, and even adding an element of picturesqueness to the great natural beauty of the region; while on other occasions they are followed by widespread havoc and destruction.

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In 1771 a terrible calamity of this nature befell the little village of Alleghe, situated on the banks of the river Cordevole, not far from the town of Caprile in the Tyrol. The district was a fertile and beautiful one, with several scattered villages surrounded by orchards and corn-fields, and protected from the fierce blasts of winter by the range of high mountains, which were at once its safeguard and its peril. At the base of one of the loftiest of this great range, called Monte Pezza, stood the little village of Alleghe. In the month of January, when the mountains around were all covered with heavy snow, a charcoal-burner was at his work in the woods of Monte Pezza, when his attention was suddenly arrested by a distinctly tremulous movement of the ground, and by the frequent rattling down of stones and débris from the rocky precipices behind him. These were sufficient indications of danger to the practised ear of the mountaineer. He knew too well the portents of those overwhelming catastrophes that are continually to be dreaded; and on listening more attentively, he became convinced that serious peril was impending. Even as he watched, several large boulders became detached from the face of the mountain, and rolled down to a considerable distance; while at intervals the trembling motion of the ground was too evident to be mistaken. It was growing late in the afternoon, and darkness would soon fall on the valley; so hastily quitting his work, he made the best of his way down to the nearest village, and with the excitement naturally caused by anxiety and fear, he told the inhabitants of the alarming indications he had just witnessed, and urged them to make their escape without loss of time from the threatened danger. Strangely enough, they seem to have attached no value to the signs of approaching mischief which the man described to them; and it would appear that they considered the falling débris to be attributable to some accidental snow-slip, caused possibly by the warm rays of the noonday sun.

Whatever they may have thought, they paid no heed to the warning; and the charcoal-burner having done all he could to save them from the threatened calamity, went on as fast as possible to carry his terrible news to three other villages, which were all directly exposed to the like danger. But they also utterly disbelieved in it, and laughed at the fears of the poor man, whose breathless and agitated condition clearly testified to the truth of his conviction that a very great peril was close at hand. One and all, they refused to quit their dwellings; and the charcoal-burner, having vainly endeavoured to awaken them to a sense of their danger, quitted the spot himself, and sought shelter elsewhere. Hours passed, and no further disturbance of any kind taking place, the villagers concluded the whole thing to have been a false alarm, and at night all retired to rest as usual, without apparently a shadow of misgiving. Suddenly, in the midst of the silence and darkness, a fearful crash of falling rocks sounded far and wide through the valley; and when the first rays of the sun lighted up the mountain peaks, a terrible scene of ruin and death was revealed. The four little hamlets had entirely disappeared; two of them, those that lay nearest to the slopes of Monte Pezza, were completely buried under an immense mass of fallen earth and rocks; the other two were submerged beneath the waters of the river Cordevole, which had been driven from its course by the berg-fall, and had spread out into what is now known as the Lake of Alleghe. None of the unhappy victims had a moment's time for escape, even had escape been possible. The rushing down of the mountain was instantaneous, and buried them as they lay sleeping; and the water flowed with impetuous rapidity into the unprotected villages, not

one inmate of which survived to relate the experiences of that awful night.

Some months passed; and the first horror of the catastrophe had a little faded, when another berg-fall took place, again followed by lamentable consequences. It occurred in the month of May and in daylight; but a much smaller loss of life was the result, though the destruction of property was even greater than on the previous occasion. Owing to the tremendous force exerted by the falling débris, the waters of the lake, which had never subsided since its formation, instantaneously rose into an enormous wave, and rushed violently up the valley; wrecking houses and farm-buildings, destroying the flourishing orchards and corn-fields, and carrying away a portion of the parish church of a village which had been re-called Alleghe, after the submersion of the first of that name. The organ of this church was forcibly swept to a considerable distance; and a tree borne along on the mighty wave was dashed into an open window of the curé's house, while he was sitting at dinner, the servant who was attending on him being killed on the spot. Many lives were lost during this second great berg-fall, and terrible consternation was created in the minds of the inhabitants of the district, which seemed to have been so specially singled out for misfortune.

Since that time, however, no other serious disaster has befallen them; the huge mountains of the neighbourhood have not again hurled death and ruin on the smiling valley at their feet; and the little lake of Alleghe, the principal memorial of the catastrophe, is only an added beauty to the lovely scenery which surrounds it, and lies there in serene tranquillity, all unconscious of the beating hearts for ever stilled beneath its waters, of the happy homes rendered dark and desolate by its cold cruel wave. More than a hundred years have passed since then; many generations of villagers have lived and died, and the recollection of the great berg-falls of 1771 has faded into a mere tradition of the place; but yet, looking down into the clear depths of the lake, on a day when there is no wind to raise ripples on its surface, the outlines of the submerged villages can be distinctly traced. Roofs and walls of houses can yet be distinguished; it is even said that the belfry of the church is visible, flights of stairs, and many other relics of the past life of the drowned inhabitants.

On the 21st of May in each year, the date of the second of those great disasters, a solemn commemorative service is celebrated in the little church of Alleghe, and masses are performed for the souls of those who perished in the two fatal berg-falls of 1771.

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SINGING AND TALKING BY TELEGRAPH.

