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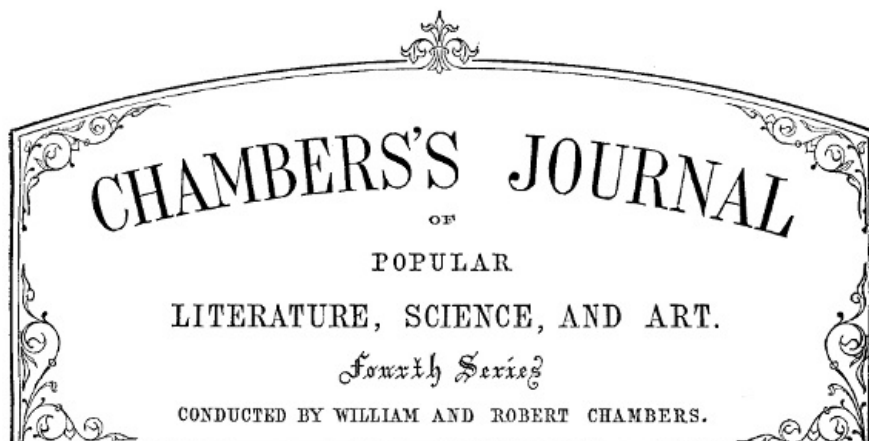
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**CHAMBERS'S JOURNAL
OF
POPULAR
LITERATURE, SCIENCE, AND ART.**

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A 'VILLAGE HOME.'

INDUSTRIAL schools, in which poor children, the waifs of the streets, are fed, lodged, and taught some useful employment, have been in existence for more than thirty years, and are on all hands acknowledged to have been successful as a means of preventing—or lessening the amount of—juvenile crime and vagrancy. The weak point in the organisation of these schools is that they rely for support on the voluntary contributions of benevolent individuals, instead of forming part of the poor-law system, and being thereby maintained by the whole taxable community. Some will think there is a more serious drawback in their constitution. By whatever name these schools are known, they are in effect asylums for the grouping of children to the number of several hundreds in a large establishment; and so far are a repetition of the old species of hospitals, which are now generally condemned. On a late occasion we brought under the notice of our readers a method of boarding-out pauper children among the families of rural labourers and small tradesmen in country towns, which has proved eminently successful wherever it has been tried in Scotland. As this method of boarding-out is under the administration of parochial boards relying on rates, it has, with other merits, that of not specially taxing the benevolence of particular individuals.

What we peculiarly admired in the boarding-out system was its conservation of the family-home as a means of juvenile nurture and intellectual and moral culture. We now propose to give some account of a family-home system which has been established in England. It differs materially from that prevalent in Scotland, and further labours under the objection of being a voluntary charity similar to that of the Industrial schools. Though not quite to our mind, it is much better than nothing, and we bespeak for it the kindly attention of the public.

This English 'Village Home' system originated in the efforts of Dr Bernardo, who began with a 'Home' for Arab and gutter boys in London. No sooner was this Home in operation than he set about founding a similar establishment for girls, in which good work he was ably assisted by his wife. 'The Village Home' at Ilford in Essex, for orphan, neglected, and destitute girls is the result.

Little girls up to the age of eleven or twelve are rescued weekly from misery and danger and placed under the care of a Mother. Even babies of only twelve and fifteen months are admitted, in cases where the detective, employed by Dr Bernardo to find out wretched and abandoned children, learns that the child will be brought up by a 'tramp' to a life of infamy. Before a girl thus rescued is permitted to join the family of which she is to become a member, she is carefully tended for several weeks in a Home in London, in order that her freedom from disease and her personal cleanliness may be secure; after which she is sent down to Ilford, and becomes at once a member of a *family*, with a dozen other girls of varying ages for playmates and sisters. The Mother gives her a kiss, and tells her to be a good girl, and they will all love her dearly; and in a few days the forlorn little one is transformed into something human and child-like. In order to become acquainted with the internal organisation of this 'Home' training of large numbers of destitute children gathered together from all parts of London, we recently visited Dr Bernardo's 'Village Home' at Ilford, the third and most recently founded establishment of the kind. Thither we repair, and find that the pretty red cottages which compose the Village form an oblong square, which surrounds a large open space of ground, intended hereafter to inclose a piece of grass of sufficient size for the grazing of a few sheep. A picturesque gateway admits the visitor to the governor's house, which is built in the same style as the cottages. We were met at the entrance by the governor.

'The children are all in school now,' said he; 'what do you say to going there first, and then you will see them all together?'

During a walk of some five or six minutes, past a dozen cottages and through two or three turnstile gates, we met on our road half-a-dozen happy-faced little children minding babies younger than themselves. The school-rooms occupy a long detached building. We entered one, a large cheerful room furnished with desks and forms, and hung with maps, pictures of animals, and illustrated texts of Scripture and homely proverbs. {434}

The girls regarded us with bright cheerful curiosity. There was no stolid indifference or sullen discontent expressed in any of their faces. They stood up as the governor took off his hat, and each one dropped us a quick little courtesy and smiled pleasantly as we passed by her desk. The ages of the children in this room varied from perhaps ten to fourteen or fifteen; and we observed that their hair was not cropped, that it was braided close to the head, according to the fancy of the owner, where it was long; and that those who had it short wore either a round comb or piece of dark ribbon to keep it from falling over their eyes.

On our remarking to the governor that this in itself was a great improvement on the usual habit of keeping the hair cropped, he replied: 'We do all we can to develop nice womanly habits in the older girls, so we make it a rule *never* to cut their hair, so long as they keep it clean and tidy; and we find the plan succeeds very well, each girl knowing the penalty she will have to pay for slovenliness in this respect; and as you see for yourself, they take care to keep their locks.' The girls are not dressed in uniform, which we consider to be advantageous.

A pleasant-faced schoolmistress presided over this room. The hours perhaps are a little longer than is absolutely necessary; but still, although morning lessons were just over, we searched in vain for one over-tired listless face. All the children looked happy and bright and clean, and most of them were so healthy in appearance that it was a real pleasure to watch them eagerly putting away their slates preparatory to scampering back to their various homes.

The school-room education is sound and practical, and suited to the position the girls will occupy

on leaving the Village.

An animated scene met our view as we turned into the square around which stand the various Homes. About a hundred girls, from fourteen years old down to babies only just able to toddle, were laughing and chatting merrily as they hurried along the broad pathway, and gathered in clusters in front of each cottage, glancing shyly at the visitors walking behind ere they disappeared indoors like bees returning to their hives.

We entered the first Home; and as they are all alike in form and arrangement, a description of one will suffice for all. They are of red brick, detached, and of Gothic style, containing day-room kitchen, scullery, and pantry on the ground-floor, besides a tiny private sitting-room for the Mother. The sleeping apartments are up-stairs, five in number; four for the little family, and one small one for the Mother.

From half-past twelve to one is dinner-hour, so we arrived just in time to see the meal served. Each cottage is presided over by a woman carefully selected for the post she has to fill, capable of both firmness and gentleness, of an affectionate disposition, and accustomed to manage children. She is called Mother by the little ones under her care; her will is law; all in her cottage obey it; or if not, are treated as naughty children would be in homes of their own. The various arrangements of the household are made clear to each inmate, and the conscientious carrying out of them is inculcated on each member of the family for the comfort and well-being of all. The cottages are large enough to hold twenty girls, five in each bedroom; but when we were there, none of the cottages contained more than fifteen or sixteen.

The rooms in which the girls sleep are plain and homelike. Small iron bedsteads painted green, and covered with a counterpane bearing the name of the Village, woven in the centre, occupy the corners; a washing-stand with basin and jug and soap-dish of simple ware, is placed on one side, to enable the girls to learn to use and lift such breakable articles without fear or awkwardness; combs and brushes are kept in a drawer, and a square looking-glass hangs on the wall, that there may not be any excuse for untidy appearance.

Nothing is done in the Home by forced routine. The older girls take it in turn to help to cook the dinner, to lay the cloth, to keep the house in order, and to imitate Mother in everything she does. Each small domestic duty is performed over and over again, till each child learns to be quite an adept at cooking potatoes, or cleaning out a room, or washing and dressing a younger one; and takes a pride in her work, so as to be able to do it *as well as Mother*. The child is daily and hourly accustomed to perform small services for the household, to keep down her temper, to give sympathy and willing aid to those who have not been so long in the Home as herself, and to do all she can to help Mother; hence, when she enters service, she has already learnt in her Home to do thoroughly all the commonplace duties which are likely to fall to her lot as a servant. In these Homes every girl has a motive for which to work; she is taught to love truth, to be gentle and modest, and to give and accept the affection to which all have an equal right from Mother down to the youngest in the house. Family interest is encouraged in every cottage; the girls are taught to regard each other as adopted sisters; individuality of character is carefully studied by the head of the household, and as far as lies in her power, is trained into usefulness for the benefit of the whole community.

Every day, in each household one or two stay from school for an hour or so, in order to learn the art of cooking the simple dinner partaken by their sisters when they come home. The table is carefully laid; every article in the kitchen is scrupulously cleaned; the rice, if it be rice-day, duly weighed, washed, boiled, and constantly watched by the eager pair of eyes whose duty it is to see that it does not burn; and then, when all, with clean hands and faces, are seated round the table, the little cook of the day has to carry the plates full of rice to Mother, to add the treacle or sugar allowed, according to the wish of each child.

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The furniture of the cottage throughout is solid and plain, and of a kind that can be kept clean by scrubbing. The children amuse themselves in the room in which they dine; at one end of which are shelves divided into pigeon-holes, in which each girl may keep her work and small treasures. These pigeon-holes are left unclosed, to teach the children to resist the temptation of touching a sister's things without leave. In this room they play, work, mend their clothes, darn their stockings, and talk to Mother, who sits with them for the greater part of the evening. She has her own private parlour at the side, from whence she can command a view of the kitchen and scullery and see that all goes on well there; and at the same time she can hear, without being seen, the conversation that takes place between her children and any relative who is permitted to visit them; an arrangement which often avoids harm from injudicious influence.

One of the special duties of the Mother is to inculcate habits of domestic comfort in a home on a small scale, and so to cultivate the powers of contrivance of each girl as to obtain the greatest possible amount of household pleasure for all.

