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HEALTH, HUSBANDRY, AND HANDICRAFT.

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HEALTH, HUSBANDRY,

AND

HANDICRAFT.

BY

HARRIET MARTINEAU.

"So many to the Deadhouse carried out!
The same dull, dismal, damnable old story."

PHILIP VAN ARTEVELDE.

"Is not the life more than meat, and the body than raiment?"

MATTHEW, vi. 25.

"Does the telescope shame the microscope? Why, then, should art blush before science? Each has its world."

OLD PHILOSOPHER.

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1861.

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PREFACE.

The first Division of this Volume, relating to Health, has appeared in "Once a Week," in the form of a series of articles on matters of Sanitary concern. These articles are now republished in a complete state, at the suggestion of the Proprietors for whom they were written.

The third Division consists of Studies of various Industrial Processes, about which my readers might feel curious, and which had not before been described for popular use. These chapters appeared in "Household Words" a few years ago, and were then designed, also at the suggestion of the Proprietors, for ultimate republication.

The intermediate Division consists of articles from both periodicals, on topics of husbandry in the house and in the field,—miscellaneous in character, and of humble pretensions. The two chapters on "Flood" and "Drought" appeared in "Chambers's Journal," in July and August, 1859.

It can give me nothing but pleasure to join in the endeavour to make useful these results of a long experience and observation of the homely realities of life; and I earnestly hope that the Proprietors may have reason hereafter to be glad that they offered me the advice under which the book now appears.

H. M.

THE KNOLL, AMBLESIDE,
November 1*st*, 1860.

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HEALTH, HUSBANDRY, AND HANDICRAFT.

HEALTH.

CHAPTER I.

HEROD IN THE NINETEENTH CENTURY.

In studying the welfare of the human frame, we cannot begin at too early a stage. Let us set out, then, from the cradle.

When the experiment of an Infant-School was determined on, in the last generation, the difficulty was how to begin.

Mr. Wilderspin long afterwards told the story of the first day of the first school, except that which had grown up under Mr. Owen, at Lanark. Mr. Wilderspin and his wife had been very unwilling to make such a venture as bringing together a great number of infants, who had never before spent an hour away from their homes or their mothers; but they were at last persuaded. How many arrived we do not remember; but they kept coming and coming; and the mothers took off their hats and bonnets, and kissed them, and left them. The Wilderspins set to work to play with them: and heavy work it was. At last one little creature began to cry aloud. This set another off; the roar spread till every one of the whole assemblage was screaming at the top of its voice. There was nothing to be done—the noise was so great, and the distress so desperate. If this went on till noon—when the mothers were to come—half the children would be exhausted, and almost dead. In despair, the Wilderspins rushed into the next room, and the poor woman threw herself on the bed in tears. Her husband was struck by an unaccountable but most fortunate fancy. A cap of his wife's

was hanging up to dry. He stuck it on the top of a pole, and carried it into the school, waving it as he went. Within two minutes every child had stopped crying. Their faces were all wet and blubbered, but they were watching the dancing cap.

We need not pursue the story. The hint of appealing to the eye was taken. The excellent master and mistress thought the morning never would be over; and the afternoon was little better. At night they agreed that they could not possibly go on with the scheme; but, as future generations will know, they did persevere; and their success induced society to take up their work.

Many of our readers may have visited an Infant-School. Some may have visited several. Let them now recall what they saw. They saw, perhaps, sixty children in one school; a hundred in another; two hundred in a third; all under five or six years old. Every one of these little creatures was infinitely dear to its parents, who thought that no other baby ever was so winning, so singularly charming; and even to a stranger who watched their movements, there was not one which did not excite interest in its own way. Most of them were alive in every fibre, never still a minute, except the set that were in the cribs; and they were in a rosy sleep, as still as at midnight. Now fancy all these schools united in one: add to them all the collection assembled at the baby-shows we heard of five years since; add to these again all the infants you ever remember to have seen; and then imagine these thousands of infants struck dead, lying—a crowd of corpses—on some wide common (for St. Paul's Cathedral floor would not hold them); conceive of them laid out in rows on the grass; with their little coffins piled in pyramids behind them; and you see but a small part of the Murder of the Innocents which goes on in England every year. Did you ever think of this before?

The fact is proved that, in England, a hundred thousand persons die needlessly every year; and of this number, forty thousand children under five years of age.

Of all the infants born in England, above forty per cent. die before they are five years old. Yet what creature is so tenacious of life as a baby? Those who know the creature best, say they never despair of an infant's life while it breathes: and most of us have witnessed some recoveries which are called miraculous. There is also no creature so easily manageable as an infant, so

easily kept healthy and happy, merely by not interfering with the natural course of things. How, then, can this prodigious amount of killing go on in a country where infanticide is not an institution?

It is precisely because the natural course of things is interfered with that infants die as they do. Nature provides their first food; and if they do not get it, whose fault is it? The great majority of mothers must be naturally able to nurse their own infants. Poor women do it as a matter of course; and if gentlewomen did it as simply and naturally, that one change would largely modify the average of deaths. Gentlewomen may not be aware of this, because the doctor is complaisant in bringing a wet-nurse, and the indolent mother is unaware that her own infant probably suffers, though it does not die, from being put to the wrong breast, while it never enters her head that the nurse's baby probably dies.

If, of the forty per cent. of English infants who die, we could know how many are the children of wet-nurses, the fact might startle the fine ladies who suborn the mothers, and might bring no small amount of reproach on the complaisant doctors.

When the kind of food is changed, nature is still far from being deferred to as she ought. Railways are doing good in the article of children's diet. There are still too many town-cows; but more and more milk is brought in from the country. We remember the spectacle of the brewery cow, shut up all the week in her stable, where, from the effect of full feeding with grains, she soon could not turn round, nor get out till she was shrunk; and of her Sundays when, the gates being closed, she was let out to disport herself among the barrels in the yard. She was a picture of health in comparison with many London cows, which feed hundreds of children. This may, or may not, be better than the state of things when there was no milk to be had for nearly half the children in London: but the race will have no fair chance till there is an abundance of country milk procurable in every town in England.

Modern bread is a great improvement, generally speaking, on that of half a century ago; there are more vegetables, we believe, in proportion to our numbers; not so much meat, we fear; but what there is is of a finer quality. In regard to food, the most fatal mischief is, perhaps, the bad cookery,—taking

all ranks of society into the account. In many a respectable kitchen, and almost universally in the poor man's dwelling, a large proportion of the nourishing quality of food is lost by injudicious cookery. Other mischiefs in regard to aliment we see every day. We see hungry children, with their spectre eyes and pinched features, and the tell-tale down, like that of a callow bird, on their cheeks. We see infants gnawing at raw apples or carrots, to keep them quiet. We see the children of small shopkeepers, and artisans, and farmers killed with a surfeit of food. We specify those classes, because they, above others, fall into the mistake of cramming themselves and their children, under the notion of living comfortably, doing justice to the children, and so on. The doctors could tell a good deal about the amount of disease in people of all ages, where it is the habit of the household to eat every two or three hours, and have meat or fish at every meal. Liver complaints and fevers afflict, or carry off, the parents in many such households; and child after child dies of diarrhœa, inflammatory attacks, or actual surfeit. If the food eaten could be divided between the hungry and the over-fed, a noble group of English children would grow up, year by year, to serve and grace society, and enjoy their natural term of life, instead of being missed from the crib, and the little chair at table, and the father's knee in the evening, and the mother's heart through the whole weary day.

So much for interference with nature about food. As to medicine, that may be called an interference with nature in every case: though the consequences of a yet worse disobedience may render physicking the lesser of two evils, on occasion.

We need say nothing here of the practice of giving laudanum or other narcotics to infants, because anything that can be said has been said aloud, solemnly, vehemently, from one end of society to the other. Where we still see an infant laid down with a flannel steeped in "cordial" stuffed into its mouth; or the bottle and spoon with baby's "sleeping mixture" on the mantel-piece, it is either where an old nurse is about to give over her office to a new generation, or where the household is sunk so low in intemperance and ignorance, that nothing can be done but through education, from the lowest point upwards. But there are still nurseries, from the tradesman's attic to the nobleman's suite of children's apartments, where quacking practices are going on, as fatal as the sleeping sop in the cellar or the gin-shop. We,

ourselves, have seen ladies in silk and lace, diligently engaged in killing a baby—following their own notions—(the mother obedient to the grandmother), rubbing in calomel in large quantities, after putting some down the throat. I will not say what I myself have seen; for one case is as good as ten, for purposes of warning. Some of the wisest persons I know, of both sexes, parents, doctors, nurses, and sensible observers, are of opinion that children will never grow up in full vigour and full numbers while more or less drugged. Remedies should rarely be needed; and of all remedial measures, swallowing drugs (or receiving them in any way) will hereafter be the last to be resorted to.

Brain diseases seem to be the scourge of infancy in our time: far more so than of old, when fevers and digestive disturbance seem to have prevailed. The fact is, we are all less vegetative in our habits than our forefathers were; and, whatever may be the effect on our adult bodies and minds, we ought to consider the case of the children more than we do. The racket, and wear and tear that the human brain is subject to, in our days, before it is fully grown, may account for a large proportion of the needless mortality which is our crime and disgrace.

We all join in a shout of reprobation when we hear of the frightening of infants in the dark. We execrate the housemaid who hid herself in mamma's bed-curtains; and, just when the little child was nearly asleep, came and pinched its nose, with the hoarse information, "I'm Billy the Bo:" but yet there are papas—great men at the bar, perhaps, or busy men at the bank—who come home after baby is gone to bed and just asleep, and who must give baby a toss before dinner. They go and snatch up baby from its first sleep, and before it knows what it is about, toss it half-way to the ceiling; or, in winter, shake it about before the flaring gas-light. We would not venture to say which is worst, Billy the Bo, or such fathers, as far as the children's brains are concerned. Then, there are the frequent journeys of our days. Formerly, young children of all ranks had the advantage, which the children of the humbler middle classes have now—of vegetating, while their nature is vegetative; of living on from month to month, and from year to year, with only such change as deepened the benefit of the stillness: sleeping in the same bed, going through the same daily routine, and being thereby more at liberty to profit by

the natural changes of the seasons and of human life. The brain then grew undisturbed, the natural processes of thought went on, the powers were developed in their order, and every stage of life was fruitful in its turn. It is so now where children are reared under the guardianship of thorough good sense.

But the exceptions to this normal rearing seem to be continually more numerous—perhaps during a transition stage only. Among the richer classes, infants really seem to have no rest. They are whisked hither and thither by railway, without any apparent consideration of the effects of its singular accompaniments of noise and motion. There are not a few adults who feel it a hardship to have no choice of modes of travelling, if they are not rich enough to post. The double motion of the railway carriage, the noise and swiftness, are sorely trying to many heads, stomachs, and spines: yet we see in almost every train more or fewer infants, of whom some are probably receiving fatal injury. At the age when quietness is so necessary that we can detect the bad effects of the silly practice of talking loud to infants (as to foreigners, as if they were deaf, because they cannot understand as we do), we expose the tender brain to the barbarous rumble, whizz, clatter, and screech of a railway-train. At the period when Nature shuts in the little creature within the quiet enclosure of home, where it can take refuge from scaring sights and sounds in its mother's lap, we see it carried over land and sea, meeting new faces and new scenes at every turn, and going through everything but the regular habits necessary to its growth,—to the confirmation of each stage of development.

The roving life of our day is abundantly hurtful at a subsequent stage of education; but it then affects the mental and moral growth; whereas in infancy the physical frame is liable to fatal mischief from it. The youth and the girl who have travelled every year of their lives, and been carried over continent and sea in pursuit of "advantages," may, and usually do, turn out incapable of deep thought or feeling,—essentially superficial, though apparently liberal; but the little one of the family is of weak intellect, or dwarfed, or rickety, or is probably in its grave. The poorer classes suffer proportionally by Infant Schools, if we may judge by the statistics which show the mortality from brain-disease among the infant-school population of the country. The process is much the same in the two cases.

Nature is outraged in both. It may be better that the working-woman's child should be at school at three years old than setting itself on fire, or falling out of the window, or being run over in the street; but it is out of its proper place in a large room, amidst a vast assemblage of noisy children of its own age, every sense being excited for the greater part of every day. Its natural place is in a home where no two people are of the same age; where there is a certain household resemblance among them all; where all are too busy for much noise; and where there are quiet times and shady places for the repose of the sensitive little brain when it grows irritable.

It does not follow that the child itself should be quiet, except just enough for its own good. It makes one's heart ache to read of the little Brontës stepping about the house as if they trod on eggs, and speaking in whispers, and knowing no games, nor the delight of a shout. The best rebuke ever given to thoughtlessness about a child's need of lung-exercise was perhaps that given by poor Laura Bridgman, the American girl so pathetically and philosophically made known to Europe by the annual reports of her guardian, Dr. Howe. This poor child, actually bereaved of eyes and ears in early infancy, showed all the instincts of childhood as she grew up, and, among the rest, that of making a noise: but, being totally deaf, her noises were harsh and troublesome. When instructed about suppressing them, the poor dumb girl asked, by her finger-signs, "Why, then, has God given me so much voice?" This was guidance. She was allowed a room for a certain time daily, where she might make all the noise she pleased. Every young child ought to have that sort of liberty for a considerable part of every day. When it begins to chatter, its lungs will have plentiful exercise: meantime its natural cries of joy and grief should have free course, except during the hours when it may be trained to be quiet. We may be disposed to pity the quaker child in many Friends' households, set up on a high stool for a certain time daily, to learn to be perfectly still; but it is a question whether the little creature does not gain, on the whole, by the practice, if it is only left free to make itself heard all over the garden in play-hours; but the noise ought to be in proportion to the self-denial which earns it.

Not only must the lungs be exercised, if the child is to be healthy, but the senses must be put early to use, to develop

the brain equably. I remember two ladies of about the same age, and in much the same position, and, moreover, acquainted with each other, who offered the most complete contrast in their way of entertaining their succession of babies; a contrast which would have been ludicrous, but for the thought of the consequences. One was a peremptory, self-confident woman, whose spirit was never dashed with a misgiving in her life, most probably. Every place where she was seemed full of glare, noise and bustle; and her notion of baby-play, in which she thought herself unparalleled, was praising baby in the most highflown terms, in a scream like an eagle's, shaking it like a pitch of hay on a fork, and making it the most stupendous promises in the most alarming manner. What the maturity of those babies is we will not describe. The contrasting mother was singularly absent. She would let her baby sit doubled up on her left arm (always the same arm) for any length of time that her reverie lasted. While her large, vacant black eyes were fixed on the window-blind, and her mouth hung half-open, baby's large black eyes fixed on vacancy, and hanging jaw, presented the most absurd likeness to its mother: and this went on through a series of seven. When not so niched on the arm, the child was on the carpet,—put down like a bag of meal,—and supplied with a bunch of keys, which it jingled till somebody came to take it up again. Dull as ditch-water, dry as chaff, were the minds so left undeveloped; and the bodily state was something between health and disease. It is only through the sweet and merry entertainment of exercising the eyes on colours, forms, and objects, and the ears among natural sounds, and the touch on all substances that come in the way, that the highest health can be attained,—the elastic, inexhaustible energy which grows out of an active and well-amused mind, during its period of abode among the senses.

These things are overlooked by many who are aware of the necessity of exercising the limbs; but how great the number is of mothers and nursemaids who do not perceive even the latter necessity, the prevalence of perambulators may indicate. We hope these vehicles have been sufficiently abused. Deaths of two infants by sun-stroke in the Park in one summer are a pretty strong warning: and attention has been directed by all conceivable means to the blue lips, rolling eyes, and dead countenances of infants wheeled through the wind and frost in

mid-winter,—their bodies torpid, their limbs cramped, their sensations those of dull misery: so that we may hope that the pile of coffins for victims of a practice liable to so much abuse may not be destined to grow much larger.

What in the world is easier than to let nature show what the child ought to do with its limbs? Give the little creature space and liberty, and encouragement to tumble about, and see what it will do. A soft ball, cunningly rolled, is enough to set an infant using all its powers till it is tired, when it will be still. It will get up when it is able to stand: it will pass from one chair to another when it is able to walk; and nothing but mischief can come of interfering,—mischief in the form of bow-legs or crooked ancles, and infinite distress to the child.

And thus it is through the whole course of infant life. The machine will go very well if its works are not tampered with or obstructed. In the child's first walks across the room, we let it take its own path, only watching to remove obstructions, and to prevent a fall: and just such should be the course of the little creature's progress in life. It will do all that it ought to do at the right time, if it is only left unstinted in the requisites of health—good air, wholesome food, warmth and cleanliness, and tender intercourse. Sensible women say there is nothing easier than managing children, body aud mind, if good sense is brought to the task. You may wind them round your finger; you may make anything of them, in regard to moral habits, simply by letting nature have her perfect work, free from perversion by anxiety, carelessness, or passion. Sensible doctors say the same as to the bodily growth, supposing the child is born healthy. The natural course of things is, that every infant born free from disease and imperfection, should at five years old be a creature full of promise—erect, intelligent, active, inquisitive, manifesting in little all the qualities which contribute to compose a true manhood or womanhood. Instead of this, what do we see? The most distressing after-dinner incident I ever witnessed was this: A man of literary eminence—a family man, a man of the tenderest heart and most delicate feelings—was dining with some old acquaintance after a long term of foreign travel. Two other guests were present. After dinner, the door opened, aud a weakly, tottering, dismal-looking little girl of three entered silently, and was silently taken upon mamma's lap. The returned traveller studied her for a moment, and then said,

'Come, you are all very well; but where are the rest?" The rest, six others, were all in their graves!

So, if we would summon the family of English infants by the hundred born on the same day, what should we see? Perhaps twenty would appear in perfect bloom, true towards nature, and dressed in her strength and beauty. Forty more might follow, whose parents are looking forward to the proper threescore years and ten for them. Some few, perhaps, may be mournfully regarded as destined for a short career; but no thoughtless observer would guess the smallness of the chance that most of the group have of completing the course of human life. Many will die soon, and few late. Unaware of the hidden signs or sources of disease, and satisfied with a low average of health, the spectator may say, "This is all very well; but where are the rest?" The rest are gone, and will be no more seen. Those forty out of the hundred have undergone, in the mass, a hell of suffering. Those tender little creatures, so sensitive to pain, yet so tenacious of life, have passed through the fire to Moloch. Their moans and shrieks, as the fire of disease consumed them, will never die out of our ears. "Oh! it is hard to see a child die!" exclaimed a fond father, who saw his two infants die in one week. It *is* hard, when all has been done that lies in the power of man or woman, first to guard and then to save. But of these forty in the hundred, there are scarcely any which are not cases of murder—of such murder as occasionally shocks society as having happened in a lunatic asylum. One does not blame anybody; but it is a dreadful catastrophe, which must be taken as a warning to permit no more. So it is with this great company of children, killed by misadventure. The great point is, that the perpetration should henceforth be considered as either crime or lunacy. How long shall it be witnessed without resistance?

CHAPTER II.

SCHOOL: FOR LIFE OR DEATH.

To the perils of Infancy succeed those of Childhood.

Is there anybody, above an idiot, who has not at some time or other thought, with a strange internal thrill, while contemplating a crowd, "How will all these people die?" The thought comes when the Queen is opening Parliament, amidst the most gorgeous assemblage that this country can show. It comes in the midst of the village fair, when the drums and trumpets, and the shouts of the showmen, and the great laughs of the rustics are loudest. It comes when, in war time, the troops march forth through thronged streets, and climb into the transports on the crowded sea. It comes when, in time of peace, the first sod of a great railway is turned, or the first stone laid of a building which will be a benefit to successive generations for a thousand years. We know how something very like it occurred to the poet Gray, and to Mrs. Hemans, at "Evening Prayer in a Girl's School;" and few of us can have been present at any celebration in any one of our public schools without being visited by that speculation.—"In seventy—or, say eighty—years from this day, every individual of this great crowd will be dead. One would like to know how each one will die." By accident on land, some of them, no doubt: by a gun going off in getting through a hedge—their own gun or some comrade's who will never be happy again; some by drowning in bathing at home, or by foundering at sea; some by fire in the dressing-room, or in the ship, or in their beds; one or two by suicide in disease of brain or agony of mind; some of the youths, years hence, by apoplexy brought on by intemperance of one kind or another; some of the young women in the most pathetic possible moment,—mothers for an hour or a day, but prevented from rallying by previous violations of the laws of nature; some few, very few, from mere old age, when they will remember this day, but not anything of a then recent date; a large proportion from the ordinary diseases

affecting the three great departments of the human frame; many from diseases of the head; more from the various diseases of the abdomen, and most from those of the chest. The deaths in the streets from brain-seizures are a common item of news in the papers. We need but refer to liver-complaints, cholera, the gout of the olden time, still surviving, and the miserable stomach complaints of our own day. But all this last class together will not carry off so many as consumption, if we are to judge the next half century by the past. Within fifteen or twenty years, a large proportion of the young people who to-day look so full of life and spirits, will have died of the slow strangulation and tormenting fever of consumption.

Whether in the hospital-ward, or in the cottage-loft, or in the city garret, or in the airy chamber and the soft bed of the mansion,—matters little. They will have gasped away their short life and been buried, while others will have half a century longer to live. The dreadful thought is, that they also might, for the most part, live their half century longer, but for the mismanagement of their earlier years. The doomed band, the twenty or thirty youths and maidens, who are listening to the Queen's voice amidst the hush in the House of Lords, or waving their hats and handkerchiefs to the soldiers who are going into danger less fatal than *they* are carrying in their own chests, might as well as not have lived to wear wrinkles and silver hair; but disease has been sown in them heedlessly, and it cannot now be uprooted.

So early? Why, many of them have but lately left school! How can they have already received their sentence? And where was it? At home or at school, or where?

Some at home and some at school. It depends on the management. Hitherto, perhaps, the danger has been greatest at school; but the scale may be turning, if we take into the account all the homes, from the Belgravian mansion to the navvy's hovel, in which there are children between seven and seventeen. There are fewer deaths within those ten years than during the five years of infancy: but they are the preparation for the next period of high mortality, when consumption and stomach-disorders will make fearful havoc among those who ought to be entering upon the great interests of life. Of the multitude who die before five or seven-and-twenty, the greater number became doomed at school, or in school-rooms at home.

What is the school-boy? What is the school-girl? And what is school to them?

They are not fully grown, in body or mind. Their brains are fit for a good deal of work of various kinds; but not yet for all kinds; and it requires care, that it be not over-worked, nor partially worked. The frame is strong enough for a good deal of very various exercise; but it requires consideration till its parts have reached their full vigour. Till this happens,—till the spine has become well-knit, and the limbs duly proportioned, and the muscles developed and strengthened, the circulation is often imperfect, the digestion is uncertain, the nervous system is unsettled; and at least as much care is necessary to do justice to the body as to the mind. Is this justice done? Not always at home; and less often at school.

A boy goes to a public school, or to a large private one, such as exist in every sect of dissenters, as well as in many districts lying out of the way of our great public schools. He carries with him the wants that everybody has at his age. He wants food in the first place—food fit for, and pleasant to, a growing boy. He wants plenty of sleep, airy, quiet, and decent. He wants regular daily opportunity for cleanliness; for the neglect of the skin is invariably avenged upon the internal organs of the body. He wants due warmth in winter, much more than he will need it ten years hence. He wants frequent change of posture and employment; steady, moderate lessons, alternating with vigorous play. He wants to have every muscle put to use in active sports, and every faculty put to use in study and in daily life. How does he get these wants supplied at school?

The "new boy" is puzzled the first morning, at finding only one basin (a good large one, however) for the six or eight fellows in his room. As he is up first he washes first, finishing with his feet. He is caught in the fact, and finds himself hated on account of it. He is called a dirty little wretch—to his amazement. It is very odd and perplexing, after having been brought up to think it a dirty trick to omit washing his feet: but the more he explains and argues, the more he gets abused. He is pulled by the hair, and made to wash out the basin before and after every other boy uses it, and to fetch the additional water required. He is quizzed for his clean collar; and as often as he brushes his hair it is made a mop of again. So he gives

up home habits for peace' sake, and becomes satisfied with the Saturday night's feet and head-washing, in soapy water which must serve for half-a-dozen. During the week, face and hands get washed, but seldom anything else. He soon becomes subject to head-colds, which he never had at home. One comes after another, and it is a great bore. Sooner or later, he has a fever; and an attack of English cholera now and then in summer. It will not be surprising if he gets a cough, which returns more and more frequently.

He is better off, after all, than his sister at her boarding-school, where there is the Saturday night's washing with the common foot-bath and the wet towel; and for the rest of the week, the scanty ablution in the morning, before the eyes of companions, followed by the consciousness of a dirty neck—the only part the teacher detects and complains of. The poor girl wonders where her miseries come from when she has fidgets (the worst plague of all), chaps and chilblains, languor and low spirits—and such dreadful head-colds! She is worse off than her brother, because she does not get such vigorous play; and she never goes to bathe.

We hear now and then, perhaps more and more, of washing-closets in schools; but before this time we ought to have arrived at refusing to send children to any school in which the apparatus for cleanliness is not complete. Baths and wash-houses will soon be considered as necessary as dormitories and school-rooms in every educational establishment. Water—laid on so as to serve a range of washing-closets where the children can wash from head to foot in privacy, and also for the supply of the laundry, where the washing and drying of linen may be done with the ease and speed obtained by modern inventions—will hereafter be a matter of course in large schools. Then will disappear the sneezings in school, and the mopping of noses, and watering eyes and inflamed lips, and the lingering cough—the ghost which now haunts all assemblages of boys and girls.

"But there is the bathing for boys." Yes, there is, in a way: but few parents like to think about that. That is a matter in which British education is disgracefully backward. The little heathens whom we think of with a sort of pitying disgust, in their South Sea islands or on the shores of the mighty rivers of the world, have, at least, learned to use their limbs, however it may be with their higher powers. They spend the hot

summer noon among the fish, and can cross any stream, dive to any reasonable depth, and shift for themselves under various risks which would be fatal to most of us at their age—or, indeed, at any age. Why are not English children as wise as the savages in this, while so much wiser in some other matters? Wherever there are people with four limbs, living near water, why do they not learn to use their limbs in the water? Perhaps this is the very greatest of the many puzzles belonging to life in England. We live in an island, and are therefore obliged to go to sea if we travel abroad at all. We flock to the coast in the summer for sea-bathing; we all live near a river, or a lake, or a pond: and yet only a small per-centage of the English nation can swim. In the late war, a middy was drowned in the Baltic, because he could not keep himself afloat till the ship's boat reached him. And then we began to inquire, and found that in our whole navy and merchant-service, and in the fisheries along the coast, only a fraction of the men can swim. The Duke of Northumberland at once set up a swimming-school on the North coast, with a qualified master and all means and appliances, and moreover with prizes for proficiency; and we may hope to hear no more of coroners' inquests on fishermen drowned close by the shore at Cullercoats, and of widows and orphans bereaved and pauperised by the upsetting of a boat within a stone's throw of the beach. Why is it not made a part of education for every child to learn early to swim? Where is the difficulty? Where is the objection?

Many years ago, a boy was drowned in bathing in one of the great private schools of the dissenters. The usher was with the party, but the boy got beyond his depth, and sank because he did not know how to keep himself up. Instead of taking measures to show every boy how to do that, the masters forbade bathing altogether: and a more awkward squad than the pupils of that school could not well be seen. They never learned the proper use of their limbs; and they were consequently timid where well-trained lads would have been without a thought of fear. A boy who can swim like a fish is pretty sure to do other things well: to row, to bowl, to drive, to ride; and every child ought to swim like a fish. See how this consideration again brings us back to the topic of mortality! Is there ever a summer when we do not see a succession of paragraphs about persons drowned in bathing? Is there ever a tourist season at

the Lakes in which every considerable lake has not its victims? A skiff is upset—a bather has got out of his depth—an angler has fallen overboard; and as none of them can swim, they all go to the bottom. So we go on, year after year. The year 1859 was mournfully distinguished by coroners' inquests on this kind of needless death. Oxford and Cambridge have offered up their victims, and seas and rivers have sent their bad news to swell the indignation and shame with which we have to confess that we, a maritime nation noted for our manly sports, have not yet learned to swim!

We have proposed every child—and not only every boy—as a swimming pupil, because the main reasons for anybody's being able to swim are good for everybody. English women have four limbs, and live in an island, and make voyages, and practise sea-bathing, and need exercise in the water at school and at home, and go out in boats—in short, run the universal risks in regard to water; and, therefore, they have a claim to be taught to swim. About the time when the great school was kept away from the river, because a boy had been drowned, a sensible and wealthy Quaker gentleman built a bathing-house for his young daughters on a mere in his grounds, which was sufficiently fenced with reeds to secure privacy; and the girls learned to swim. In the sea they could all go through the exercises as South-sea women and as French women do. Their frames were improved; their health was improved; their safety was improved; and there was not a shadow of an objection to be set off on the other side.