PEOPLE are already to a certain extent acquainted through the newspapers with what is called the Telephone, or instrument for transmitting musical sounds to a distance. We wish to say something of this novelty. The conveyance of sound by means of an electric wire, has been practised through the instrumentality of the *bell telegraph*, used occasionally, though much less frequently than apparatus of a different kind. The signaller does not himself ring a bell, but sets in vibration a bell at the further or receiving end of the wire. The electric current, passing through the wire, acts upon a small magnet, and this in its turn acts upon a small bell or its hammer. By a preconcerted arrangement, one single sound is understood to denote a particular letter or word; two denote another letter or word; three quickly repeated, have a separate meaning; three separated by unequal intervals of silence, another—and so on. The receiver must have a quick ear, and much practice is necessary for a due fulfilment of his duties. Although the plan has an advantage in enabling him to understand a message in the dark as well as in the light, it has more than equivalent disadvantages; among which is the fact that it leaves no permanent record.

But talking by electricity conveying the actual sounds of the voice for many miles—what are we to think of this? And a song—the words, the music, and the actual quality of the singer's voice; does not this seem almost beyond the powers of such a mode of transmission? Who first thought of such a thing is not now known. Very likely, as in most great inventions, the same idea occurred to many persons at different times, but was laid aside because the mode of realising it was not sufficiently apparent.

It was about 1860 that Reis invented a contrivance for employing a stretched membrane vibrating to a particular pitch or note; a contact-piece was adjusted near the membrane; and a series of rapid contacts sent a series of clicks along an electric wire to an electro-magnetic receiver at the other end. But the apparatus could only convey one note or musical sound.

Four or five years ago, Mr Edison, a telegraphic engineer at Newark in New Jersey, made an attempt in this direction. It is known that, in one form of automatic chemico-electric telegraph, signals are recorded by sending an electric current through prepared paper saturated with a chemical agent which changes in colour wherever the current touches it; the paper is moved on equably, and a pen or stylus rests upon it, conveying the impulse received from the electric wire. Mr Edison has tried to devise an arrangement for producing sound as well as discoloration, something for the ear to hear as well as something else for the eye to see. We are not aware whether his experiments have been sufficiently successful to produce a practically useful result.

In 1874, M. La Cour sent audible signals from Fredericia to Copenhagen, by means of a tuning-fork, a contact-piece, a telegraphic wire, and a key to set the fork in vibration.

Mr Elisha Gray appears to have made a more definite advance in this direction. He has

transmitted the pianoforte sounds of a concert through the wire of an electric telegraph. The performer played at Philadelphia, to an audience at New York, ninety miles distant. The apparatus may be called a telephonic piano; it transmits the sounds of that instrument, but of no other. Public performances of this kind were given in the early months of the present year. On one evening the instrument was played at Chicago, and the music heard at Milwaukee, eighty-seven miles distant. *The Last Rose of Summer*, *Yankee Doodle*, *The Sweet By-and-by*, and *Home, Sweet Home* are named as the tunes thus played. On a second occasion the apparatus triumphed over a distance of no less than two hundred and eighty-four miles, from Chicago to Detroit; not much was attempted in actual music, but the sounds were audible at this great distance. Two instruments are required, a transmitter and a receiver. There is a keyboard of two octaves (available therefore only for simple melodies), a tuning bar, an electro-magnet, and an electric circuit. The play on the keys with the fingers produces vibrations, thuds, molecular movements, in rhythmical succession; these are transmitted by the electric wire to the receiving apparatus at the other end. This receiving apparatus is a large sounding-box, on which is mounted an electro-magnet. The box intensifies the sounds by its sonorousness, through the medium of the slight touches which the magnetised iron gives to the box at every expansion or elongation which the electro-magnetism gives it. Delicate experiments have shewn that there is a minute difference in the length of a bar of iron when magnetised and demagnetised; and Mr Gray appears to have taken advantage of this property in causing his magnetised bar to give a succession of taps to the resonant box. We believe that the apparatus requires wholly new setting for each tune. If so, the system bears the same relation to real pianoforte playing as the barrel organ does to the church organ; it does not lend itself to the spontaneous or extempore effusions of the player.

More comprehensive, so far as the scientific descriptions enable us to judge, is Bell's *telephone*, for the transmission of talk and sing-song as well as of instrumental sounds. If present indications should be really justified by future results, the imagination can scarcely picture the number of practical applications that may ensue. The inventor, Mr Graham Bell, went to America in 1871. He is the son of Mr Alexander Melville Bell, whose system of 'Visible Speech' has attracted a good deal of notice on both sides of the Atlantic. Both father and son have been practically engaged in perfecting a system for teaching the dumb to speak; and Mr Graham Bell set himself the task of accomplishing something which would justify him in saying: 'If I can make a deaf-mute talk, so can I make iron talk.'^[A]

Mr Bell, when at Salem in Massachusetts, began to turn his attention to this subject, the telegraphy of sound, or *telephony*, in 1872; but three years elapsed before the matter assumed such a form as to enable him to send a little musical message through a two-mile wire. Securing his invention by a patent, he gave his first public exhibition of the system in the autumn of 1876. The talk or speaking of an operator at Cambridge, Massachusetts, was heard at Boston, in the ordinary conversational tones. It does not appear that the actual quality or *timbre* of the voice was distinguishable, but only a voice, speaking certain words. Early in the present year, however, further improvements were made in the apparatus which enabled it to shew even this kind of delicacy; that is, it transmitted not merely the words in sound, but also the tones and inflections of different voices. Singing being, in regard to acoustics, only one variety of speaking, it follows almost as a matter of course that if the apparatus can talk it can also sing. Accordingly, a lady sang *The Last Rose of Summer*, and was distinctly heard at the distant station; the sounds 'had about the same effect as if the listeners were at the rear of a concert-hall, say a hundred feet from the singer.' The sounds of laughter and applause were similarly transmitted, with the proper rhythm and key or musical pitch. In instrumental music a violin could be distinguished from a violoncello; a test more delicate than would be supposed by many persons.