Each girl's clothes are kept on a shelf in a press; the elder ones superintend mending operations, and the tidiness of the younger ones. There is *no number* marked on their things, not even on the shoes and boots, which are kept beautifully clean and ready for use in a recess at the foot of the press.

Everything about the cottage bears the stamp of ordinary home-life; nothing is institutionised. Every natural social feeling is fostered and developed in this Home life, so that when the time arrives for a girl to go into service, she carries with her into her new home not only a practical knowledge of the duties expected of her, which fits her to hold her own among her fellow-servants, but the firm conviction that she has only to do well to get on; added to which she wears

in her heart the very best preservative against doing badly, the talisman of the love and affection of the family amongst whom she has been reared.

Each cottage is called at Ilford after the name of a flower—Hawthorn, Rose, Forget-me-not, Sweetbrier, and so on; and as far as possible the hats and cloaks for Sunday and holiday-wear are identified, each with its Home; so that the groups belonging to the various Cottages may be distinguished in church by the differing colour of the hat or style of the cape.

A large laundry is attached to the cottages. Here the girls learn laundry-work, from the clean washing and ironing of a coarse towel to the careful goffering and ironing of a lady's ruffle or a gentleman's shirt. They all take their turn in every department of the work, not doing a set piece and then leaving it because the task is done, but taking an interest in the part assigned to them, and each one vying with the other in quickness and thoroughness. The pride with which they exhibited their ironing shewed plainly that it was no forced task, but a labour of genuine pleasure. Bright pleasant-spoken women superintend this part of the Home, inculcating that 'everything that is worth doing at all is worth doing well,' and seeing that nothing is left till it is finished. Although it was the dinner-hour, several of the girls were still busy at the tables.

'It won't take you five minutes to finish that shirt, Lucy,' we heard one of the women say to a rosy-cheeked girl; 'and it would be a pity to leave it; the starch will get so dry.' The girl answered with a smile, and went on ironing cheerfully, quite as anxious that her work should look nice as the Mother was for her. Such training as this cannot fail in its desired effect; and girls taught thus early to take an interest in the labour of their hands, cannot fail to do honour to the Home they have been reared in, and the kind Mother, whose affections they hope to retain to the end of life.

A girl who had been thus trained for two or three years waited on us at lunch at the governor's table. She is about thirteen, and not very big for her age; but she managed not only to supply us with all we required in a handy way, but to carry up to the nursery the babies' dinner. Her movements were quiet, her manners dignified and self-contained, and she kept an eager watch on us, to observe if we had all we needed. She was evidently intent on doing her best, and was ambitious enough to even try and divine if anything was missing. We were informed when this girl left the room that she had been in the Home some time, that she had a fearful temper, but that great hopes were entertained of her turning out at sixteen a good useful servant.

We were all the more impressed with this specimen of the results of the Home training system, as we had only a short while since had in our house a pattern girl from one of the workhouse schools. She was sent to us as *quite* fit to enter service. She was fourteen, a year older than the Ilford little maid, and had been brought up from a baby in the Union. She could read and write perhaps better than most young ladies of her age; she knew a smattering of geography, a jumble of history and poetry, but such an amount of bad language and viciousness that we were horrified at her knowledge. Not one simple piece of household work did she know anything about or cared to learn to do. She was stolid and indifferent if shewn how to clean, insolent if reproved for a fault, and not to be trusted either in what she said or in what she did. She had no standard of morals; stared absently, as if one were addressing her in an unknown tongue, if spoken to about trying to do her best to please her mistress; and when waiting at table or performing personal service, merely acted like a machine; and yet she was naturally a much cleverer girl than the Ilford child; and if she had been subjected to the refining and humanising effects of Home surroundings, might have developed into a thoroughly useful maid.

Dr Bernardo entreats all who can to join him in carrying on the work he has begun of rescuing vagrant girls from destruction. Like many institutions dependent on precarious contributions, it is sadly in need of funds, and will gratefully receive presents either in linen, simple stuffs for girls' frocks, or in money; and we can answer for it, that all those who are interested in the Home and would like to see it, will be kindly greeted by the governor if they will take the trouble to visit the pretty little Village at Ilford.

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THE LAST OF THE HADDONS.

CHAPTER XXXII.—BENT, BUT NOT BROKEN.

AN hour later I slipped noiselessly in at the cottage door, which stood hospitably open for me, passed the parlour, where I could hear Mrs Tipper and Lilian talking together, and stole up to my own room. Gusts of wind and rain were beating in at the open window. I afterwards heard that a terrible storm had swept over the country that night, laying waste the crops and spoiling the harvest in all directions; *I* only knew of the storm which had devastated my hopes. I imagined that I had myself sufficiently under control to venture to return—but alas! Another bitter struggle, another wrestle with my weaker self, amidst wild prayers for help—for death.

Then I was on my feet again, telling myself, in a pitiable would-be jaunty strain: 'No; you will never slip out of your misery in *that* way, Mary Haddon, and it is folly to hope it. You are not the kind of person, you know. You could not die of a broken heart if you were to try. Your vocation may be to suffer, but you will not die under it—certainly not without a long preliminary struggle to live. You are not made of the material which fades gracefully away under pressure; and yesterday you would have affirmed that you did not wish to be made of it. You have always scouted the idea of being at the mercy of circumstances; you have been a little hard upon those

who succumbed under trial—in your inmost heart, you know that you have not had much patience with weakness; and now has come the opportunity for proving your superiority to ordinary mortals.'

Then my mood changed. I dragged myself towards the dressing-glass, thrust the damp hair from my brow, and stared at my face with miserable mocking eyes, as I reviled it for its want of loveliness, and taunted myself with not being able to keep a good man's love. Then I fell to weeping and pleading again; and thank God, it was this time for help to *live*. Alas, would the victory *ever* come? Do others find as much difficulty as I did in overcoming? Have others as much cause to feel humble in the hour of victory as I had? I know that it is all very pitiful to look back upon; though the consciousness of my weakness under trial did me great service afterwards. Weak and faint, but thank God, not worsted, I at length rose from my knees, bathed my face and hands, and after a while had my feelings sufficiently under control to think over the best way of doing what it was my resolute purpose to do. My power of self-command was very soon put to the test. I was conscious of another sound besides that of the sighing and sobbing of the wind, which like a tired child who has spent its passion, was sinking to rest again. Some one was tapping rather loudly at the door.

Alas! how weak I still was. How could I meet Lilian's eyes? Not yet, I dared not. But whilst I stood with my hands pressed against my throbbing heart gazing at the door, I recognised Becky's voice. What a reprieve! I hastened to admit her, and then locked the door again.

'If you please, Miss, Mrs Tipper was afraid you was out in all this storm, and'— She stopped; looked at me for a moment with dilating eyes, and then her tears began to flow. 'O Miss Haddon, dear, are you ill? What's the matter?'

'You must not cry, and you must not speak so loud, Becky.'

She saw that I waited until she had ceased, and hastily rubbed the tears out of her eyes.

Then in a low quiet voice, I said: 'A great trial has to be gone through, Becky. It *must* be borne, and I think you can help me to bear it.'

'I knowed it was coming—I knowed it!' said Becky, under her breath.

'What did you know was coming?'

She appeared for a moment to be searching in her mind for the best way of telling me, and at the same time expressing her sympathy; then with lowered eyes replied: 'I loved Tom—I always shall love him—and he can't love me.'

She knew then! Probably every one but myself had seen it!

'In that case, you know that such things are not to be talked about, Becky.'

'Yes, Miss; only'—

'I know that it was your regard for me which made you mention it. But we need all our strength just now—you as well as I—and we must not think or speak of anything that will weaken it. I want your help, and to help me you must be cool and quiet and strong. Will you try to be that?'

'Yes; I will—I will indeed, dear Miss Haddon;' eagerly adding: 'What can I do?'

I stood pressing my two hands upon my temples in anxious thought a few moments, then asked: 'Do I look unlike my usual self, Becky—ill? Tell me exactly how I look to you?' thinking of the effect which the first sight of me had had upon her!

'Yes; you look terrible white, and wild, and trembling; and there's great black rims round your eyes,' gravely and straightforwardly replied Becky.

'As though I had been frightened by the storm. There has been a storm; hasn't there?'

'Yes; there's been a terrible storm, Miss; but'—

'Go on, Becky.'

'You're not the sort to look like that about a storm.'

'I see.'

If that was Becky's opinion, the storm would not do for Lilian and Mrs Tipper, and the alteration in my appearance must be accounted for in some other way. I was seeking about in my mind for a way out of the difficulty, when Becky unconsciously helped me with the exclamation:

'O Miss Haddon, dear, what have you done to your hand?'

Looking down, I saw that there was a slight wound in it—made I suppose when I fell, by a nail or sharp stone—and that it had been bleeding somewhat freely.

'Nothing to hurt, Becky,' I murmured; 'but it will serve my purpose. Give me a handkerchief—quick! and now another!'

She understood me; and when Lilian presently came running up, she found appearances sufficiently sanguinary—quite enough so, to account for my looking strange and unlike my usual self.

'Dear Mary, what is it? Oh, how have you hurt yourself?'

It was really a very superficial wound; but of course I did not explain that; making a little demonstration about the wrapping up with Becky's assistance.

'It has made you look quite ill, dear!' went on Lilian, kneeling down by my side. 'Let *me* tie that, Becky.'

But Becky would not yield an inch until I had given her a little look of reminder, and then did so very reluctantly.

'And your clothes are quite wet, darling!' ejaculated Lilian. 'You must have been out in all that storm. Fearful, wasn't it? Could not you find any shelter?'

'No; it had to be borne as best it might,' I grimly replied; though I called myself to order at once; a startled look in Lilian's eyes shewing me that I could not talk about storms with impunity as yet.

Then there was dear little Mrs Tipper hurrying in with a concerned face to inquire what had happened, and recommending all sorts of remedies for my hand. Did I not think it better to send Becky into the village for Mr Stone the surgeon? Was I *quite* sure it did not require being strapped up? Had I looked to see if there was anything in the wound? &c.