We are so far making progress as that there are swimming schools opened here and there, for women as for men; and we are learning how French and German girls esteem and practise the art which has become a matter of regular instruction on the Seine and other rivers. An event which happened three years ago also awakened attention among some who have not shaken off their prejudices against everything French. It will be sufficient to remind our readers of the burning of the steamer Indiana, on Lake Erie, in July, 1856, when fifty passengers perished out of one hundred and ninety, though the time was noonday, and the water was perfectly calm, and help was not long in arriving. The ladies on board could not swim, nor even float; and they had actually used their life-belts as pincushions when undressing; so that they could only go to the bottom when the flames

had driven them overboard. The gentlemen seem to have been much in the same condition. Not so Bridget Glyn, a poor Irishwoman, who had her four little children with her—the youngest a babe. Bridget knew what to do in the water; and she saved all her children, even though a boat ran one down, and all went under repeatedly during the time that elapsed before they were picked up. She saw the right moment for throwing them overboard, and for following them; she knew how to make them hold on so as to balance her, as she held up the babe: she prevented them from struggling, and when they sank she knew where they would come up, and seized them by the hair.

All healthy women might be at home in the water, like Bridget Glyn; but, instead of that, they lose their wits there, and cling to any man who would save them, so as to drown him too, if possible. If we could, as a nation, swim as naturally as we walk, we should see a prodigious reduction in the amount of mortality from shipwreck and accidents in home navigation. Far greater, however, would be the saving of life in another direction. The victims of consumption would be saved by hundreds.

We have floated far away from our school-children. Not, however, from their interests. What else is necessary for their well-being?

Our own opinion is that no one is justified in keeping a school who does not keep a good cook.

In great public schools the theory is that there are housekeepers whose business it is to see that the tables are properly served; but, in those cases, the housekeepers have no power over the arrangements of meals and hours. In private schools, the heads of the household are usually dependent on their servants; for few are the ladies in our days who know much about the economy of the table. After casting many a wistful glance through a long range of schools—from the Bluecoat School to the super-genteel ladies' establishments, patronised by bishops and filled with future peeresses—we are compelled to say that the simple wants of growing children are seldom met. We have nothing to say here of cheap schools, where everything is done for less than it can possibly cost. The answer I once gave about such places I give now, and always shall give. Two fine little girls, children of a political

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refugee, motherless and without prospect in life, were to be done something with, and money was subscribed for their education. A lady who had given grand dinners several times a week for the London season, urged their being sent to a school where they would be taken entire charge of for 20*l.* each a-year. After pressing upon this lady the price of the loaf, the price of a pound of mutton, the price of a cwt. of coals, and a week's washing, I with difficulty induced her to say that the thing could not be done; growing girls could not have enough bread, meat, and vegetables; nor warmth, nor clean linen for the money, if there was any real education given at all. Parents must know what food costs; and if they send children to twenty-pound schools, it must be at the conscious risk of health and life. I am not writing for murderers; and therefore I pass over the cheap private schools.

Looking at others, a crowd of mournful remembrances comes back upon us. In one great public school, the boys had to provide their own breakfasts. If a little devil had been set to work to invent a way of encouraging all bad inclinations and passions in boys, while injuring their health, he would have devised just this: a school full of lads providing themselves with a meal a-day. The amount of care and interest bestowed on the eating and drinking; the eagerness for luxuries; the debt; the dread of parents, and cessation of intercourse with them; the gaming induced by the pressure of debt; the introduction to the vices of manhood by the choice of breakfast,—these evils are worthy of diabolic invention. One day a wise man decreed that a good comfortable breakfast at home should be a part of the daily routine: and an amount of corruption was prevented such as had engaged the prayers and tears of a succession of holy men before the man of common sense arrived. But the spread meals must be good; and how seldom it is that they are soundly good! One of the primary requisites in any boarding school is a cook who can make household bread, always alike and always perfect (a practicable thing for those who know how to set about it); who can boil a potato (the hackneyed test); who sends up joints thoroughly roasted to the bone and boiled to the centre, without being burnt or ragged; who understands the mystery of savoury stews and of sending up various vegetables equally hot, and puddings which shall not have their own day of the week, or even of the fortnight. The

difference between a monotonous and comfortless dinner and an agreeable and various one, is so small in cost, that it is perfectly inexcusable to subject growing children to any disgust and injury for such a reason.

It is commonly taken for granted that sauciness about food is seen in home-bred children; and that the way to make a dainty boy or girl eat properly, is to send them to school. This is partly true: but there is another side to it. Instead of learning to eat what comes, the school-child too often stealthily omits the eating. While a disposition to general daintiness is to be dealt with as carefully as the fault of gormandising, it is as useless as it is cruel to contend with occasional cases of constitutional repugnance to some particular article of diet. It is as absurd as making a child eat what disagrees with it, merely because other people do. I have seen a pale-faced little girl, with lead-coloured circles round her eyes, compelled to take milk breakfasts till she was "of the proper age" to have coffee, and enduring, in consequence, a whole youth of indigestion. She did not dislike milk; but she could not digest it; and during her entire childhood, she went to her lessons with a suffocating lump in her throat, and a head full of pain or noises. At school, she would have eaten the bread and omitted the milk. I have seen a little boy actually unable (like others of the family) to eat rice. His gorge rose at it. This was inconvenient; and the opportunity was taken, when he was seven years old, to bribe him to get over the dislike. He took a fancy to a book in a shop-window—one of those overwhelming desires which throw a child into a fever. It was the "Seven Champions of Christendom," with a gay frontispiece. He was promised the book, if he would eat of the Saturday rice-pudding henceforward. By a tremendous effort, with his eyes fixed on the opposite wall, he got down, and kept down, his small plateful of pudding. The book was bought, and read before tea-time: and all was then a blank. The child never did eat rice again: he could not do it; and his mind was troubled. For a transient pleasure he had bound himself by a promise which he could not fulfil. These are grave mistakes, however trifling each occasion may appear. The whole subject of eating is made of far too much importance by thus connecting it with so much thought and emotion. Proper meals, properly cooked, would obviate a large class of such mistakes.

Everybody likes a great deal that is in "Tom Brown's School-days;" but a large proportion of the public, including, probably, the dissenters generally, are amazed and shocked at the disclosure it makes of the sensual cast of mind of the boys in a great public school. It does not follow that it is so in all such institutions. If it were, they would never be entered by the children of parents who dread to expose their sons prematurely to the grosser order of temptations. The little personages in that book think, every day of their lives, and with eagerness and passion, of sausages, kidneys, a treat of beef and mustard for supper—or good eating of one sort or another. Throughout the wide range of dissenting life in England, nothing like this, we believe, is dreamed of: and the disclosure has been a sort of shock to a multitude of good citizens. What, they ask, can be expected of boys who begin their independent life amidst overwhelming and entirely unnecessary temptations, and whose minds become occupied with gross thoughts and desires? What parent could make the venture of sending his child into such a scene? I sympathise cordially with this view. Not the more, but the less, however, can I reconcile myself to the asceticism which prevails in many private schools, where it is taken for granted that growing children must be hungry; and that hungry children ought to be able to eat whatever is set before them.

The atmosphere of a school is one of high excitement. The faculties are strongly exercised; the nervous system is in a state of tension; the emotions and passions work vehemently; and, while more food is required than in the quiet routine of home life, there is often less inclination to take it. This is particularly the case in girls' schools. I have seen the pupils crowded so closely at table, that the one circumstance of the knives being blunt has made some of the more delicate go without their dinners. Half-roasted veal or mutton, burnt pie-crust, boiled rice all gluey and served six times a-week, offered no inducement to elbow one's neighbour, and hack away with a blunt knife. It was easier to eat the bit of bread, or perhaps a potato, and let the rest go. Hence may grow up the practice of eating between meals, and of buying unwholesome things.

On the whole, the chances are much against the pupils of many schools entering upon life with that inestimable blessing,

a sound digestion: and the greater part of the mischief might be spared by such a provision of comfort as is found in every decent home:—plenty of room at table for everybody; plenty of time; liberty to talk quietly to neighbours; sharp knives with clean handles, and bright forks and spoons; good bread; thoroughly well-cooked joints, with such variety as soup, fish, stew, pies,—such dishes as it is perfectly easy to supply in a large household; a pretty wide range of puddings, and occasional fruit when the common fruits are in season. Dinners like these, and comfortable breakfasts and suppers, would leave no pretence for the systematic purchase of food which seems to be an established practice in some public schools. If boys will spend their money in dainties, it should, at least, be without the excuse of hunger or of custom. As it is, troops of children leave school under sentence of long suffering from an impaired digestive system,—a certain proportion being sure to end in early death.

What else is wanted? Warmth; quiet sleep; strong exercise. Boys can generally get on very well in these respects. It is true, the elder and stronger are often seen engrossing the fires, when little fellows are blue with cold in the distance: but boys can always move about at short intervals, and get warmth into their toes. They have the playground for exercise; and tired boys soon learn to sleep at night in the midst of any story-telling and restlessness around them. Into the practice of fagging and its consequences I do not enter here. Hearts have been broken, brains have been turned, many a life's career has been spoiled, by the tyranny of the strong over the weak in fagging: but there are consequences of an opposite kind enough to make a complicated question of it. We all agree, probably, that when education is what it ought to be, there will be no such prodigious advantage given to the strong over the weak, to the tyrannical over the timid, to the brutal over the nervous. We all hope for the time when the discipline may be given without the abuses.

School-girls are exempt from the great heavy black cloud of care which the fagging system frequently spreads over the life of a multitude of little boys; but they have their own troubles, and some very severe ones. They have seldom anything more than a mere apology for a playground; and they do not half make use of it. The boys may be allowed to engross the

fighting as well as the fagging; but we know of no other exercise which the girls might not enjoy as freely.

Indeed, it will be an immense advantage when the day comes for boys and girls learning and playing together, as the children of several foreign countries do. Climbing trees is admirable exercise for everybody; and so is cricket, and trapball, and ball play of all kinds; and racing and jumping. Instead of this, we see not a few schools where the girls, after sitting and standing all day, are taken out for a walk in the twilight, to save lighting candles. They seldom feel the sun; they have chilblains and other ailments from bad circulation; and in such schools nearly every girl has more or less distortion of the spine when she has been there more than two years. In the last century people knew no better. Little girls were put upon hard benches without backs, and so high that the feet hung in the air; and so perched, they were required to sit bolt upright and sew for hours together. The consequence was the deformed shoulder, the hump-back, the weary aching spine which many thousands of Englishwomen have carried to the grave. There is no more reason for women being crooked than any other creature born with a proper backbone; and this is better understood than it used to be. We see that the seats in schools are oftener accommodated to the height of the children: and if leaning back is not countenanced, there is more frequent change of posture and of occupation. Calisthenic exercises, and the inclined plane for the relief of the backs of fast-growing girls, are common sights in our day. The improvement is marked; but the condition of school-girls needs more consideration than has yet been given to it. Their average of health is far below that of boys: more of them will languish in invalidism; fewer will have genuine robust health; more, in particular, will die of consumption within ten years. The main cause of this is the unequal development of the faculties. There is too much intellectual acquisition, though not too much mental exercise, if it were made more general; and there is an almost total absence of physical education. If the muscles were called upon as strenuously as the memory to show what they could do, the long train of school-girls who institute the romance of the coming generation would flock merrily into ten thousand homes, instead of parting off—some to gladden their homes, certainly, but too many to the languid lot of invalidism, or to the actual

sick-room; while an interminable procession of them is for ever on its way to the cemetery—the foremost dropping into the grave while the number is kept up from behind. Many a survivor will be still wondering, with grandchildren round the fire, that this and that and the other pretty or clever school-fellow should have died so early; and at the same time, papa, at thirty, will remark on the number of the fellows who left school with him who have had to go to Madeira. Some have rallied; but for most it was merely the choice of a grave under the myrtles there, or in the sea, or in the cemetery at home.

When a dragon devoured youths and maidens in ancient times, somebody was always found to go out against him, and to conquer him at last. We must not be less watchful and devoted than our forefathers. We must rescue our youths and maidens from an early doom.

The few foregoing remarks on Swimming as a desirable art and exercise for women, have occasioned inquiries as to how women can learn to swim. What means exist, it is asked, for enabling girls to use their limbs in the water?

In such a case as this the supply of a want must follow, and not precede, the demand. When parents show a desire that their daughters should swim, instructors and means will turn up; just as a dancing-school is sure to be instituted in any rising town, when the need of one has been talked of for a little while. First, then, let parents and daughters make known their opinion and wish on the subject; and there will soon be as many swimming-schools in England as there are in France.

In the "Englishwoman's Journal" of August, 1858, p. 413, there is an account of the opening of a Metropolitan Swimming Bath for ladies in the Marylebone Road, where instruction is said to be given "by an efficient female teacher." It seems to me that when we have got "an efficient female teacher," we have got all we want for the basis of a system of any extent. There are multitudes of young women on the look out for means of honest subsistence. Why should not teachers at Public Baths instruct ten, or twelve, or twenty strong and willing girls to swim, in order to teach others to swim? The fathers and mothers in any town or village who wish their children to learn should inquire at these baths; and, if there is

as yet no supply, should cause a proper young person to be instructed.

Wherever there are good and spacious baths for women there seem to be some women who can swim. At Liverpool, where the baths are admirable, there are several ladies who are perfectly at home in the water. If each of these ladies would instruct some promising girl or girls from the schools in their art, in order to make it their occupation, no doubt the next generation of women in Liverpool would be swimmers in much greater proportion than the present. Let other towns and any country neighbourhood where there is good water provide baths of sufficient size—either by mooring bathing-houses in the streams, or by making shallow docks on shore, and teachers will presently offer. If not, it would be no great expense for the combined parentage of a neighbourhood to bring over a swimming instructor from France or Germany.

What prevents fathers teaching their own children in infancy? The earliest time is the best for learning an art which is never difficult. In most countries in the world—actually over the greater part of the inhabited globe—the children swim as soon as they walk, if not earlier. In Egypt, and throughout all Mongolian countries, and among the indigenous races of America, and throughout the negro lands of Africa, and in Polynesia, the human being is amphibious. There children of both sexes can spend the whole day in the water, and explore it at pleasure. Any Nile voyager who has passed the first Cataract can tell how it is among the Berber infants, and indeed along the whole course of the Nile. English children would do the thing just as well if they were put in the way of it. Their mothers are the proper persons to put them in the way of it: and, as the mothers are at present unqualified, the fathers should undertake it. In another generation or two they would be saved the trouble, we may hope, by the mothers being then better qualified. Meantime, it will gratify, and perhaps surprise any parent to see how immediately a little child takes to the art, which really seems like nature to it, if begun sufficiently early.

Wherever public baths are established, it is no doubt practicable to make an arrangement, either to open the swimming-bath on certain fixed days to women, or for giving women a bath to themselves. The whole thing rests with women, or with parents of families. Whenever there is a real demand there

will be no want of areas containing five feet of water. The generation which has multiplied baths and washhouses and drinking-fountains, can enable children to swim.

The way in which the art is taught at Paris is this. The water is that of the Seine. This is the least agreeable circumstance in the case, as the water of the Seine is quite as unfragrant in the summer as that of the Thames. Whether it is purified on entering the baths, I do not know. Let us hope it is. The bath is moored in the river, and the space occupied by water is 120 feet in length; a course long enough to afford room for all the exercises connected with swimming. A wooden platform, three or four feet under water, reaches to about the middle of the width of the bath; and this is for the use of children, and mere bathers who do not swim. The other half is of considerable depth in the middle, admitting of practice in genuine diving.

The dress is excellent for the purpose. It is made of a light woollen fabric, which does not absorb much water. The trousers are loose, and fastened at the ankles. The dress is in one piece from the throat to the ankles, without the petticoat; and this is the simple convenient dress used in Germany. Where the instructors are men, the short full petticoat is buttoned upon the waist-belt. It is just as decent a dress as English ladies used to wear when Bath was called "The Bath," and when wigged gentlemen and powdered ladies used to wade about in full trim, and chat in the water. The first step in the process of teaching is to make the pupil understand how to keep on the surface, and how to sink to the bottom. Most people know that to spread out the limbs is to float, and to double one's self up is to sink: but it is not everybody who knows that the quickest way of going to the bottom is to raise the arms above the head. This is precisely what women do when they fall out of a boat, or find themselves overboard in a shipwreck. Up go their arms in their terror; and down they go to the bottom like a shot. This is the action used by divers, who want to reach their point by the shortest way.

From the ceiling of the Paris bath hangs a rope, which travels along on a sort of crane. Where this rope touches the water, a broad belt is attached to it. This belt is fastened easily about the pupil's waist, supporting her in the water, and

leaving her at liberty to learn the action of the limbs in swimming. She is made perfect in these, and must then try her powers without support. To render her safe, and preclude fear, the instructor (who is a master and not a mistress) walks along the edge, just before her, holding a pole within her reach, which she can grasp in an instant, if fatigued, or alarmed.

There is a gentler method for the same object, which is exceedingly amusing to foreigners who first witness it. The novice is still hooked by the belt, but to a rod and line held by the instructor, who plays with his heavy fish as occasion requires,—now giving her entire freedom to swim away if she can, and now preventing her from sinking or tumbling about, by a sustained pull which keeps her on the surface. The pupils may be seen floundering or floating at the end of their line, or striking out, so that the teacher has to follow along the margin, like an angler pulled over the rocks by a stout salmon. At this stage the pole and line are pretty nearly done with, and the learner is able to keep within snuff of the air.

It is a remarkable sight when the master is followed by ten or twenty pupils, his pole reminding one of the magnet which brings swans or fishes to the bread in a basin of water, in the old-fashioned toy which astonishes children. The second pupil has a hand on the shoulder of the first, and swims with the other three limbs; the third on the shoulder of the second; and so on—looking like a shoal of mermaids. When so thoroughly at ease as to amuse themselves for a long time in the water, the ladies sometimes grow hungry; and then is seen another remarkable sight—not quite so pretty. They rush from the bath to a confectioner's shop which opens upon it, and may be seen presently swimming with one hand, and with the other eating their lunch, completely at ease.

As for the quality of the water in those baths on the Seine, it is not commendable, certainly; but the most disagreeable objects are kept out of sight by a netting carried down outside the baths to the bottom. Many a pupil may feel grateful for that netting, especially on occasion of his first successful attempt to dive, when he has not quite acquired the art of coming up again. The stream flows strongly through the bath; and it is well for him if he finds himself brought up against the netting, instead of rolled off towards the sea. As for the purity and fragrance of the water, what does the spectacle of the neighbouring

washerwomen lead one to expect? There they are, leaning over the gunwale, all round a large boat, rinsing and beating the linen, close by the outlet of a sewer full of stinking mud.

The baths are not so bad as this, and the swimmers have the comfort of knowing that their bodies will come out of cleaner water than their linen.

After learning the art in fresh water, it is mighty easy to swim in the sea, from the density of the water, and scarcely possible to sink. A woman who knows how to float is safe for many hours in the sea, as far as keeping on the surface is concerned. Among breakers or sharks, or in extreme cold, the peril is not of drowning simply. The simple peril of drowning might be reduced to something very small, if everybody could swim.

These particulars of the Paris school may afford some guidance as to how to set about getting women and children taught what they all ought to know. It does not follow that we must have swimming-masters in England. The art is taught all along the rivers of Germany, and invariably by women in the women's baths. In that case the dress is less elaborate, and there is more freedom and simplicity in the practice.

I am informed that there are now Englishwomen enough learning to swim to have given occasion to an established method of teaching novices at the baths in St. Marylebone, where one of the three baths is appropriated to women, for one day in every week, from April to October. The pupil wears an India-rubber waist-belt, inflated completely on the first occasion, and less and less inflated as the novice learns to support herself in the water. She walks into the water with her hands placed, as she will be instructed, in readiness for striking out as soon as afloat. When the water reaches the bottom of the belt, she throws herself gently forward on the surface, practising the instructions of her teacher as to the action.

It is said that, by the help of this belt, and a knowledge of what the action of the limbs ought to be, women and children can learn to swim without a teacher. However this may be, there is usually, we may hope, some relative who can swim, and who can give courage and confidence by his or her presence, as well as instruction. I should not like any relative of mine to go alone to any retired place to try to swim, confiding in the belt. There was a time when people confided in corks, till some deaths occurred by the corks slipping or in some

way failing. The best way in this, as in every other art, is, in my opinion, to get well taught in the first instance, at establishments properly fitted for the purpose. A due demand will presently create a supply of such schools. The well-taught may then teach others, in ponds, rivers, the sea, or where they like. A single death by drowning of a woman trying to swim would stop the process all over England at this stage of the enterprise. Let us have everything safe at first,—plenty of good help within reach of beginners, and the next generation will take care of themselves.

CHAPTER III.

FOLLIES IN FOOD.

In the last generation, a family of five brothers and sisters were left, by the death of their widowed mother, to choose their way of life for themselves, at ages varying from fifteen to two-and-twenty. They made a wise choice, which was acquiesced in by the guardians of the younger ones. They had no marked disease,—any one of them : but they were of a strumous constitution, their physicians admitted ;—not scrofulous, but tending towards it. They resolved to devote five years to the establishment of their health, which they considered would be a good economy of time, if those years could give vigour to all that followed. There was no difficulty about money ; so they took an airy country-house on a gravelly soil ; bought horses for the five and two grooms, and devised a side-saddle for the girls, which would enable the rider to take either side of the horse at pleasure,—a point of some importance for girls still growing, who were to spend so much time on horseback. They were in the open air whenever the weather would possibly admit of it, varying their exercises in every imaginable way. They lived on generous diet,—beef and mutton in plenty, and good ale or porter, and, by the medical advice of the day, port wine. At the end of the five years they were as fine a set of young people as could be seen, without a trace of disease or weakness, sound in body and mind.

Another family in a lower rank of life lost their father when

they were about the same age. They had had warning; for a brother had died of some form of scrofula, and their father, who had been far from temperate, died consumptive: but they had no idea of health being a matter of choice or of duty in any way. They expected "Providence" to settle all that for them; and the consequence was, that the old mother saw one after another drop from her side, after long periods of disease. It is not necessary to dwell on the particulars. Unhappily, we have all witnessed the fate of scrofulous families, where ignorance and mismanagement aggravated the misery to the utmost. It is enough to say that the young men exposed themselves to heat and draughts without any precautions; that it never entered their heads to unload their skins (beyond their face and hands) of the salts accumulated on the skins of working-men from day to day; and that their meals were like those of their neighbours,—hot cakes, swimming in butter, for breakfast and tea; and at dinner and supper the everlasting favourite,—the "pasty:" no game pie, nor anything like it; but two thick, greasy slabs of paste, with fruit clapped in between them: or, if fruit could not be had, fresh or preserved, treacle in its place. There are districts in England where whole families of working-men and apprentices are seen daily dining on such an abominable mess as this, and rarely touching or desiring meat. It is in just such neighbourhoods that there are superstitions against washing. An infant's arms must not be washed before six months, or it would turn out a thief, and the parents "would not like that:" and the parents themselves are scandalised at the very mention of such rashness as washing the feet. If the doctor advises a patient to put her feet in hot water for a cold, he is told that she has not let water touch her feet for thirty years, and never will; and that she once had a daughter who ought to have been living now, but she was once advised to put her feet in hot water, and she died;—not in the same year, it is true: but who can tell whether she might not have been living now, if she had done like her mother? Living in a state of society like this, and knowing nothing of the art of health, the predisposed family drooped and died, or are lingering on in conspicuous disease.

These are indications worth attending to, while the Registrar-General's Report tells us that twenty in a hundred of the deaths in England, in 1857, were from "constitutional disease,"

by far the largest proportion being from some form of scrofulous affection, and especially consumption. No less than 58,320 persons died of consumption in England in 1857. But double the number died of diseases for which want of cleanliness and good diet are mainly answerable. As to personal cleanliness, we will only say one thing;—that very few persons seem to be aware, even after all that the Combes have written, what the precise consequences are of the skin not being thoroughly washed and rubbed every day. It is not enough to say or suppose that people feel refreshed and invigorated by bathing; for mere bathing—a mere plunge into the Serpentine, or the sea, or any other bath—does not answer the purpose of thorough ablution. We ought to know the process by which disease follows a loaded skin. It is simply that the skin ought to carry off several pounds a day of the waste of the body: and if it is so choked as to be unable to do this, the work is thrown upon the interior organs, which have quite enough work of their own to do. Hence come internal inflammations, disorders, and decay. The introduction of steam ought to have lessened mortality from this cause more than it has: but the perception of this advantage of the steam-engine is spreading. Many years ago, some mill-owners and mining proprietors gave the benefit of the warm water of their engines to their work-people, by carrying it into a range of washing-sheds and baths. In Cornwall it seems to be a regular practice for the miners to wash in this way on leaving their work every afternoon. Let us hope that it is a more thorough washing than is described in the Reports of the Inspector of Mines in certain coal districts, where the men, duly shaven and proper in appearance on Sundays, are wearing their clean shirts over skins ingrained with six months' coal-dust. Inflammatory and choleraic diseases make prodigious havoc among an unwashed population.

Taking society all round, however, it appears that more young people are killed by mistakes about food than about anything else except air. The mistakes about food are so various, so opposite, that while we are ashamed of our ignorance, we may hope for a great saving of life when we grow wiser. "Doctor," said an American clergyman to the family physician who was attending the mother, "do look at that girl's tongue." "O, father, I am very well," said the young lady; "as well as I always am." But the doctor looked at the tongue, and observed

that it was just as white as every young person's tongue he looked at. "They are all alike," said he. "Why?" "Why, people must have more or less fever while they eat as young people eat here; and without proper exercise too." He criticised the American diet; which it is not our business to do while we have so much to correct in our own. The young people in both countries suffer and die in much the same way;—the Americans more and the English less; but both very unnecessarily. The mistake is the same, whether the diet be the same or different.

The mortality detailed by Dr. Farr relates, we must remember, to all classes. When we read of errors in diet, we usually think of the tables of the rich, as we imagine them, and suppose that luxurious people are over-fed. In the first place, this appears to be a mistake, by the testimony of physicians; and in the next, if it were true, we need not dwell upon it, because the rich and luxurious must always be the smallest class of the English or any other people. It is enough to say that wise modern physicians have been heard to declare that English ladies are not, generally speaking, sufficiently well fed. They take enough in bulk, perhaps, but not nutritious and reparative food. They would be more robust and less nervous if they lived rather more as ladies did in Queen Elizabeth's time, consuming more beef and manchet and (if earned by strong exercise, not otherwise) good ale. As for the late dinners which we are all so shocked at, they had better be called suppers. If the gentlemen do not take a substantial luncheon in the middle of the day, they ought; and the ladies do. They in fact dine with the children at one or two o'clock. The leg of mutton or cold beef then is their real dinner. They have tea at five or six, with or without the children; and then, if they choose to call the eight o'clock meal dinner, they can; but it in fact answers to the supper of old days. A few spoonfuls of soup, a wing of fowl or game, a plate of jelly or cream, and ice and fruit afterwards, may be all very pretty, but it bears no comparison as a dinner to the mutton and pudding at two o'clock. Many gentlemen do make their real dinner at the nominal time; and hence the great amount of disease among professional men and the rich merchant class in London. Now it is the stomach that gives way, and now it is the nerves. Paralysis knocks down one, choleraic disease carries off another, and dyspepsia

makes life a long misery to a third; and who can wonder, when that class of gentlemen breakfast early (if men of business in any way), and work their brains all day, without another proper meal, or perhaps any food at all, for twelve hours? The expenditure of alimentary material may be great in the kitchens of the rich—as in the making of the famous white soup in the Queen's kitchen—but the higher classes are not in this country over-fed.

The next class is nearer to reason in its ostensible practice than perhaps any other in the country. Three meals a day, with a small interlude, and at nearly reasonable times, seem to promise well; and if one sort of citizen is better nourished than another, it is probably the ordinary man of business in town and country, who likes his joint and pudding at dinner, and the loaf of good home-made bread, with country butter and eggs, at breakfast and tea. Yet there are drawbacks here. The wife is not complacent about her table, and her daughters do not eat as girls should; and her sons at times look critical. The fault here is, not in the theory, not in the hours, not in the tradesmen who supply the house, but in the cookery. Without incurring the reproach of grumbling at one's own age of the world, or saying that "the former times were better than these," one may state the plain fact, that the custom of our country used to be for the housewives of all ranks to be responsible for the table at home, and to claim that responsibility as a matter of right—as a point of honour as well as of duty. To declare this is to say that the case is otherwise now.