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In all the earlier experiments of Professor Bell, he employed galvanic batteries to produce the current; but these were afterwards dispensed with, and their place supplied by permanent magnets. With this improved arrangement, sounds were conveyed through a wire to a distance of a hundred and forty-three miles, from Boston to North Conway in New Hampshire. Last February a lecture was delivered, on the subject of Telephony, by Professor Bell at Salem, and was audible, word for word, at Boston. In order to shew that the transmission is equally available in both directions, provided the proper apparatus is at both ends, the lecture from Salem to Boston was followed on the same evening by singing and speech-making from Boston to Salem.

From the patent specifications and from the descriptions in American scientific journals, it would appear that a phonographic reporter of some skill is needed, to translate the audible sounds into words and write them down. We must first comprehend, however, the mode in which the sonorous transmission through the wire is brought about; for this it is which really constitutes the principle of the telephone. Ordinary telegraphic coils of insulated wire are applied to the poles of a powerful compound permanent magnet; and in front of these is a thin vibrating diaphragm or membrane, with a metallic contact-piece cemented to it. A mouth-piece or trumpet mouth, fitted to collect and intensify waves of sound, is placed near the other surface of the diaphragm. It is known that the motion of steel or iron in front of the poles of a magnet creates a disturbance of electricity in coils surrounding those poles; and the duration of this current will coincide with the vibratory motion of the steel or iron. When, therefore, the human voice (or any other suitable sound) impinges through the tube against the diaphragm, the diaphragm itself begins to vibrate, and the contact-piece awakens (so to speak) electrical action in the coils of wire surrounding the poles of the magnet; not a current, but a series of undulations, something like those produced by the voice in the air around us. The undulations in the coil produce a current in the ordinary telegraph wire with which it is placed in connection. A similar apparatus at the other end is hereby set in action, but in reverse order; that is, the wire affects another coil, the coil another diaphragm, and the diaphragm another tube, in which the sounds are

reproduced in audible vibrations.

It is said that even a whisper can in this way be reproduced at a distance, the maximum extent of which may possibly be much greater than has yet been achieved. At one of the exhibitions given to illustrate this system, Professor Bell stationed himself in the Lyceum at Salem; Mr T. A. Watson at Boston. An intermittent current, sent through the eighteen miles of telegraphic wire, produced in the telephone a horn-like sound. The Morse alphabet was then transmitted in musical sounds, audible throughout the lecture-hall. Then the sounds of an organ were made to act upon the apparatus, and these in like manner were transmitted; two or three tunes being distinctly heard in succession at Boston. Professor Bell then signalled to Mr Watson to sing a song; this was done, and the words as well as the tune of the song heard. A speech was then made at Boston in the simple words: 'Ladies and gentlemen, it gives me great pleasure to be able to address you this evening, although I am in Boston and you in Salem.' This speech was heard distinctly in the Lyceum at Salem, and was followed by many questions and answers sent to and fro.

If monotonous be adopted instead of those variations in pitch which belong to ordinary music, it is believed that several telephonic messages may be sent through the same wire at the same time. It would be agreed on beforehand that all sounds in C (for instance) shall be intended for one station alone; all those in D for another station, and so on; each diaphragm would vibrate in the manner belonging to the sound-waves impinging upon it; but each station would attend only to those in a particular pitch. Such is the theory. Whether it can be practically carried into effect, the future must shew.

Mr Cromwell Varley, during his researches in duplex telegraphy, produced an apparatus which he is now trying to apply to telephonic purposes. A limited amount of success was achieved in July of the present year, through an electric wire connecting two concert-halls in London; but the apparatus requires further development. It comprises among other details a series of tuning-forks, one for each note.

There does not, so far as description goes, appear a probability that telephones would be so applicable as the machines already in use for ordinary telegraphic purposes; for reasons which we need not detail here. The conveyance of sound is the novelty; and whimsical suggestions have been put forth concerning the possible results, such as the following: 'One of the first steps which a young couple, upon their engagement, would naturally take, would be to have the speaking-wires laid down to their respective rooms, and then, at any time, far from the curious eye of the world, they would be able to indulge in sweet converse.' Another: 'The extension of the system might not prove so pleasant in other cases. Thus, for example, university authorities might take it into their heads to attach an instrument to every room in the college, in order that the young men might report that they were steadily at work every quarter of an hour.' Another: 'It is hardly going too far to anticipate the time when, from St James's Hall as a centre, Mr Gladstone will be able to speak to the ears of the whole nation collected at a hundred different towns, on Bulgarian atrocities, or some other topic of burning interest. Nor need we despair of seeing Herr Wagner, from his throne at Bayreuth, dispensing the "Music of the Future" in one monster concert to St Petersburg, Vienna, London, New York—in short, to all the musical world at once.'