But I had my hand well muffled up; and assured them, with more truth than they suspected, that it really was not a very serious cut. 'Only I think I will say good-night, and take off these wet things at once, if you will excuse my not coming down again,' I added, with a feverish longing to be alone.

I had nevertheless to submit to mulled wine and a great deal of comforting and petting. And Lilian entreated to be allowed to remain with me during the night. 'Dear Mary, do let me stay; I feel sure that you are not so well as you think you are.'

But I sent her off with a jest; and my first difficulty was overcome. Two hours later, when she had made sure that the others were at rest, Becky stole into my room.

'I will lie on the floor, and I won't speak a word; but don't send me away, please don't send me away,' she whispered.

I was obliged to make the faithful girl share my bed, for I could not prevail upon her to leave me. Probably her presence was some little help to me in the way of preventing any indulgence of sentiment, had I been inclined to yield to it again. When morning came, cool and fresh and sunny after the storm, I was myself again; not my looks—the effects of the storm which had passed over *me* were not to be so easily effaced—but I was nerved in spirit for what was to come. In the early morning—so early that Becky had barely time to slip away—came Lilian in her white wrapper; and then I noticed how fragile she had become. My darling, had I been even for a moment so unjust as to doubt you, I could have doubted you no longer! She was full of loving sympathy about my hand.

'Dear Mary, I could not sleep for thinking of you. Even now you do not look quite yourself.'

'Nevertheless, I am myself.'

She nestled closer to me, looking anxiously and doubtfully up into my face. How thankful I should have been just at that moment if love were as blind as it is sometimes depicted as being!

'No; not quite your old self. Say—do say that you love me, Mary.'

'Is it necessary to say it, Lilian?'

'Yes;' feverishly.

'Then I love you, child.'

'And—and say that you believe my love for you is true—say it!'

'I *know* that your love for me is true, my sister.'

Once more she clung to me trembling in her deep emotion; but silently this time, and believing that she was asking for strength to go on, I waited until she was able to do so. Although I knew now that she loved Philip—it was as plain to me as that he loved her—I thought it better to let her herself lead up to what she wanted to say. It would comfort her by-and-by to remember she had been able to say it. Presently she looked up into my face, a holy light in the sweet eyes as they steadily met mine.

'Mary, you have not told me when your wedding is to take place. Recollect, you must give me at least a week's notice for my dress. I do not choose you to have a shabby bride's-maid. No, indeed; I mean every one to see that—she loves you. Is the time fixed?'

'Philip wished me to decide last night, and—something was said about next week, dearie.'

'I am glad it is settled, Mary;' with grave earnestness, her eyes still fixed upon mine.

'But—I am afraid it will shock you very much to hear it—some way, I do not care to think about it.'

She grew whiter, clinging closer to me as she echoed: 'Not care to think about it!—your marriage?'

I steadied myself. One weak word—a look—and all would be in vain.

'It does seem a little strange even to myself. But to confess the truth' (I could hardly keep back a bitter smile at the thought of the truth helping me *so*), 'I had scarcely promised Philip an hour, before I began to think I would put it off.'

'Why?' she murmured—'why?'

'It is so difficult to explain the workings of one's own mind. I am not sure whether marriage is my vocation. I begin almost to fancy that I must have been intended for an old maid. Would it shock

you very much if I were to be one after all?'

'You!—an old maid? How could that be? You are jesting of course.'

'I am not so sure.—But run away and dress, child. If we are late for breakfast, auntie will fancy that all sorts of dreadful things have happened to us.'

She obeyed me, but was, I saw, puzzled, and even a little frightened at my jesting. The only effect of my first attempt had been to make her startled and afraid. Her knowledge of me had not taught her to expect that I should not know my own mind upon so momentous a question as my marriage. My task would be difficult indeed. At breakfast she told Mrs Tipper that my marriage was to take place the following week.

'Next week, dear?' said the thoughtful little lady, looking from one to the other of us in a nervous startled way, adding rather confusedly: 'I did not expect—that is, I thought there would be more time for—preparations, you know.'

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'I believe it is all Mary's fault; and that she gave us so short a notice on purpose to escape a fuss, as she calls it, auntie. But she will not escape any the more for that, will she? A great deal may be done in a week.'

'Of course we shall do the very best we can do in the time, dear,' returned the little lady, looking the least self-possessed of the three of us, as she went on to ask me in a trembling voice which day in the week was fixed upon.

I said something about its not being decided yet, and tried to force the conversation into other channels. But Lilian would talk about nothing but the wedding and the preparations to be made for it. Her forced gaiety might have deceived me, had I not known.

'You will not require to buy much, auntie; the gray moire and white lace shawl, which you only wore once at the Warmans' *fête*, will do beautifully with a new bonnet. But I of course must be new from head to foot—white and blue—I suppose. The best plan will be to write to Miss Jefferies and give her a *carte blanche* to send everything that is right; for we do not mind a little extra expense for such an occasion; do we, auntie?'

'No, dear, no; of course not. But you have not asked what Mary has chosen.'

'Oh, that will be white of course.—When is your dress coming down, Mary? I must see that it is becomingly made; you know you are so careless about such matters.'

I made some remark to the effect that wedding dresses and wedding paraphernalia in general did not sufficiently interest me to seem worth the time and trouble they cost.

But Lilian was not to be repressed, returning again and again to the one topic.

'And you must not forget that you promised to let auntie and me take the management of Hill Side during your absence, and see that all your plans are being properly carried out. Nancy is to go there at once, I suppose? Philip says that the oak furniture for the library will not be ready for a couple of months, on account of the firm having so many orders for the pattern you chose. And, recollect, Mary, I am to have the pleasure of choosing *everything* for your own little cosy; I know your taste so well that I am sure I shall please you, and you are not to see it until it is finished.'

All I could do was to try to give them the impression, without saying so much in words, that I was not so much interested in the question as might have been expected. I saw that it would not do to venture far, with Mrs Tipper's eyes turned so watchfully and anxiously upon me.

My hardest trial was the unexpected arrival of Philip soon after breakfast was over. Whether he had come down only to fetch the papers, or whether it was in consequence of what had passed between himself and Robert Wentworth, I know not, but he availed himself of the opportunity to tell Mrs Tipper that I had consented that our marriage should take place the following week.

At his first words I took the precaution of seating myself at the piano with my back towards them, running the fingers of my one hand over the notes, with a demonstration of trying the air of a new song which he had added to our collection. Then with my fingers on the keys, I stopped a moment—quite naturally, I flattered myself—to throw him a few words over my shoulder.

'The idea of your taking my words so literally as all that!'

'I not only took your words literally, but mean to make you keep them literally.'

'Oh, nonsense!'

Ah Philip, how surprised you were, as indeed you well might be, at my assumption of flightiness! How more than surprised you were afterwards, when I placed every obstacle I could think of in the way to prevent our being alone together; and how honestly you tried to act the part of a lover in the presence of Mrs Tipper and Lilian, insisting upon my keeping my word, and refusing to accept any excuses for delay, Lilian as honestly taking your side.

Fortunately, my maimed hand, which I kept in a sling and made the most of, sufficed to account for my altered appearance. But for that and my bearing towards Lilian, Philip might have suspected. Then he found me so entirely free from anything like pique or anger towards himself, that he could not imagine the change he observed to be occasioned by any fault of his own. I had indeed nothing to dissemble in the way of anger. In my moments of deepest misery, it was given me to see that there had been no intended disloyalty to me. Philip's love for Lilian and her love for him were simply the natural consequence of two so well fitted for each other being thrown together intimately as they had been. I am writing from a distance of time, and of course in a calmer frame of mind than I was in at the moment of the trial; but I know that my thoughts all

tended to exonerate them from the first.

None knew better than did I how completely free Lilian was from anything in the way of trying to attract, even as much as girls may honestly do. Knowing what I did—reading both their hearts—it was very precious to me to see their truth and fealty to the right. I knew that if they once perceived my suffering, nothing would induce them to accept happiness that way. I *must* keep my nerves steady! As much as I was able to compass that first day was to puzzle them all; but even that was a little step—it was something that they could see the change without discovering the cause. Quite enough to begin with.

TORPEDOES AND INFERNAL MACHINES.

ON Easter Monday last, when several thousands of persons were holiday-making in a public garden out north-westward of London, a loud bang startled the inmates of houses many miles from the spot in all directions—louder than any discharge of artillery, and comparable to a blowing-up on a tremendous scale. It proved on investigation to be due to the explosion of a cylinder no more than twenty-five inches in length by two inches in diameter, filled with one or other of those destructive compositions which chemistry has lately presented to us, and to which have been given the mysterious names of dynamite, lithofracteur, gun-cotton, nitro-glycerine, &c. How such a diabolical sausage got into such a place at such a time, and what the police authorities have had to say about it, we need not detail here; but the subject sets people thinking ugly thoughts about Torpedoes and Infernal Machines.

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The French have had much to do with (so-called) infernal machines, which, under various forms, have been employed to assassinate successive sovereigns, but happily failed in the wicked attempt, though not without inflicting injuries on onlookers. In 1804, when Napoleon thought that he had England pretty nearly in his grasp, a *catamaran* expedition was fitted out by the English to act against him. This catamaran was an oblong water-proof box lined with lead; it contained fifteen hundred pounds of gunpowder, various inflammable substances, clockwork to produce an explosion at a given moment, and ballast to steady it. Being towed towards an enemy's ship and left for the tide to float it onward, it would cling to the ship by means of grappling-irons buoyed up with cork; and in a given number of minutes the clockwork acting on a trigger would explode the combustibles. Such at least was the theory; but the chances of failure were found to be too numerous and varied in practice. Some years after this, Colonel Colt, the inventor of the celebrated revolver, devoted a great deal of time to this subject of infernal machines, making many combinations which were useful as hints to later contrivers.

In 1809, when Lord Cochrane was engaged against the French in the Bay of Biscay, he employed a destroyer most formidable in character. He filled a number of empty puncheons with about fifty thousand pounds of powder; on the tops of these puncheons were placed three hundred and fifty explosive shells, with fuses, and upwards of two thousand hand grenades among and between them. The whole were bound and jammed together with cables, wedges, and sand, on board a small vessel called the *Devastator*. A fifteen minutes' time-fuse being ignited, the crew (Cochrane himself, a lieutenant, and four seamen) rowed away quickly in a boat. The infernal monster did not produce quite the kind of mischief intended; the explosion was one of the most tremendous ever heard; but the enemy's ships were rather too far away to be materially damaged, while Cochrane lost some of his gallant little crew by over-fatigue and drowning by tumultuous waves.