A new saying has recently obtained a wide circulation—"That you should discharge your cook for no offence short of murder." Send her away, and you will never have another: for two real cooks in a lifetime are more than any one has a right to expect. Why are there so few cooks? Simply because the demand for them has declined. So it is, in the very face of the new saying. Cooks are wanted more than ever; but not good ones, because housewives do not know how to set about requiring high qualities in a cook, and are accustomed to put up with what they can get, or to hire on blind speculation. Middle-class housewives in England cannot cook, generally speaking: and, moreover, they do not know what to require, what to order, and how far to superintend. Their mothers did not teach them; we have no schools for the homely domestic

arts; and how should they know any more of housewifery than of law, physic, or divinity? If the truth were known, this is one of the depressing influences which bear down the spirit and health of the maidenhood of England. Thousands of girls are painfully conscious of ignorance which is, and ought to be, regarded as a disgrace; and, when intending to marry, a heavy weight of care sits at the heart from the sense of the chances against their being able to make their husbands' home comfortable, and the scene of complacency that the home of every good wife should be. After marriage it is worse. If the deficiency is repaired, it is through severe humiliation on the one part, and great forbearance on the other; and the cases are few in which it can be thoroughly repaired.

What is to be done? for cooking does not come by nature, nor even ordering a table by observation. The art must be learned, like other arts, by proper instruction. We want, and we must have, schools of domestic management, now that every home is not such a school. Mothers can, at least, teach their daughters to know one sort of meat from another, and one joint from another, and, in a rougher or more thorough way, what to order in the every-day course and for guests. Thus much, then, every girl should know, from childhood upwards. A little practice of observation in the markets would soon teach a willing learner to distinguish prime articles from inferior kinds, and to know what fish, flesh, fowl, and fruits are in season every month in the year. We have seen ladies buying pork under a sweltering summer sun, and inquiring for geese in January and July, and taking up with skinny rabbits in May, and letting the season of mackerel, herrings, salmon, and all manner of fish pass over unused.

Everybody is glad to hear of the introduction of cookery into industrial schools, here and there. But much more than this is wanted; and there can be little doubt that if well-qualified cooks would open schools in London and all our large towns for the instruction of ladies and housekeepers, they would meet with signal success. It is probably true that almost every little girl is fond of the household arts, and delights in cooking, especially; and it is certainly true that a multitude of young ladies, married and single, would give all they are worth to be as much at home at the head of their households as their grandmothers were. Till this new-old

branch of female education is placed within reach of the whole sex, there will be sickness and mortality, as well as waste of the national resources, from the whole of society being at the mercy of its cooks—not a tenth part of whom are worthy of the honourable name.

How is it in that class in which every wife is the household cook, or at least the directress of the kitchen? How do the affairs of the table prosper in that substantial class which includes our farmers, country shopkeepers, and superior artisans? We are sorry to say—but physicians and tradesmen will testify to the fact—that the mortality of the country is increased by the habit of over-eating which exists in thousands of households of this order. Not in all; and great honour is due to those who adopt a sensible diet, because it is apt to be stigmatised as meanness; but, as a general fact, the habit of over-eating destroys health and life to a grievous amount in that order of citizens in which a gross table is regarded as a liberal and kindly mode of living. As to the true old English farmhouse, there is no better picture of its habits as to meals and hospitality than one given by Mr. Howitt, in (if we remember right) his "Rural Life in England." The quantity on the table at one time, the perpetual arrivals of more, the constant succession of meals all day, and the urgent persuasions to guests to eat, and reproaches for not eating enough, are just like the experience of townspeople who some time in their lives were suddenly introduced into rural society. The ordinary mode of life on a Yorkshire grazing farm is abundantly surprising to persons who have doubted about taking luncheon while eating three meals a day. Mistress and maid are stirring early to make the porridge for the household, breakfast being at seven. The vast bowls of porridge and quarts of milk being dispatched, there is bare time for the chamber-work before lunch has to be sent out to the fields—huge baskets of bread, oat-cake, and cheese, with bottles of beer. This is from half-past nine to ten. At twelve dinner smokes on the long board—great pieces of pork, beef, or mutton, or all three; or vast pies and puddings, and cheese, and rice-milk, and ale; and the board is pretty well cleared in half an hour. At three, the baskets go again into the field with the afternoon lunch—bread, cheese, and beer as before. At five all assemble for tea, which is porridge and milk, as at

breakfast. At eight, there is supper—cold meat, hot potatoes, oat-cake, and cheese. By that time the women have done cooking for the day, and, the board being cleared, they sit down to mend stockings; the farmer reads the newspaper at his own round table, with his own candle; and the men nudge each other to keep awake, or nod forwards, or join to prick or pinch or punch any particularly sleepy sinner, till nine o'clock strikes, and they slink off to bed. However strong the exercise taken by such a household, it is still subject to fever, liver complaints, diarrhœa, and rheumatism, besides that torpidity of brain which is in itself a preparation for disease. The strongest and most active brains resist disease the best and the longest. Not the overwrought brains, be it observed, but the most generally exercised, which keep up the highest vitality over the widest range of human powers. One does not look for this kind of brain among rustics who eat five or six meals a day, and know and care nothing about the world outside the farm fences.

But the small shopkeepers in towns are a very different class, from whom a higher intelligence might be expected: yet they are apt to eat twice as much as is good for them. Observe the master or mistress of the household at market. What a quantity of prime fish is bought! what ducks, geese, and turkeys, besides joints, and odds and ends of dainties! What peas and asparagus and seakale! What vast cheeses, and cream-cheeses, and curds, and gallons of fruit, and mounds of butter! But, to come to particulars, here is an illustration.

A friend of mine—a surgeon's wife—was informed one day about noon that a patient desired to see her in the waiting-room. She answered this odd request by going there, when she found two persons in great alarm, and distressed that the surgeon was not expected home for two hours. The wife of a small shopkeeper was ill, and a friend had come with her, in hope of obtaining immediate relief. They could not explain what was the matter, but would be glad of any advice. The poor woman said she felt so miserable she did not know what to do, and her throat was quite unlike in shape to its usual state; and she could scarcely breathe, and had such an oppression, &c. The lady saw immediately that it was a case of violent indigestion. She said that it was not her practice to prescribe for her husband's patients, but she could recommend a simple medicine for relieving the immediate oppression, which

would pass the time till medical advice could be had. What she heard of the eating of that day and the preceding astonished her; but in the evening her husband said she had not told him nearly all that had gone down the woman's throat, which was, as nearly as I can remember, this—perhaps more, certainly not less.

There was a large fine salmon in the case—a present. A friend came to pass the day, and the salmon was cooked for dinner, superseding a bullock's heart stuffed with onions. There was a pie, and there were puddings, and other things at dinner; but the great salmon was the main feature. At tea, at five, there were hot buttered cakes and buttered toast, and the heart stuffed with onions, and sweet cake, of course: and at eight there was supper, viz., fried soles and potatoes, an apple pie and custard, cheese and porter. At breakfast next morning the salmon was proceeded with; and the patient had partaken plentifully of it, and had also fortified herself with lunch before going to the doctor. If, as we are assured, this is only a fair specimen of the diet of thousands of families in England, it is no wonder that we suffer under that dreary collection of diseases that Adam saw going into hospital, by dismal anticipation, as related in Paradise Lost. If we set against these the consequences of under-feeding, we may see how far we are from wisdom. On the subject of deficient food we will not enter. Nobody needs convincing of the horrors of it. The practical question is, whether any means can be found of saving the lives of young people who have been brought up to over-load their stomachs (under the idea of fostering their strength and living generously) that there may be the more food left in the market for those who now have not enough. There are a few places within the United Kingdom where instruction is given in regard to the constitution and management of the human frame. If there were schools enough to teach the girls of the middle classes the leading truths about diet, in relation to health, the next generation would be happier than the last. The well-to-do would have better health—quiet nights, easy and cheerful days, freedom from nightmare and indigestion, a longer life and a merrier one than now: and the poor people below them would have a better chance of keeping body and soul together, and being in an amiable mood towards God and man. Can one not imagine the surplus left over by a wise generation of farmers and shopkeepers spread out in the wilder-

ness for the poor? For it should be remembered that food of all kinds is one of the commodities which is, at each particular time, limited in quantity; so that to waste it is to deprive somebody. If this were fairly understood by those who eat meat three times a day, more persons would have it once.

One practical point, which would assist the due feeding of the under-fed, need not wait for a general advance in education. To enable the poorer classes to turn food to the best account is much the same thing as putting more within their reach; and this could easily be done. It actually is done in a few places where cooking is taught on system in industrial schools; and there is no apparent reason why there should not be schools of cookery for poor children, as well as for young ladies in London, and for soldiers in the camp. Why should we not all learn to cook? We have cookery-books for the great, and also for the million; but cookery-books are of little value till there is some aptitude at the practice. Let half a dozen popular teachers like Soyer (but who *is* like him!) travel through the country, each with a portable kitchen, and show all the women and girls in town and country the best way to make and cook the common preparations of food; and the benefit will be equal to a rise of wages to the labouring man at once. The mere secret of the stew—now rarely or never seen on the cottage table—would be as good as another shilling a-week in health and strength. It is difficult to stop here, on the verge of a great and enticing subject; but I can say only one thing more now—that there are literally thousands of mourning parents in England at this moment, whose manly young sons and once promising daughters are in their graves because their fathers made mistakes in providing the family food, and their mothers did not know how to set it before them. The mind recoils from such a statement, but it is true; and it ought therefore to be set down plainly. The mind also recoils from the statement that the cholera is at Dantzic and at Hamburg;* and not altogether absent from England; but it is true, and ought to be told; and with it the further truth that if every family in the kingdom sat down in pure air, in a state of personal cleanliness, to three meals a day of good common food, well cooked, and earned by fair work of body and mind, the cholera would be kept out more surely than by a wall of brass, or would fly over us like the first raven

* October, 1859.

we hear of, and go back to its haunts, for want of some place whereon to alight. It will be some time before that can happen. Meanwhile, what can each of us do to save some of the thousands who are for ever dropping into well-known pitfalls around the threshold of adult life?

CHAPTER IV.

THE COOK OR THE DOCTOR?

The subject of Food is important at all ages. It is always with a shock of surprise and pain that we read, in the Registrar's Reports, and in the accounts of Coroners' Inquests, of death from starvation. Everybody says the same thing on every occasion of the kind;—that there must have been great fault somewhere, because the law of the land provides subsistence for every person in it. Let it be granted that deaths from destitution of the necessaries of life are gratuitous: this is but a small part of the mortality from hunger. The number of persons who die annually from being under-fed is very great. The victims themselves are often unaware of the fact: and so are their neighbours generally. Whatever disease last lays its grasp upon them,—invited by their low condition of body,—is called the cause of their death; but if the truth were fully understood, we should see in the register, instead of columns of entries of low fevers, tubercular diseases, and fatal affections of the viscera, one comprehensive term,—deficient nutriment.

If this kind and degree of mortality were owing to national poverty, or to social arrangements which condemn large classes to destitution, this would not be the place for any remarks on the subject. It would be a political topic of extreme gravity, which ought to occupy the full attention of Queen, Lords, Commons, and the political press: but it is far otherwise. There never was a time when work and means of subsistence were so generally diffused in the United Kingdom, as in the middle of the nineteenth century. There is every reason to believe that there is food enough in the country to keep up the

health and strength of every person in it: and it is only the deficiency of our knowledge and skill in regard to food which causes a large number of men, women, and children to be under-fed in the midst of abundance.

It is a rare thing to find the head of a household in any rank of life well informed as to the right kind and degree of nourishment for any one person. Hence there is such a thing as a family being under-fed in the midst of wealth. This happens where the quantity which goes down the throat is considered to be the same thing as so much nutriment. The same mistake is to be expected in the labourer's home; and it is found there, with the aggravation that the food which is eaten, whether more or less nourishing at best, is in great part spoiled by bad cookery. If it was thoroughly well known throughout the country how much nourishment everybody ought to have, what articles of food yield that nourishment best, and how they may be best prepared, there need be no under-feeding, from the palace to the labourer's cottage. It is only within a short time that this has been fully understood. The knowledge is now being applied to improve the diet and the health of our soldiers: and we must hope that the benefit will extend to all other classes.

The main principle of the matter is simply this.

A large proportion of the food we eat is mere water and material which does not nourish. What *is* nourishment? What is the precise meaning of it?

There are two kinds of nourishment in good and sufficient food; but they are not quite of equal necessity; they are of very different proportions; and the smaller amount (by weight) is the most indispensable. This smaller element is absolutely necessary to life, as it goes to repair that waste of the substance of the body which never stops. When this waste is not supplied by food containing this element, the parts perish very soon. A person absolutely starved on a desert island lives only a few days. I am acquainted with one who lived thirty days under these circumstances: but he was the only survivor of his party; he was barely breathing when assistance came; and his case is considered almost unparalleled.

He and his comrades had been set ashore in a mutiny. He made the Freemasons' sign to the leading mutineer, and the man returned in thirty days, landed with a kettle of hot brandy-

and-water in his hand, and found my friend senseless under a bush, with the bodies of his comrades lying about him. His appearance was extraordinary ever afterwards, as if every fibre in his face was vibrating without ceasing; but he recovered to be a world's wonder, for having lived thirty days through the waste of his frame, without its having been repaired more or less. Four days of absolute fasting is, I believe, usually considered fatal. The element which repairs this waste is called the nitrogenous substance of food; the other is called the carboniferous. There ought to be three times as much of the latter as of the former to keep one in full health; but a person may do without it for a short time without fatal consequences, because the nitrogenous portion supplies its place to a small extent.

The carboniferous element supports the respiration, keeps up the action of the frame by which the nitrogenous portion is carried where it is wanted, causing the circulation and the renewal of the blood, and the power of each part of the body to do its work. The two together make our food.

The first question, therefore, in choosing our food is, what articles of diet contain most of these two elements, with the least mixture of what is useless; and the next consideration is, how best to ensure the due proportion of three parts of one to one of the other. To understand and apply these two pieces of knowledge is the fundamental business of cookery.

Though this is the scientific basis of cookery, it by no means follows that every wife who goes to housekeeping, and every girl who takes a place as cook, is expected to study the scientific part of the matter herself. Learned men have done it for her. They have told us what articles of food contain most of what we want, under the best conditions for use; and the treatment of the subject has now reached the practical point which suits the purposes of every-day life. Lists of good dinners have been made out, not only for hospitals, but for soldiers in barracks and in camp, from which we may learn what mode of eating is most healthful for active people.

The useful articles of diet are numerous, and the commonest we have. As to the quantity required, the prize-fighter, who requires most, has thirty-six ounces per day, besides the innutritious portion which everybody swallows at every meal. For women, twenty ounces may suffice, though a larger allowance is

better. Healthy working-men ought to have from twenty-five to thirty ounces.

The greatest amount of nourishment of both kinds is contained in flour, meat, potatoes and peas; milk, cheese, rice, and other grains, and sugar; while tea, coffee, and cocoa, are of great value in their way. Such are the materials; but they may be so treated in the cooking as to waste what is most valuable, and preserve what is of the least consequence. It is possible to manage the making of a stew, so as to wash away the best qualities of the meat, and leave the vegetables hard, and drain away the thickening, causing a predominant taste of smoke and salt. When Miss Nightingale and her assistants undertook to cook in the Eastern Hospitals, they made a pint of thick arrowroot from one ounce of the powder, while in the general kitchen it took two ounces to make a pint of thin arrowroot. It was the proper boiling of the water that made the difference here. Again, two ounces of rice were saved on every four puddings when the nurses made the puddings. Such incidents show that it is not enough to have the best materials for nourishment; they must be husbanded in the preparation. It seems probable that, by sensible conduct all around, everybody might command enough of the best material for food; and it is certain that a very small proportion of the wives of Englishmen know how to do justice to the food they buy.

As a matter of fact, what do the working-classes of this country eat and drink? Different methods prevail in different districts, no doubt, and in different ranks of labourers; and, of course, one wife will differ from another in household management, according to her training and her ability; but still, a few specimens will throw some light on the reasons why so many persons die every year from being under-fed.

In some rural districts the diet in the cottages is just that of the Irish before the famine; a diet which the Irish peasant still prefers, and which is sufficient, if he is not stinted in quantity. "What, potatoes!" some reader may contemptuously exclaim. Yes; but not potatoes alone. The secret of potato-diet is having milk with it, that the one article may make up for the deficiency in the other. In winter, when milk is not to be had, the practice is to melt salt lard in water, for sauce, or to have a red-herring (one for a whole family) as a relish: and then the food does not suffice. This is one mode. Another is, living on

bread and tea, with occasional lard, or butter, or cheese. The tea is hot for breakfast, but cold at dinner, which is eaten in the field. Cold tea at dinner-time,—without sugar, or without milk; and sometimes without either! Bread from the baker's, most likely, with a trifle of something to take off the dryness. On Sundays and holidays there may be a morsel of bacon; but no fresh meat. This is another way. Elsewhere, the wife makes the bread; but not in goodly loaves, but in the form of "bread-cakes:"—hot buttered cakes at breakfast;—the same cold at dinner; and hot buttered cakes for supper. This is for three days or so after the wages are paid; and for the rest of the week there is hunger—unless debt is permitted at the shop.

In none of these ways could the dinner come to less than a penny a head: and it must usually amount to a good deal more. Now, there *are* wives who can set a good dinner before their households for a penny a head; and for half as much again can provide a considerable variety in the course of the week. The penny dinner on record happened to be a beef dumpling, as some people call it, while others know it by the name of pot-pie. The family consisted of six; and the dish cost sixpence, affording enough for everybody. The sticking-piece of beef was the meat-part, costing threepence. Onions, seasoning, and the flour and lard for the crust, made up the rest. No pieces of beef are to be had so cheap now; but there are plenty of good materials to be got by those who know how to look for them:—ox-cheek, the sticking-piece of each sort of meat; a sheep's head and pluck; and the bits and odds and ends seen in the butcher's shop by housewives who go early enough to secure such things. The most valuable dish in a household that I know of, where there is nothing to spare, is a stew, which costs 1*s.* 3*d.*, and affords a good meal to six hard-working persons, leaving some over: viz., two pounds of beef (the sticking-piece), one quart of groats, a pint of peas, and seasoning. Surely these dinners are better than bread, even if there is butter or cheese with it.

Cheese is, however, excellent food. It is all nourishment and no waste. Butter is good too: but they are not meat, and can never supply the place of it. Yet, amidst all our improvements, it does not appear that the consumption of meat bears an increasing proportion to the population. The strangest

thing is that we do not make more use of fish than we do. In the Catholic days of this country, everybody ate fish; and there seems to have been enough for everybody. But within this century, when our fisheries were languid, and fishing was a precarious vocation, many tons of fine fish have been habitually buried in the sands whenever "the take" was larger than common. There was no demand for more than a small quantity. The railways have since opened up the markets of the interior, so that in the very heart of the island fine fresh herrings may be had in the season at from one to two score for a shilling: yet the demand falls very far short of what might be expected of a people whose labouring classes rarely taste meat. It seems probable that the obstacle is the inability of the women to cook. Fish is a luxury when intelligently cooked; but it is easy to spoil it in the dressing. Fish which is overdone has lost its nutritive quality: but when one does meet with a woman who understands when to buy mackerel, herrings, whitings, and skate, and how to treat them when bought, one sees that varied and excellent meals may be had at no greater cost than mere dry bread.

This brings us again to the point of how different households live.

Leaving the rural districts for a moment, let us look into a street of one of the towns where fine fresh herrings may be had in season at three a penny. In one small house in a court, where the family work together at a trade, the women pay five shillings and sixpence each for board and lodging and the warmth of the fire, candles being extra. They get their pay on Saturday night, and pay down their week's money on Monday morning, when the mother gets two pecks of flour, which make eight loaves, or what is equivalent to them; and tea for the week; and meat—liver and bacon, or cheap pieces to make stews and pies of; and a little lard and sugar. The bread is made at home, and baked at the baker's for a halfpenny a loaf. On Sundays there is always a piece of meat, baked with potatoes in the dish, and a pudding. There is never any milk seen in the house, nor butter, rarely any cheese, and, oddly enough, no rice. The family keep fowls, as they live in a yard. In a street it does not answer, as the chickens get stolen or run over; but in a court they can be kept in the heart of a town. But not an egg, much less a chicken, do the family ever eat, though an egg beat up would serve them as a substitute for milk in their tea.

Eggs bring a penny or twopence a-piece; and they are too valuable to be indulged in at home. However strange this seems in regard to a commodity so easily produced, it is the reason assigned by many a family for abstaining from so excellent an article of food.

While these good people, who pay their way, and are a superior family in their station, are having breakfast and tea of bread without butter and tea without milk, and a dinner at twopence or threepence a-head, a neighbour proceeds somewhat differently. The husband is a workman in a factory, the wife keeps one of the thousand huckster's-shops in the town, and their mode of living is like that of thousands of their class. They have hot rolls and ham for breakfast; salmon and peas, or a spring goose, or a Christmas turkey at dinner; and buttered muffins and beefsteak at tea. Sometimes they have prime beefsteak three times in one day. They, with their double resources, may keep it up for a time; but many of the shop customers cannot. If you ask where all those piles of hot rolls and muffins that you see can possibly go to, you find that the largest baskets come out empty from the narrow crowded streets where the workmen's families live. They begin the week with stuffing themselves with greasy hot bread, at a cost which would supply dinners of meat and vegetables; and before the week is out they have no bread. Look into the huckster's-shop, and you will see a workman's wife, or the man himself, buying a pound of ham, out of the very heart of the joint, for a shilling, and tea enough for a single cup for himself and his wife, and a pinch of sugar. Day after day scores of people may be seen buying quarter and half-quarter ounces of tea, morning and afternoon, paying on each occasion for the shopkeeper's time, and for paper and string. They pay also for the sins of debtors. The huckster pays himself in his prices for bad debts, long credit, and an infinity of paper and string, odd minutes, and waste in weighing and measuring; and these heavy fines, as we may call them, are levied upon customers who, if they knew how to buy and dress their food, might have as good a table for the same money as health and enjoyment could require. Instead of this constant comfort, they make waste which they do not enjoy, aware that a time of hunger cannot be far off. They are often under-fed, never thoroughly well fed, and always in danger from every wandering sickness. The huckster gets into difficulties in

the same way, and almost forgets the sight of beef-steak and salmon.

As these hucksters sell everything, they have customers for an article which is also sold all along the streets, as often as children pass to and from school and work, namely, "goodies" or "sweets," or, what sensible people call "sweet trash." The amount of bad toffy, comfits, and tarts consumed by the children of the working-classes, and of the very poor, is beyond the belief of all who have not attended to the fact. It is enough to say that in hundreds of families, where meat is seldom or never seen on the table, the mothers are in the constant habit of giving the children halfpence for "goodies" to an amount which would supply each child with half a pound of good mutton per week.

One method, and perhaps the best, of reconciling these vagaries, and establishing a steady practice of good diet, would be to make good plain cooks of the women. This would be the best method of economy; but it is also a question how more material may be obtained. If we were all as wise as we might be, there would be meat, and other prime articles of food, within reach of every laborious man in the kingdom. It is painful to write of the inferior parts of the ox as the food of the labourer, while the sirloin and the rump-steak are for the squire and the farmer. In the primary articles of food it might seem that men of all ranks should be on an equality. But what can one do and say? The truth is, practically, that the labourer rarely sees good meat, or any meat but bacon, on his table. I believe and trust that there will ere long be more meat produced; and if, at the same time, a wise economy could be introduced into all classes, by which no meat would be wasted, and no one would eat too much of it, and everyone could understand how to obtain and use it, we might hope to see the leg of mutton, and loin of pork, and goodly piece of boiling-beef, on the ploughman's and the mason's table, as regularly as in the houses of their employers.

Meantime, what can be done?

It is well known in certain rural districts that the labourer's expenditure usually exceeds his avowed income: and that it is impossible to preserve the health and strength of cottage families on such means as they nominally have. Something is due to chance earnings or gifts: but the main part of the mystery

is solved when we look at the game preserves. Half a century ago, when the labourers actually could not live—when bread was not only dear, but intolerable in quality, the offence of sheep-stealing was prevalent beyond example. In the parishes where wages are 8*s*. per week, there is much poaching; and so there will be while men are required to live on such a pittance. Now, if the improvement in farming admitted of an advance of wages to 12*s*. or 14*s*., or 16*s*. a week (rates paid now where the farming is good), the man and the boys would be worth the increase, in mere strength and spirit; and, instead of stealing the squire's wild birds, the family might and would keep fowls of their own. Instead of getting hares and rabbits on the sly, they would keep a pig, be sure of prime bacon, and exchange the rest for beef and mutton. Till we see this change taking place in the very poorest districts, how may the interval be best bridged over? How may the greatest number be preserved from that condition of imperfect feeding which prepares thousands of our neighbours for being victims of every assault of disease?

It is essential to good nourishment that there should be some variety in food. Not only must there be both the classes of elements above spoken of, which are found together in the main articles of food, but the articles themselves must be varied. Bread includes various good elements; and so does milk; and so do potatoes: yet nobody could long remain in health on a diet of bread alone, or of potatoes without milk or other animal product. Thus, it is wretched management to buy bread, and nothing but bread, and feed the whole family upon it, because bread is the best single article of food. The aim should be to have both animal and vegetable food at every dinner. It must be remembered that animal food does not mean meat only. It includes fish, cheese, butter, milk, and eggs. This point might be carried, if the labouring class understood the importance of it, and knew better how to manage their affairs.

They might be assisted in many ways, and from two points of view especially; and without insulting them by the offer of alms, or of any further aid than neighbours ought always to be glad to afford and accept. They might be helped first to the food itself; and next, to the due preparation of it.

It is not an unusual thing for ladies, in town and country, to buy calico, prints, and flannel, wholesale, in order to furnish schools and cottages with clothing, good and cheap. Why the

same thing is not done with articles of food is strange. Ladies who have a little time to spare could do a prodigious amount of good in a rural parish (or in towns also), by procuring rice and coffee by the cwt., as imported; and barrels of foreign beef, and of Ohio pork; and quarter chests of tea; and carrots by the load, when the smaller roots would serve for the pig and the cows, while the best would come very cheap for the cottagers.

In Russian villages there is often a pair of scales under a shed for general use. It is intended primarily to weigh the wool and yarn of the spinners; but what a blessing it would be for many an English hamlet, where the people are at the mercy of the shop scales, and where they now buy mere pinches or handfuls of what they want! A pair of scales and a coffee-roaster for general use, with arrivals of rice at twopence farthing a pound, when it is fourpence or fivepence at the shop, and coffee at a shilling, reduced to tenpence by a due mixture with chicory, and prime pork at fourpence, and beef at sixpence, and Indian meal at some wonderfully low figure—would change the aspect of many dinner-tables in the parish. The cheapest food, nutritious and really palatable, at present known, is believed to be one on which the operatives of a manufacturing town were mainly fed in a bad winter by a benevolent employer, whose object was to embrace the greatest number within his means of relief. A mixture of Indian meal and rice, boiled for many hours, with condiments, made an excellent daily meal for hundreds of men, at (if I remember right) three-farthings a head. In ordinary times, the main object is not to discover the cheapest food, but the cheapest *good* food, in sufficient variety; and the difference between the lazy slice of bread, served out to the whole family, to be eaten anyhow and anywhere, and the hot meal, properly served at table, need not be insisted on here, or anywhere. Wholesale prices tend powerfully to the establishment of the dinner-table in cottage life.

But what is to become of the village shopkeeper? some will ask. The village shopkeeper, or the city huckster, loses more by long credits and bad debts in an unthrifty neighbourhood than he can by three or four articles of his stock being otherwise supplied to his poorest customers. Where there is a general shop, the prosperity of the villagers is the best thing for the shopkeeper on the whole.

Finally, there is the preparation of the food. If existing

housewives cannot teach their daughters, somebody else must. And why not? In certain factories in large towns, a room or two, and plenty of water, is granted by the employer, to enable the women to learn, in the evenings, to cook and to sew, as well as to read and write. Wherever the education (not the mere teaching to read and write) of girls of the labouring class is undertaken, there should be instruction in the ordinary arts of life. Why are not our National Schools in the country like that of Sandbach in Cheshire, where the girls cook for the sick, and thereby learn the economy of the table? By a report of that school published in the "Times" a year ago,* it appears that upwards of 2000 meat dinners, well-cooked, hot, and savoury, were supplied in the year 1857, besides puddings, broths, arrow-root, and vegetables, at a cost of less than 70*l.*, including a Christmas dinner of roast beef and plum pudding to a large party of old folks. The money was supplied mainly from the Offertory: the girls of the parish were qualified for service, and, what is of more consequence, to be good wives; and the surgeons of the parish found a wonderful power of recovery in their patients.