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'HELEN'S BABIES' AND 'OTHER PEOPLE'S CHILDREN.'

THE two small volumes which give the title to this article, afford an amusing account of the troubles that befell Mr Burton in ten days, during which he somewhat rashly undertook the supervision of his sister Helen's Babies, the best children in the world (so their mother assures him), and of the vicissitudes through which his young wife subsequently passed, while endeavouring to manage 'Other People's Children.' To many, the incidents will appear too ridiculous; but it is to be kept in mind that the children are American, who for the most part are allowed to do pretty much as they like, and who, amongst other tastes, possess an untiring voracity for 'candy.'

When we first make his acquaintance, Harry Burton, a salesman of white goods in New York, is a bachelor aged twenty-eight, and is in some doubt as to where he shall spend a short holiday, so as to secure a quiet time for reading; when he receives a letter from his married sister, Mrs Lawrence, asking him to go to her house, while she is absent with her husband on a few days' visit to an old school-fellow. She admits that she is not quite disinterested in making the request, as she shall feel easier about her two small boys Budge and Toddie, aged respectively five and three, if there is a man in the house; but promises him undisturbed quiet, and leisure for improving his mind.

Mr Burton accepts with alacrity, having a vivid recollection of a lovely house, exquisite flowers, first-rate horses, and unexceptionable claret and cigars; to which the remembrance of the pure eyes and serene expression of his elder nephew (whom he has only seen on flying visits to his sister) lends an additional charm. It occasions him a slight misgiving when the driver of the fly in which he proceeds from Hillcrest Station to Mrs Lawrence's house, alludes to his young relatives as 'imps;' and it is not without some heart-sinking that he meets them on the road, in torn and disreputable garments, each bearing a dirty knotted towel, which Budge promptly informs his uncle are not towels, but 'lovely dollies.' Mr Burton is self-sacrificing enough to hoist the boys into the carriage; and it is rather hard on him that, just as Toddie raises an awful yell, on being

forbidden to try and open a valuable watch, they should meet another carriage containing Miss Mayton, a charming lady, whose presence at Hillcrest, we imagine, may have had something to do with determining Mr Burton's movements. However, the lady is gracious in spite of the dusty and heated appearance of her admirer, caused by his contest with Toddie, and he arrives at his destination in a celestial frame of mind.

He is rather dismayed when left alone with his nephews at the supper-table, feeling that he will get nothing to eat while he is called upon to supply the inexhaustible demands of the two young cormorants; and at the conclusion of the meal he hastily rids himself of them, as he fondly hopes, for the night. Vain hope! As he strolls in the garden smoking a cigar, dreaming of Alice Mayton, enjoying the fragrance of the roses, and above all the perfect stillness of everything around, he is roused from his reverie by hearing Budge's voice overhead, and is met by a demand from a little white-robed figure for 'stories.' Mr Burton is too tender-hearted to resist the wistful expression of Budge's countenance, and he complies; but he fails to compare favourably as a *raconteur* with the absent papa; and Budge assuming the position of narrator himself, gives *his* version of the history of Jonah. We cannot help laughing at his description of the prophet, who 'found it was all dark inside the whale, an' there wasn't any fire there, an' 'twas all wet, an' he couldn't take off his clothes to dry, cos there wasn't no place to hang em.' Songs succeed to stories, and at length Uncle Harry thinks he is free; but he reckons without his host. Budge insists that his uncle shall hear him say his prayers in the exact manner in which 'papa always does;' concluding his devotions by an immediate and pressing request for candy. But Toddie's prayer must be said first, in which a special petition is offered for the welfare of his 'dolly.' Then, the candy being forthcoming, there arises a clamour for pennies, drinks, and finally for the 'dollies;' which tiresome objects being found, Uncle Harry once more beats a retreat, and settles himself for a little serious reading, experiencing, however, one more interruption from Budge, who appears before him and requests his blessing before he finally turns in. Papa says 'God bless *everybody*,' persists the boy, when his uncle endeavours to satisfy him with a simple 'God bless you;' and we fully echo Mr Burton's sentiment: 'Bless your tormenting honest little heart, if men trusted God as you do your papa, how little business there'd be for the preachers to do!' The remainder of the night is tranquil enough, for we pass over such minor incidents as shrieks from Toddie for his dreadful 'dolly,' which has been mislaid among the bed-clothes, and the very early rising of Budge, who is up with the lark, doing his best to rouse his uncle (whose room communicates with that of the boys) from his morning sleep. Who could find the heart to be angry with the small sinner who apologises for his misdeeds by saying: 'I was only a lovin' you cos you was good an' brought us candy. Papa lets us love him whenever we want to—every mornin' he does.'