During the short war between England and the United States in 1812-13, many submarine boats were suggested and partially tried, but with no great result.

The Crimean War (1854-56) brought to the Admiralty a deluge of inventors and projectors, each armed with some new scheme of a 'diabolical' kind. The Earl of Dundonald (the Lord Cochrane of 1809) sounded the government concerning a plan which he had matured long before; but there was hesitation in the matter; and the public learned little more than that the scheme related to a kind of fire-ship. Captain Warner's 'long range' was another crotchet, by which an enemy's vessel was to be destroyed at an immense distance by *something* being hurled against it; this something, whatever it may have been, did not find favour with the government. Then there was a talk also about Captain Disney's war-projectile, consisting of a metal cylinder having a bursting charge at one end, and at the other a highly combustible liquid; the liquid, when exposed to the air, set fire to almost everything with which it came in contact. This pleasant kind of plaything was to be propelled against ships, buildings, or masses of troops. Captain Disney had another mode of employing what he frankly called his 'infernal fluid,' which would 'cause blindness for several hours to all troops coming within a quarter of a mile of it.' The real nature of the liquid was his peculiar secret, which, so far as we are aware, the government did not think proper to purchase.

While discoverers and inventors were directing their attention to these intentionally destructive contrivances, the principal governments were cautiously testing some of them as opportunity offered. The Russians studded the Baltic with submerged torpedoes in 1854-55; iron cases containing combustibles, sulphuric acid, and chlorate of potash, so placed that a sudden concussion would make the whole explode. Very few British ships were really hit by them; but a good deal of uneasiness was felt by the crews of Admiral Sir Charles Napier's fleet, who would much rather have encountered an open enemy than a concealed submarine foe, the whereabouts of which could not be determined beforehand. In 1866 the Austrians in their brief war with Italy

used torpedoes in which gun-cotton was fired off by an electric current. During the American Civil War, 1861 to 1865, nearly forty vessels were destroyed by torpedoes. (We may here mention that this name, first given to these contrivances by the Americans, was derived from one designation of the torpedo or electrical fish.) Three-fourths of the destruction was wrought by the Confederates against Federal vessels, but the remainder blew up or disabled the Confederates' own ships. The torpedoes employed were of various kinds and sizes, some exploding by mechanical concussion, some by chemical action, some by electric discharge. One of them was a complete submarine boat, which could be lowered to several feet below the surface of the water, and there propelled with hand-paddles at the rate of four miles an hour, by men shut up in a water-tight compartment, and provided with half an hour's compressed fresh air. This submarine boat dragged a floating torpedo, allowed it to come under the bottom of an enemy's ship, paddled away to a safe distance, and then fired the torpedo by an electric fuse. Such at least was the theory; but it proved to be a case of the engineer 'hoist by his own petard;' for although the torpedo really did destroy a Federal ship, the submarine boat and its crew were never afterwards seen or heard of.^[A]

Some of the contrivances to which naval engineers are directing their attention are called *outrigger torpedoes*. A small swift steamer has an outrigger or pole projecting twenty or twenty-five feet from one side; a torpedo case is fastened to the outer end of the pole, and a concussion-fuse is fitted to it, or an electric-wire extends along the pole. When the steamer has cautiously and silently brought the torpedo (which may be either a little above or a little below the surface of the water) under the bottom of an enemy's ship, the composition within it is fired by the fuse or current, and the explosion left to do its destructive work. It is supposed and intended that the distance of twenty or twenty-five feet between the steamer and the torpedo will keep the former free from peril. Some torpedoes are self-explosive on touching the enemy's ship. One variety is a hollow iron cone, kept at a certain depth under water by a mooring chain; the cone contains from one to three hundred pounds of powder; above this is an air-space to give buoyancy, over this a small apparatus of chemicals, and at the top of all a projecting rod. If the bottom or lower part of the hull of a passing ship happens to strike against this rod, a kind of trigger explodes the chemicals and then the powder—with what result the evil fates are left to determine. Another kind, not self-explosive, is ignited from the shore. The torpedo-cone is moored as in the former case, and electric wires extend from it to a battery on shore. When an enemy's ship is seen to be passing just over the torpedo, a shock is sent from shore, and the demon of mischief explodes. A self-exploding torpedo has the disadvantage of destroying one's own ships occasionally, by a mishap; while the others are with difficulty coaxed to explode just at the desired instant.

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Six or eight years ago, the public were a good deal mystified about Captain Harvey's torpedo, what it was and what it was intended to accomplish. It was described as an oblong box, to be towed beside a steamer by means of a long rope. It was charged with a powerful explosive composition; it had projecting levers at the top, a tube containing a detonating compound, and a bolt that could be pressed down upon the detonator by the levers. Towed out to its place by a steamer of great speed, it is brought close to the side of a hostile ship, the tow-rope is then slightly slackened, the torpedo sinks a little, and as the rope tightens again, it comes with a violent blow against the ship's bottom, exploding and making (theoretically at anyrate) a big hole in the ship's hull: a short process, but by no means a merry one. (The English authorities are said to be manufacturing Harvey's torpedoes at Woolwich Arsenal at the time we write, June 1877.)

Rather more recently, Captain Ericsson's torpedo attracted the attention of the American government. It had one feature of a remarkable character—a hempen cable utilised as a tube or pipe by making the centre hollow. The torpedo, a cylinder of light galvanised iron, was about ten feet long by nineteen inches in diameter, and was charged with nearly four hundred pounds of nitro-glycerine. It was towed by a steamer, with a tubular cable or rope half a mile long. When brought into a desired position, the torpedo was propelled swiftly in any direction by compressed air driven through the tubular rope. The torpedo could be wound in so as to be any less distance than half a mile from the steamer. One rather fails, however, to see how the commander of the steamer is to send the explosive matter against an enemy's ship exactly at the right time and in the right direction.

The Whitehead or fish torpedo, one of the kinds now being experimented upon by the English government, appears to be a very elaborate contrivance. It is a sort of submarine rocket, a cigar-shaped iron case five or six yards long by about half a yard in diameter at the thickest part. At one end is a charge of three or four hundred pounds of dynamite or of compressed gun-cotton, with a pistol or trigger-detonator to ignite it; then a pneumatic chamber for compressed air, with an apparatus for maintaining the torpedo at any predetermined depth below the surface of the water; then an air-chamber, tested to a thousand pounds on the square inch, and containing an air-engine with compressed air; and lastly, a double action screw propeller. So much for the torpedo; but how to make it travel along and then explode? It is either driven into the sea out of an apparatus called an ejector, fitted in the bow of a steamer built for the purpose, or it can be launched from a special carriage placed on deck. The arrangements can be so made that the torpedo will travel along at any depth below the water varying from one foot to thirty feet, for a horizontal distance of a thousand yards, and with a speed of seven miles an hour. A torpedo-vessel called the *Lightning* has just been built by Messrs Thornycroft and Donaldson for the Admiralty, to contain two or more of these torpedoes, and to eject them one at a time against an enemy's ships. The idea is, to steam to a distance of a few hundred (less than a thousand) yards from the enemy, and eject a torpedo, with its engine, screw, &c. working, in the right direction; the head of the missile, if it dashes under water against an enemy's ship, will explode, and burst a huge hole in the ship's bottom. Or by another adjustment the explosion can be timed to occur in a

definite number of minutes after the ejection. A missile of great cost this will be, whether it hits the enemy or not; seeing that the whole of it will be hurled to fragments if it explodes at all; a cost, per missile, of four or five hundred pounds sterling.

A school of torpedo-warfare has been established at Portsmouth; and there can be little doubt that foreign powers are doing the like. Alas for humanity and civilisation! It is contended, however, that all this *diablerie* will lessen slaughter, by deterring armed ships from coming within torpedo-distance; but a great naval war can alone determine the matter.

As to infernal machines, contrivances planned for some dastardly and nefarious purpose, an incident about four years ago gave us a little insight into them. A cargo of highly insured but worthless goods was shipped at a French port in a steamer, and in the midst of the cargo an infernal machine, intended to explode, destroy the ship and cargo, and earn the insurance money for the miscreant conspirators. The machine was a sort of chest, provided with explosive compound, an exploding apparatus, train of clockwork, primed cartridge, trigger or striking needle—the clockwork being timed to produce the explosion in a given number of days after leaving port. An occurrence at Bremerhaven a year or so ago afforded a further illustration of this application of scientific discovery and mechanical invention to purposes at once fraudulent and barbarous. Whether any case is on record of the *coal-torpedo* having been really applied to its Satanic purpose, we do not know; but that such a thing exists is certain. It is a hollow shell of iron, carefully moulded from a lump of coal, and blacked to look like coal; an irregular cube of a few inches on each side, and filled with terrible combustibles of the dynamite kind. What does this mean? It means that a steamer laden with almost worthless goods insured at a very high value has a coal-torpedo purposely mixed with the coal in her bunkers, ready to explode whenever thrown into the furnace, or perhaps before! Another infamous contrivance, darkly hinted at, is the *rat-torpedo*, which, placed secretly in the hull of a ship, will after a time explode, and burst a hole in the ship's bottom. Specimens of these two kinds have come into the hands of European and American governments. {441}

The Easter Monday torpedo in a place of public amusement, whatever it may have meant, was only one (the reader will perceive) among many forms of cylindrical, cigar, cubic, and globular missiles, of the 'Infernal Machine' character.

In the war lately commenced between Russia and Turkey, torpedoes are playing a notable part. The Russians, having a weaker navy than their antagonists, supplement the deficiency by employing these subtle agents. One Turkish war-vessel, guarding the passage of the Danube, has unquestionably been blown to pieces by Russian torpedoes, and its crew destroyed. The Russians have shewn much daring in approaching Turkish ships during the dark hours of night, attaching torpedoes to the ships' bottoms, retiring quietly and swiftly, and leaving the explosive monsters to do their fell work. On the other hand, torpedo-defence has been practised with some success by the Turks—preventing the approach of torpedo-vessels, or fishing up the torpedoes themselves before they explode. Torpedo-tactics, in the naval warfare of the future, will evidently embrace the two parts of torpedo-attack and torpedo-defence. Where is it all to end?