As the vicar says:—"While a return to a generous diet after sickness, in the case of those who have been habituated to it, naturally renews the strength, with the poor, unaccustomed to animal food, the improvement is so marked as to be almost like life from the dead."

Here is a hint as to lessening the unnecessary mortality of the kingdom,—a kind of mortality which, we fear, hardly enters into the recognised 100,000 of the Registrar's Reports. If the administration of animal food, in a wholesome and agreeable form, is like life from the dead, how long shall any of the homes of England be without it? There will be good meals in every house when there is a good cook there. If we cannot put good dinners upon all tables, we may proceed a long way towards putting a cook into every home in England. Let us have a kitchen attached to every girls' school, and schools for cookery in every town, and the nation will be nearer than it has ever been yet to being well fed, which is the same thing as saying that the children will grow up well, the men and women will wear well, and the aged will go down to their graves in comfort. This will not be disputed by doctor or nurse, gentle

* 1858.

or simple : and if it be true, almost everybody may save and fortify life by teaching, or getting taught to one or more future wife, mistress, or maid, the simple, pleasant, and inestimable art of spreading the household table.

CHAPTER V.

DRESS AND ITS VICTIMS.

THERE are a good many people who cannot possibly believe that dress can have any share in the deaths of the 100,000 persons who go needlessly to the grave every year in our happy England, where there are more means of comfort for everybody than in any other country in Europe.

How can people be killed by dress, now-a-days ? they ask. We must be thinking of the old times when the ladies laced so tight that "salts and strong waters" seem to have been called for to some fainting fair one, as often as numbers were collected together, whether at church, or at Ranelagh, or the theatres. Or perhaps we are thinking of the accidents that have happened during particular fashions of dress, as the burning of the Marchioness of Salisbury, from her high cap nodding over the candle ; or the deaths of the Ladies Bridgman two years since, from the skirts of one of them catching fire at the grate ; or the number of inquests held during the fashion of gigot-sleeves, when a lady could scarcely dine in company, or play the piano at home, without peril of death by fire.

Perhaps it may be the heavy, towering head-dresses of the last century we may be thinking of, bringing in a crowd of bad symptoms, headaches, congestions, fits, palsies, with the fearful remedies of bleeding and reducing, which we read of in medical books, and in gossiping literature, like Horace Walpole's correspondence. Or we may even be thinking of the barbaric fashion of painting the face, neck, and hands, at one time carried on to the excess of enamelling the skin. That was not at so very remote a time ; for I have heard from the lips of witnesses what it was like ; and a friend of mine, yet living, can tell what she saw at a concert where a lady sat before her with a pair of broad

shoulders which looked like tawny marble,—as smooth, as shining, and as little like anything human. These shoulders were once enamelled, and may have looked white in their day; but no life-long pains to renew their whiteness would serve after a certain lapse of time; and there they were, hopeless, tawny, and the quality of the skin destroyed. The poisonings by means of cosmetics that we read of in the history of past centuries, may have been sometimes intentional; but there was plenty of unconscious poisoning besides.

I do not, however, mean any of these things when I speak of dress, in connection with preventible mortality.

Perhaps I may be supposed to be referring to the notoriously afflicted and short-lived classes of milliners and slop-workers who are worn out and killed off in the cause of dress. No; I am not now going to bring forward their case, because it comes under a different head. At this moment I am not thinking of either the political economy or the general morality of the dress-question, or I should bring up the group of suicides who have perished, some from hopeless poverty, some from intolerable degradation, and some from the embarrassment of gambling debts incurred for the sake of dress.

If the secrets of the city were known, we might hear of more tragedies than the theatres show, from the spread of gambling among women, and especially among servant-girls and shop women, who have been carried beyond bounds by the extravagant fashion of the day. But I am not speaking of suicides, nor of the victims of the needle, whose case is too grave to be treated lightly, and whose day of deliverance, too, is at hand, if the sewing-machine is the reality it appears—and not a phantom, cheating the hopes of thousands. We may possibly look into that another time. Meanwhile our business is with the injurious and sometimes murderous effect of dress which we see worn every day.

It will not seem so wonderful that the familiar clothing of our neighbours and ourselves may be of such importance when we remember the explanations of physicians—that dress may, and usually does, affect the condition and action of almost every department of the human frame;—the brain and nervous system, the lungs, the stomach, and other organs of the trunk; the eyes, the skin, the muscles, the glandular system, the nutritive system, and even the bony frame, the skeleton on which

all hangs. If dress can meddle mischievously with the action, or affect the condition of all these, it can be no marvel that it is responsible for a good many of the hundred thousand needless deaths which are happening around us this year.

Putting aside the ordinary associations, as far as we can, and trying for the moment to consider what is to be desired in the clothing of the human body,—what is requisite to make dress good and beautiful,—let us see what is essential.

Dress should be a covering to all the parts of the body which need warmth or coolness, as the case may be. It should be a shelter from the evils of the atmosphere, whether these be cold, or heat, or wet, or damp, or glare. This is the first requisite; for such shelter is the main purpose of clothing. In our own country the dress should easily admit of the necessary changes in degrees of warmth demanded by our changeable climate.

Dress should bear a close relation to the human form. No other principle can be permanent; no other can be durably sanctioned by sense and taste, because no other has reality in it. We may fancy that we admire the old Greek and Roman robes which look dignified in Julius Cæsar on the stage, and in statues, and in our own imaginations of classical times; but we could not get through our daily business in such a costume; nor should we admire the appearance of our acquaintance in it. In fact, the wearers themselves were always tucking up or putting away their troublesome wrappers when they had anything to do: and the busy people of society appeared in their workshops and fields in garments which left their limbs free, and their whole body fit for action. On the whole, in a general way, with particular variations according to taste, the dress should follow the outline of the body. Any great deviation from this principle involves inconvenience on the one hand, and deformity on the other.

Where it follows the outline of the frame it should fit accurately enough to fulfil its intention, but so easily as not to embarrass action. It should neither compress the internal structure nor impede the external movement. An easy fit, in short, is the requisite. It is a part of this easy fit that the weight of the clothes should be properly hung and distributed.

After the peace of 1815 it was said that we gained two things from the French—gloves that would fit, and the shoulder-piece. It would make the difference of some lives out of the great

number thrown away, if we made due use of the shoulder-piece, now. By the shoulder-piece, the weight of the garment is spread on the part best fitted to bear it, instead of being hung from the neck, as it was before we knew better, or from the hips or the waist (in the case of women's dress) as now, when we ought to know better.

Next; dress ought to be agreeable to wear: and this includes something more than warmth and a good fit. It should be light, and subject to as few dangers and inconveniences as possible.

These conditions being observed, it follows of course that the costume will be modest, and that it will be graceful. Grace and beauty are flowers from the root of utility. The worst taste in dress is where things are put on for no purpose or use, as in the earrings, nose-rings, bangles and necklaces of savage (or civilised) wearers, the feathers on the head, and flaunting strips of gay colour, whether of wampum or ribbon, and the fringes and furbelows that one sees—now in Nubia, and now by Lake Huron, and now in New York or London. The best taste is where the genuine uses of dress are not lost sight of, and the gratification of the eye grows out of them; where the garments fit accurately and easily, and the colours are agreeable, and the texture good and handsome, and the ornaments justified by some actual benefit, such as marking outlines, as the Greek borders did, or beautifying the fastenings, or affording a relief to the limits and edges.

These seem to be the main conditions agreed upon as essential to a good mode of dress. It would appear to be a greater sin and absurdity in us than in our ancestors to dress injuriously and offensively, because the observance of these conditions is so much easier to us than to them. It is astonishing to us to discover, by thinking about it, how costly dress was to the gentry of the kingdom in the reigns of our Edwards and Henrys, and even under the last of the Charleses and Jameses. The proportion of middle and upper class incomes spent in dress must have been something far beyond what prudent people in our day would dream of. We must suppose that garments were made to last very long. With the labouring-classes we know it was so, before the days of cotton, and when linen was only for the great. In the rural cottages and artisans' dwellings throughout the land, men, women, and children wore woollen

garments, the history of which would not be agreeable to our readers, accustomed as we are in these days to think of clothes as meant to be changed every day and night, and often washed or otherwise cleaned.

The variety, the cheapness, the manageableness of clothes in our day, compared with any former time, ought to render us obedient in an unequalled degree to the main conditions of good dress. Instead of this, we see trains of funerals every year carrying to the grave the victims of folly and ignorance in dress.

How is it with regard to protection from heat, cold, damp, and glare?

The Englishman's dress seems to be, on the whole, as little exceptionable as any that can be pointed out. We are not thinking of our soldiers, dressed in tight woollen garments, stocks, and heavy head-gear in all climates and seasons alike. The mortality from that tremendous cruelty and folly is a separate item to be urged against the military authorities. Non-military Englishmen wear a costume which may be rendered warmer or cooler without losing its characteristics; which indicates the form, may fit it easily, at the wearer's pleasure; leaves the limbs free, and need press injuriously nowhere. Some years ago, we must have denounced the cravat, or stock, as dangerous; but the throat, with its great blood-vessels, and its importance as connecting the whole body with the brain, is now subject to so little pressure that we have only to hope that the relaxation will go on till there is none at all. Twenty years ago, people said, you might know a philanthropist in America by his turn-down collar, as an evangelical lady was supposed to be known in England by a poke-bonnet; but the turn-down collars, with a mere black ribbon or light scrap of coloured silk, long ago won their way far beyond the ranks of the professional friends of mankind. Those who have the sense and courage to wear the natural "comforter," which gives warmth without pressure —the beard—improve their chances for a sound throat, a clear head, and a long life. The hat is now, apparently, the only irrational part of the Englishman's dress; and so many strange devices are upon trial as a substitute for it, that we may safely leave it to the wearers to select some head-covering which shall defend the eyes and brain, be light and easy to carry, and admit air freely.

A new danger, however, has arisen with the invention of waterproof clothing. My readers may have found themselves tortured, or have seen some friend in agony, with an unaccountable tooth-ache or face-ache, coming on at the counting-house or office, day after day, and may have traced it to wearing goloshes, which people wear now as if they were meant to serve instead of shoes, whereas they are fit only for passing from place to place in wet weather. Take off the goloshes or (which is nearly the same thing) the patent-leather shoes of the children in a school or a family, and you will find their stockings all damp. Keep on your waterproof cloak at a lecture, and you will find everything you wear moist and steaming before you go out into the air again. This wear of impervious clothing, otherwise than in walking in the rain, is the cause of much ailment in these early times of the use of gutta percha. Men who wear pervious clothing at all times, except when in the rain, have really little to do in the way of dress reform.

It is much otherwise with women. Their clothing does not protect them from cold, heat, damp, or glare. Some few uncover the chest and arms under trying circumstances of heat and draught: but they are few; and they must have heard all that can be said to them in the way of warning. The great body of Englishwomen—those of the middle and lower classes—have usually some sort of covering from the throat to the hands and feet, but it is too seldom judicious in degree or quality. The modern linsey petticoats are excellent as far as they go; but it is certain that the working-women of our country are too thoroughly weaned from the woollen clothing of their ancestors. At present, too, no woman who adopts the fashion of the hoop in any form is properly guarded against the climate. Any medical man in good practice can tell of the spread of rheumatism since women ceased to wear their clothing about their limbs, and stuck it off with frames and hoops, admitting damp and draught, with as little rationality as if they tried to make an umbrella serve the purpose of a bonnet.

Then observe the head and the feet. The eyes are unsheltered from sun and wind, and the most important region of the head is exposed by the bonnets which Englishwomen are so weak as to wear in imitation of the French. Again, the doctors have their painful tale to tell of neuralgic pains in the face and head, which abound beyond all prior experience, of

complaints in the eyes, and all the consequences that might be anticipated from the practice of lodging the bonnet on the nape of the neck, and leaving all the fore part of the skull exposed.* Why the bonnet is worn at all is the mystery. A veil, white or black, would be considered an absurdity as a substitute for the bonnet in a climate like ours; but it would be actually more serviceable than the handful of flimsy decorations now usurping the place of the useful, cheap, and pretty straw bonnet, which suits all ages in its large variety. There are the hats, to be sure, which young ladies wear so becomingly. They are hardly simple enough in form for a permanence, but they are substantially unexceptionable for youthful wearers. Their advantages unfortunately tempt elderly ladies to put them on; but the class of mistaken wearers of hats is not a very large one, and we may let them pass. In praising the hat, however, I am thinking of the sort that has a brim. The new and brimless invention is nearly as bad as the bonnet for use, while more fantastic. A chimney-pot hat with a tall upright plume may possibly suit a volunteer rifle corps or a regiment of Amazons rehearsing for the opera, but it is not very English in taste.

The fearful spread of throat and chest diseases is ascribed, by those who should know best, mainly to the modern notion of muffling up the throat in furs and other heating substances. Before the boa came in, we heard little of any one of the tribe of throat diseases which we now meet at every turn. Some ladies carry a boa all through the summer, and many tie up their throats with a silk handkerchief whenever they go abroad, in all seasons; suffering their retribution in hoarsenesses, bronchitis, sorethroat, and other ailments never endured by those who cultivate more hardy habits, reserving such wraps for very special occasions. People who use cold water in some form of bath every day of the year, and who give their faces and throats to the bracing air, under the safeguard of vigorous personal exercise, forget what colds and coughs are.

As for the other point—the feet—it is to be feared that some are still sent to the grave by thin shoes. The danger of gutta-percha and patent-leather shoes has been referred to. The Balmoral boots of the day would be admirable but for the military heels. Those heels throw the foot into an unnatural posture, by which a great strain is produced. If my readers

* In 1859.

happen to be acquainted with a respectable chiropodist, let them inquire the recent news of bunions—that severest of small maladies. They will learn that there has been an unheard-of increase and aggravation of bunions since the high-heeled boots came in. The danger of falls is also considerable: and those who have a dread of a long tumble down the stairs, had better put on their boots on the ground-floor.

If we consider the female dress of 1859 under any of the remaining conditions, what can we say of it? Does the costume, as a whole, follow the outline of the form? Does it fit accurately and easily? Is the weight made to hang from the shoulders? Are the garments of to-day convenient and agreeable in use? Is the mode modest and graceful? So far from it, that all these conditions are conspicuously violated by those who think they dress well. Here and there we may meet a sensible woman, or a girl who has no money to spend in new clothes, whose appearance is pleasing—in a straw bonnet that covers the head, in a neat gown which hangs gracefully and easily from the natural waist, and which does not sweep up the dirt: but the spectacle is now rare; for bad taste in the higher classes spreads very rapidly downwards, corrupting the morals as it goes.

The modern dress perverts the form very disagreeably. The evil still begins with the stays, in too many instances, though there is less tight-lacing than formerly. It is a pity that women do not know how little they gain by false pretences in regard to figure and complexion. Our grandmothers would not have worn paint if they had been aware that it is useless after forty to attempt to seem younger—the texture of the skin revealing at a glance the fact which paint and dyed hair cannot conceal; except perhaps in the parks, or across a theatre. In the same way, the round waist produced by tight-lacing is always distinguishable in a moment from the easy oval form of the genuine small waist. Compare the two extremes, and you will see it at once. Compare the figure of the Graces of Raffaelle, or the Venus de Medici, with the smallest and most praised waist in a factory, and observe the difference. Before the glass, the owner of the latter sees the smallness in front, and fancies it beautiful; but it is disgusting to others. It is as stiff as the stem of a tree, and spoils the form and movement more than the armour of ancient knights ever did; and we know what is going on within. The ribs are pressed out of their places, down upon

the soft organs within, or overlapping one another: the heart is compressed, so that the circulation is irregular: the stomach and liver are compressed, so that they cannot act properly: and then parts which cannot be squeezed are thrust out of their places, and grave ailments are the consequence. At the very best, the complexion loses more than the figure can be supposed to gain. It is painful to see what is endured by some young women in shops and factories, as elsewhere. They cannot stoop for two minutes over their work without gasping and being blue, or red, or white in the face. They cannot go upstairs without stopping to take breath every few steps. Their arms are half numb, and their hands red or chilblained; and they must walk as if they were all-of-a-piece, without the benefit and grace of joints in the spine and limbs. A lady had the curiosity to feel what made a girl whom she knew so like a wooden figure, and found a complete palisade extending round the body. On her remonstrating, the girl pleaded that she had "only six-and-twenty whalebones!"

Any visitor of a range of factories will be sure to find that girls are dropping in fainting-fits, here and there, however pure the air and proper the temperature; and here and there may be seen a vexed and disgusted proprietor, seeking the warehouse-woman, or some matron, to whom he gives a pair of large scissors, with directions to cut open the stays of some silly woman who had fainted. Occasional inquests afford a direct warning of the fatal effects which may follow the practice of tight-lacing; but slow and painful disease is much more common; and the register exhibits, not the stays, but the malady created by the stays as the cause of death. That such cases are common, any physician who practises among the working-classes will testify.

Do the petticoats of our time serve as anything but a mask to the human form—a perversion of human proportions? A woman on a sofa looks like a child popping up from a haycock. A girl in the dance looks like the Dutch tumbler that was a favourite toy in my infancy. The fit is so the reverse of accurate as to be like a silly hoax—a masquerade without wit: while, at the same time, it is not an easy fit. The prodigious weight of the modern petticoat, and the difficulty of getting it all into the waistband, creates a necessity for compressing and loading the waist in a way most injurious to health. Under a

rational method of dress the waist should suffer neither weight nor pressure—nothing more than the girdle which brings the garment into form and folds. As to the convenience of the hooped skirts, only ask the women themselves, who are always in danger from fire, or wind, or water, or carriage wheels, or rails, or pails, or nails, or, in short, everything they encounter. Ask the husbands, fathers, or brothers, and hear how they like being cut with the steel frame when they enter a gate with a lady, or being driven into a corner of the pew at church, or to the outside of the coach, for want of room. As for the children —how many have been swept off pathways, or foot-bridges, or steamboat decks by the pitiless crinoline, or hoops of some unconscious walking balloon! More children have been killed, however, by the extension of the absurd petticoat fashion to them. For many months past, it has been a rare thing to see a child under the tunic age duly clothed. The petticoats are merely for show; and the actual clothing, from the waist downwards, is nothing more than thin cotton drawers and socks, leaving a bare space between. For older boys there is a great improvement in dress—the tunic and loose trousers being preferable in every way to the stiff mannish tailed coat and tight trousers of half a century ago. But the younger children are at present scarcely clothed at all, below the arms; and the blue legs of childhood are a painful sight, whether in a beggar boy or a citizen's son. Even in such a climate as Sierra Leone there is something forlorn in thinking of the lady's maid in a great house wearing (and possessing) nothing more in the way of clothing than a muslin gown and a blue bead-necklace (on an ebony throat, of course), but in winters like ours to see children's legs covered with nothing better than thin cotton (thin, because the ornamentation is the vanity), is in fact reading the sentence of death of many victims. Let it be remembered, too, that the neuralgic, rheumatic and heart diseases thus brought on are of a hereditary character. The wearer of crinoline and invisible bonnets, in incurring such diseases herself, renders her future children liable to them; and the children now bitten by the wintry winds, if they live to be parents, may see their offspring suffer from the ignorance and vanity of their own mothers. It is universally observed that certain diseases are becoming more common every year—neuralgia and heart disease, as well as the throat ailments of which we hear so much. It would be a great

benefit if we could learn how much of the form and the increase of maladies is ascribable to our modes of dress.

What is to be done? Will anything ever be done? or is feminine wilfulness and slavishness to fashion to kill off hundreds and thousands of the race, as at present? I see, with much satisfaction, that the Messrs. Courtauld, the great silk manufacturers in Essex, have put up a notice in their factories, that a fine is imposed on the wearing of crinoline by their workwomen. The ground of the regulation is, that the work cannot be done with either decency or safety in that kind of dress. I hope this example will be followed in all mills and factories where the same reason can be assigned. There are whole societies in America who do not see the necessity for such mischief, and who hope to put an end to it—in their own country at least. The Dress-Reform Association of the United States was instituted some years since by women who refused the inconvenience of Paris fashions in American homesteads: and they have been aided, not only by physicians, but by other men, on the ground of the right of women to wear what suits their occupations and their taste, without molestation. The dress which was long ago agreed upon, after careful consideration—the so-called Bloomer costume (not as we see it in caricature, but in its near resemblance to the most rational English fashion of recent times)—is extensively worn, not only in rural districts, but in many towns. It seems to fulfil the various conditions of rational, modest, and graceful dress better than any other as yet devised for temperate climates; and if so, it will spread, in spite of all opposition.

What opposition it met with here is not forgotten at home or abroad, and never will be forgotten. Some of our highest philosophers and best-bred gentlemen were more indignant and ashamed than perhaps anybody else. They said that we constantly saw Englishmen angry and scornful because of the indignities cast by Mussulman bigotry on the dress of Europeans in Damascus and Jerusalem; but here were Englishmen doing the same thing, without equal excuse, when Englishwomen proposed to adapt their dress to their health, convenience, and notions of grace. The aggressors triumphed. They induced outcast women to adopt the dress, and stamped it with disrepute before it had a chance of a trial. It was an unmanly act; and if those who were concerned in it have since suffered from the

extravagance of wife and daughters, or from sickness and death in their households, which might have been averted by a sensible method of clothing old and young, they have had their retribution. Some of our newspapers are rebuking others for meddling with the women's choice of fashions—quoting the rebuke sustained by the old "Spectator" on account of that line of criticism: but it is an affair which concerns both sexes and all ages. What hinders a simple obedience to common-sense in the matter? It is only for the women of those classes who really have business in life to refuse to encumber themselves with tight, or heavy, or long, or unserviceable dress, and to adhere to any mode which suits them; and then, whatever the idle and fanciful may choose to do, the useless mortality will be mainly stopped, and the general health prevented from sinking lower. It may be confidently avowed that in this way only can women win back some of the respect which they have forfeited by the culpable absurdity of their dress within the last few seasons. From the duchess to the maid-servant, the slaves of French taste have lost position; and it will require a permanent establishment of some leading points of the sense and morality of dress to restore their full dignity to the matronage and maidenhood of England.

CHAPTER VI.

HOME OR HOSPITAL?

Among the whole range of human enterprises, there is scarcely perhaps a pleasanter one for ordinary people than building a house. Building a house to live in, or to put some friend into, I mean; for there is nothing particularly interesting in the speculator's business of erecting houses by the dozen, or the row, or the block, without knowing who will inhabit them.

There is all the difference in the world between the two methods. I need not describe the dreary spectacle of the rows of unfinished or empty houses in and near London—places where the damp is spreading through for want of the warmth of life within; where vagabonds get in for shelter, knowing that nobody is likely to come there but people like themselves; and

where all the cats, rats, and mice of the neighbourhood can make as much racket as they please. The police may look in occasionally in pursuit of thieves, or at the request of some timid resident in the nearest house ; but nobody has really any business there, and certainly nobody any pleasure. There is no gratification in such house-building as this.

The case is no better in those manufacturing towns where it was the rage, at one time, to speculate in dwellings for a rapidly-increasing operative population. It was enough to sink anybody's heart to see the builders' men at work upon a dozen or a score of cottages in a block. The main object seemed to be to save land, bricks, and money. The dwellings were all alike, standing back to back, so that one wall, without an inch of opening, formed the back-wall of the whole lot. Only the end houses could ever have openings on the side, and each of them on only one side. The others had a door and two or more windows in front ; and that was all the ventilation provided. Living there was being shut up in a box like a baby-house, with only a bit of the front moveable. Only one chimney to each ; windows not made to open, or with perhaps one small pane turning on a hinge ; and no fire-place in any bed-room: such was the provision made for the breathing of a whole family. The families themselves were too little aware that it is a poisonous practice to live even in large and lofty rooms which have not openings for the perpetual renewal of the air. They did not understand that their wretched feelings in sleep, and on waking, were owing to their having breathed poisonous air during the night ; and so the tenants made no objection to the cottages on that score.

They were more aware of the injury done them by the absence of a proper foundation for the houses. The walls were scarcely inserted in the clay soil, which was left just as it was, undrained, untouched, with the brick-floors slightly rammed down into it, or a wooden flooring merely laid upon it. The damp which crept up the walls and kept the bricks wet, or the boards rotten, was a palpable evil enough ; and the tenants lamented it ; but they did not see, nor their landlord either, how anything could be done ; and there the place rotted, and the people in it. The houses were built to last only a few years, and to be going to pieces during the whole interval ; but the people decayed so much faster, that there was a long series

of funerals from the doors before the roofs fell in, and the walls crumbled down.

That was a long time ago. The subject happily is better understood now. From rickety dwellings run up to serve a single generation, let us turn to houses which will last a thousand years.

By houses which will last a thousand years, I do not mean any great baronial castle, or even the most substantial manor-house that any ancestor of our generation ever erected. I am thinking of the dwellings, for gentle and simple, which are built every year in those districts of the country in which stone is the material. In the mountainous parts of the kingdom, very few ruins of human dwellings are seen; and such as there are would be sound and substantial houses again if they were roofed and fitted up. The walls are two or three feet thick, and there seems to be no reason why they should not stand for ever, if the foundation is good. The principle of building is the same for the most part in regard to the handsomest and the humblest abodes; and the pleasure, I suppose, is much the same, both in kind and degree, of seeing the future dwelling rising from the ground, and assuming the appearance which it is to have for generations to come. In districts where the land is level, the soil clay, and the houses of brick, the highest policy of building is to emulate, as nearly as possible, the advantages and virtues of the stone regions; and the towns and villages of our mountain districts ought therefore to be models of the art of healthy living in respect of habitation.

In such places there is usually an express aim in building a house, large or small. It is built, not for the chance of letting or selling, but for some particular inhabitant or class of inhabitant. There is probably a scarcity of dwellings, and the new one is meant to accommodate somebody who is waiting, or any one of a dozen families who are known to be wretchedly crowded. In such a case, the first stage is of hope and fear about getting ground to build on. This is a sore point in many rural districts, and a very expensive part of the business in the towns. It is a painful thing to see, in many a glorious valley, and in many an old-fashioned country parish, that ground can always be had for building mansions, but never for cottages. A great lady, perhaps, who owns half a parish or a whole one, permits no house to be built except on the site of a former one, however populous

the neighbourhood may be growing. A tradesman who has a chance to build a house on a lot among others, makes haste to buy up the other lots, or to plant out any cottages which he cannot suppress. Nobody will sell land for building, for fear of the frown of the squire or the parson. But by patient watching land is obtained, sooner or later; the tiresome and expensive forms of conveyance are all gone through, and the building may begin.

The first marking out of the plan of the dwelling on the sod is charming. Children and inexperienced persons cannot understand it, so small do the divisions look. It is like a doll's house, they say; and the only way to convince them that the thing is true, is to put half-a-dozen persons on the plot meant for the sitting-room, and show them there is room to turn about.

When the final study of the outline is gone through, to make sure that there is no fatal mistake, no crying inconvenience or blemish; and when the first sod is turned by some valued hand, there is an end for a time to the prettiness of the business. The foundations make a great mess. Ere long, however, the walls begin to rise; and one stage seems to have been reached when the spaces for the windows appear. Not many builders of family houses are so indifferent as Mr. Day, the author of "Sandford and Merton," who was too indolent to leave his book, and decide on the distances between the windows of his dining-room when the workmen were waiting. He ordered that the walls should be built up without regard to windows, and he would have them cut out afterwards. He never roused himself to the task: the room was unused, except as a lumber-room, and was never entered without a light. People less eccentric take pleasure in standing at the window-places and looking abroad, to fancy how the view will appear under all changes. When the roof-tree is laid on, it is a real festival. The workmen have a bottle of wine; and the wish for many happy years under that roof-tree goes merrily round. Perhaps there are pleasanter moments still to come, during the work. From some hill-top, or from the other side of the valley, there may be an unexpected sight of smoke rising from the chimney. The workmen are melting their glue over some shavings in what is to be the fireplace; and the blue curl or pillar of smoke looks as homelike and hospitable as if there were really a fire-side. Perhaps the evening sun gleams upon the windows, seen

from afar, but only just put in, in fear of rain in the night. These things are pleasant; and so it is to stand at the edge of the abyss where the floor is to be,—or to step from beam to beam, trying to conceive of the room warmed and lighted, and shut in for the winter evening,—all cleanliness and comfort: and so it is to climb the ladder before the staircase is up, to study the view from the chamber windows, and satisfy one's self once more as to the height and size of the rooms. As for the finish of all, when the house is habitable, and taxpaying day is past, and you have seen in the twilight the bedsteads coming down the hill, and have stirred up the fire, and set the kettle to boil while the beds are made up, and mustered chairs enough round the family tea-table, and lighted the lamp, and drawn down the blinds, and locked the door, and sat down to rest in your new house, and then go to bed, watching the light of the embers on ceiling and walls (for there must be a fire in the bed-rooms at first) till you drop asleep, the experience is one of the most agreeable that a person of domestic tastes can enjoy.