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We draw a veil over Mr Burton's feelings when, on the following morning, it becomes manifest that Toddie (whom his mother believes to have an artistic and poetic soul) has been seized with a passion for investigation, and has dived deep into the mysteries of all his uncle's most precious belongings, the result being—chaos. That after this Mr Barton should insist upon locking the door of communication, can scarcely be a matter of surprise; and accordingly an expedition is made into the neighbouring town to obtain a new key—Toddie having dropped the one belonging to the door down the well—during which the conduct of the two boys is simply angelic. The more spiritual part of their nature comes to the surface; their childish imaginations are impressed by the lovely panorama of the distant city which lies outspread before them glistening in the sunshine; and as the pure young voices speak familiarly of the other world and of the dead baby-brother Phillie who is up there with God, we feel how near those white souls are to heaven. The uncle finds their conversation so improving that the drive is prolonged to the 'Falls,' where, suddenly becoming all boy again, they nearly madden their unhappy guardian, who has turned away for a moment to light a cigar, by hanging as far as possible over the cliff, trying hard to overbalance themselves. As he drags them away, his heart is in his mouth. Budge screams: 'Oh, Uncle Harry, I hunged over more than Toddie did.' 'Well, I—I—I—I—I hunged over a good deal *anyhow*,' says Toddie in indignant self-defence. To chronicle all the sufferings inflicted by the two dreadful yet irresistible young 'imps' on their unfortunate uncle, would be impossible. Our deepest sympathies are aroused when he despatches to Miss Mayton a box containing a lovely bouquet, and he finds it is delivered to her containing only Toddie's remarkable 'dolly,' which he has contrived to substitute for the flowers. We groan in concert with Mr Burton when his nephews dance frantic war-dances on his chest, a proceeding which with cruel sarcasm they call a 'frolic;' and our pity follows him through the day, as he is alternately ordered by those imperious young gentlemen to produce candy and pennies, to tell them Scripture stories (the imaginative Toddie evincing a decided leaning towards the ghastly), to sing songs, to cut whistles, and to gather 'jacks,' a plant which grows where there is plenty of mud, and whence they all emerge with their Sunday splendour considerably dimmed, in which condition of course they meet Miss Mayton.

In spite of their incessant mischief, their overpowering activity of mind and body—which must have induced the feeling in Mr Burton of being permanently located on a barrel of gunpowder lighted match in hand—it is impossible not to love the honest little souls, whose worst sins often proceed from the very best intentions; and accordingly we do love Budge dearly, when, on the following day, he surpasses all his previous achievements and covers himself with glory. Uncle Harry announces his intention of taking the boys to see Miss Mayton, and adjourns to the garden to arrange another bouquet, which Toddie is to present as a propitiatory offering. The children take great interest in the proceedings, and learning that Miss Mayton is the destined recipient of the nosegay, Budge asserts that she is 'just like a cake;' and announcing that he 'just loves her,' puts to his uncle the embarrassing query: 'Don't *you*?' 'Well, I respect her very highly, Budge,' replies that individual; and in answer to his interrogator, explains the meaning of the word

respect as applied to Miss Mayton in such fashion, that that dreadfully acute infant comes to the conclusion that 'spect and love means just the same thing.' Mr Burton at this point judges it prudent to break off the conversation, and the trio start on their expedition. The bouquet is delivered without *contre-temps*; Miss Mayton is graciousness itself; and the visit proceeds so satisfactorily that they agree to remain to dinner. Uncle Harry has his misgivings; but beyond the upsetting of the contents of a plate into Miss Mayton's lap, his nephews' conduct is so very blameless, that it is with no feeling but that of lover-like ecstasy, that he finds himself seated in the deepening twilight by the side of the woman he adores, his eyes making confession of his weakness. Suddenly a voice from between them murmurs in sweet tones: 'Uncle Harry 'spects you, Miss Mayton.'

'Suspects me! Of what, pray?' asks the lady.

'Budge!' exclaims the horrified uncle—and we can well believe his statement that his voice rose nearly to a scream—'Budge, I must beg of you to respect the sanctity of confidential communications.' But Miss Mayton's curiosity is aroused; and Budge is not to be silenced, even when his uncle explains to her that 'respect' is what the boy is trying to say, owing to his endeavour to explain to him the nature of the respect in which gentlemen hold ladies. 'Yes,' says Budge; 'only Uncle Harry don't say it right. What he calls 'espect, I calls love.'

After this, what can happen but that the confession should pass from the eyes to the lips? And Budge is forgotten and left out in the cold, until, waxing impatient, he gives his version of how he would behave under the like circumstances: 'I—I—when I loves any one, I kisses them.'

We feel that from this moment the lives of those blessed boys will be made all sunshine by their grateful uncle, and so doubtless they would have been but for one persistently wet day, during which we are sure no mortal power could have sustained Mr Burton, had it not been for the recollection of Budge's recent good deeds. How he lives through the rainy day—how Toddie twice places his own life in imminent peril—how Mr Burton provides employment for his restless nephews—how the artistic Toddie evinces a decided talent for wall-decoration—how he scalds his arm, and devours the curative poultice—and how on the following morning poor little Budge lets us peep into his childish heart and see the yearning for the mother who is away (being comforted by his uncle in a manner which induces us to offer to Miss Mayton our warmest congratulations), we advise our readers to discover for themselves. That Budge should be the first to inform Mrs Mayton of her daughter's engagement, we, knowing that young man, find only natural; and we are glad to be able to state that it is done with the same tact which distinguished his efforts to bring the young couple together. Toddie once more endeavours to put a period to his existence by swallowing a bottle of paregoric, but is fortunately cured in time to meet his father and mother at the station on their return, by a process which causes him more to resemble the whale than his favourite Jonah.