CROSS-PURPOSES.

IN TWO CHAPTERS.—CHAPTER I.

'Is it very bad? Do you think it will mark her? How unfortunate I am.'

'Oh, it won't signify—*much*,' says the major, making a feeble attempt at consolation.

The groom is on his knees washing down the mare's leg. As he washes, the red raw patch shews out with ominous distinctness from the glossy dark-brown skin that surrounds it; and Cissy, standing in her riding-habit, whip in hand, regarding the operation, begins to look the very picture of ill-concealed misery.

'How dreadfully bad it looks *now*,' she says fearfully.

'Not at all,' replies the major.

'I cannot imagine how it happened; she is usually such a clean jumper,' goes on Cissy, diligently searching for excuses. 'I never in my life injured a mount before, and I would not have harmed *this* one for all the world. Captain Halkett will be so awfully angry.'

'Nonsense! You don't suppose he will *bite* you, do you? Think of his angelic temper and your privileges as a woman. He daren't blow you up, you know.'

'It is not so much *that*'—with hesitation. 'Of course I know he will *say* nothing, but he will *think* the more; and'—

'Like the parrot,' interrupts the major.

'And he will look so annoyed,' goes on Cissy, torturing herself with immense success. 'I would not for anything it had occurred. I do think I am the unluckiest girl on earth.'

'Are you in love with him?' suddenly asks the major sharply.

'In love with him? What an absurd question! Of course I am not,' says Cissy angrily, while

blushing in the most furious and uncalled-for manner. 'What *can* have put such a ridiculous idea into your head?'

'Well' (sulkily), 'you are so afraid of vexing him, for one thing.'

'Not a bit more afraid of him than I would be of you or any other man, under the circumstances,' declares Cissy with exemplary candour. 'But it is not a pleasant thing at any time to injure a favourite hunter; and the mare, for some reason or other, is a special darling with Captain Halkett. Indeed, it was only yesterday I heard him saying he valued her more than any animal he had ever had.'

'Given him by one of the fair sex, most likely,' says the major with vicious intent.

'Very probably,' returns Cissy quietly, who carries a very game little heart beneath her pretty Irish skin, and would have died rather than betray any undue emotion. Nevertheless, it must be confessed her colour faintly wavers and fades away a little, only to return with tenfold brilliance as she sees Captain Halkett pass the stable window.

'Here he is!' she cries hurriedly. 'Now, what *shall* I do?'

'Nothing, if my advice is worth anything,' says the major sententiously.

Captain Halkett coming slowly up the yard, cigar in mouth as usual, and hands thrust deep in the pockets of his shooting-coat, sees Cissy, Major Blake—and the groom on his knees beside the mare. He takes in the whole situation at a glance. Throwing away his cigar, he turns to Cissy, and says pleasantly: 'Good-morning, Miss Mordaunt. Had a good day, I hope?'

'Yes; thanks—very—that is, *no*, not at all,' says Cissy nervously. 'I am afraid you will be horribly angry. But the fact is, as Major Blake and I were coming quietly home—cantering through the Park fields, at the last gap some sharp stone caught the Baby's leg, and has hurt her, as you see. I—I am so *very* sorry about it,' concludes Miss Mordaunt, genuinely vexed for the mishap.

'Don't say that,' entreats Halkett gently; 'and don't vex yourself. I would rather the mare was dead, than that you tormented yourself about her. Besides'—stooping to examine the injury—'from what I can see it is only skin-deep, and won't matter in a day or two; eh, Connor?'

'Yessir; only a scratch, sir. Right as ever in a week, sir.'

These words carry balm to Miss Mordaunt's breast; and presently the bandages being finally adjusted, and the Baby consoled by an additional feed, they leave the stables; and Blake considerably diverging to the right, Miss Mordaunt and Halkett go leisurely towards the house.

As they reach the stone steps leading to the Hall door, Cissy pauses. 'You are *sure* you forgive me?' she asks sweetly. {442}

'How can you speak to me like that!' says Halkett, almost angry. 'Did you think I should cut up rough with *you*? What an ill-tempered brute you must consider me; you ought to know me better by this time.'

'I have not known you for so very long,' says Cissy smiling; then impulsively, while her colour once more deepens: 'Why is that horse such a favourite with you?—beyond all others, I mean. Was it a present?'

'Yes,' says Halkett in a low voice.

'From a very dear friend?'

'Very dear; more than a *friend*.'

'From—a gentleman?'

'No. From a lady,' says Halkett shortly, and turns away his head.

On the instant, the words the major had uttered in the stables come back to Miss Mordaunt's mind, and without further comment she sweeps past Halkett into the house, and he sees her no more until dinner-time.

When half-past seven chimes out, and the solemn retainer of the House of Mordaunt announces dinner as being served, both Major Blake and Captain Halkett make a hard fight of it to take Miss Cissy down; but Fate, in the person of Sir Thomas Lobin, interferes, and balks them of their prey. Halkett, however, may be said to have the best of it, as he succeeds in seating himself directly opposite his Irish divinity, and so can watch the changes of her beloved face, and perhaps edge in a word or two, addressed particularly to her, during the repast. All this can be the more readily accomplished, as he has been told off to a young lady who, if not actually insane, is at all events three parts silly, and so does not feel it incumbent upon him to supply her with the orthodox amount of small-talk.

Major Blake falling into line, finds himself presently situated somewhat low down, with Mrs Fairfax on one side of him, and Grace Elton, a cousin of Cissy's, on the other. If it were not that his thoughts are altogether centred on Miss Mordaunt, he might have considered himself in luck, as he is undoubtedly in very good quarters. Grace Elton is as unaffected as she is charming, and extremely pretty into the bargain. But the major will neither acknowledge nor see anything beyond the tip of Cissy's nose, as it shews itself provokingly every now and then from behind the epergne.

On a line with Sir Thomas, and the third from him, sits Mrs Leyton the Indian widow, in a ravishing costume of pearl and blue that speaks alone of worth. She is looking wonderfully handsome to-night, and has a bright adorable spot on each cheek that is *not* born of rouge. She is

keeping her hand in by trying a little mild flirtation with the vicar, who occupies her right, and is making very pretty play; while his daughter—who is almost too young for society—watching them from the opposite side, finds her mind much exercised, and wonders in her heart if Mrs Leyton is *really* very fond of papa. Surely she *must* be; else why does she raise her large soft dark eyes so tenderly to his once in every three minutes precisely, by the marble clock on the chimney-piece?

Aunt Isabel, at the head of the table, is radiant as usual, and dispenses roast turkey and smiles with equal alacrity. She is carving with even more than her customary vigour and well-known proficiency, while at the same time she is listening to and adding a word here and there to every topic under discussion. She is, however, particularly attentive to Miss Lobin, who sits beside her, and who is as deaf as a post; though no trouble to any one except herself, poor lady, as she seeks not for conversation, and as long as she gets a bit of everything mentioned in the *menu*, is perfectly content.

There are two or three stray men from the neighbouring barracks scattered up and down; and these, with the three Misses Brighton—who being evidently not cut out by mother Nature for the civil service, have been considered suitable to ask to meet them—make up the party.

'Well, Cis, you had a pleasant day, I hope?' says Uncle Charlie, presently addressing his favourite niece.

'A delicious day, dear uncle; only we wound up with a misfortune. I was stupid enough to hurt Captain Halkett's horse on my way home through the Park; though indeed I scarcely think it was my fault. However, as it *was* to happen, we were lucky in having it occur at the end, instead of the beginning of our day, as we had our ride in spite of it.'

As she makes this little speech, she never once glances at Halkett (indeed she has taken no notice of him since the commencement of dinner), and purposely treats the whole thing as unworthy of regret. Halkett, contrasting her pretty contrition of the morning with this off-hand dismissal of the matter, is, manlike, thoroughly mystified.

'I am sorry to hear of an accident,' says Uncle Charlie, who holds all good animals dear to his heart.—'Nothing serious, I hope, Frank?'

'A mere scratch,' returns Halkett carelessly.

'That is right. It could not have happened through any great desire on the rider's part to reach her home, as she delayed her return so long we all imagined an elopement had taken place. But there was no such excitement in store for us.—I do think, as your guardian and uncle, Cis, I have every right to know what you and the major were talking of all that time.'

'Politics,' says the major lightly; 'we never talk anything but politics.—Do we, Miss Mordaunt?'

Here Blake dodges to one side of the epergne, that he may the more surely get a full view of Miss Mordaunt's face.

'*Never*,' replies Cissy emphatically, dodging the epergne in her turn; and then they both laugh.

Here Halkett mutters something under his breath that is so far audible as to rouse the silly young lady by his side into some kind of life. She sighs and uplifts her head.

'Were you speaking to me?' she asks in a somewhat startled tone.

'No—yes—was I?' stammers Halkett, rather shocked. 'I *ought* to have been, of course; but I have fallen so low as to allow dinner to engross all my attention. Pray, forgive me. It comes entirely of going down to dinner with a middle-aged gourmet.'

'Dear me—I fancied you quite young,' responds his companion with a simper; and lapses again into silence after the effort.

'Politics!' says Uncle Charlie, going back to the subject, after he has desired the butler to take several different dishes to Miss Lobin. 'How you must have enjoyed yourselves—especially Cissy. I never met any woman with such keen and comprehensive views on all matters connected with the state. It was only yesterday I asked her opinion of Gladstone, and she told me she always thought he was'—

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'*Now*—Uncle Charlie,' interrupts Miss Mordaunt with such indignation, that the old gentleman, though chuckling to himself, audibly refuses all further information.

'May we not hear your opinion of Gladstone?' demands Sir Thomas, who is an old beau, and much addicted to Miss Mordaunt.

'Certainly not. And remember I distinctly forbid you to ask Uncle Charlie any questions when my back is turned; as he is capable of saying *anything* once my eye is off him.'

'Your will is my law,' says the old beau with a bow that would have reflected credit on a Chesterfield; and shortly afterwards, at a signal from Aunt Isabel, the ladies rising, leave the gentlemen to their own devices.