This kind of pleasure is common, as I have said, to gentle and simple. At each stage that I have described the dwelling may be a mansion or a cottage. And it is true throughout, that the essentials of a wholesome and agreeable abode are the same through all ranks of habitations. They are plain: they are easily attainable; they are universal: and yet it is a miserable truth that tens of thousands of persons in our country are killed every year by the imperfections of the dwellings in which they live. It would be easy to show the way in which this chronic murder goes on; but we need not afflict ourselves with the thought of damp, closeness, dirt, and the disgust and disease which arise from these, if the purpose is answered as well by studying the conditions of wholesome habitation.

These universal conditions are sufficiently obvious. They are included under four heads:—Soil, Air, Light, and Water. The sovereign and the ploughman have an equal interest in these particulars of their dwelling; and if all is right under these four heads, the terms of human life lie pretty fairly and equally divided before the one and the other. They will be more equal in the possession of health and domestic comfort than they can be superior and inferior in other circumstances of outward fortune.

First comes Soil. It is a grave disadvantage to have to live upon clay. Rock, slaty soil, and gravel, are good; and clay is bad. The worst effects may be palliated by extreme care in drainage; but nothing can altogether compensate for a soil which will not let water run through it and away. Every order of house, built on any kind of soil, and especially on clay, ought to be hollow and well ventilated under the living rooms. If there are cellars, those cellars ought to be as airy as any room in the house. In the case of humble dwellings which have no cellars (but I never could see why they should not), there should be a space of at least two feet left under the floor; and a ventilator back and front to each space should be inserted in the walls,—to stand open except when heavy rain or floods may render it necessary to close them. This secures the floor from damp, and from exhalations from below.

It is some years now since the conviction began to spread that the outer walls of houses ought to be double or hollow. In the regions of rough stone dwellings this was, I believe, always the practice. The oldest mountain cottages seem to be like the newest in having walls two or more feet thick—the outer and inner courses of stones being laid with mortar, and the space between filled in with rubble. This is the way to have dry walls; and, when once warmed through, a dwelling impervious to cold, as far as the walls are concerned. The work must of course be good. The case is just that of an American log-house. If the filling-in between the logs is properly done, no dwelling is so warm in winter and so cool in summer: but if crevices are left, there is nothing to be said for the comfort. In the same way, I know some cottages on a hill-side which are as comfortable as any mansion in the county, while within a few yards are others in which the surgeons cannot carry their patients through an illness, on account of the bitter cold from the ill-compacted walls.

Where the soil is rocky the roofing is of slate; and much of the flooring also. In such districts the kitchens, cellars, yards, and back passages are floored with slates: and no material can be better for dryness and cleanliness, though a bit of carpet is needed in winter evenings.

A house thus built, whether palace or cottage, is secure from damp, provided the walls have not been saturated with wet in the course of erection; that every loose slate on the roof is

immediately replaced; and that the spouts are watched and kept in good order.

In some parts of the country thatch still exists, and is even renewed when cottages, farm-houses, and barns need a new roof. Elsewhere, tiles are the materials. Tiles, formed to carry off rain to the spouts, and well laid, are unexceptionable. Thatch has every fault that roofing can have. It rots with the wet, and admits it to the ceilings: it harbours vermin, and it is liable to fire. Any one who has seen how, in certain Dorsetshire cottages, the family huddle in the corners to escape the droppings of stinking thatch, needs no convincing of the superiority of any other kind of roofing.

As for the next condition—AIR—the main point is to have a constant circulation of it throughout the dwelling, without draughts on the person. The circulation should therefore be underfoot and overhead. The underfoot provision has been noticed. As for the other, the case has no difficulty in it; and no expense is involved which need place the poorest tenant at a disadvantage.

There must be a door and windows back and front. There must be a back-door, if any neatness is to be preserved in the front; for the washing and other domestic business should be done in the rear: the stairs should have some opening to the outer air; and if there are three bedrooms (and no family house ought to have less), one at least must be at the back. There is therefore a free course for the air through the house.

Next, each separate room should have an equally free circulation. Sash windows, which open at the top as well as the bottom, are better than lattices; for you can always open them more or less without letting in rain; which you cannot do with lattices. Moreover, lattices, when not perfectly new, let in wind at every pane: so that the candle flares and wastes, and you sit in a draught; whereas the inch or two open at top of a sash window gives you plenty of air overhead at pleasure. In every room there should be a fireplace—for ventilation at all times, and in readiness for days of sickness. Every room should also have a slit over the door, or an opening high up into the chimney, or both. There will thus be a perpetual flow of good air into the room, and of spoiled air into the chimney, without any sensation of cold to those sitting below, who will feel that glow of health which cannot be matched by any heat obtained by stifling means.

Under the head of Air comes the consideration of drains: of those drains which carry away the sewage. Not a foot of such drains should pass under any part of the house. The arrangements should be so planned, that everything noisome should be kept outside, and at once carried away. In the humblest cottage there should be a bit of roof behind,—a lean-to, or a roofed morsel of yard where the dish-washing should go on, and the cabbage-water be poured away into the drain. If there is to be health, there must be no muck-heap—no spilling of evil-smelling things upon the ground; and, if possible, no cesspool. Sooner or later, the soil about cesspools becomes foul, and mischief arises. Some natural slope must carry away all refuse to a safe distance: or an artificial one, with proper channels, must be created.

It is of great importance that some place should be provided for drying the household clothes. In the country, where land is not of such unconscionable value as in some towns, it is really no appreciable sacrifice to the proprietor to afford with the cottage a slip of ground in which potatoes may grow below, and shirts, and petticoats, and blankets dry in mid-air. In towns there will soon, we may hope, be wash-houses and drying-closets for all housewives who can bring their twopences,—the small insurance against bad washing, damp, and illness at home. It would terrify us to know how many persons of all ages have sickened and died from the atmosphere of rooms where half-cleansed clothing has been hung up to dry, day and night, in the midst of the family. The drying-room in towns, and the garden in the open country, ought to preclude such mischief in future.

This consideration of space comes under the head of Air, in regard to all dwellings. It is difficult to understand why the rooms of houses in rural districts are ever made too small, though the reasons for that evil in towns, where every foot of space is an expensive commodity, are clear enough. It makes a difference of so little money in building a cottage, whether the enclosed area is three or four feet longer and broader or not, or whether the rooms are six feet or eight feet high, that there ought to be no hesitation, when it is once understood that the due supply and renewal of air depend on that addition to the space.

While considering the supply and quality of the Air in a habitation, we naturally think more of the town than the country. It is true that a labourer's cottage may be infested with bad smells, if slops and refuse are thrown down near the

house, and if the windows are not opened, and the bed-rooms have no chimney, and the place is in bad repair; but still the town seems to be the natural place for closeness and foul air. It is so; but we must not think only or chiefly of blind alleys and streets of low lodging-houses, if we are studying the causes of our undue mortality. There are great houses almost as unhealthy in part as any lodging-house in London. Very high rents are paid for dwellings where three or four reception-rooms make a great show, and are, in reality, very comfortable, luxurious, and wholesome,—with their windows down to the ground, and their large fire-places and lofty ceilings. But how is it with the rest of the house? There is perhaps one pretty good bed-room on the first-floor for guests. On the second-floor the space is cut up into little chambers where the four-post bed occupies half the room, and you may almost touch the ceiling. Above are attics where you touch the ceiling in putting on your coat or your gown, and where ladies who spend the day in the capital rooms below are frozen at night in winter, and cannot sleep in summer for heat, just under the tiles. As for the servants (at least the men-servants) they sleep underground amongst the blackbeetles,—it being a great curse to them that the beetles are the liveliest when human beings want to sleep. I am told that there is scarcely a basement-story in London clear of them: and I know of some which are so infested that it is shocking to think of servants ever being expected or desired to sleep in their neighbourhood. If there is occasion to take down the front of the kitchen fire-place, there are the black-beetles, making an embossed surface, shining and uniform, from their being packed as close as they can stand. When the lights are extinguished, out they come, from every crack, crevice, and join, and over-run everything, and the faces of the sleepers among the rest. The world in general believes that they might be got rid of: and the world in general will have a higher opinion of footmen and other servants when they refuse to sleep in any underground place.

By far the greater part of the disease that exists in the world, and especially the great class of epidemics, by which more persons die than from all other causes together, is the direct consequence of a want of good air. The subject is much too vast for this place; and I have only just touched upon the means by which the vital element may be duly provided in private dwellings.

Where there is plenty of air it may be thought that there will be abundance of LIGHT; but this does not necessarily follow. There are well-aired houses which have a bad aspect. I have one in my mind's eye now, where there is abundant ventilation; but where the health of a large family has certainly been injured, for a whole generation, by the absence of sunshine. The only rooms in the house which admit sunshine are precisely the two which least want it—the kitchen and the laundry. Enough is known now of the special diseases which attack persons who live in dark and sunless places, to show the duty of considering aspect in building the humblest cottage in the kingdom. Its windows must be turned to the sun (south-west, or south-east, if due south is inconvenient), at any cost of other considerations. If there are housewives so short-sighted as to complain of the fading of furniture, let them be shown that the cost of new curtains and carpet, or drugget, is paid over and over again by the saving in doctors' bills and physic. There is something more than the simple warmth which blesses us in the sun's rays. They have a vital influence which we may not yet fully understand, but which scientific men have ceased to doubt of; while darkness creates cretinism, and a whole train of diseases, some entirely special. A medium condition, one of an abode open to the daylight, but deprived of sunshine, produces the modified effect—of a depressed condition of health, liable to attacks of grave disease from slight apparent causes. We have no window-tax now; and it is a sin to build any kind of new abode without providing for the sun shining well into it.

The remaining consideration is WATER, on which it cannot be necessary to say much. Yet I have seen model cottages, built with generous care and pains, where the respectable tenants could not stay because of the difficulty about water in summer, and at any possible moment. It was a part of the country where water did not abound; and wells were expensive from the great depth required: so the labouring class were dependant on the precarious brook and the ditches. The brook occasionally shrank into a series of muddy pools of warm water, or dried up entirely; and the ditches were no better. The difficulty of washing the children and the clothes, together with the daily cookery, was so great, that the tenants surrendered all the unusual advantages for the sake of the one great requi-

site, without which the children could not be kept healthy, nor the men sober. I have seen in mountain districts, where water was gushing from every upland, and every place was a slope in one direction or another, whole villages living in dirt and bad smells, and the women toiling up the hills with tubs and cans, to bring water, which was consumed more grudgingly than beer, from the labour that it cost to get it. I have seen the sacrifice at which girls have been employed to bring water from some distant pump; the headaches, the sore eyes, and the loss of time and increase of gossiping propensities; and I have seen the effect of the simple operation of searching for water close at hand, and opening a well at the rear of a row of houses which might as well have had that comfort all along. The water-supply, then, is one of the first considerations in taking or building a house.

These main conditions apply to all kinds of houses; and there is, indeed, little to be said about the differences between stone and brick houses, or large and small ones, or rich and lowly ones. Brick houses are now built with hollow walls, and ought always to be so built henceforth. The invention of hollow bricks is a truly beneficent one; and the effect will appear, whether it is marked or not, in the reduction of the Registrar's list of annual deaths.

The practical question remains,—How our ever-growing population is to be better lodged? The crowding is dreadful, in every town and village, and in almost every cottage; and the perpetual destruction of dwellings where room is wanted for improvement, seems to intensify the mischief. On the other hand, Model Lodging-houses are on the increase in great cities; and in rural districts the condition of the labourer is certainly rising, because his value is greater, and more freely acknowledged. Such men as the Duke of Bedford having begun the reform of labourers' dwellings, the improvement is likely to spread; and when the profitableness of enabling peasants to live near their work, in health and comfort, is once discovered, the welfare and convenience of the peasant are likely to meet with due consideration. In towns, it is only necessary for Model Lodging-houses to be ascertained to be a good investment for money. If they really are so, as seems to be the case, they will take care of themselves, and their tenants will appreciate their privileges. Meantime, if the real cost of providing good

dwellings for working-men's families were better understood, there would surely be a more adequate supply of them. The estimates differ, of course, in different parts; but it may be said that there are few places in England where a substantial cottage of four rooms may not be built for 60*l.* Built in pairs, each costs rather less; and for 120*l.* for the pair, further conveniences can be afforded. If well built, there will be scarcely any repairs wanted,—at least in the regions of stone buildings; and five per cent. on the outlay might cover the ordinary interest of money and the repairs. Or say, for such a cottage, a rent of 3*l.* 10*s.* or 4*l.*, to include the ground it stands on;—it would be willingly and thankfully paid in any part of England where the labourer was worth hiring; and it is, in fact, a lower rent than is paid in most of our agricultural counties. Will not young gentlemen and ladies who have plenty of time, and a few hundreds to spare, and not enough to do, give themselves the amusement and pleasure of building some cottages, in the best known way, where they are urgently wanted? After all is said of the badness of cottage property as an investment, I am as thoroughly convinced as ever that, when well managed, it is an expenditure and trouble which will never be repented of in later days when the issues of life's enterprises come to be gravely reckoned up. It is something to have lost no money; it is more to be aware that hard-working people have had a wholesome and agreeable resting-place in their home: but what is it to know that some young creatures, who would otherwise have made a row of hillocks in the churchyard, are getting on at school, or taking pride in "going forth to their work and to their labour until the evening?"

On the question of Building Societies I cannot now enter. It is emphatically true of that question, that there is much to be said on both sides. I happen to have seen the favourable side: but I have heard a good deal of the other. As long as it is true that, in the long run, men pay rent to twice or three times the amount that would build them a house of their own, it seems rational and desirable that they should combine their resources for the obtaining of dwellings as a family property: and many have prospered in the attempt. But the ordinary dangers of ill-considered assurance hang about such societies; and so do speculators, who make a profit of the simple members. At the moment, I can only say that the sickness and death rate

of our great nation will be prodigiously lowered whenever any considerable portion of the working-classes shall be living in abodes which are their own property; and that the surest and speediest way to that issue is doubtless by means of the economy of association; but association for that particular object is at present particularly unsafe, except in some very favourable instances. The aim is an admirable one for the working-man; and in the case of well-regulated associations for erecting Metropolitan Lodging-houses, the danger is little or nothing: but in provincial towns and rural districts, a prudent man will inquire well, and make himself sure about the parties and the management (including the bases of calculation), before he puts his savings into the funds of a Building Society. Having found reason to make that investment, and got a house of his own over his head, free from debt, and with no more rent to pay, he may look round on his healthy children with all imaginable satisfaction.

CHAPTER VII.

THE COST OF COTTAGES.

After the appearance of the last chapter, I was requested from various quarters to relate such facts as I can furnish on the subject of the cost of cottage-building. I cannot explain, nor understand, the statements of some of these applicants as to the cost of good dwellings for labourers; and the wide difference between their estimates and my own experience, and that of several persons who have built cottages in various parts of the country, seems to show that there may be great use, if no great beauty, in a matter-of-fact account of what has been done, and may be done any day.

I have built five Westmoreland cottages, the specifications of which, and the receipted bills for which, lie before me now.

The first was a dwelling for my farm-man and his wife—without children. It was built in conjunction with a wash-house for my own house, and a cow-stable for two cows, with all appurtenances. The cottage consists of two good rooms on the ground-floor, with two large closets—one used as a pantry, and the other containing a bed on occasion. The wash-house has

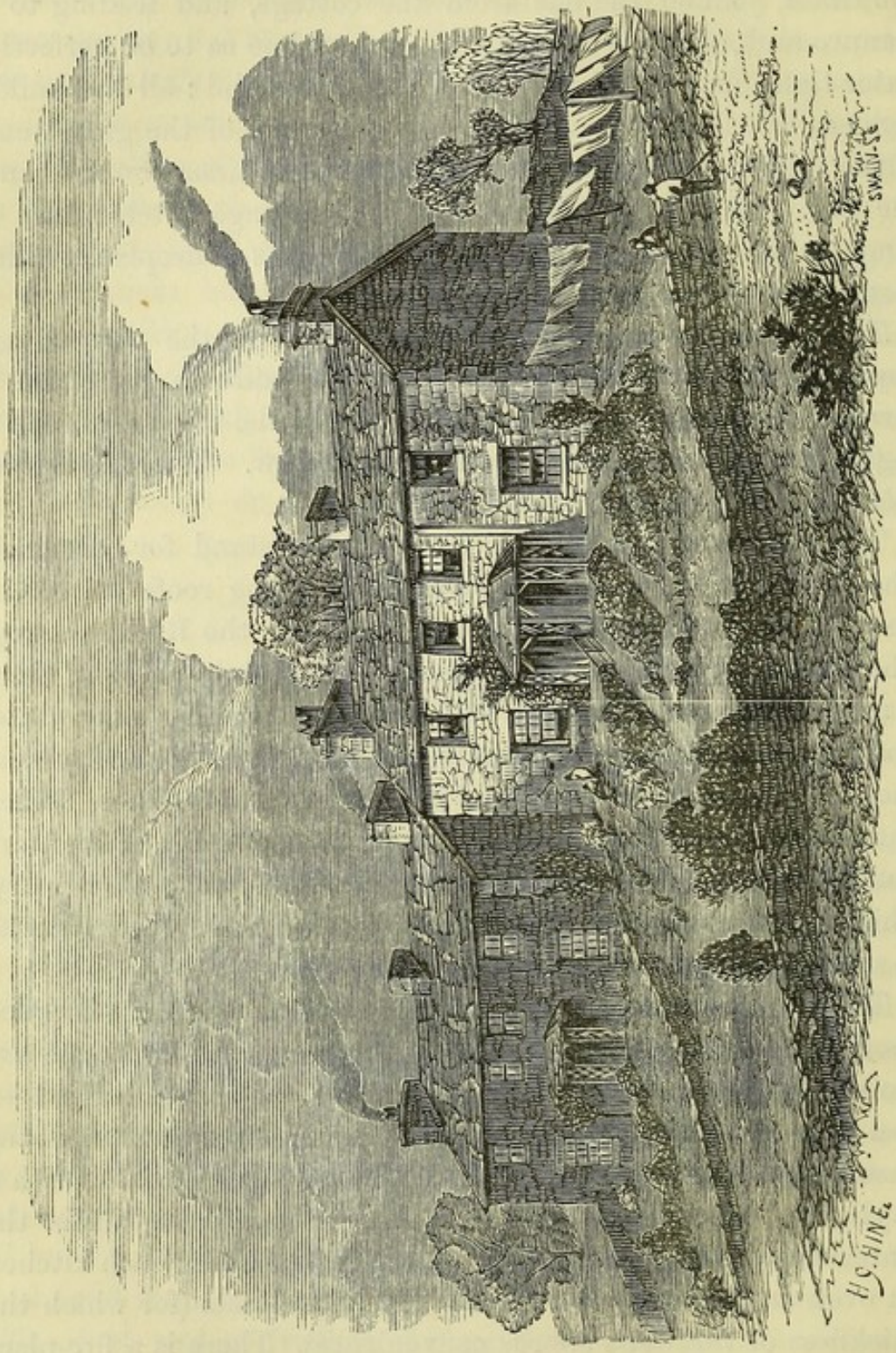
the usual fittings—boiler, pump, and sink, and all conveniences. The cow-stable has stalls for two cows, and a smaller one for a calf: two windows in the walls, and one in the roof: a gutter and drain, joining the one from the cottage, and leading to a manure-tank, which is flagged and cemented so as to be perfectly water-tight, and closed with a moveable stone lid: all the buildings are two feet thick in the walls, which are of the grey stone of the district—mortared in the outer and inner courses, and the cavity filled in with rubble. The cottage kitchen has a range, with an oven; and the bedroom has a fireplace. The cost of this group of buildings was 130*l*.

The other cottages are, however, more in the way of my inquiring correspondents. The four are built in pairs, on a terrace, with a space of a few feet between the two pairs, and a flight of broad steps leading up from below. There is a good piece of garden ground to each cottage.

The walls are two feet thick, and may stand for centuries The foundations are on excavated rock. The roofs are of Coniston slate, and the corner-stones are from the Rydal quarry. The woodwork being properly seasoned, and duly painted, there is no call for repairs beyond the occasional painting and white-washing, and replacing of a slate now and then in stormy weather. A more durable kind of property can hardly be. When once warmed through, these dwellings, if well built at first, are warm in winter and cool in summer; and they are perfectly dry, which is not always the case with houses built of stone in blocks —some kinds of stone absorbing moisture.

The kitchens and passages are flagged. One pair has a boarded floor in the sitting-room; the other is flagged. Boards are usually preferred. Each cottage has two out-houses behind—a coal-shed and privy (with a patent water-closet apparatus)—the passage between the house and out-houses being roofed with a skylight. There is a cistern in each roof to afford a fall for the water-closet. Each dwelling has a pump and sink; each kitchen an oven and range; each house has two closets (for which the thickness of the walls affords convenience). There is a fire-place in every room; a fanlight over the kitchen door; a window (to open) on the stairs; a dresser in the kitchen, and shelves in the pantry. Each cottage has a porch, like most dwellings in this part of the country, where the protection of a porch to the house-door is needed in stormy weather.

Such is the character of my cottages. As for their contents —the ground-floor consists of a kitchen, a good-sized, light, cheerful sitting-room, and a pantry under the stairs. In one



pair, the living-room is 12 feet 8 inches long by 11 feet 3 inches broad, and 7 feet high. In the other pair, the same room measures 15 feet in length by 12 in breadth. The respective kitchens are 10½ feet by 10, and 12 feet by 10. Up-stairs there are three bedrooms, one of which is convenient for a

double-bedded room. The estimate in the contract was 110*l.* per cottage; but some of the conveniences above mentioned were an after-thought, and cost 7*l.* per house. Thus, the total cost of each dwelling was 117*l.* The tenants pay no rates, but a rent of 7*l.*, including the garden ground. These dwellings are in great request, and therefore inhabited by a superior set of tenants, who have, for the most part, done justice to their healthy and cheerful abodes by keeping them clean. They pay their rent half-yearly; and this last Martinmas all had paid before the rent-day arrived.

The nearest cottage to these is one built by a friend of mine, containing a sitting-room with a kitchen-range, a back-kitchen and out-house; and two bedrooms above, each with a fire-place. Cost, 100*l.* Rent, 5*l.*, exclusive of 5*s.* for garden-ground.

I observe that I have been blamed for lending any countenance to the erection of cottages containing less than three bedrooms; but I do not see why the labouring class should not be provided like every other with dwellings suitable to their means and convenience. I have seen old people, and a pair of sisters, and married people without children as much distressed for want of a cottage with three or even two rooms, as families for want of one with five. Let dwellings of various sizes be provided; and let the proprietors select their tenants well.

Ambleside is noted for its building arts, insomuch that its workmen (called "wallers" and "slaters") are sent for from Manchester, Liverpool, and even, as I am told, London. The wages of the "wallers" or masons, are 4*s.* a-day; and of labourers, 15*s.* a-week. The builder of these cottages, Mr. Arthur Jackson, turns out thorough good work. It was from him, as well as from another good builder, since dead, that I learned that in this place a substantial cottage of four rooms can be built for 60*l.*—as I know it can elsewhere. I have now applied again to Mr. Jackson for estimates; and he says that he can undertake to build for 60*l.* a house of four comfortable rooms, with a pantry under the stairs, and a fire-place in each room. For 100*l.* he would build one with five rooms, three above and two below, with a scullery. He has never built in brick, because no bricks are seen here, except the few imported for the backs of fire-places; but he is disposed to think he could build at the same cost in a brick country. Some evidence which I have just received confirms his opinion.

Here is an account of three superior brick cottages lately built in the neighbourhood of Manchester. Each contains the same amount of in-door accommodation as my cottages. The dimensions are:

The "house-room"	15½	feet by	12 feet.
The kitchen	9	,,	10 ft. 2 in.
The pantry	9	,,	5 feet.
Chief bedroom over the "house-room."			
Two other bedrooms, each	9	,,	7 ft. 7 in.

The cost is, in detail, as follows:—

MATERIAL.	£	s.	d.
Bricks	37	0	0
Flags	17	0	0
Mantelpieces	6	10	0
Slates	30	0	0
Laths, hair, and lime	16	0	0
Timber	40	0	0
Chimney-pots	1	10	0
Nails and ironwork	17	0	0
Total	£165	0	0

LABOUR.	£	s.	d.
Bricklayer	36	0	0
Slater	7	0	0
Blacksmith	7	0	0
Plumber	29	0	0
Painter	24	0	0
Joiner	32	0	0
Carting, &c.	27	0	0
	£162	0	0
Material	165	0	0
Total	£327	0	0

Or 109*l.* each. The proportions being preserved, it appears that in Manchester, as here, a good cottage of four rooms, without accessories, can be built for 60*l.*

Mr. Bracebridge published a notice, some two years since, of some labourers' cottages built for him twenty years before, which had stood well, and appeared advantageous enough to recommend afresh. A row of six dwellings, admitting of a common wash-house and other offices, can be built for 500*l.*,—their quality being as follows:—

House-room, 13 feet by 12; a chief bedroom over it, of the same size. A second bedroom, smaller by the width of the stairs, is over the kitchen and pantry. By spending six guineas more, a room may be obtained in the roof, 12 feet by 8, and 8

feet high, lighted from the gable, or by a dormer window. The detailed account may be seen in the "Labourer's Friend" for November, 1857 (p, 180), and further particulars in a letter to the same publication, dated March 13th, 1858.

The fullest account that I know of, and on the largest scale, of the cost and rent of cottages, is contained in the *Report of the Poor-law Commissioners on the Sanitary Condition of the Labouring Classes, in* 1842. The date is rather old; but such change as has taken place in the last seventeen years is in favour of cottage-building, as a speculation, as well as in the quality of the dwellings. The economy, as well as the sanitary condition, is better understood.

At p. 400 of that Report there are tabulated returns from the officers of twenty-four Unions in the manufacturing counties, in which we see (among other particulars) the cost of erection and the rent of three orders of cottages. I can here cite only the extremities of the scales. The lowest order of dwellings, yielding a rent of 3*l.* 5*s.* per annum, cost originally from 28*l.* (at Stockport) to 60*l.* (at Glossop).

The next order, yielding a rent of 5*l.* 15*s.*, cost from 40*l.* (at Uttoxeter) to 90*l.* (at Burslem and Burton-upon-Trent).

The best class, yielding a rent of 9*l.* 2*s.*, cost from 75*l.* (at Salford) to 155*l.* (at Derby).

At pp. 401 and 402 of the Report, there is a long list of the same particulars, with the cost of repairs, in regard to rural cottages in England and Scotland. The cost of four-roomed cottages varies astonishingly, being as low as 20*l.* and 25*l.* in Bedfordshire and Cheshire, and as high as 180*l.* in Suffolk. The greater number are set down as between 40*l.* and 100*l.*

Any reader who refers to these tables will certainly amuse himself with the whole portion of the Report which relates to the cottage-improvement at that time achieved. Nothing will strike him more than the account (at p. 265) of the labourers' cottages built by the Earl of Leicester at Holkham, in Norfolk, showing what a home the labouring man may have for the interest of 100*l.*, with something additional for repairs; say a rent of 6*l.*, though his kindly landlord asked less. In brief, the tenant has a—

House-room . . . 17 feet by 12, and 7½ feet high.
Kitchen and Pantry . . 13 ,, 9 ,,
Three bedrooms above.

In the rear, a wash-house, dirt-bin, privy, and pig-cot: and 20 rods of garden ground. The drainage excellent, and water abundant. For the rest, I must refer my readers to the Report, from p. 261 to p. 275, with the engraved plans and illustrations.

More modern narratives and suggestions abound,—judging by booksellers' catalogues and advertisements. One of the most interesting notices of the subject that I have lately seen is in the "Englishwoman's Journal," of October, 1859, and in letters, called forth by that article, at pp. 283 and 284 for December of the same year. If these letters disclose a painful view of the ownership and condition of many cottages, they are also encouraging in regard to the eagerness of respectable labourers for respectable homes. To an account of tenements of four rooms each, with out-buildings and garden, costing from 75*l.* to 80*l.* each, the rent of which is 4*l.* 10*s.*, the remark is added:—

"The rents are paid up very regularly, so that this Michaelmas out of twenty-six occupiers, there was not one defaulter."

This question of the cost of cottages is a very important one,—not only because it is bad for labourers to be charged anything but the genuine price for their abodes, but because there is no chance for the working-classes being well housed unless dwellings of a good quality can be made to pay. At present, unconscionable rents are, on the one hand, extorted for unwholesome and decayed dwellings; and, on the other, it is supposed that nobody but wealthy landowners can afford to build good cottages,—such cottages being regarded as an expensive charity. In my small way, I am satisfied with my investment: I know that other people are: and I believe that it is possible to lodge the working population of the kingdom well and comfortably, without injurious charity on the one hand, or pecuniary loss on the other.