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For a time Mr Burton has been too busily occupied to chronicle any more of the doings of the amusing 'babies.' He has married, bought a house, and settled in the neighbourhood of Tom and Helen Lawrence. We feel sure that Mrs Burton will prove no less admirable than Miss Mayton; indeed, recently breaking silence, her adoring husband has assured us that so it is; but as there are spots on the sun, so do we find that Mrs Burton has one slight weakness—namely, a conviction that she thoroughly understands how to manage 'Other People's Children.' Entirely disapproving of the manner in which her husband had allowed those two ridiculous children to tyrannise over him, and turning a deaf ear to his energetic assertion that all his time was occupied in saving their own lives and their parents' property from destruction, that admirable woman announces her views on the subject of their training. 'You should have explained to them,' she says, 'the necessity for peace, order, cleanliness, and self-restraint. Do you imagine that had you done so, their pure little hearts would not have received it all and acted upon it?' Mr Burton seems doubtful; but his scepticism only makes her rejoice still more in the prospect of speedily having Budge and Toddie under her own hands, during their mother's unavoidable seclusion in her own room on business of the utmost importance. Budge and Toddie presently arrive with the exciting news that there is a new little sister-baby at home, and that they have come to stay a few days. Mrs Burton is determined that her system of education shall begin at once, being anxious to prove its efficacy to her lord and master; but the boys have immediately disappeared, probably in pursuit of the dog Jerry (who has judged it prudent to retire into private life on their advent), and are discovered pickling tomatoes for their aunt by means of 'Mexican Mustang Liniment' and 'Superior Carriage Varnish.' We imagine Budge may have had some reason for his remark: 'I don't think you act *very* nice about presents and surprises.' Toddie spends the morning in a praiseworthy effort to hatch some chickens; but although he sits down 'ever so soffaly' because he 'hasn't got fessers,' the result is such as to necessitate a visit to the bath-room.

Undismayed by these beginnings, Mrs Burton, on preparing to go out in the afternoon, leaves the boys as it were in charge of the house, appeals in touching words to their sense of the beautiful not to disarrange anything, telling them that people should always try to make the world prettier, and departs with a quiet mind. Whether she thinks her method is attended with unequivocal success when she finds, on her return, that they have acted on her hint, and endeavoured to 'make the world prettier' by manufacturing—of stones, road-dust, and a noxious smelling weed—a fernery in her best drawing-room (it narrowly escaped being watered), we will not too curiously inquire.

Our author's account of her numerous encounters with Toddie—theological and other—from which she invariably issues worsted, and with increased respect for the force of character which Mr Burton had long since recognised in that young gentleman, is most laughable. She tells the boys interesting anecdotes and stories full of moral purpose, containing hints for their guidance,

which the young logicians never fail to act upon in a way which leaves her powerless to reprove (if she does not wish to have her own lessons quoted against her), and with a dismayed sense of failure. She eulogises generosity, and forthwith the boys steal some hot-house grapes from a neighbour with which to present her on her birthday. She gives them lessons on the duty of making others happy, and they try to please her by lighting a bonfire in the cellar; a proceeding which disperses her birthday party. She sends them out of the room with a lecture on being quiet when Uncle Harry has the toothache. 'Even the sound of a person talking is annoying to him,' she says. 'Then you's a baddy woman to stay in here an' keep a-talking all the whole time,' says the irrepressible Toddie, 'when it makes poor old Uncle Harry supper so. G'way.'

She gives them instruction on the duty of working for others, the moral of which is pointed by two small itinerant Italian musicians, who, she informs the children, with beautiful enthusiasm, are doubtless toiling for sick parents who are far away; the result of which lesson on the dignity of labour is, that the two young monkeys perambulate the streets with Uncle Harry's precious violin and a whistle; and earn nearly a dollar with which to buy him a horse and carriage, which they have been told he cannot afford to purchase. It is with a sorrowful heart that Budge complains in his evening devotions that he has 'been scolded again for tryin' to do somethin' real nice for other people;' and that Toddie expresses his opinion that 'Aunt Alish ought to be ashamed of herself;' adding a hope that she may be made so. Poor Aunt Alice is gradually beginning to understand, having arrived at the knowledge by a thorny path, how very little she really knows about the management of other people's children. She tries to find out from Budge why their uncle succeeds better with them than she does, and learns a lesson on the art of making other people happy in their way and not in ours, which she takes to heart, if we may judge by the buns and candy which are manufactured by two small cooks in the Burton establishment, not without many perils to life and property. Perhaps the creature most to be pitied during the visit is the dog Jerry, who suffers many things at the hands of the boys. At all events he seems to be the only rejoicing member of the family at their approaching departure. Aunt Alice begs for another day, in which they distinguish themselves by ascending a precipice to get her a fern as a parting gift. Fortunately a kind Providence watches over them, and nothing worse occurs than a sprained ankle for Toddie. They are returned comparatively safe and sound to their father and mother, for which mercy we should imagine Mrs Burton offered a devout thanksgiving.

The last chapter is devoted to a conversation in which Mr Lawrence favours us with his views on the bringing up of children. Surely he is right when he says that 'love never faileth.' {559}

We feel certain that, to those who have babies like Helen's to manage, and who have wit to read between the lines, these two little volumes will prove as instructive as they are amusing. We can accord them no higher praise.