On entering the drawing-room, Mrs Leyton walking with the undulating graceful motion that belongs to her, and that cannot be acquired, goes straight to the fireplace, where she sinks into a lounging-chair, leaving the opposite one for Aunt Isabel, who almost instantly falls into a gentle doze. Little Miss Millar, the vicar's daughter, losing sight of her shyness in her desire to obtain her object, seeks a resting-place that will enable her still to keep a fascinated watch over Mrs Leyton, the widow having cast a glamour over the timid country maiden. The Misses Brighton and Grace Elton keep up a continual chatter, and are evidently enjoying themselves immensely; while Miss Lobin taking the cosy corner of the sofa, emulates her hostess, and letting her face

lengthen until it reaches a state of utter imbecility, sweetly snoozes.

Cissy is standing in one of the windows, somewhat apart; she gazes out upon the stilly night, and softly cogitates. She cannot quite make up her mind whether she has been most sinned against or sinning; she cannot wholly approve her conduct at dinner, and finds it impossible to divest herself entirely of the idea that Halkett was looking miserable the entire time. But all men make a point of appearing injured when placed in the wrong position, and of course he had not liked her cross-examination of the morning. Yet again, why should he *not* receive presents from women? What right had she to question act or word of his? No matter what thoughts and hopes she may have encouraged in the secret recesses of her heart, she feels now she has no certain data to go upon to prove that Halkett cares for her beyond all others. Somebody—who was it?—had said he was a flirt. Well, one thing was positive—he should not flirt with *her*.

Here Aunt Isabel, slowly rousing, sneezes, and hems audibly, to let her friends know she has not been sleeping.

'Cissy, child,' she says, 'you will be perished over there. Come to the fire and warm yourself.'

'I *am* warm, thank you, and quite comfortable.'

'My love, I don't believe it' (with extreme mildness); 'it is freezing as hard as it can, and there is always a draught near a window. Come here, when I desire you.'

'Oh, I shall die near that blazing log.'

'And *I* shall die if you remain over there,' says Aunt Isabel; and carries her point.

'Better I than you, Auntie,' says Miss Mordaunt, and coming over, good-humouredly kneels down beside her kinswoman.

'Cold hands—warm heart,' murmurs the old lady, caressing the soft white fingers that lie upon her lap.

'A troublesome possession,' remarks Mrs Leyton with a lazy smile. 'No one is *really* happy in this world except he or she who carries an empty bosom.'

'Are *you* happy?' asks Miss Cissy innocently.

'Almost. The little worn-out article that beats here'—laying her hand over the region of the heart—'has pulsations hardly strong enough to cause me any uneasiness. Now and then I feel a faint pang—not often.'

'I would rather keep my heart, even at the expense of my suffering,' says Cissy warmly. 'She who cannot feel anguish, can know no perfect joy. Without love, life is a mistake, an unutterably stupid gift. That is how *I* think; but then I am Irish, and therefore of course unreasonable.'

'O no,' says Mrs Leyton graciously. 'The Irish are the most charming people in the world—so light-hearted, so quick to sympathise. Though I have been here only two days, and have asked no questions, I knew you to be Irish before you told me. Most of my friends come from your land; even Captain Halkett is half Irish, his mother being from Galway.'

'Yes?' says Cissy. She rather shrinks from mention of Halkett's name, and remembers with a slight pang how friendly have seemed his relations with Mrs Leyton since her arrival. 'Have you known Captain Halkett long?' she cannot help asking.

'All my life. His father and mine were fast friends; our childhood was spent together. Then we separated'—with a sigh, that sounds ominous to Cissy, but in reality is only born of past sorrow, utterly unconnected with him in any way—'to meet again after many years in India, and now—here. One way or another, all through, Frank's life has been mixed up with mine.'

Cissy bites her lip, and asks no more questions; but Mrs Leyton notices the action of the white teeth, and ponders.

'There is a great charm in Frank's manner, I think?' she says interrogatively.

'Is there? Most men nowadays are charming, as acquaintances,' replies Cissy carelessly. 'And Captain Halkett is too universal a favourite to be altogether charming to *one*.'

'Poor Frank!' laughs the widow lightly. 'He is unfortunate; or at least has found some one who cannot appreciate him. Then you mean to say you would find it impossible to care for any man who liked some other woman besides yourself?'

'Well, as you ask me the question, I confess I would,' says Cissy, who is feeling irritated, she scarcely knows why. 'I would divide honours with no one, and I would be winner—or nothing.'

'Then the man you love must be civil to no one else?'—with arched eyebrows indicative of surprise.

'Oh, "*civil*." Let him be as civil as he pleases. If you were talking merely of civility, I altogether misunderstood you. I only meant if I had a lover—which at the present moment I certainly have not—I would wish to be first in his eyes. Let him be *civil* to all the world, but let him love *me*.'

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'Quite so; that is only fair, I think,' says the widow, but she looks immensely amused; and Cissy seeing her expression, feels her wrath rising. 'I quite thought—judging from appearances—that you and Captain Halkett were very good friends,' goes on Mrs Leyton unwisely, and regrets her speech a moment later.

'I beg you will not judge *me* from appearances,' says Miss Mordaunt haughtily. 'A woman of the world as you are, Mrs Leyton, ought surely to know that people for the most part do not always

feel everything they may look. And besides, you must forgive me; but if there is one thing I have a particular objection to, it is being watched and commented upon.'

'You are right,' returns Mrs Leyton with suspicious sweetness; 'I fear I have been very indiscreet; for the future I will not *watch* you and Captain Halkett.'

There is a covert meaning in this speech that is absolutely maddening; but the entrance of the gentlemen puts a stop to Miss Mordaunt's reply. She withdraws slowly, and seats herself upon a distant lounge, where she is immediately joined by Major Blake.

'I hope you have missed me,' he says with a tender glance, pushing aside her trailing skirts that he may gain room for his huge person. 'I assure you the time those men spent over their wine was actionable; while I was tantalised by dreams of fair women the entire two hours.'

'Two hours! What an exaggeration. Why, by Aunt Isabel's watch, that was never known to lose a minute, it was only half an hour.'

'What to me was two hours, to you was but a fourth of the time. How cruel an interpretation may be put upon your words! And I have been buoying myself up with the hope while absent from you, that when we *did* meet again, I should hear something kind from your lips.'

'And so you shall,' says Miss Mordaunt, bestowing upon him a radiant smile, just to let 'that woman' see she is not pining for the recreant Frank. But unfortunately for the success of the thing, Mrs Leyton is looking the other way, and does not see it at all, while Frank Halkett does.

'Must I confess to you? Well, then, my accurate knowledge of the hour arose from my incessant glances at the watch, to see if your delay in coming was really as long as it appeared—to *me*.'

'If I thought you *meant* that'—begins Blake hesitatingly, with a sudden gleam in his eyes (what man but feels more valiant after dinner than before?)—'if I really thought you meant it'—

'Well—"if you *really* thought I meant it"—what would you do then? But no!' she cries hastily, seeing she has gone rather far, and unwilling to bring matters to a climax—'do not tell me; I do not wish to know. My ignorance in this case no doubt is blissful; I prefer to remain in it.—And now to change the subject. Who is Mrs Leyton? and what do you know about her? I am all curiosity where she is concerned.'

'Do you like her?' asks Blake, merely as a precautionary measure.

'I can't say I do—exactly,' replies the Irish girl candidly. 'Now tell me where you first met her.'

'In India. Her husband was alive when I first became acquainted with her. He lived tremendously hard; but he was devoted to her, without doubt, and she to him; and she took his death awfully badly. Never saw a woman so cut up by anything before; they generally take it pretty sensibly after the first shock, but she didn't; and went to a skeleton in less than three months.'

'She is not very thin now.'

'No. I suppose one can't keep on pining for ever, and in course of time good food *will* cover one's bones. But she felt it no end for months, and was altogether down in her luck. You see he got rather a horrible death, as his horse first threw him, and then almost trampled him beyond recognition.'

'How dreadful!' murmurs Miss Mordaunt, with a little shiver; and wonders how Mrs Leyton could ever have smiled afterwards.

'Yes; wasn't it? She took it so much to heart, that for years after she could not bear the sight of a horse, though she had the best seat in the regiment—amongst the women, I mean—and could not be induced to take a ride. Before leaving India, she sold, or gave away, every one of her horses.'

Here Cissy becomes intensely interested. 'To whom did she give them?' she asks indifferently.

'I hardly know; I was up-country at the time, but her most intimate friends, I suppose.—By-the-bye, Halkett was an immense crony of hers.'

'Indeed?'

'Never out of the house,' says the major, thinking it a good opportunity to improve his own chances, though really only giving voice to what had been the common report in that part of India where the catastrophe had occurred. 'After Tom Leyton's death, he would have married her like a shot; but she would not hear of it. She is a very handsome woman, you know, and tremendously admired by some fellows, though for my part I don't altogether see it.'

'Don't you? I think her wonderfully pretty. Perhaps she will relent, and marry him now; who knows? Certainly his constancy deserves some reward. Was it Mrs Leyton gave him the mare?'

'Don't know, I'm sure. But think it very likely, now you mention it, as he sets such uncommon store by her.—How very well Mrs Leyton is looking just now,' says the major, adjusting his eyeglass with much care, and glancing significantly at the other end of the room, where sits the widow in earnest conversation with Frank Halkett. Cissy follows the direction of his gaze, but, conscious of his scrutiny, takes care that not one muscle of her face betrays what she is really feeling.

Yes, very well, very handsome looks Mrs Leyton, as leaning gracefully back in her chair, with one hand toying idly with the rings that cover her fingers, she listens to Captain Halkett's conversation. Now and then she raises large dreamy eyes—half mirthful, half sympathetic—to his face, but scarcely interrupts him. He is talking with much earnestness—is apparently entirely engrossed by his subject—and takes no heed of what is going on around him. Presently he ceases,

and evidently seeks an answer from his beautiful companion. She gives him one of her upward glances—all sympathy this time—and says a few words; but they are without doubt the right ones, as Halkett's face brightens, and a smile overspreads it that makes it positively handsome. At the moment he raises her hand, and bending over it, seems to examine her rings curiously. To Cissy the action almost bespeaks a betrothal, and renders her half indignant, wholly miserable. Nevertheless, turning to Major Blake, she says with a bright brave smile: 'I think my idea was right, and even now he has received his reward.'