In many—perhaps in most places—however, the first stage of the business is yet unaccomplished. Society is not convinced of the sin and shame of restricting the building of abodes for the working-classes, and of making them pay high rents for places unfit for human habitation. I fear there are many neighbourhoods in England too like, in this respect, to the one in which I live,—where many of the abodes of the humbler inhabitants are a disgrace to any civilised community. If ever

there was a settlement favoured beyond others in regard to natural sanitary conditions, it is Ambleside: and if any one spot can be found superior even to Ambleside, it is Windermere (five miles off), where the railway ends, and whence the Lake tourist, on his arrival, overlooks from a height a glorious view of lake, wood, and mountain. In both places there is scarcely any level ground in the whole area. The facilities for drainage cannot be surpassed. There is rock for foundations; and the water-supply is unbounded—unbounded as to quantity, if it were regulated and distributed with any degree of care and good sense. Good soil, good air, great variety of level, and plenty of water,—what more could we ask in choosing a dwelling-place? Yet there is disease, vice, and misery which would be accounted intolerable if they came in the shape of inevitable calamity. Instead of general declarations, I will offer a few facts,—omitting at present any notice of such abodes as are private property, in the hope that when reform begins with public property, the owners of cottages and small houses will be awakened to a sense of what they are doing in letting such tenements as many in Ambleside, either by the shame of contrast, or by losing their tenants. While mansions and villas are rising throughout the neighbourhood, one has to wait years to obtain a few yards of ground on which to build a cottage. All possible discountenance is shown to cottage-building: and I have myself been told, many times a year, for many years, that the people could not pay rent for good cottages, and would not take them if they were provided to-morrow. This must be altogether a mistake. There is, as I said, great anxiety to occupy my cottages; and rents of 4*l.* and 5*l.* are paid for dwellings of which the following is a true account. They were measured and reported upon a day or two ago.*

These houses are endowment property, under the care of the trustees of the school. The trustees do not dispute the condition of the property, nor defend the exorbitant rents they are obliged to demand; but they declare that they find it impossible to obtain from the Charity Commissioners the necessary powers for its improvement. They have repeatedly made application; but the delays, the mislaying of papers, the fruitless trouble incurred, have discouraged them. Meantime, the state of three houses, as examined, is this.

* December, 1859.

Number One is inhabited by a family of six persons. There is no water-supply whatever. There is no out-door convenience which can be used by decent people. There is no opening in back or sides, and no ventilation at all in the sleeping-place but one small pane, which the mother broke the other day, to prevent the young people being stifled (a danger increased, by the way, by the boys smoking their pipes within doors, even in the mornings). The six sleep in two beds scarcely larger than sofas. The living-room is 10½ feet long by 10 broad, and 7 feet 2 inches high.

Number Two contains a family of eight persons. The conditions as to air, water, and convenience, are the same; the living-room is 10½ feet by 9. The rent is 4*l.*

Number Three contains a family of six. Conditions mainly the same. The living-room is 7 feet 2 inches in height: but only 8 feet 6 inches long by 7 feet 9 inches wide. The rent is 5*l.*, the same that is paid by my friend's tenant for an airy, cheerful, well-found dwelling of four rooms and outhouse, on the hill-side.—This is all I will at present say of labourers' dwellings at Ambleside.

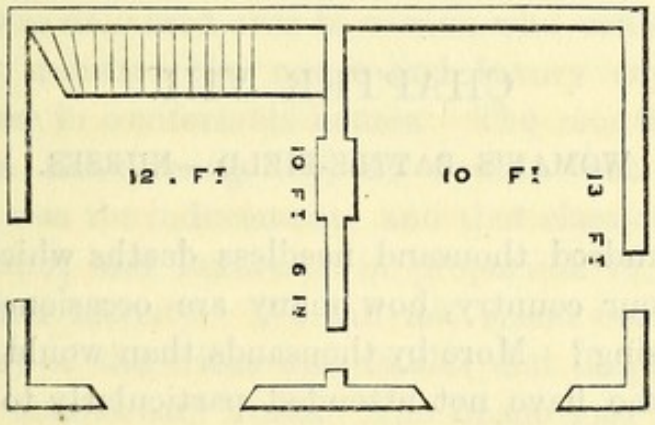
At Windermere a new town has sprung up since the establishment of the railway-station, and the temporary residence of a clergyman of architectural propensities; so that we naturally supposed the new settlement to be peculiarly healthy,—all fresh and new, and set upon a platform, absolutely tempting for drainage. Some weeks ago we were startled by news of a terrible fever—typhoid fever—at Windermere, the school-master being dead, and several other persons who could ill be spared. The mortality between that time and this has been fearful. A good man who lived there desired, a few years since, to carry his large family to Australia. He was too old to go by the aid of the Emigration Commissioners, and his friends lent him the means to go and establish himself, with the intention of sending afterwards for his wife and seven children. He slowly made his way in Australia, has paid his friends, and is now, no doubt, looking forward to the arrival of his family in no long time; but, alas! this fever has carried off four out of the seven children. This is the news which is on the way to the affectionate father!

When one inquires the precise cause of the epidemic, one medical man says there is no sufficient house-drainage at

Windermere; another says the mischief is owing to the quantity of decomposed vegetable matter—to the swamps, in short, on the platform; while another declares that the main evil is the accumulation of filth. Whether it be any one or all of these, the mortality is chargeable on ignorance or carelessness, or worse.

While such things are happening here, there, or everywhere, every year, it is a matter of no small consequence to ascertain the conditions on which our labouring population may be well housed,—as a matter of business, and not of mere charity; that is, under the steady natural laws of society, and not the fluctuating influence of human sensibilities, which have always more calls upon them than they can meet. When it is ascertained that it answers to labourers to pay from 3*l.* to 6*l.* rent, rather than have sickness in the house, and that they may have for that rent good dwellings of from four to six rooms, or equivalent attachments, there will be a manifest decrease in the sickness and mortality of the country.

I am further called on to explain the particulars of such a cottage as can be built in Westmoreland for 60*l.* I have, therefore, obtained from the experienced builder whom I quoted before—Mr. Arthur Jackson—a plan and estimate of the cottage he would build on receiving such an order.



By the plan it will be seen that there is a fair-sized front-room, a kitchen, and two bed-rooms above, all having fire-places, by the chimney running up the middle of the house. The walls are two feet thick, the windows large, and the ventilation ample. There is, however, no out-door accommodation; and a pump and sink cannot be afforded for the money. The items of costs are these, "walling" comprehending the entire building, and paving, and all the stones of the walls:

	£	s.	d.
Walling	23	0	0
Plastering	7	0	0
Slating	10	0	0
Carpenter's work, which includes the entire fitting-up of the interior	20	0	0
	£60	0	0

While giving these particulars, and showing that separate lodging-rooms can be provided for a rent of 3*l.* 10*s.*, I must explain that I do not recommend this kind of cottage as anything especially good in itself. If I built a dwelling of four rooms, I should certainly afford the requisite out-door accommodation, and a proper water-supply at home. When the women have to go up the hill for a tubful of water, or with pails to some distant pump, the family at home never have enough for all purposes of cleanliness, and the fatigue of the fetching and carrying is out of all proportion to the supply obtained.

Mr. Jackson says, however, that he could afford both kinds of accommodation if a row of half-a-dozen dwellings was in question. A well and pump for common use would, in that case, be provided in the rear.

CHAPTER VIII.

WOMAN'S BATTLE-FIELD.—NURSES.

Of the hundred thousand needless deaths which take place annually in our country, how many are occasioned by bad or deficient nursing? More by thousands than would be supposed by persons who have not attended particularly to the subject. But the most hasty view will show that the number may be very great.

What is the popular notion of a nurse? And how does it correspond with the haunting conception of 100,000 people yearly dying who have a claim upon us to live? Let us try to imagine that doomed multitude—the ten thousand carried off by small-pox—the little children strangling in croup by scores—the hundreds sinking delirious in hospital erysipelas—the

wards full of hospital gangrene—the tens of thousands swept away by fever and cholera, as by a whirlwind. Let us steadily contemplate such a scene as this, and then call to mind all we know about Nurses, and consider the proportion which the two classes of Sick and Nurses seem to bear to each other.

How much good nursing have any of us ever seen? At the mention of good nursing, the heart may spring to the touch of some precious remembrance of exemplary nursing in a quiet home, where nothing was said about it, because it seemed to be a matter of course. Wherever there are mothers and daughters and sisters, there will be more or less good nursing, as far as it can be taught by good sense and affection, in the common maladies which befal individuals. But nursing is an art based upon science: and the resources of instinct, which are often insufficient in individual cases, are as nothing in the conflict with epidemic sickness, or when accidents and unusual diseases occur, or where numbers are down at once. Such a mortality as our Registrar's returns show can be contended with only by a great body of trained nurses, whose vocation shall be recognised and respected by society.

To be, to do, and to talk "like an old nurse," means to be positive, ignorant, superstitious, wrong-headed, meddlesome, gross, and disagreeable, and to speak and act accordingly. The expression arose out of the deficiency of nurses, by which the occupation was delivered over to women who could do nothing else, or who relished the power and luxury enjoyed by the monthly nurse in comfortable houses. The monthly nurse was employed in sick-nursing too, no doubt: but the monthly engagement was the inducement: and that class of women were wilful, ignorant, and luxurious in proportion to their importance and their scarcity. We will not spend our space on the familiar story of the tricks and foibles and disgusting selfishness of the traditionary nurse. The image may be found in a multitude of works of fiction, and the reality in most elderly people's recollections of their early life. Let her retire behind the curtain to doze and booze and maunder out her queer notions about diseases and remedies. We have to study newer specimens of the same order of functionaries.

In every town, great or small, we know some widow or spinster who gets her living by nursing among the cottagers or small shopkeepers and artizans. She knows how to manage

lying-in cases, in a general way, and she is a good creature in all cases. She is kind when called in the night; and she is willing and ready to sweep the room, and wash the patient, and make the cup of tea or gruel. The greater part of the nursing which is done by hire is done by this sort of woman; and she is immeasurably better than nobody; but she knows nothing of the structure of the human body and its various organs and their uses; she is not enlightened about the importance of air, light, or temperature; she has wild notions about food and medicines and infection, and the character of diseases; and it is a great thing if she is able to dress blisters or apply leeches or fomentations skilfully. Formerly it was very difficult to find anybody of a higher quality than this when a hired nurse was wanted in a family; and even now, the grand perplexity of physicians is to answer the demands upon them to supply well-qualified nurses in any proportion to the patients who require them.

The census returns of 1851 throw some light upon the facts of the proportion of nurses to the sick. Domestic nurses (meaning nurse-maids) are a separate class, though the chief part of the tending of children in sickness is done by them. They amount to nearly 40,000, of whom, strange to say, almost half are between five and twenty years of age. We find under this head the little nurse-girl, who may be met in a town alley, sitting on a door-step, rocking a baby to sleep, or carrying it bent double on her arm, while her own shoulder is growing out, or her spine getting twisted with carrying a heavy weight before she has done growing. Convulsions, croup, accidents, kill a multitude of infants in such hands, who might live to die of old age if there was anybody to show how to ward off or treat such misfortunes. But, though the attendants of children are called nurse-maids, the last thing that they are taught is anything about nursing.

Going on, then, to the class which claims the title, in virtue of actually professing to nurse, we find that in Great Britain there are, including monthly nurses, above 25,000 women who take charge of the sick professionally. In comparison with the deaths, and infinitely more with the sickness in the kingdom, this number is almost incredibly small. It would seem a mere nothing if we did not remember that a large proportion of them are hospital nurses—each one taking charge of many patients.

In fifteen London hospitals there were, in 1858, 521 nurses of every class. Every large town in the provinces probably has its infirmary or hospital, with a staff of nurses. It has been proposed to fix twenty-five patients as the proper number to be attended to by a single nurse; and this may serve as some sort of a guide in contemplating the extent of the need of more nurses; but we are told by experienced persons that no such rule can be enforced, nor ever could be, if hospitals were much better organised than they have hitherto been. In military hospitals, for instance, in time of peace, the patients are, on an average, very slightly ill in comparison with the inmates of a civil hospital; and it may be easier to attend upon fifty of the regimental patients than five-and-twenty in a city or county infirmary. There must be endless varieties, too, in the fatigue of the office, according to the management of the institution. For instance, in one there may be such arrangements as that the nurses are at liberty to spend their whole time among the beds of their patients, while elsewhere the nurse is expected to carry up coals and water, and carry down trays, and fetch and carry and even wash the linen, and go for the medicine, and cook the diets. Supposing, however, that every hospital was well managed, there would still be a sad deficiency of desirable nurses: and when the number of sick throughout the kingdom is considered, the paucity of qualified attendants is really terrible.

The thought is not new. For half a century at least it has been a subject of speculation, through the press, in lectures, and in conversation, why the deficiency remains so great, and how to supply it. Considering the vast number of English-women who have to work for their bread, and the over-stocking of many departments of female industry, it seems surprising that this, which is so especially women's work, should be done so scantily and so badly. As sanitary inquiries have been pursued further and further, it has been discovered more and more plainly that a vast amount of needless death happens from bad nursing. We are told that in order to reduce the preventible mortality we must (among other things) improve our hospitals; and, in order to improve our hospitals, we must improve our nurses. While many of them are diseased and infirm; while more are intemperate, and not a few loose in conduct and character; and while they are under overwhelming temptations

to make a profit of their patients and their place, they can be no effectual check to the needless mortality within the hospitals. One result of such discoveries has been to create the enthusiasm which we have witnessed of late years in the cause of good nursing. Florence Nightingale did not wait for the outburst of an enthusiasm on any hand. For many long years she had been working in silence, under a growing sense of the necessity. She had been learning the art, and putting her knowledge in practice as she advanced, so that when, under the pressure of the war, there was a sudden rush of devotees into the vocation, there was a woman ready to guide the movement, and to lay open the case to the steady good sense of society, precisely when good sense was most in danger of being swamped by the mixture of a romantic egotism with a gush of genuine benevolence. Through her we know something of what it really is to nurse the sick, and of what is wanted to plant good nursing effectually between the sick-bed and the grave.

There is no subject on which it is easier to be romantic than that of nursing. It is natural and fitting that the tender and even picturesque aspect of the office should fix the attention of observers: only, when it comes to reforming the institution, the whole truth must be studied. It is pretty to see a little child nursing poor mamma's foot when poor mamma's head aches; and one feels a respect for young ladies who aspire to undertake the work of a Sister of Charity: but the little child's nursing, though it need not be discouraged, will not cure mamma: and the well-intentioned assistant must go through a severe probation, before she may venture to regard herself as a Sister of Charity. The imaginative benevolence and piety which may find their proper training and final use in some other department of action, are usually out of place in the hospital; and it really appears that there is as much trouble with floating saints and virgins on the one hand, as with grovelling mercenaries on the other. As for the minority of able and devoted women who stand between or far above them, they are of a value which can scarcely be matched among women. If we look at them, we shall no more see them gliding about in silk, or floating in muslin, or disguised in a hideous nun's uniform, and lecturing their patients on heavenly things by the hour together, or exchanging spiritual confidences with fevered sufferers, than we shall see them drinking gin behind a

bed-curtain, or taking a bribe from a visitor. Some documents are lying before me, which show what we shall find the best nurses really doing. To observe them in their proper sphere, we must imagine the best managed hospital that we can ever hope to see.

It is not every woman who desires it, or is worthy of it, that can be a professional nurse. She must have a degree of bodily soundness and vigour which is not common; for her work is not only very hard, but it keeps her standing and stooping for many hours of every day. The successful nurse must have ascertained, before she declares herself a candidate, that she can stand and stoop to the required extent without injury. She must have stout limbs and sharp senses. We know well enough what it is to have a nurse who is purblind, or hard of hearing, or insensible to bad tastes and smells.

Next, what is to be the relative position of the candidate? Is she to be mistress or servant, does she suppose? "Servant, of course," she replies. Very true: but has she considered what it is to be a servant in so strict a sense as in a hospital? She must have no ideas and no will of her own about medical treatment. Instant, constant, complete, silent obedience to the physician's orders is her very first duty. Does she suppose this to be at all times easy? Whether entitled by a special education, or prepossessed by ignorance, she can hardly help having notions about the cases under her hands; and it must be difficult at times to yield to a questionable order without a word spoken. Yet there can be no freedom to question an order in a hospital, though there might be an opening for discussion in a private house. Again: there is no choice of hours, or of work, or of methods. All is fixed and settled; and she has only to put herself under the working of the machinery of her office. Every day has its routine—every hour its proper work: what change and recreation can be allowed are out of the house: there can be no controversy, religious or other, with colleagues; and there must be no petting of patients. This is with some the hardest piece of self-denial of all: but duty requires it. The aim is to get the patients well. That is what a hospital is for. In the vast majority of cases of illness, a vegetative mode of life, monotonous, material, calm and quiet, is as essential as it is to the youngest infant; and this is the reason why physicians dread, as they do, the introduction of sentiment and

sentimental women into hospitals. The religious care of the patients belongs to the chaplain, or the pastors, who may visit patients from their flock : and, women once admitted to any other functions than ministering, under orders, to the bodily needs of the sufferers, there would soon be an end to the expansion of the profession at all, and to all chance of women having the special hospital-education which it is the great aim at present to obtain for them. It does not follow that the nurse must be mute, hard, and unsympathising. True sympathy shows itself otherwise than by talk and tears. Whatever is done may be done gently and tenderly. Mere vigilance, without words, is often the most acceptable form of sympathy to a sufferer ; and two words of pity, or of cheerfulness, or uttered in the spirit of fortitude, may rouse or charm more than any exhortation.

The nurse has to see a constant succession of patients going out and coming in, so that the scene might well weary out the most elastic imagination and the most patient heart. I have said nothing of the spectacle of ghastly wounds and sores, of the long waiting upon fever, of the moans and cries of anguish, and the dreary weeping of the worn-out sufferers. It is to be assumed that the nurse has ascertained that she can bear these sights and sounds. It is a matter of course that she can ; and also that she is free from the prudery which is somewhat in the way of benevolent action wherever it exists, and is wholly incompatible with the nursing office.

Supposing all these conditions to be satisfactorily met, what is the life led by a good nurse ?

In the London hospitals there are two classes of female nurses : the Matrons and Sisters constituting the first, and the Nurses (sometimes subdivided into day and night nurses) the other. If ladies choose to enter either class without pay, in any future scheme, there must be no notice taken of the difference ; but the unpaid must be subject to precisely the same regulations as the salaried. Neither money nor religious vocation can be allowed to confer privilege while the object is to obtain the largest possible number of respectable, healthy, sensible women of the working-class, in return for a fair maintenance ; that is, on the footing which is generally found to be the most steady and workable. At the moment when new sewing machinery is demolishing occupations which had long

ceased to afford a maintenance, a new profession is opening to women, through the extension of our sanitary knowledge; and the system must be adapted to the professional members first. The volunteers and amateurs must take their place under it as they can.

It is found that, as paid nurses, widows with children are ineligible. If they do not love their children they are unfit to be nurses; and if they do, they must be for ever pulled two ways. The cases of peculation and trickery thus arising are numerous, but not at all to be wondered at. The nurses had better be single women, or widows without children. It is part of the romance of the enterprise with some people to introduce penitents to the wards; but this is reprobated by all experienced managers of hospitals. It is all important to respect the corps of each hospital, and to keep up their self-respect. There must be no damaged character amongst them, for the sake of the sound. If there is any of the old leaven left, this is the place and the work to bring it out; and if the reform be complete, the penitent must have too much disquietude, self-distrust, and egotism stirring within to be fit for an office singularly requiring robustness and simplicity of nature and habit. Penitents can find works of mercy always wanting to be done in every track trodden by human feet; they need not come to the public hospital, while there are so many private sick chambers; and it must be plainly said that they cannot be admitted.

Our good nurse must then be a single woman, say of the working-class, and about thirty years of age; sound in health, and well disposed for her work,—with a calm, cheerful manner, but with a glow within which we should call enthusiasm, while she is not aware that it has, or ought to have, any name. As we are supposing her in a well-organised hospital, she is trained for her office.

The time is at hand, the money is in the bank, and the plan is under discussion, for the training of young women in the art of nursing; so we may look forward to the accomplished fact. She will have learned what the structure of the human frame is in a general way; where the great organs lie, and how they ought to act. She will have learned how health is affected by food, clothing, cleanliness, exercise, and free ventilation. She will have been taught how to put on a bandage in the various

cases required; how to manage leeches and other applications, and how to prepare the commonest sick-diets; and how to act in emergencies,—of bleeding, fainting, convulsions, inflammation, choleraic attacks, &c., till the doctor comes.

Thus fitted for her work, she enters upon it with the full knowledge that hospital-nurses have to undergo a period of discouragement, during which many feel that they must get out of it at any cost. An experienced reader will know what is meant by the *hospital languor* which comes over the nurse, after a time, like a sick dream. It is easily accounted for; and the only object in adverting to it is to point out that it is a common trial which all nurses have to undergo, and which every good nurse gets over, by spirit and prudence. She does what is possible to secure an easy mind and a disengaged spirit by availing herself of some one of the safe methods of Assurance, within or without the hospital, by which a certain deduction from her pay will secure her the means of retiring before she is quite worn out. She will further make a point of laying by something, so as to have the power of taking a complete holiday, however short, when she needs change of air and rest. There are consultations on foot as to these matters—as to methods of insurance, and of making savings from the wages of nurses, on the one hand, or pensioning them on the other.

The economy must not be too close. A nurse must be well-clothed, and thoroughly well fed. If she provides her own food she considers it a duty to sustain her strength by substantial meat dinners, with good beer; and if her meals are provided by the hospital, she steadily demands whatever is necessary to enable her to discharge her fatiguing duties effectually. The hope of those who are consulting about making the most of nurses, is that a plan will become general by which there shall be in every hospital a mess for the nurses, managed by the matron.

The most wasteful of all plans, as to food and time, is for each nurse to buy and cook her own meals, and eat them alone; and it certainly would seem to people generally that sitting down to a joint and pudding would be more cheerful and comfortable than each woman fiddle-faddling at her own bit of dinner. An open, honest, sufficient allowance of good ale or porter is essential, if the curse of hospitals—intemperance—is to be successfully dealt with. The temptations to spirit-drinking

are stronger than can be conceived by women who sit at home over the easy occupations of ordinary life. On the one hand, the vice is always trying to establish itself; on the other, it is impossible to tolerate it in a hospital; and the thing to be done is to keep watch against it, and to substitute for it generous diet.

Our nurse's clothing must be ample. There can be no shutting out the air, and heaping up the fire in a hospital, where the principle is to have such bedding, clothing, and equable warmth provided as shall allow of free admission of fresh air at all times. The nurse must therefore be so warmly clothed as not to suffer in winter days, or in night watches, in going about her ward.

These are her personal arrangements; each of them important as involving her health and strength. As for her business, it is a very regular affair, except in as far as her deep interest in her work may introduce diversities. A high authority exhorts the hospital-matron not to worry if a day-nurse is seen sitting-up with a bad case when, as the matron would say, she ought to be in bed. As a general thing, however, the nurse should have her eight hours' sleep, as well as two hours a day for recreation, and two more for meals and her personal business. When the true quality and value of a nurse are understood, she will not be employed to do what others can do as well. Therefore our nurse is not to be seen bringing in water, lighting fires, or scrubbing the floor. She sees that everything is ready at first, and then enters upon her duty to the patients. She helps those who cannot wash themselves, and makes all clean and pure from bed to bed. She serves the first doses of medicine for the day, the list of which hangs up where the doctor and she can easily refer to it. To give the medicine punctually and accurately is of course one of her first duties; and she trusts nobody with it. At breakfast-time the meals are brought to the ward, as the dinners are, ready divided and hot, so that her time is not consumed in dividing—much less in weighing—the food.

The arrival of the doctors is prepared for by her being prepared to report on each case, and her having ready any questions she may have to ask. She makes her words as few as possible. She has her own slate or book in which to enter orders or questions: and her manner checks the thoughtless students (supposing

them present) when they are noisy or obtrusive, to the discomfort of the patients. By the time the medical rounds are over, and the offices ordered by the doctors are fulfilled, it is time to prepare for dinner. She encourages those who are well enough to rise, and sit at table; and she tries to make a cheerful fireside for as many as can sit up during the afternoon. She altogether prohibits any such illicit indulgence as a pipe in a closet, or pastry or drink brought by visitors; while she encourages cheerful amusement in every way. She has the beds made, the linen changed, the night-lights in order, and everything quiet by the prescribed hour, when she yields her place to the night nurse.

All this may be easy and almost pleasant to the reader; but it is the mere framework of hospital life. The filling-in is the part to study. Among twenty, thirty, or more sufferers, there is no day which can pass over smoothly and without anxiety. The child that cries aloud for half the day would wear out many a woman's nerves; and then there is the moaning of people in pain, and the restlessness of the feverish, and the raving of the delirious. There are wounds and sores to be attended to; and many disagreeable things to be done; and usually, among so many patients, some on any particular day who seem not to be doing well. The toil is never-ceasing; the anxiety always besetting; the wear and tear in every way very great.

On the other hand, good nursing decides the fate of thousands of persons every year, for recovery or death. In badly managed hospitals there are epidemic periods when erysipelas, hospital-gangrene, cholera, and fever carry off the patients just as if they were living in a blind alley full of bad smells and stagnant filth; but, as a general rule, people who go into hospitals come out convalescent; and if the arts of the hospital were spread over private life, the number of deaths from other causes than old age and vice would be wonderfully reduced. A well-trained body of ten thousand nurses, working during only their years of utmost vigour, would do more to extinguish preventible death than the twenty thousand hap-hazard town and country nurses, old and young, set down as professional in the census returns. What the actual need is may be judged of by the existence of the Nightingale Fund; by the number of ladies who volunteered to go to the East during the Russian war; by the institutions which are springing up in various parts of the country; and by

the tentative conversation of young ladies who meditate devoting themselves to the work. How to meet the need, is the question.

It must always be right to develop all existing capabilities in private life. In every household let little children show what they are made of. One will mount a chair, and stare into your mouth to see a tooth drawn, while another will run out of the house when the dentist comes in. One will faint at the sight of blood, while another likes to bind up a bad cut. Why should not the natural doctor and nurse have a free career? There will always be plenty to run away from it. Let little children be allowed and encouraged to soothe and help the sick. Let them learn to sit quiet, to move about quietly, to stir the fire with a stick, to chafe limbs properly, to make a bed properly, and change linen in the easiest way; to air rooms, to darken windows, and to make and serve sick messes. These things can be learned and practised at an early age; and the process will certainly show what Nature intends as to a supply of nurses.

The material thus indicated, what is the instruction to be? At Madras, the orphan daughters of British soldiers are educated at the Military Asylum, where the elder ones who show themselves fit for the service are trained as nurses, and always diligently sought. Married or single, they are always busy. As their fathers battled in the field of warfare, so do they in that of disease; and they are the most effective soldiers in the world. Not only in India, but everywhere, does disease lay low its victims more painfully and more plentifully than any war that ever was waged. We cannot help sending out our armies occasionally to slaughter and be slaughtered; but we might more than compensate for the mortality of war if we would send out that other redeeming force which contends in the field of disease, and rescues its captives from the threshold of the prison-house. When a nurse died in the East there was great mourning; and it was openly said that the best soldier could have been better spared, the object then being to save soldiers. A good soldier's place may be filled, though at great waste of safety, of feeling, of convenience, and of money; but the place of a good nurse cannot be filled at all. Every existing one is excessively wanted, and cannot be spared from her post.

There are women enough in England—working women enough—devoted women enough, if the training and the encouragement

were provided. It is not the fatigue, nor the disagreeableness, nor the anxiety, nor the low and doubtful position of nurses, which has kept us so bare of them while other departments of female industry overflow. It is that no woman who would be a nurse has known where to go and what to do to qualify herself. There is now an end of this difficulty. Every woman may now ascertain her own fitness or unfitness for the nursing profession, and, if found capable, can at once enter, without expense or trouble, on the training which shall qualify her for her business.

The fund which was formed in Miss Nightingale's honour, on her return from the East, and placed at her disposal for her great object of training nurses, has been accumulating since that time, under the care of trustees, the failure of Miss Nightingale's health compelling a long delay in the formation of plans. In spite of illness she has framed her scheme; and the Committee of the Fund have published it in a way so plain that no woman can now be under any difficulty how to proceed.