TEA-CULTURE IN INDIA.

THE author of an anonymous tract printed in 1689, and obtainable gratis 'up one pair of stairs at the sign of the Anodyne Necklace, without Temple Bar,' rather anticipated events in describing tea to be the leaf of a little shrub growing plentifully in the East Indies. No Indian tea found its way to Europe at that time, when haters of innovation were beginning to complain that through drinking of tea Englishwomen were no longer equal to eating beef of a morning. It was not until 1823 that a Scotsman, bearing the historical name of Robert Bruce, discovered there were tea-drinkers in Assam, who brewed their beloved beverage from the leaves of a native tree growing to a height of forty and even sixty feet; of which a few plants and seeds were subsequently carried by his brother, Mr C. A. Bruce, to Calcutta, to excite a transient curiosity, and that was all.

Time, however, brought Mr C. A. Bruce his reward. In 1834 a committee was appointed to consider the question of introducing tea cultivation in British India, and a scientific party under Dr Nathaniel Wallich—a Danish gentleman, whose botanical industry had won him the post of Superintendent of the Botanical Gardens at Calcutta—was sent to explore the newly acquired province of Assam, and make special inquiry respecting the tea-growing there practised. The result was that the committee reported favourably as to the feasibility of cultivating tea in John Company's dominions, Mr Bruce being selected to superintend the formation of government nurseries; and with the aid of Chinese seeds, Chinese plants, and Chinese cultivators, he set the possibility of producing good tea in India beyond all doubt. One consequence of the happy experiment was the establishment in 1839 of the Assam Tea Company, which took over the greater portion of the government gardens, started new ones on a larger scale, set about the cultivation of tea in good earnest, and after various vicissitudes, is now a flourishing concern.

The profitable industry is now fairly established in several of the provinces of the Indian empire, but Assam still maintains its pride of place, being credited with one half of the tea produced; the tea districts of Cochin and Tibet supplying twenty-six per cent., Darjeeling thirteen per cent., the Himalayan districts six per cent., and British Burmah the remaining five per cent. Darjeeling prides itself upon the superior delicacy and aroma of its leaf; but the rough, pungent, malty flavoured product of Assam, which owes its character to the use of native in place of Chinese seed, is the recognised standard Indian tea. If the Assam planters may congratulate themselves upon overcoming the old-time prejudice in favour of Chinese seed, they have equally good reason

to rejoice at having found a way to dispense with Chinese labour, once a grievous necessity. By offering high wages and constant employment, they are able to tempt Bengalese coolies to leave their beloved villages, and by providing comfortable huts with garden-ground in which they can install their wives and families, insure their staying in their new home. That they may not be saddled with useless hands, the tea-growers employ native foremen familiar with the work to act as recruiting officers.

Twelve or thirteen years ago a violent tea-growing mania suddenly set in. Companies were formed by the dozen. The value of available land rose beyond all reason. Some unscrupulous schemers sold uncleared forest-lands as plantations; others, more unscrupulous still, obtained payment for plantations utterly non-existent in any shape, and genuine 'gardens' of forty acres fetched from twenty to thirty thousand pounds. Things have long since found their level again; but the possession of a tea-garden even now presupposes the possession of a capital of at least three thousand pounds, a smaller sum being deemed insufficient to start with, since no return is to be expected from a new plantation for the first three years, and it takes six years for the plants to attain maturity; then they will allow of eight or nine gatherings being made in a year, and yield four hundred pounds of leaves per acre. They improve with age; but planters of seedlings have little chance of seeing their trees at their best, if the Chinese and Japanese speak truly when they say the tea-tree lives to be five hundred years old, and grows better as it grows older.

For very many years after its introduction into England, tea was the subject of a double monopoly. The Chinese were the only manufacturers, the East India Company the only importers. The opening of the trade deprived the consumer of the benefit of the strict supervision exercised by the Company's agents, and left the Chinese merchants master of the situation. A deterioration in the quality of the teas sent into the English market quickly followed; and every reduction in the duty tended to the same end, by encouraging the importation of low-priced leaf of little use save to mix with that of better class; and so it is almost impossible to obtain at any price what those who can remember it call 'old-fashioned tea.' At a late meeting of the Indian section of the Society of Arts, Mr Burrell, after remarking that India produced tea superior to any in the world in flavour, strength, and purity, complained that it was rarely used in this country except to mix with the inferior growth of China; and urged his hearers in their own interests and as a duty they owed to their countrymen in India, who had long toiled and struggled to meet their wants, to a more direct and extended use of Indian tea, and thereby afford a fair harvest of profit to its cultivators, for which nothing was now wanting but an increased consumption of their produce in this country.

Mr Burrell, we think, should rather have appealed to the sellers of tea; for unless they bestir themselves in the matter, but few of the millions of British tea-drinkers can have the chance of tasting pure Indian tea. We are aware that 'the trade' declare pure Indian teas unsuited to the national palate; but we have no faith in their judgment. If dealers in adulterable articles are to be believed, the British public's taste is a monstrously depraved one, preferring chicory to coffee, publican's to brewer's beer, turmeric and flour to mustard, and clever concoctions of all kinds to the things they pretend to be. It may be taken for granted that the Yankee vender of wooden nutmegs was ready to swear his customers preferred the ingenious imitation to the genuine article.