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'Looks uncommon like it,' says the major with a sigh of relief.

NOTES FROM CHINA.

A MEDICAL gentleman at one time resident in China furnishes the following notes of interesting incidents within his knowledge. Though roughly put together, they may amuse our readers and be relied on as true.

In the month of January 1869, at about half-past seven P.M., I was sitting at dinner in my house in Swatow, when a sailor from the small gun-boat at that time in Swatow Harbour came running breathless and hatless, asking me to come down without any delay to the hospital, which I had built in the Chinese town on the side of the river opposite my own house. This man said there were thirteen sailors and the captain of the gun-boat badly wounded by an unprovoked attack of the Chinese. This looked serious indeed; so putting up instruments, lint, &c. I hastened down with the sailor. On reaching the hospital, the unwounded men of the gun-boat were still carrying into the hospital their injured comrades. I never saw a set of men so severely wounded without any being fatally so. I set to work, and extracted fifteen bullets from the men; but some were too deeply imbedded to get at that night. One man had one ear shot off, a second two fingers, a third was hit in the eye, a fourth shot in the breast, and I afterwards extracted the bullet at his back. The captain of the gun-boat had on a very thick shaggy pilot-coat, double on the breast; a bullet had cut right across his chest; and on examination I found the skin just raised where it had passed. A very singular wound was that of a young officer, whose two front teeth were knocked in by a bullet, that then disappeared somewhere in his palate. I never could find this bullet whilst he was under my care; but it seemed not to have done him much harm. He left Swatow; and I saw him three or four years later, and he said the lead had never appeared, and he had suffered no inconvenience from it. I believe it must have worked itself somewhere into the muscles at the back of his neck.

The cause of this raid of the Chinese was this: the captain of the gun-boat had merely taken out twenty-five men to exercise by rowing one of his boats up the river Han, on which Swatow is situated. This river is very wide at the mouth, and abounds in large creeks; on the banks of one of the largest of these, next to Swatow, are built three fortified walled-in villages, or what we should call *towns*, from their large population. The inhabitants of these towns were well known as being particularly lawless, not having paid taxes for many years, and setting the mandarins at defiance. Seeing the foreigners (whom they detest) rowing up the creek, 'the Braves' (as they call themselves) rushed out in hundreds and fired into the gun-boat from each side of the river; and were it not for the nature of their guns, or as the Chinese call them 'gingals,' which are old-fashioned and of short range, none of the boat's crew would have returned alive; as it was, fourteen men were well riddled; and the boat, which I saw afterwards, had as many holes in it as a colander. The sailors rowed away for their lives, and escaped.

Our settlement, on hearing this story, was in great and just alarm. These people detest the foreigners; and having put to flight their supposed enemies in a crippled state, it was very likely they might follow this up by an attack on the settlers; and had they only sufficient courage, their numbers were so great, that our fate would have soon been decided by pillage and murder. The British consul, Mr Alabaster Challoner, saw the danger; and being a man of decided character and great energy, without any delay sent a merchant-ship that was in the harbour under high steam-pressure to Hong-kong to inform the Admiral of what had happened. The reply was prompt and satisfactory; for a few hours brought Admiral Keppel, Lord Charles M. Scott (son of the Duke of Buccleuch), two frigates, and seven gun-boats into Swatow Harbour, to the great satisfaction of the foreign settlers and of Mr Challoner. This gentleman was a small delicate-looking man, whose neck being a little crooked, made him hold his head on one side; but such was his courage, determination, and inflexible sense of justice, that the stoutest Chinese officials trembled at his look; and they all declared they would rather face a tiger than meet the glare of 'His Excellency the Devil's' eyes when displeased. The Admiral immediately told off five hundred marines and blue-jackets, fully armed and supplied with two small cannon, to punish the offenders. The friendly natives of Swatow averred loudly that these men were going to certain destruction; that not one would return, as the tribe in question was invincible; and most of the foreign merchants were sufficiently alarmed by these assertions to send all their most valuable possessions on board the vessels in the harbour. Fortunately the result was not what they dreaded. On approaching the first town, the troops saw 'the Braves' in vast numbers on the walls, shouting, waving flags, jumping up and down, and calling on them to come on and be killed. The tars replied by blowing open the gates with gunpowder, and falling on the heroes, who instantly gave way and fled precipitately. They then set fire to the place, sparing all who did not resist. They treated the other towns similarly, and returned victorious. The excellent effect of this prompt action was to produce a complete tranquillity in the neighbourhood of Swatow, which has remained

undisturbed ever since (eight years), and a feeling of security which never before existed; yet the Admiral was reproved by the British government at that time for having acted without 'home orders!'

In the winter of 1873 a very unseaworthy merchant sailing-vessel (a Siamese), the *Tye Wat*, set out from the north of China to Siam with a cargo of beancake, &c. The weather became excessively stormy, and at last the old vessel actually went to pieces many miles from land in the Gulf of Pe-che-le. The crew consisted of eight Malays, who worked the ship; the captain, an Englishman; and in addition was one Chinese woman. They had no boats on board, no time to make a raft or means of doing so; and as the vessel was rapidly sinking, the wretched people looked round in despair; when a hope of escape struck one of them as his eye lighted on a very large wooden water-tank which was on deck. This tank was strongly made, about six feet long, five feet across, and five feet high, with a large hole at the top into which a man could squeeze, and a tight-fitting cover. There was not a moment to lose: a hole was bored in the bottom, to let out what water it contained, then quickly plugged; and all ten squeezed themselves in hurriedly, put on the lid, and awaited their fate. In a quarter of an hour after they were thus packed, the ship sunk under them. They first whirled round, and then floated off freely, and felt themselves rolling and tossing about frightfully on a stormy sea. The weather was intensely cold, so much so that icicles had hung from the rigging of the sunken ship the day before; and being so tightly packed, perhaps it was fortunate the weather *was* so cold. In their haste to save life, they had brought only part of a ham which the captain had snatched up, and a bottle of brandy; and thus these poor creatures were tossed about from day to day, hungry and thirsty, jostled like potatoes shaken in a barrel; now and then, when they dared, letting in a little air by raising the lid. Their situation strongly reminds one of Gulliver in his box when the eagle carried him out to sea from the land of the Brobdingnags.

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On the fifth day the Malays said they must kill and eat the English captain; but the poor Chinese woman (to the credit of her sex) vehemently opposed them, and succeeded in saving him for that day. On the sixth day the Malays said they *must* eat her; but the captain in turn saved *her* for that day. It is difficult to imagine a more horrible situation than that of this poor Englishman surrounded by eight starving men determined to eat him, which they certainly would have done had not an English vessel rescued them on the seventh day. It happened thus: the captain of that vessel sighted a large box tossing on the waters, and at first never thought of minding it, only supposing it part of some wreck, as the weather was so bad; but as he looked, to his utter surprise a head popped up through the hole in the centre, and then vanished, to be followed by another figure, making frantic gesticulations. With much difficulty this strange box was got alongside, hauled up, and its poor inmates dragged out to light barely alive, and emaciated fearfully, finding the man-hole easier to pass out of than to get into; which was reversing the fable of the weasel who got into the barn. The captain of the rescuing vessel was a kind Englishman, and did all in his power to restore his guests. They were still in the Gulf of Pe-che-le; and did not reach the port of Swatow sooner than six days, where a doctor was called in to visit these liberated 'Jacks-in-a-box.' He said they were a singular proof of how much human beings can endure. All lived, and recovered perfectly. Certainly they were all *young* people. The Malays went home. The English captain went to Singapore, and shewed himself really grateful to the poor Chinese woman who had saved him from the jaws of the Malays.

UNSUSPECTED WAYS OF EARNING A LIVELIHOOD.

'WHY, sir, we never should wake of our own accord, specially these dark mornings, if we hadn't somebody to knock us up.'

The speaker was a worthy artisan whom I often used to meet at a certain steam-boat pier on the Thames; his after-breakfast labours appearing to begin about the time I usually was in waiting for the boat.

'You see, sir,' he continued in answer to a question I had put to him—'you see, sir, there's about sixty of us hereabouts down by the water-side; and there's so much that depends upon the tide, that we have to be called at all hours—sometimes two o'clock in the morning, or three or four, just as the case may be.'

'But who is it calls you?' I asked. 'A policeman, I suppose?'

'No; not a policeman,' my companion answered; 'it would take up a deal too much of his time; besides, fresh policemen are always coming on to the beat, and we could not be bothered with constantly having to shew and tell a new man the way.'

'Well, it must be rather an awkward matter,' I observed.

'No; it isn't. We each pay fourpence a week to Phil Larkins; and he wakes us as regular as clockwork.'

'But if sixty people want to be called at all sorts of irregular hours, how does the awakener manage to know his duties?' I asked.

'Oh, we chalk on our doors or shutters the time, and that way he knows. Phil is to be depended upon always. But he very nearly lost the work a year ago, and it was a shame. Some fellow

wanted to step into his shoes, and morning after morning went and altered the chalkings, so that we were either called two hours before our time, or over-slept ourselves, and so got into trouble. There was no end of quarrels and misunderstandings till the trick was found out. And I think the rascal who did it deserved a ducking—only, you see Phil is such a little fellow he couldn't give it him.'

'It was a dastardly trick!' I exclaimed with indignation, bidding the man good-bye.

Another speaking acquaintance of mine was an old man whose duty consisted in sweeping down the steps which were submerged at high-tide, but quite bare at low-water. I had often seen him at work cleansing from mud and silt step by step as the tide receded; and now it occurred to me that from the nature of his occupation he, of all others, must work at the most irregular hours. It was a dull wintry morning, but the old man was working cheerfully at his accustomed task, which, as the water was getting low, was very nearly completed. He was pale and thin, but had that air of decent respectability which happily is often seen in the very humblest classes.

I opened the conversation in true English fashion by a remark on the weather, asking his opinion as to the probability of rain. {447}

'Snow more likely,' he answered laconically, but quite civilly.