St. Thomas's Hospital is to be the training-school. There, in those wards, some of them 100 feet long, and among the new cases coming in by the hundred in a day, and in full view of almost every disease, but small pox, and of every conceivable accident, the future nurses of the English people may now learn their business. The matron will be their ruler, the Resident Medical Officer and the "Sisters" (superintendents of the nurses) will be their instructors; and they will act as assistants to the regular day and night nurses. By due diligence, the novices will become fit for professional employment in a year; and a year's training at St. Thomas's Hospital is the amount offered.

The candidate must be fully resolved to stay the year out. There may be circumstances—such as a failure of health, or other accident—which may induce the Committee to allow an earlier departure; but nothing of the sort must be depended on. The candidate must know her own mind, and pledge herself for the twelve months. The authorities of the hospital, on the other hand, have the right of dismissing any "Probationer" (as the nurses in training are called), at any time, for obvious unfitness, as well as for misconduct.

The best age is from twenty-five to thirty-five. Of course, the candidate must be in good health and vigour, and must bear a good character. She will be registered on her entrance on her training, and a record will be kept of her conduct and

qualifications, which will be laid before the Committee of the Nightingale Fund once a month. If this record presents a satisfactory account at the end of the year, she will be a certificated nurse,—no doubt eagerly sought, and nearly certain of being provided with an engagement, either in that hospital or some other. The Committee declare that they "look forward with confidence to being able to find situations for their certificated nurses," at the end of their term of probation.

The Probationers will be trained at the expense of the Nightingale Fund. That is, they will have board and separate lodging in the hospital, and their washing, and a certain provision of outer clothing. They will be paid 10*l.* in the course of the year; 2*l.* the first quarter, 2*l.* 10*s.* the second quarter, and also the third; and 3*l.* the last quarter. A certain degree of merit will obtain a gratuity of 3*l.*, and the highest of all a gift of 5*l.*, from the Committee at the end of the first year of independent service.

It does not appear that there is at present any limitation of number. In fact, any woman of the proper age, and good health, and character, may offer herself, with a tolerable certainty that a useful and honourable career is open before her, in which she cannot fail except by some failure in herself.

It is not at all wonderful that there should be a crowd of applications on the plan becoming known and understood; for in no profession or occupation is there such a scarcity of hands, or therefore so clear a prospect of constant employment.

The candidate has simply to apply to the matron—Mrs. Wardroper—at St. Thomas's Hospital, Southwark; and, if in person, between eleven and twelve in the forenoon. Mrs. Wardroper will supply her with a slip of paper—a form to be filled up with replies to eight inquiries:

Name of applicant.

Age.

Place of birth.

Where educated.

Previous occupation.

Whether single, married, or widow. (If married, the certificate must be produced.)

If married, or a widow, whether with children; and, if so, with how many.

References.

This is all very plain and easy; and here we see the beginning of a new period, in which the traditionary "old nurse" will die out, and the sick of our country will have less suffering in illness, and a better chance of recovery than ever before; and in which the most womanly of professional occupations will have been, for the first time, effectually thrown open to all who are worthy to enter it.

It is to be hoped that while the Committee are providing tendance for every disease and every terrible accident which is admitted into a hospital, or is found in any private house, they will not overlook the brain-sick, who are the severest sufferers of all. In the words of one who has known that suffering, and the misery of bad attendance under it, "There is far more need to train attendants for the insane than for the sick. The sick can tell if they are ill treated, and will be believed; but the poor sick in mind may be neglected and ill-used to an extent that the world knows little of, and find no remedy."

The Lunacy Commissioners, and all the benevolent men in the profession cannot secure justice to the insane, while the race of attendants is what it has always been, and is now. There is actually no existing remedy for the enormous evil of subjecting persons of education and refinement to the management and control of ignorant attendants, coarse in language and manners. Go where we will,—among asylums, physicians matrons, and patients,—we hear the complaint of the difficulty of obtaining any attendants who can be trusted or tolerated at all, in their demeanour towards the patients. They are not all tyrannical,—not all unkind; but in ignorant minds there is a radically wrong notion of their relation to the brain-sick. Few can conceive that the feelings, and most of the thoughts of the insane, generally speaking, remain very much what they were before the disease set in, and very like other people's; and that therefore they should be treated, as far as possible, with the same consideration shown to other persons, and formerly due to themselves. Few of the ignorant class of "keepers" have any conception of topical brain disease and partial insanity, except as a curious phenomenon. With them a crazy person is crazy, and must be managed rather than ministered to; and the misery thus caused to sensitive and self-respecting persons is dreadful to think of. The coarse and hard tyranny once prevalent in lunatic asylums has given way, to a considerable extent,

under the happy influences of advancing knowledge and improved social conscientiousness; but there is a kind of infliction on the brain-sick which no supervision can obviate, and no vigilance check, while the true remedy of good nursing and fitting attendance is out of reach.

There is no natural or insurmountable reason for its being out of reach. There are humane and enlightened women, full of good sense as well as kind feeling, who would be willing and even eager to nurse and guard the insane, if they knew how to set about it without encountering unknown evils, and committing themselves to the society of persons whom they dread and dislike far more than the patients. It is all a chance whether a woman of this quality can get any training first, or enter on the occupation afterwards, without running risks which amount to an effectual discouragement. It would be a great blessing if the Committee of the Nightingale Fund could open a way to such women, and bring them face to face with the patients who are suffering so keenly, and often so fatally, for want of them.

It could hardly be difficult to do. The teaching and training is small in comparison with that required for hospital-nursing. In fact, it is an opening which is needed; an access to the patients, and a trial of the mode of life. No doubt there is something to be learned in preparation for so peculiar an office. The usual hospital methods of securing good general conditions of air, warmth, food, cleanliness, &c., are as necessary in lunatic asylums as in all other abodes where the recovery of health is the object; but, beyond these general methods, there is not much that can be taught to attendants on the insane. The art necessary for them is that of exerting their own faculties, intellectual and moral, for the benefit of their charge. They have constantly to exercise good sense, readiness of mind, good humour, and never-failing patience. These things cannot be taught; but they may be incited and encouraged by wise authorities in the presence of the duty to be done. This would soon appear if the Nightingale Fund Committee would make arrangements with the authorities of Bethlehem Hospital or St. Luke's, or some other well-managed asylum, by which probationers might be trained for the office of attending on the brain-sick. The increasing proportion of cures among the insane which has rewarded such improvements as we have been able

to make in the management of that class of patients, would be rapidly and enormously extended, if we could get rid of the one terrible impediment complained of by all parties,—the bad quality of the attendance. As far as appears, the object is one which fairly comes within the scope of the Nightingale Fund. If the Committee should think so, and should act accordingly, there would be rejoicing, not only in every corner of every asylum to which the news should penetrate, but in many thousands of English households where it is now a daily and nightly sorrow that the insane member of the family is not, and cannot be, ministered to either wisely or tenderly. Cannot this consolation be afforded? and, as the pattern method is provided, without much delay? I am sure the Nightingale Committee will bear with the question.

As for the prospects of sufferers by disease, open schools to women, and provide a new department in children's schools, and the sick of the next generation will not die by tens of thousands for want of good nursing. Disease will be checked on its first approach, and the mortality of our day will be a theme which will take its place in history and speculation with the Great Plague and the Black Death. The doctors permitting and aiding, the women will achieve this victory.

CHAPTER IX.

SELF-MURDER.

Among the preventible deaths which every year carry off more of our citizens than the most savage war, suicide ought to be attended to with strenuous and patient care.

"Do you call suicide a preventible cause of death?" a hundred voices will probably ask. They will say that the self-destroyer usually does his last deed when nobody is thinking of such a thing; and that it would be cruel to blame his family and friends for a calamity which they have at the moment no reason to apprehend. May be so; but still we may be justified in treating of suicide as a preventible kind of mortality. Let us look at some of the leading facts.

According to the coroners' returns, the cases of suicide inquired into in England and Wales were in 1856, 1314. In 1857, they were 1349. In 1858, they were 1275.

The first remark of some readers will be that they thought there had been more: and of others, that they had no idea there had been so many. But all will probably go on to remark on the uniformity of the proportion of suicides to other deaths in three consecutive years. The proportion would be found no less regular in thirteen years, or in thirty. This circumstance ought to set us thinking whether so regular a phenomenon must not have some steady cause. Men in society always end by obtaining control over steadily-operating influences; and therefore we may hope to get the mastery over the causes of suicide, and nearly put an end to that mode of dying.

In order to do this, we must rouse ourselves into a mood of common sense, such as few persons but physicians and managers of lunatic asylums are accustomed to entertain in the presence of this tragic subject. There are many reasons why we should feel awe-struck and overwhelmed with some kind of delicate feeling or other when cases of suicide occur or are discussed. The old Romish belief that the viaticum was necessary to save the departing soul, caused the death of the most innocent suicide to be regarded with horror and dismay: and far worse was the thought of the eternal destiny of the conscious self-murderer. His burial in unhallowed earth, with a stake driven through his body, was a shock to society, and a bitter disgrace to his family: and the anguish of those past times has been so far perpetuated as that every countenance still becomes grave, and every voice sinks into solemnity when there is mention of any one who has raised his hand against his own life. Again, there is still a prevalent reluctance in society to advert to the subject of insanity. There is still an inability among the great majority of people to regard insanity as disease, in the same way as the maladies which affect other organs than the brain; and in almost every case of suicide the coroner's jury declare the act to have been done in a state of insanity. The insanity is considered a milder imputation than a design to perpetrate the act: but it is still felt as a grievous imputation, and one which induces awe-struck silence, and a desire of oblivion, rather than any practical study of such cases with a view to putting a stop to the practice of self-murder. Thus we go on

in ignorance: and while we indulge in old prejudices and ill-grounded sensibility, a thousand lives will be thrown away every year which a more reasonable and healthy habit of mind in ourselves might save. This seems to me a very serious consideration.

Young people always set out with supposing that self-destroyers are persons of acute feelings, who cannot endure the hardness of the world, or bear the misfortunes which have befallen them, by their own fault or otherwise. This view is so constantly confirmed by works of fiction, and by the traditions which have come down from ancient times, that we cannot wonder at it; but it would be a great blessing if the rude and disgusting truth were thoroughly known and appreciated that, in the great majority of cases, the self-destroyer has injured his brain by drink or other excess; that, in others, the sufferer is a coward, or the mere victim of passion, or crazed by selfishness. Most people would be exceedingly surprised to learn how many of the thirteen hundred self-destroyers in any year were profligates, blackguards, cowards, and miserable egotists, who had brought their brains into such a state that they could not control their actions, nor bear pain of body or mind. So many emotions of awe and tenderness are naturally and necessarily roused by any tale of wilful death that it seems to be harsh, coarse, and light-minded to say what I have said. While quite understanding, and even sympathising with, this kind of recoil, I must say that the truest reverence for human life, and the highest order of sensibility, will be that which shall go the straightest way to work to diminish the practice of suicide.

The true story of any coroner's register, told in full, would bring us all into a mood of common sense, with no little danger of the most exalted sentiment being turned into strong indignation against the victims who had spoiled the happiness of so many people besides their own. Let us take any such register, in any district in the kingdom, and see what we shall find between any two dates. Here is a specimen of what is always going on, though it is not everywhere that so many self-murders happen in a single neighbourhood within a very few years.

A. was an agricultural labourer of a very superior kind. He was a model of physical strength, and might earn large wages from the quantity of excellent work he could do. He had a wife somewhat his superior in station and cultivation. No

children. A comfortable dwelling; a kind landlord. No disease or misfortune, nothing amiss, till he and his wife took to drinking. On his landlord's death he was excused long arrears of rent, but received notice to quit—altogether inevitable under the circumstances. His wife being absent, in a temporary service, the dwelling was observed to be closed one day. A. was found hanging in a closet.

B. kept an inn, with good command of custom; took to drinking, and threw everything into disorder; one year hanged himself, and was cut down in time; and next year cut his throat, but not quite fatally: on which a lady was overheard to comment, "Dear me! that is a pity!" her sympathies being with his wife.

C. was a farmer and grazier: had good land, and enough of it, good stock, sufficient capital. In short, was free from pecuniary care, as far as the world could see. He was an eager angler, and sufficiently provided with amusement. He took to drinking. His sheep strayed, and were the pest of fields and gardens in the early spring before the grass grew. He became ashamed to meet the complaints of his neighbours, and to show his cankered face among them. He slunk away to the meadows with his rod and line, or shut himself up with his bottle. He became occasionally wild with the horrors of delirium tremens, and then permanently despondent. He was watched and nursed very carefully: but one day blood was seen oozing out from under his chamber-door—he had cut his throat with his penknife.

D. was an active, cheerful-tempered young woman, affectionately treated by her family. She became variable in spirits, and was believed to dread desertion by her lover. She went out one day, without any remark or act which could excite particular notice, and was next seen dead in the water—her umbrella being on the bank: "Found drowned," was the compassionate verdict declared.

E. was not without a vigorous and absorbing pursuit. He was, besides being a farmer, a poultry-fancier. But he took to drinking: and one day his body was seen floating, under circumstances which left no doubt as to how it came into the water.

F. was an old gardener, who had enough—by such work as he could yet do, together with his wife's property—for comfort at home, if the home had been an amiable one. He might still

have earned fair pay : but he was lazy and pleasure-loving. He was trying to keep upon his feet in the road when he should have been plying his scythe or pruning-knife. After a time, it became understood among the neighbours, when utensils were missed from back-yards and sheds, and when fruit disappeared from gardens in the night, that the pilferer might be pretty well guessed at ; and, when the talk became more open, he was found one day to have gone away. He had not gone many miles. At a town where he went occasionally on business—perhaps to sell vanished bill-hooks, blacking-brushes, or rare strawberries—he was found hanging in a closet. His most intimate friend and drinking companion was

G., a postillion, so clever and full of local knowledge that he could make almost any amount of money during the travelling season of the year. Yet he could not pay the rent he had guaranteed for his daughter, or any other debt ; and he, like C., was at last ashamed to show his blotched face in the place where every one had been well-disposed towards him. He drank all night after hearing of F.'s suicide, and in the early morning went to the stables. A little time after some one saw a pair of legs in an odd position, and went to see. G. had hanged himself.

H. was pitied, and let alone by the men on the farm on which he lived. He was considered weak ; he had never married ; and his father was well to do ; so he went out as much as he liked with the stock, and no more. Whether he would have been weak as a sober man, there is no saying. He was not sober ; and a feeble despondency took possession of him. He was perpetually saying that he would not be seen any more, and bidding people good-bye ; so that at last every one called it "his way," and paid no attention to it. For once, however, it was said in earnest : he was not seen any more alive, and he had bid some of them good-bye when he went out with some cattle. He was found lying at length in a brook, too shallow to have drowned him, if he had not turned his face resolutely under water.

Is this enough, from one neighbourhood, within a few brief seasons ? It is enough for my purpose, whether this coroner's register relates to the north, south, east, or west of England. Of all these cases, there is only one which in any degree answers to the sentimental view of suicide : that of the young woman. The others all subjected themselves to disgusting and tor-

menting disease of brain, liver, and skin by a habit of intoxication.

This may remind us, that the thirteen hundred deaths in a year are those only in which the verdict of the coroner's jury declares the case to be one of suicide. Coroners, physicians, and registrars are of opinion that a large amount of self-murder passes unrecognised, and is called illness or accident. Another noticeable circumstance is, that wherever there are suicides from drink, there is a large mortality from the same cause, so wilfully incurred that it is virtual suicide, though no coroner's court may sit over the corpse. If the number of men and women who died intemperate—died of intemperance persevered in, in spite of all imaginable warnings—in the locality of these suicides, and while they were going on were added to the avowed self-murders, the disgust of inquirers would be almost lost in horror: so many innkeepers in five years; so many shopkeepers, so many artizans, so many labourers, till the churchyard is so crowded that the wonder is where the next series of suicides will find room—the verdict of insanity entitling them to a grave in consecrated ground.

Thus does a minute study of any district discourage every romantic association with suicide, and point to preventible causes. So do all the general facts of the case.

For instance, nearly three men commit suicide to one woman. As there is no such disproportion in the subjects of what we may call natural insanity, we may attribute the majority of male suicides to the habit of men to incur the artificial insanity caused by intemperance. It is too true, that many women are intemperate: but custom and opinion restrain the vice to a very small proportion of the sex; and it is observable that the sort of women who so drink—the low population of our cellars and rookeries, and the outcast class—are precisely those who commit nearly all the suicides on the list.

Another general fact is, that the proportion of suicides regularly corresponds with the seasons of the year. The greatest number is in the early part of summer; next, in the opening of spring; and the smallest is at the end of autumn. So far is the popular association of suicide with foggy November from being well founded!

Again: suicides are (with the exception of some peculiar localities) more common in towns than in the country; and in

one sort of occupation than another. There are districts which seem to be actually infested by the notion and the practice, while in others it is extremely rare. For instance, while the average of suicide for England and Wales is 68 in a million of the population in the three years 1856-7-8, the county of Pembroke afforded a proportion of only 10 suicides, while Westmoreland exhibited a proportion of 111. These are the two extremities of the list of counties. Every one would suppose that Middlesex would be at the top, and far above every other, unless, perhaps, its populous neighbour, Surrey; but rural Westmoreland is worse than even the seat of the metropolis. Middlesex shows a proportion of 105, and Surrey of 104, to the 111 of Westmoreland. Such a fact indicates constant and ascertainable causes; and the causes are not difficult to find among an antiquated population like that of our mountain districts, where natural instincts and passions are strong and comparatively unchecked, and where society is in a transition state from an ancient to a modern economy. The change in the fortunes and methods of life of the "statesmen" of the Lake District, caused by the agricultural improvement and the manufactures of the neighbouring counties to the south, has broken the fortunes and the spirit of many a rural family, and induced debt, despair, and drunkenness in many a homestead where all was prosperous a century or two ago. Here we trace causes of suicide, which, as the returns show, work only too surely; and such causes as these are preventible, and will assuredly be obviated by a further advance in civilisation—the first step of which should be, in the special case, an improved management in land and stock.

Another general fact is, the operation of the *imitative* faculty in propagating the practice of suicide. The case is too low to justify the use of the word *sympathy*. It might answer well to call it mimickry at once. People who commit deliberate suicide have generally a weak faculty of imagination, together with a strong egotism. They cannot conceive of anything outside of their immediate trouble; they have not the serenity and fortitude which accompany a comprehensive capacity and excursive habit of mind; they think of nothing but an escape from present anguish; and they seize upon any suggestion afforded by the conduct of others. Hence a run of suicides when a new or fantastic method is exhibited. The particular propensity is

met for the occasion by some mechanical device : such as raising the balustrades of London bridges at one time, and covering over the gallery of the Monument at another. In their grosser forms of egotism, these imitative suicides are remediable by ridicule, neglect, or the punishment of such offenders as are rescued from death. During the reign of Louis Philippe there was a suicidal epidemic in France, which would have been simply ridiculous but for the perdition of many young people who might have lived to be wiser. A pair of impatient lovers, who could not wait to be happy, shot or drowned themselves (I forget which), tied together with pink ribbons. As soon as the story had gone the round of the papers, another pair of lovers shot themselves with pistols, which were tied together with blue ribbons ; and then others poisoned themselves, united by red ribbons ; and others precipitated themselves from a balcony, bound together by some other coloured ribbons. By this time something must be done. The thing done was to suppress all public notice of such suicides for a time ; and they soon ceased. In 1841 there was a rage for jumping into the Thames from the bridges. When there was a case almost every night, the survivors of the experiment, and those caught in the attempt, were sentenced by the magistrates to short terms of imprisonment. As soon as it was found that the real disgrace of conviction for an offence was sure to be incurred in case of failure, the number of suicides immediately sank to the average.

As to the permanent causes of that average amount,—they are the influences (whatever they may be) which excite the destructive propensities. A maniac tears his clothes to pieces, if he can do nothing else ; a man at large knocks down his neighbour, murders his wife, or cuts his own throat, according to the degree of excitement, or kind of passion that he is under. The same propensity, disciplined by good training, superior powers, and habitual self-control, enables a higher order of man to preserve his health of mind, and occupy that particular faculty in conflict with his difficulties. He conquers fortune, instead of taking up the razor against himself or somebody else. It is a very large and arduous remedy to obtain : but the true preventive of suicide would be a full and equable development of the human faculties, by which imagination would modify the present by the future ; ameliorating sensations by ideas, and rendering despair impossible ; and by which also all distracting

selfishness would be precluded, like any other monomania. In speaking of such an equable development, I of course include such exercise and regulation of the physical faculties as is indispensable to the health of the system. As a warrant for this view, I may cite one more general fact, indicated by the official returns;—that, so far from the spread of education (random and partial as that education is) occasioning an increase of suicide, the amount diminishes (other things being equal) according to the superior quality of education, and increases among the uneducated classes, in proportion to their ignorance. In fact, the passions and propensities of the rudest people are the strongest.

Do we want something more within compass, more immediately practical than the grand method of preserving the balance of the faculties, and the health of the mind? Well, then, there are some very plain practical truths which we might attend to much better than we do.

I say no more about the artificial insanity which comes of excess in drink and other vicious indulgences. Nobody needs convincing of the mischief of intemperance, or the horrors of delirium tremens: and it is enough to fix attention upon the connexion between this artificial insanity and suicide. If we turn to what is commonly considered natural insanity,—the insanity to which coroners' juries attribute nearly every suicide that occurs,—we shall find that some powerful preventive duties lie directly in our way.

It is an old complaint on the part of physicians, and of sensible people outside the medical profession, that families and friends, and sufferers themselves, conceal the symptoms of maladies of the brain till they can be concealed no longer. The further practice of making a secret of the existence or condition of an insane relative is mischievous in the same direction, by keeping up the notion that there is some sort of disgrace or insurmountable horror in insanity. The notion is a relic of ignorance and superstition, as we see by the fact that nobody is ashamed of having been delirious in a fever. In that case, the simple physical origin of the brain disorder is completely established; and the delirium is regarded, when it is over, like the other symptoms of the fever. In the case of the insane there is still some lingering of the ancient notion of possession by demons; or of the malady being a signal case of

branding by the wrath of Heaven. No men or women would now admit that any such conception influences their minds; but yet they might find it a difficult matter to explain clearly why they feel disposed to conceal the fact of the insanity of any relative. It is not my business here to go into any inquiry of that kind. My present point is, that a vast amount of curable brain-disease becomes incurable, and that a large proportion of suicides is occasioned by this practice of concealment of early symptoms. A man who would complain to wife or brother, and to his physician, of disorder in any other organ of his frame, will not speak about his brain. He would be explicit about disordered functions and local pains, and treacherous weakness of limb or sense, but he is gloomily silent about an impaired memory, irritable moods, depressed spirits, haunting fancies, and the long train of forerunners of unconcealable brain-disease. He goes on as long as he can, and tells only when he feels he is not to be trusted with razors, or the laudanum bottle. Then his family conceal it, trying insufficient remedies, and letting him go about till he assaults some eminent personage, or kills a child, or hangs himself. Such patients often, if not usually, pass through a stage (well known to convalescents from a "nervous fever," as it is called), when the suffering from a sensation of tension in the head is such that the impulse to "let it out" is almost,—sometimes quite,—uncontrollable. The patient may be as fond of life as anybody; he may have every reason, this illness apart, for valuing and enjoying life; his reason and conscience may be quite clear as to the duty and privilege of brave living and unselfish dying; and yet he snatches at the first knife within his reach, to relieve the intolerable sensation in his head. Hence the suicides, not only of convalescents from severe illness, but of many sufferers from incipient, or still manageable brain-disease.

Here, then, we see that a rational, honest, cheerful attention to the health of the head,—just as if it were the chest or the abdomen,—is one preventive of suicide. There is more behind, however. We must go still one step further back. The duty will not be fulfilled till the prevention of insanity itself is taken in hand.

To a great extent it may be said that the same improvement in education and morals which would preclude much suicide, would preclude a far larger amount of insanity. This is true;

and it narrows the ground of special consideration. If we all lived so as to enjoy the best health, and if we were all good and reasonable, very few people would kill themselves, and insanity would be very rare. Taking that much for granted, there are special considerations belonging to the case.

Insanity, and particular forms of insanity, are hereditary. The practice of suicide goes down through successive generations, as we all know familiarly by the evidence given at coroners' inquests. Out of this fact arises a clear and stringent duty in the matter of forming a marriage connection. But there is one point especially on which the evidence is so plain, and the consequences of transgression are so fearful to the parties concerned, and so injurious to society, that nothing but ignorance can excuse the commonness of the offence. The intermarriage of blood-relations will hereafter be regarded as a barbaric crime, like some of the gross practices which we read of in ancient and in foreign countries far behind us in civilisation. We recoil from Spanish and Portuguese marriages between uncles and nieces; but we see marriages of cousins take place before our eyes, with no more effectual condemnation than a shake of the head, and a prophecy of future mischief. And this goes on while marriage with a deceased wife's sister—an union which no natural law forbids, and some strong ones prescribe—is resisted by ecclesiastical opposition which makes no difficulty about the marriage of cousins.

One single testimony of fact will here be worth more than anything else that can be set down. The Commonwealth of Massachusetts desired, a few years since, to ascertain the number of idiots in the State, with a view to arrangements for their welfare, as well as to establish the statistics of the case. The legislature sent out a Commission of Inquiry; and the Report of that Commission (written by the Dr. Howe so well known as the educator of Laura Bridgman, and as the Principal of the great Blind School at Boston, U.S.) lies before me. One passage (page 90) gives "the statistics of the seventeen families, the heads of which, being blood-relatives, intermarried," which he had occasion to inquire about in the discharge of his commission. Ninety-five children were the issue of these seventeen marriages. Of the ninety-five children, one was a dwarf, one was deaf, twelve others were scrofulous and puny, and forty-four were idiots. *Forty-four were idiots!* Nature speaks plainly enough

here; and no considerations of sentiment, custom, or prejudice should drown her voice.

We found asylums for idiots: we reform our lunatic asylums: we reason with our hypochondriacs, and soothe our sufferers under morbid melancholy, and try to divert and occupy the monomaniac. This is all very well: but it would be better to have no idiots and lunatics, and to know the practice of suicide only by tradition. We may aim at this from this day forward; and if we do not aim at it, socially and individually, it will concern us very closely to consider what share we have in the thirteen hundred yearly deaths in England to which we give the name of self-murder.

CHAPTER X.

A DEATH-WATCH WORTH DREADING.

When King George III. and all his people were expecting an invasion in 1803, there was some anxiety as to the number of citizens who could be collected to repel the enemy. There had been a census two years before; and if it could be trusted (which was perhaps not the case) the number of people of both sexes and all ages in England and Wales was 9,000,000. In these 9,000,000 were included our soldiers and sailors who were dispersed about the world: and thus the King and Mr. Pitt were naturally anxious about the paucity of men. They were unwilling to withdraw the husbandmen from the field; for we then depended for our very existence on the food we ourselves grew. The King's passion was for agriculture; yet, if he had had his choice of a crop, he would have begged for the mythical old harvest that we have all read of at school—armed men springing from the furrows. He considered that the greatest of national blessings would be the birth of the greatest number of boys. He was not out of humour with the girls either; for he looked upon them as the mothers of more boys. His leading political idea was the encouragement of the greatest possible increase of citizens. He noticed every large family he saw in his walks, patted the children on the head, made a present to

the mother, and called the father a good citizen. The royal example spread among the authorities throughout the kingdom. Country justices patted children on the head, and ordered bread for them out of the poor-rate to such an extent that the poor-rate soon amounted, in this population of 9,000,000, to the enormous sum of 4,000,000*l.* Wheat was then at 115*s.* 11*d.* a quarter. The trading classes were going to ruin, or had already fallen upon the rates. No matter! Substitutes for the militia were so hard to be found that the parents of large families must be upheld and favoured; and if tradesmen could not support their own large families, the rate would give them bread.

When the war was over, and the soldiers and sailors came home, and food was dear, and the labour-market was overstocked, and every town and village swarmed with pauper children (legitimate and illegitimate), and the rate swallowed up more and more of the capital of the country, the fact became plain that the people had outgrown the means of subsistence. An alarm even more demoralising than King George's desire for a host of subjects now arose. Children were looked upon unlovingly, because too many of their parents were not married, or had married to obtain the benefits offered by the poor-law to unscrupulous people. Then arose a multitude of prudential schemes for economising money, and clubbing money, and insuring lives; and at last—insuring deaths.

It was even so. A person of middle age might describe the contrast he had himself witnessed between the days when a row of children presented themselves to the King, pulling their forelocks or bobbing their curtseys, sure of being praised for their mere existence, and therefore objects of parental pride and hope, and the time when (not so many years after) it was an unconcealed relief to poor parents that their children should die. That was the opening season of tract-distributing and cottage-visitation under the early "evangelical" movement; and this modified the cottage language of the generation on which it was first tried; so that the account given of the death of children was, that "it was a happy thing—for the Lord would provide better for them." Nothing was more common than this method of consolation, or of accounting for not needing consolation.