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The tea-growers of India, however, have a hopeful prospect before them. The consumption of the produce of their gardens has risen prodigiously, since the arrival of eight chests of tea from Assam caused such a sensation in the London market that the importers obtained from sixteen to thirty-four shillings a pound for it, or an average per pound of twenty-four shillings and sixpence. In 1851 the exportation of Indian tea amounted to 262,839 pounds; by 1863 it had risen to two and a half million pounds; in 1876 English buyers were found for 28,126,100 pounds. Every year sees an increase in the consumption of Indian tea; and unless their Chinese competitors look to it, they will gradually be beaten out of the field, for India possesses vast reserves of land fit for conversion into tea-gardens, and could, if need be, supply the wants of the whole world.

PROFESSOR TYNDALL ON THE SPREAD OF DISEASE.

WE copy the following from our able contemporary, *Nature*. The views propounded have been already noticed in our paper on the 'Germ Theory.'

'In proposing a vote of thanks to Dr Corfield for his recent lecture on Infectious Diseases, Professor Tyndall paid a high compliment to the lecturer for the thoroughly sound instruction which he had so clearly conveyed. He had made it plain that contagion consisted, not of gas or vapour, but of definite particles, sometimes floating in gas, in the air we breathed, or in the water we drank; and that, like organic seeds in the soil, they multiplied themselves indefinitely in suitable media, the great probability being that these disease-producing particles were living things. A close study of the subject, extending now over several years, enabled him to agree entirely with the lecturer in the parallelism which he had declared to exist between the phenomena of contagious disease and the phenomena of ordinary putrefaction. The case of flies, for example, to which the lecturer ascribed the power of communicating disease from one person to another, was exactly paralleled by phenomena in putrefaction. Chop up a beefsteak, steep it in water, raise the temperature a little above the temperature of the blood, pour off the water, and filter it; you get a perfectly clear liquid; but that liquid placed in a bottle and exposed to the air

soon begins to get turbid, and that turbid liquid, under the microscope, is found to be swarming with living organisms. By suitably heating this perfectly clear beef-tea, it can be sterilised, everything being killed which is capable of generating those little organisms which produce the turbidity; and by keeping it from coming in contact with the floating particles of the air, it might be preserved transparent for years. He had now some sterilised beef-tea of this sort which had been preserved for eighteen months in a state of perfect transparency. But if a fly dipped its foot into an adjacent vessel containing some of the turbid fluid, and then into the transparent fluid, that contact would be sufficient to infect the sterilised infusion. In forty-eight hours the clear liquid would be swarming with these living organisms. The quantity of the turbid liquid which attaches itself to the finest needle-point suffices to infect any amount of the infusion, just as the vaccine lymph taken up on the point of a surgeon's lancet spreads disease through the whole body. Here, also, as in the case of contagious disease, there was a period of incubation. In proof of what the lecturer had stated that the contagion of these communicable diseases was not gaseous or liquid, but solid particles, he would describe an experiment he had made only a few weeks since. Eighteen months ago he had a chamber prepared from which all floating particles of dust were removed, and in it he placed a number of vessels containing animal and vegetable refuse which soon fell into putrefaction, and also two or three vessels containing perfectly clear beef-tea and mutton-broth, as transparent as water, in which the infective particles had been killed by heat. Although all these vessels had stood for eighteen months side by side there had been no communication of contagion from one to the other. The beef-tea and mutton-broth remained as transparent as when put in, though the other vessels emitted a most noisome stench. But if a bubble were produced in one of the putrefying masses by blowing into it, and if on rising to the surface and bursting, the spray of the bubble was allowed to fall into the transparent beef-tea or mutton-broth, in two days it became as bad as its neighbours.

'Referring to another point on which the lecturer had insisted—namely, that there was no power of spontaneous generation of the germs or contagion of diseases, Professor Tyndall said that, though at present great names were opposed to that view, he would venture to predict that ten years hence there would be very few great names opposed to the lecturer on that matter. With regard to the power of specific contagia to be generated in decomposing animal matter, he would say that for the last twenty-one years he had been in the habit of visiting the upper Alpine valleys, where, amongst the Swiss châteaux, there was the most abominable decomposition going on from day to day, and exceedingly bad smells, but there these contagious diseases were entirely unknown. If, however, a person suffering from typhoid fever were transported there, the disease would spread like wildfire from this infected focus, and probably take possession of the entire population. It might be taken, therefore, that any of these special diseases required its special germ or seed for its production, just as you required a grape-seed to produce a vine. He entirely agreed with all that Dr Corfield had stated as to these diseases 'breeding true.' He never found the virus of small-pox producing typhoid, or *vice versâ*. The subject was one of the most important which could engage the attention of the scientific physician.'

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FOOTNOTES:

- [A] The subject of 'Visible Speech' is not unfamiliar to the readers of *Chambers's Journal*. In the number for May 12, 1866, a succinct account of the system is given—a system intended to remedy the utter want of agreement between the appearance and the sound of a letter or a word.

Transcriber's note—the following changes have been made to this text:

Page 554: Milwaukie to Milwaukee

Page 558: tomatos to tomatoes

*** END OF THE PROJECT GUTENBERG EBOOK CHAMBERS'S JOURNAL OF POPULAR
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