'I daresay you are right,' was my reply, 'for I should think you are one of the weather-wise people.'

'Ought to be, if there's anything learned in being always twelve hours in the four-and-twenty out of doors all seasons,' was the rejoinder.

'Rather hard work for you, my man,' I said sympathisingly.

'I don't complain. There's lighter work to be sure, but there's some that's a deal heavier; and after being at it so many years, maybe it comes easier to me than it would to another. I was only fifty-five when I began, and now I'm seventy-three.'

'And is it necessary that you should work all the six hours that the tide is ebbing?' I asked, really desiring the information.

'Quite necessary,' he replied, descending a step, and plying his broom vigorously as he spoke. 'Why, if I did not begin at the beginning and go on regularly, the mud would harden, and I should have to drag up buckets of water to wash the steps with. And gentlefolks want nice clean steps going to the boats.'

'I suppose you are glad when your work does not happen to be in the dead of the night?' I observed.

'I don't know that I care. It is the change in the time that makes the variety in the work. And sometimes on fine nights, when the stars are blinking and winking, or the moon floating in the sky, with the clouds rushing along as if every now and then they were washing her face—I think things and feel things as I don't at other times. I think it is a mistake for people always to sleep of nights, I do.'

'I suppose you depend on some one to call you up at the turn of the tide?' I said inquiringly.

'No; I don't,' replied the old man, with a shake of his head. 'I tried that at first, but it didn't answer. I daresay Larkins might do it; but it was before he took to the business of knocking at doors; and the man I trusted to made mistakes or else forgot, and didn't wake me right, and I very nearly lost the place; and ever since I have trusted to myself.'

'Then how do you manage?' I said.

'That is just what I don't know, except that it seems to me it is managed for me. I only know that if it is high-water in the deadest hour of the night, I always do wake. It is just as if something said: "Look alive; time's up;" and sure enough it always is. I often wonder at it; but I have come to think that wondering is of no more use than wondering at the tides coming up so surely, and the new moons shining just as they are expected, and the stars all keeping their places so safely. O sir, some folks, no doubt, are very learned, but there's a deal more in the world than people can ever make out.'

'Do you know, my friend, that you are speaking the thoughts of one of the greatest of men?' I exclaimed, reflecting on Hamlet's words to Horatio.

'Am I? What did he say?' was the rejoinder.

'He said,' I exclaimed, "'there are more things in heaven and earth than are dreamt of in our philosophy.'"

'Well, he was right, whoever he was,' exclaimed the old man, with a sort of innocent satisfaction at his own corroboration of a great man's words. 'And what's more, I think the world would be a worse place than it is if we had nothing left to wonder at.'

'I heartily agree with you,' was my reply.

'And there's more to wonder at than even the stars and the tides,' continued the sweeper, 'and that's the ways of men, the good and the bad that's in the most of us. But then I do think we river-side people see more than others, what with the partings and meetings going on; and now and again the dead bodies that come to shore, and sometimes the miserable despairing people who would drown themselves if they weren't hindered. Well, it's these things that set me wondering and thinking, and that make the working hours pass quickly, especially at night.'

'You seem a bit of a philosopher,' I said admiringly.

'What's that?' cried the old man.

'It means lover of wisdom,' I replied; 'and he is happy who can justly lay claim to the title. My friend, we must have another talk another day.'

'Well, sir, you'll always find me here according to the tide; leastways unless I am ill again, as I was last year.'

'How was that?' I asked.

'Well, I don't quite know myself,' the old man answered, 'for I don't remember much about it. When they found the steps neglected, some of the wharf people came to look after me, and then they took me off to the hospital, where I was for a matter of six weeks. You see, sir, since my poor old missus died I am all alone, for my grandson went to sea; his father is a soldier; and my daughter has been in service these thirty years; so I had no one to go for a doctor or give me a drink of water.'

'Oh, that was very sad,' I exclaimed.

'Well, it was rather hard lines; but you see no one knew how I was taken; and when they found me, folks were mighty good to me, and they gave me back my place when I got well; so I ought not to complain.'

The boat by which I travel was now nearing the pier, and I stepped on board, with a friendly nod to the old man, reflecting with some sympathy on the many such stories which doubtless, if we knew them, would serve to swell

'The short and simple annals of the poor.'

FROTH.

CHILDREN sometimes ask, and men and women need not be ashamed to ask, why is froth always white or nearly white, whatever may be the colour of the liquid underneath it? To answer the question, we shall have to determine what froth really is in itself, and how it is formed.

Take a filled ale-jug, or the well-known 'pewter' of a tavern or public-house, and pour out gently into a glass: scarcely any froth is produced. Pour out the self-same liquor from the self-same vessel in a stream several inches high, and you produce a foaming 'head,' which to the eye seems to be a substance quite different from ale or beer. Open a bottle of lemonade or ginger-beer, of soda-water or seltzer-water, and pour out the contents into a glass; the formation of froth is so rapid and abundant that the glass appears full when it really contains but a small quantity of liquid. Open a bottle of Bass's ale or of Guinness's stout; the froth is still more opaque and pronounced. Look at a cup of tea or coffee soon after the sugar has been added; there will often be seen a small covering of froth on the surface, which froth, if not actually white, is much more so than the liquid beneath. Watch the movements of the paddle-wheels of a steamer; the water thrown back from them is covered with foam of dazzling whiteness, the intensity of the white increasing with the rapidity of the wheel's motion.

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In all these cases, and in multitudes of like kind, the froth seems to result from agitation; a quiescent liquid seldom presents symptoms of this nature. But agitation alone would not do it. Supposing it were possible for human beings to live, or for pints of ale to exist, without *air*, there would be no such thing as froth. In pouring out ale or other liquid, the falling stream becomes mingled with a portion of the atmospheric air which surrounds us; and it also buries, as it were, the air contained in the apparently empty glass: the result is, a mixture of ale and air, instead of ale only. Under ordinary circumstances, liquids contain as much air as they are capable of absorbing; the additional quantity is expelled. But how? It cannot rise in a body to the surface, but divides into minute spherical portions or air-bubbles, which ascend to the top of the liquid on account of their levity or comparative lightness.

This, however, is not all; if it were, the bubbles would burst directly they come to the surface, and froth would not have an opportunity of forming. Cohesion comes into action, the cohesion between the particles of every liquid. The bubbles of air, as they rise from the body of the ale, beer, or other liquid, are able to penetrate between the particles; but when they arrive at the surface they encounter a film of liquid cohesive enough to restrain for a time their final escape into the atmosphere. Froth consists of bubbles, each a tiny globular portion of air, bounded on the upper surface by an exceedingly thin film of liquid; the bubbles retain this position and condition until the struggle ends as a victory for one of the belligerents. The ascensive power of the air within the bubble overcomes the cohesive power of the liquid film or covering, and 'the bubble bursts'—our beverage loses its frothy 'head.' The length of time that elapses before the air escapes by the bursting of the bubble depends chiefly on the viscosity of the liquid. If we pour ale into one vessel and water into another, from equal heights, we shall find that the former will present a frothy surface, the latter a more instantaneous sparkling appearance; the power of retention being greater in the former instance than in the latter. In other words, ale having a greater specific gravity than water, and also greater viscosity, the bubble formed has a thicker coating, and requires a longer time for its disruption. Taking the round of all the 'frothy headings,' we find the same rule prevail. In the spray from the paddle of a steamboat, in the froth

on the surface of beverages, in the sparkles on a cup of tea, the air is in the first place entangled among the particles of liquid, and thus forms bubbles in the struggle to escape. Although carbonic acid may, in regard to physical properties, be ranked as a kind of air, the formation of froth in effervescing liquids is slightly different.

But why is froth *white*? Porter, ale, tea, coffee, champagne, water, differ very considerably in colour; yet in all of these, when froth is produced it is white. This appears to be due to the reflection of the light from the outer surface of the several bubbles. When the surface is thus broken up, we have a cluster of little spheres, each of which presents a reflection to the eye from some part of its surface; and as there may be tens of thousands of these in a very small space, the effects become united, and are recognised as a whiteness. It is simply an aggregation of small effects to produce one more conspicuous. If the bubbles are large, then fewer of them can be contained in a given area; consequently the number of convex reflecting surfaces is smaller, and the united effect less brilliant—in other words, less white.

But it may still be asked by some of us, how is it that the froth of a *reddish* liquid, such as beer, is white? The phenomena of reflected light must again be appealed to for the means of solving this problem. The colour of a liquid (not its froth) is determined by the transmitted light, not the reflected. If liquor be contained in a transparent glass vessel held between the eye and the light, and we look *through* it, the eye receives the light transmitted by the liquid, and deems the colour of that light to be the colour of the liquid itself; but if we pour the liquor into an open vessel, and look obliquely at the surface, we shall find that the colour does not deviate much from whiteness, whatever the transmitted colour may be. The liquid, whatever be its body colour, is when agitated broken up into detached portions at its surface by the formation of bubbles, and each bubble reflects to the eye a portion of the light which falls upon it. Consequently, if this reflected light is nearly white in all cases, the resulting assemblage of bubbles, generally known as froth, must always appear white or nearly white. We can easily understand the greater yellowness of the froth on strong Dublin stout than that on pale Burton ale; the more tenacious liquor forms a thicker and consequently less clearly reflecting bubble than that on the more limpid.

A CITY WEED.

I PASSED a graveyard in a London street,
Where 'stead of songs of birds, the hoarse sad cries
Of wretched men echoed from morn to night.
Locked were its gates, and rows of iron bars
Fenced in God's Acre from tired wanderers' feet.
All broken lay the slabs which love had raised;
But on a mound where fell a patch of light,
A Bindweed grew; and on its flowers, with eyes
O'erflowing with a wintry rain of tears,
A pale-faced, miserable woman gazed,
Heart-sick with longings for the nevermore,
And faint with memories of bygone years:
A breezy common with a heaven of stars,
And lovers parting at a cottage door.

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FOOTNOTES:

- [A] Since writing the above, information has come to hand concerning the real fate of this submarine craft. When the civil war was over, divers were sent down; they fished up the enemy-destroying and self-destroying torpedo-boat, which was found, with its dead crew in it, *underneath* a Federal ship, which it had sunk by bursting a hole in the hull.

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