It began to be too well understood that, up to a certain age,

children are an expense, after which they gradually turn into a source of profit. Facts of this sort, which must be considered in framing a legal charity, became only too well understood in the homes of the poor. By dying, the infant relieved the weekly fund of the family, and was itself "better provided for with the Lord." I will not dwell on this phase of society. It was necessary to advert to it, because we are suffering under the consequences to this hour, and have some remains of the perversion to deal with still; but I will hasten on to a time when trade in food had become free, and all the arts and business of life had so increased, and so much gold had been discovered wherewith to pay labour, and so many colonies were open to emigration, that no excuse remained for dreading that surplus population which had become a mere bugbear. The former surplus population was a real and grave evil: but to develop industry and education, and throw open the harvest-fields of the world, was the remedy. In the same way now there are half-fed families and depressed neighbourhoods; but there is a remedy in such an improved intelligence as shall distribute labour where it is wanted, and in good sense and good conduct which shall make the most of resources at home. In other words, there is enough for everybody, if everybody knew how to use it.

Under such an improved state of affairs, how have the children been getting on? I am not considering the children who can work, but infants—infants so young that they used to be dear precisely because they were so helpless—precious because they were of value to the heart alone—but infants of whom it had been discovered that they were unprofitable to such a degree that some arrangement must be made to compensate for the peculiarity. Under the unreformed poor-law, at its worst period, daughters had presented themselves at the Workhouse Board to ask for pay for nursing their parents: and such daughters were just the sort of mothers to sit down, with their baby on their lap, to calculate the gain of insuring it in a burial-club. One of them avowed, a few years ago, how she managed. She put arsenic on her breasts when she suckled her babies, as soon as they grew expensive and troublesome. She had sent eight out of the world in this way; and she could not see that she had not done right. She said it was better for the children, who would be more certainly "provided for"

than they could be by their father: and of course it was better for the father and herself. So she murdered her eight children before she was herself brought to the gallows.

There is a town in England which had, in 1854, a population somewhat under 100,000. It is a healthy and prosperous place, where the average age reached by the easy classes is as high as forty-seven years, and where the work-people are so far thriving as that they pay largely to the various objects of Friendly Societies. What would my readers suppose to be the mortality among children in such a place? Of a hundred children born, how many die in infancy?—Of the children of the gentry, 18 per cent. die in infancy. Of those of the working classes how many? 56 per cent. "What an enormous mortality!" everyone will exclaim. "What can be the reason! How does this mortality compare with that of other places!"

To ascertain this, we will take some district which shall be undeniably inferior to this town in probability of life. The rural parts of Dorsetshire—where the poverty of the labourers is actually proverbial—may be selected as the lowest we can propose. Yet the infants of Dorsetshire labourers have four times as good a chance of life as the children we have been speaking of. In that healthy and prosperous town the infant mortality was, in 1854, fourfold that of the poorest parts of Dorsetshire. The same thing was then true of Manchester. When wages were highest, and everybody was able to live comfortably, four times as many per cent. of the children who were born died in Manchester as in Dorsetshire.

Was there any peculiarity in the case of these short-lived families? any circumstance in their management which could account for the difference? What the impression was at the time we see by a presentment by the Liverpool Grand Jury, which mainly occasioned the next change in the law of Friendly Societies. What the Grand Jury said was this: "They could not separate without recording their unanimous opinion that the interference of the legislature is imperatively called for, to put a stop to the present system of money payments by Burial Societies. From the cases brought before them at the present assizes, as well as from past experience, the Grand Jury have no doubt that the present system acts as a direct incentive to murder; and that many of their fellow-beings are, year after

year, hurried into eternity by those most closely united to them by the ties of nature and blood—if not of affection—for the sake of a few pounds, to which, by the rules of the societies, as at present constituted, the survivors are entitled. The continuance of such a state of things it is fearful to contemplate."

The Grand Jury had an incitement, of course, to say what they did. The occasion was the trial which my readers may remember, for the murder of two boys, aged eight and four, for the sake of the payment from a burial club; and the immediate sanction for their request was the alarm expressed by Lord Shaftesbury, supported by Baron Alderson's avowed belief, that burial-clubs occasioned infant mortality on a large scale. How much concern had the healthy and prosperous town I have described with burial-clubs?

The population, we have seen, was under 100,000. On the "death-lists," as the register of insurance was popularly called, there were the names of nearly 39,000 infants. It is clear that there must be some great mistake or fraud where it was pretended that 39-100ths of the inhabitants were infants insured in burial-clubs. We find some explanation in the plan pursued by a Manchester man of uncommon thrift. He entered his children in nineteen burial-clubs. By a comparison of numbers and registers, it was found to be a common practice for parents to subscribe to as many clubs for each child as they could afford. And not parents only. It was discovered that women who undertook the charge of workpeople's infants, were in the habit of insuring the children in burial-clubs; thus acquiring a direct interest in the death of their charge.

When these facts became known, through the inquiry caused by the Liverpool grand jury, and by a published letter by the well-known chaplain of the Preston House of Correction, the world naturally cried out that there must be a bad spirit of suspicion, of exaggeration, and of evil imagination in those who could say such things of English people. A Committee of the House of Commons inquired into the subject in 1854: and meantime the following facts were ascertained.

It was found, in the first place, that though the law needed mending, it was already much better than the existing practice. By law, no insurance for money payable at death could be made on any child under six years of age. The principle of the law had been the plain one, that it was necessary to uphold all

safeguards of the life of infants whose existence could not be made profitable. To make their death profitable while their lives were expensive, was to offer a premium on neglect, and even on murder. As such was the law, society supposed that all was right, till the Preston chaplain showed that it was useless—and how. The law was prospective, and nobody seems to have asked how many children were on the "death-lists" at the time of the passing of the Act (1847): and the members of the old clubs insisted on understanding that the new law affected only new clubs, and went on registering infants for burial as before. They quoted the opinion of counsel for this; and, when new clubs were to be formed, they framed them on the model of the old ones, without any regard to the law. So lately as the month of May, 1853, there was a club of 1500 members set up, into which infants were received just as if no impediment existed.

This was one fact. Another—perfectly astonishing to all but local visitors of the poor—was the way in which the illness or death of an infant was spoken of. It was a difficult affair to persuade the parents to send for the doctor. The answer was, in the ingenuousness of barbarism, that "the child was in two clubs." It would, in other words, be no harm if the child died, while it would be a pity to have to break into the money to pay the doctor, when it was of no use. Doctors themselves have been told, and so have rate and rent collectors, that the cottager cannot pay now, but will have money when such or such a child dies. It was the commonest thing in the world to hear the neighbours saying, what a fine thing it would be for the parents if their sick child died, as it was insured in three clubs, or two, or ten, as it might be.

On the trial of Rodda, who was hanged at York, some five or six years ago, for the murder of his infant, it was proved that he had said he did not care how soon the child died, as he should then have 50*s.* from the club; and that he added remarks to the effect that the death of another would bring in the same amount; and two more would each fetch 5*l.* Clergymen could tell how often the parents of a fallen daughter, or the fallen daughter herself, found comfort for the disgrace and burden of an illegitimate child in the thought of the compensation that its death would purchase from the burial-club.

Such were the facts which inquirers encountered, and which the Preston chaplain published, to bring the representation of

the Liverpool Grand Jury into general notice, and obtain a reform of the law.

It was full time that something of the kind should be done. In one burial-club, the deaths of children between two months and five years old were no less than 62 per cent. of the whole. If any fact could be more directly to the point than that, it is that from 6 to 8 per cent. more children died who were in burial-clubs than in the poorest class where no such insurance was made.

Full and clear as the evidence was, and remarkable as were two or three child-murders, in connection with burial-clubs about that time, many of us could not believe that such things could be done in England as Rodda was hanged for, and for which Honor Gibbons and Bridget Gerratz were sentenced to the same doom. But the prevalence of the feeling that they had done what was natural under the bribe offered for the child's life, and the certainty that the law would be altered, caused a commutation of the sentence on these women to one of transportation for life. From that moment society was pledged to amend the law: and the thing was done.

It was a fact not sufficiently made known, that the law of the land does not permit Life-insurance in the offices to which the middle and upper classes resort, when the death of the person insured can be otherwise than unprofitable to the insurer. If I remember right, this restriction was suggested by the case of Miss Abercrombie, who was thoroughly understood to have been poisoned by her brother-in-law in 1830, after he had effected large insurances on her life. It seems strange that the same limitation should not have been extended to burial-clubs. What a rich man could not do in regard to his child, was done in the case of 39,000 children in a single town of less than 100,000 inhabitants: a circumstance which occasioned repeated comment in the Committee of 1854.

The inquiries of that Committee brought out some evidence of a very interesting character. Much of it has been lightly passed over because there was no proof of any considerable number of direct murders. But, as one judge observed, in his evidence, all orders of murder are rare in the experience of any one judge: as several witnesses observed, the undetected murders were likely to bear, in this case, a large proportion to the detected, while there was no provision for detecting them: as

many more observed, the mortality arose from neglect and inaction, where murder was not to be imputed : and, as nearly all agreed, it was a perilous and pernicious practice to throw the inducements into the scale of a child's death, rather than its continued life. Hence the change in the law.

By the Friendly Societies Acts of 1855 and 1858, the amount obtainable from one or more societies may not exceed 6*l.* for a child under five years of age, or 10*l.* for one between five and ten ; and no money is to be paid without the production of a certificate of a duly qualified medical man, stating the probable cause of death, and also indorsing the amount paid upon such certificate.

It had been earnestly desired that the object of insurance should be the burial of the dead by the club, so as to preclude the passing of money into the hands of the parents or nurse. It was objected that this would break up existing clubs, and that it might interfere with a provident habit largely established. We shall all be better pleased when we see the provident habit based upon the life instead of the death of children ; when we see insurance effected to procure them education, apprenticeship, or settlement in life, rather than a funeral. Also, considering that the chances of living are already far less in the case of poor children than in that of the upper classes, one would rather not see such a sum as 6*l.* made obtainable by the death of an infant. No doubt the original intention was good—that the grief of losing the little one should not be aggravated by the difficulty of paying for its decent interment; but after the insight into the system obtained by the inquiries of 1854, every caution should be used in sanctioning money payments on the death of the helpless.

According to the latest Reports, there are 125 Burial Societies in the kingdom, comprehending about 200,000 members. Some Societies have 20,000, and some even 50,000 members each—the bulk of whom are children. The deaths last year were 5397 ; that is, an amount more than double the mortality of Friendly Societies generally, which is somewhat lower than that of society at large in this country.

The Registrar of Births, Marriages, and Deaths declares the mortality in burial-clubs in 1857 to be to the general mortality as 27 in the 1000 to 22. The high mortality among children is always assigned as an explanation ; and this is, on the other

hand, the ground of complaint about the payments of these clubs. Their members, who consider that they pay a high rate of insurance during the periods when there is least probability of death, are always surprised that their Society does not grow rich. It seems never to have any reserve. The explanation now offered is, that the same subscription is required for infants as for strong men; and, as a very large proportion of the infants die, the funeral money of adults is spent in laying the little ones in the ground, or in consoling the parents for their death.

Now, all this seems a disagreeable, unnatural, perilous way of going on. If we look at the obvious benefits of co-operation in the form of insurance, and consider the aims set forth by the Registrar of Friendly Societies, we shall see nothing that can recommend the insuring the lives of little children. The proper objects of Benefit Societies are agreed to be five, besides the expenses of management: viz. medical attendance; allowance in sickness up to the time when the pension begins; a pension at sixty years of age; a sum payable at death; and endowments.

The great and fatal mistake appears to be, the inversion of the purposes of these two last provisions. There are sound and strong reasons why a man, or a widowed mother, should insure his or her life. It may be a question whether a burial-club is the best place to put such savings in; but it is indisputably wise for those who have relatives dependent on them to secure the payment of a good sum of money on their removal by death. The only reason for such an insurance in the case of a child is that the mere funeral expenses and family mourning may be paid; and every inducement to parents to make a profit of the loss of a child is a shocking and dangerous abuse. The child's proper place is under the last head—that of endowments.

These endowments are sums of money to be paid at a certain future time, for the benefit of the person in whose name the insurer may subscribe.

For instance, a parent pays so much per month on behalf of an infant, in order to receive a considerable sum when the child is fourteen (in order perhaps to apprentice him); or when he reaches manhood—to settle him in business, we may suppose. Arrangements are made, under Government sanction, for such insurance; and by these it is settled that, in case of the child's death, the deposit is returned to the insurer; and, in

case of the death of the insurer, the deposit, be it more or less, may be taken out and applied for the benefit of the child.

If we could convert into endowments of this kind the money deposited in readiness to bury 150,000 children, a new prospect would open to the next generation of the working-classes. The difference would immediately appear in the returns of annual mortality. In towns and villages where the murder of infants may not be even thought of, it makes an immense difference in the chances of life, whether infants are looked upon as likely to die or meant to live. They pine under that expectation of death as under the evil eye. It is truly a death-watch to them. Their chances when out at nurse are never the best; and they are slender indeed when, in addition to the trouble the little creatures give, they may each put several pounds into the nurse's pocket by going to sleep for good. All is changed when the money is laid up to put them to school—to bind them to a trade—to set them up in a business. Nobody thinks of their burial then. They are regarded as living, and likely to live; and hundreds and thousands of the children of England grow up, instead of dropping into an early grave. If the ghost of George III. were to come and tell us the truth about it, he would probably put it in his accustomed way: he would tell us that we might double our army, and fully man our navy, out of the difference, if we would turn over all infants from burial clubs to endowments under the Friendly Societies Act. Regarding them as civilians hereafter—or not looking beyond the immediate claims of every helpless infant for the fostering of its life—we ought all to direct our whole influence on the encouragement of the supposition that human beings are born to live. It is a disgrace to society when children die *en masse*. It is a sign that the laws of nature are somehow violated.

The best way of discouraging these infant burial-clubs is to keep the children alive and well.

Let everybody help, then, to get all infants properly vaccinated. Let public opinion discredit the hire of wet-nurses, which annually dooms large numbers of the children of wet-nurses. Let it appear that society expects and intends its infants to live and not die, and the terrific mortality which marks the site of burial-clubs will decline, and the clubs with it. The difference between them and the hopeful, cheery Endowment Insurance, is the difference between the tick of a death-

watch in the stifling chamber in the dreary night, and the stir and chirp of nestlings in the wood, in the breeze and glow of the morning. If the working men of England saw the choice that lies before them, surely they could not hesitate between the life-fund and the death-fund for their children.

CHAPTER XI.

THE STUDENT.

HIS HEALTH.

How much truth is there in the popular notion of the effects of a student life? The ordinary conception of a "bookworm" (as every man is liable to be called whose life is spent amongst books) is of an uncomfortable-looking personage who cannot hold up his head, nor tread firmly, nor see a yard before him. His limbs are lank: his hair is limp: his shoulders are shelves to hold dust: his head droops forward: his face works nervously in conversation: there is scarcely anything that he can digest: he is disconcerted if any visitor, any news, or household incidents break in upon his habits and his plans. Nothing seems to him worth such a sacrifice: for he has long been convinced that nothing in the world is of so much consequence as the particular subject which occupies him: and it follows of course that to obstruct his labours upon it is to do the greatest possible injury to the world. If he is married, it is a mistake; for he gives his wife only the second place in his heart after his books; and the children are very disturbing little people. If he is too much absorbed to hear their voices in play or in grief, they may chance to jog his chair, or even shake the room; and no bookworm can stand that. If they are ever so well disciplined, they are occasionally ill; or one may even die—and that is a painful and irresistible interruption. I need say no more. A mere outline will call up the image of the recluse student, as it is presented to the minds of the practical people of everyday life.

"Is it true?" is the first question. Yes, it is. For ages there have been such persons; and there are such at this moment. We may comfort ourselves with the certainty that

the number diminishes; and at present so rapidly, that we may fairly hope that a true specimen of the bookworm will soon be a subject of investigation as interesting as the dodo in Madagascar—setting naturalists to work to ascertain whether a known specimen is really the last of its species.

The next question is, Why we may expect the species to die out? And this involves the fundamental inquiry of all, How such a thing came to exist?

The bookworm is a transformation from the proper type of man, wrought by the too strong action of some law of nature, in the exclusion of other laws which it is a folly and a crime to evade. In the course of the education of the human race, there must be a period during which books must have a higher value than they can have in the long run: and during that period there must be men who overrate the value of books in general, and sacrifice themselves individually to the worship of some particular class of them. Such a period must necessarily occur before men understand their own nature and position well enough to perceive how they may make the best use of books, as of everything else: that is, as means and not as an end. During the bookish ages which originated and followed the invention of printing, men were unaware that the brain is the organ by which "we live and move and have our being;" and that no part of it (and therefore of our frame) can work as well as it might do unless the whole is exercised sufficiently for its health. Our growing knowledge and understanding of the structure and functions of the brain, and of the laws of health generally, is our security against a perpetual succession of bookworms. We may hope that intemperance in study will in time become rare, like other kinds of intemperance which we believe that men will outgrow, sooner or later. For some time past we have been accustomed to look into Germany for perfect specimens of the bookworm; yet even in Germany there is a strong conviction of the value of schools of physical training, in counteraction of the tendencies of study. This is right: for Germany has afforded the richest specimen perhaps of the bookworm in modern times; and to balance this, it is fair that she should furnish founders of gymnasia, at home and abroad. Eichhorn is one of the latest examples we have of the recluse student of the bookish ages of the world. If I remember right, he lived for twenty-five years shut up in his study, never crossing the

threshold (except, I suppose, to go to bed), and never having worn coat or shoes during that time. If ever seen at all, he was seen in gown and slippers. One would like to know how many human faces he did see—how many voices of his own kind he heard during those years. With all his learning, he certainly missed the great truth, that the man who makes no use of his environment lives but half a life, or more probably scarcely anything of a life at all, but rather a waking dream.

What, then, is the student to do? There must be men whose business lies in the library and at the desk. Such men are honoured by the wise, and most honoured by the wisest. Is this really an unfortunate destiny?

Not if they are wise. Not if they are aware that to exercise their limbs and senses, to cultivate their social faculties, and to lay a firm grasp on some practical business in life, is the true way to get the greatest value out of book-study. It is not necessary for them, any more than for other people, to be always thinking about their health, and consulting their own welfare. That is in itself a morbid habit. What they have to do is to plan their ordinary life in obedience to the laws of nature, as far as circumstances admit; and then they are free to think no more about it.

Such a plan is something like this,—proceeding on what we know of the differences of sleep in the light and in the dark; of the condition of the brain at different periods of the day; of the relation between the stomach and the brain, and generally of the animal functions and the brain; and, again, of the relation between the man altogether and the objects and influences which surround him.

The student should rise early. To my mind, after careful observation, and after a long experience, the thing is proved. It is the fashion now to say that early rising might be wise and pleasant in former states of society, but that our existing social habits make it disagreeable and pernicious, if not impracticable. I am not writing for members of parliament, nor for people who pay visits every night. The great majority of Englishmen, and I suppose all students, have the power of arranging their own day, and obeying the laws of nature in the disposition of it. If I had room, I should like to give some account of the results of philosophical observation in regard to the quality of sleep in daylight compared with that of the dark hours. The differences in

regard to the circulation, and the action of the brain are very marked—the indications being in favour of sleeping in the dark hours.

It is of great importance to persons of sedentary occupations to obtain brisk exercise as the first act of the day. Whether it shall be walking, or some vigorous exercise at home, is a matter of choice; but a man will study all the better after breakfast for having cheered his spirits, and quickened his circulation by a walk; and I will add, by what some people would call an unpleasant one. I speak from experience here. For thirty years my business has lain in my study. The practice of early rising was, I am confident, the grand preservative of health, through many years of hard work—the hours gained being given, not to book or pen, but to activity. I rose at six, summer and winter; and (after cold bathing) went out for a walk in all weathers. In the coldest season, on the rainiest morning, I never returned without being glad that I went. I need not detail the pleasures of the summer mornings. In winter, there was either a fragment of gibbous moon hanging over the mountain, or some star quivering in the river, or icicles beginning to shine in the dawn, or, at worst, some break in the clouds, some moss on the wall, some gleam on the water, which I carried home in the shape of refreshment. I breakfasted at half-past seven, and had settled household business and was at my work by half-past eight, fortified for seven hours' continuous desk-work, without injury or fatigue.

The bookworm makes no choice of hours for his studies. He begins when he gets up, and leaves off when he goes to bed. More moderate students will do well to choose the morning hours for study. I believe they are all well aware of this, though many excuse their practice of night study by the ordinary pleas of quietness and a supposed favourable state of brain. If we do not question their assertions, we have the strong ground for remonstrance that they are sacrificing duration to quality at a tremendous rate. They will lose more by injuring their nerves, sleep, and digestion by night study, than they can possibly gain by any supposed aptitude in the brain for the labours of the lamp. I am myself convinced that the brain is more obedient to wise calls upon it than we are accustomed to suppose. I am confident that a vast amount of energy, thought, and time is wasted in fastidious consultation of the brain's

likings; and that men who make their brain their servant, instead of their master, may train it to punctuality and obedience. The way to obtain the needful "inspiration" for writing and clearness for reading, is surely not to question whether it is there, or whether it is coming, but to sit down in confidence that it must come, if the faculties and feelings which accompany it are put in action. If the student is out of order—if his digestion is wrong—if his feelings are agitated, or he is benumbed by want of exercise—then, of course, he must betake himself to the best means of setting himself right. In his normal condition, however, he will find the fresh, strong, light hours of morning the most favourable to close attention, vigorous thought, and unfaltering achievement. Such is, I believe, the testimony of those who have tried whether or not the hours of vigour are best suited to the primary task of the day.

It is scarcely necessary to point out the familiar danger of night study: the recourse to stimulants or sedatives to force the brain action or compose the nerves. The dismal story of the intemperance of students is too well known to need to be dwelt on here. We have heard enough of strong coffee, of green tea, of wine, of tobacco, of opium, and even, as in Mrs. Elizabeth Carter's case, of wet towels round the head, to keep the faculties awake. Mrs. Elizabeth Carter's recompense for such inveterate study was a besetting, maddening head-ache, frequently recurring for the rest of her life. I have never forgotten a dismal spectacle that I saw, and some pathetic words that were uttered, when I was sitting, in 1834, beside Kosciusko's monument on the Hudson River.

Two students of the West Point Military Academy were telling me about their college-life, in which very hard study was required. Both were thin and pale, and both obviously accustomed to tobacco-chewing. One walked a few paces away to look for the approaching steamboat, when the other made some remark which justified me in asking whether his health would not be better for abstinence from the juice which showed itself at the corners of his mouth. He assented instantly and heartily.

He said it was a dreadful bondage; it was wearing out his stomach and ruining his nerves; he would give all he had in the world, and undergo any suffering, to get rid of the curse he had taken upon himself in mere imitation on entering the college; but he "could not afford it now." He could not study

without it; it would take him a fortnight to learn to study without it; and the loss of a fortnight would prevent him from passing in his year, and would injure his prospects for life.

What became of him I never knew; but the one certain thing about him was, that he had not nerves which could be expected to stand the stress of life for its ordinary term.

There are physicians who are much to blame in the counsel they give to persons who place themselves under artificial conditions for the sake of study.

When I was young, and under a course of hard literary work, a physician said to me one day in my study:

"You have a convenient cupboard there, at your elbow. You ought to keep a bottle of hock and a glass there (I would not recommend an alcoholic wine). You should help yourself with a glass of hock when you feel exhausted—say, by eleven o'clock at night, or when you feel a sinking."

"No, I thank you," said I. "If I begin with a glass by myself, will you warrant my not getting on to a bottle? Cold water is my restorative; only that I never want one beyond regular meals."

What would not a physician have had to answer for who should have advised the West Point student to chew tobacco? And how much less rash is it to recommend a recourse to wine in solitude, as a consequence of preceding intemperance in study? If some physicians were more careful in their advice, no one perhaps could say, as a London literary clergyman said to me twenty years ago,—that he did not know one single author except our two selves who did not resort habitually to some sort of stimulant or sedative,—strong coffee or tea, snuff, wine, or spirits, or opium in some form,—as a necessity of student life. We may hope that the intervening twenty years have made a great difference; but the true preventive—muscular exercise, securing good digestion and circulation—is not nearly so much valued as it will be hereafter.

Here comes in the question, how much of the day may be given to study—book and pen-work—without injury to health?

It would be absurd to offer any precise answer to this, because much depends on individual constitution and intellectual habit, and much more on the way in which the rest of the day is spent.

As to the constitutional and habitual differences—we have

seen how Eichhorn lived; and a good many scholars have approached very near to him in devotion to books. Dr. Chalmers tried, above a quarter of a century since, to induce me to promise that I would not write, nor study, more than two hours per day. He said he had tried various proportions; and that he was satisfied nobody could write or study more without injury. He was right to confine himself to that limit, under such an experience: but the case might be, and is, very different to others. I had to reply to a similar remark from Dr. Channing afterwards. He was about to write an essay when I was his guest in Rhode Island: and he told me that he could not keep well enough to write at all if he did not stop at the end of every hour, and walk round the garden, or converse with the family. I could not promise what either adviser wished, for the fact is, I have never felt seven or eight hours' continuous work too much; and moreover have always found that, up to this limit, each hour was worth about two of the preceding. It is a matter in which no one can lay down a rule for another. Due provision being made for the exercise of other faculties than those engaged in study, the student must decide for himself how soon he ought to quit his desk.

The preliminary arrangements are very simple. Good meals at moderate intervals, and the stomach left at rest between. Some interval—an interval of active exercise is best—between books and food. A leisure hour for dinner, and cheerful conversation after it. A short nap, for those who need or like it, after dinner. Light occupation in the evening—literature, or correspondence, with more or less social intercourse, music, or other recreation. These are each and all highly desirable; but the most indispensable of all is strenuous and varied bodily exercise.

Many men believe, even now, that they are fully discharging their duty by quitting their books an hour or so before dinner; buttoning up their coat, taking their umbrella, and going forth for a constitutional walk. A man who goes out in this way alone, along a familiar stretch of road, and unable to escape from the same thoughts he has been engaged with all the morning, had really better be asleep at home. His brain would get more varied action by sleep than by such exercise as this.

A man who does nothing more or better than this for his muscles, and the part of the brain which is appropriate to them

will find but few dinners which he can digest. He must not touch this or that which he sees other people enjoying. After dinner he cannot sit upright, or get any ease for hours. He craves an easy chair or a sofa; and if they relieve his back, there is still the miserable uneasy stomach,—the headache, the spell of troubled and anxious sleep. Then tea and coffee make him sleepless: yet he does not know how to do without them. Then follows the night, with nightmare, fearful dreams, intellectual labour without any fruit but nonsense; or a leaden sleep which portends a morrow lost for study, or strongly unfavourable to it. What moral trials attend a suffering of this kind I need not show.

All considerate and good-natured people are ready to make allowance for the moods and tempers of a dyspeptic man; but the most generous treatment cannot give him self-respect under his frailties, nor such affection from those about him as is enjoyed by the amiable and cheerful friend who is not at the mercy of his own moods.

It is now the middle-aged student only (or chiefly) who can do nothing for exercise but walk. Boys and young men can either ride or row, or play cricket or fives. Those who cannot may derive much increased benefit from their walks, if the exercise is not expressly one merely for health's sake, but for some ulterior object; and if the object be benevolent the gain is great. Active business is a good antagonism to close study: and if the business be in the service of others, so much the more complete is the truce to besetting thoughts.

Nothing is so beneficial as the combination of muscular exercise with social enjoyment. "What does that mean?" some may ask.—"Dancing? Running races? Hunting? These are not at command, or are incompatible with a day's study."

Certainly they are. But we now have means of physical training in which exercise of the most exhilarating kind may be taken in company with comrades. I do not mean volunteer rifle-corps—in the first place—though they are admirable for the purpose. Some preparation for that drill is necessary, if not for all the members, for those of them whose employments are sedentary, and especially for students. A student, accustomed to a daily constitutional walk, joins a corps with all possible willingness, with good walking power, perhaps, and intelligence which gives him quickness and readiness; but his

arms fail him altogether. Having wielded nothing but the pen (except his knife and fork) he is confounded by the impossibility of handling his rifle. He does not see what he can do but give it up altogether. There is a remedy, however, if he lives within reach of a gymnasium such as several of our towns are now supplied with. We ought to have one in every place where any sort of education is provided for: for physical education is of at least as much consequence as anything that is taught in our schools. Under the instruction of a master of physical exercise, the weak part of any man's anatomy may be brought up to an equality with the rest in a very short time.

The blessing to Oxford men of the great gymnasium there—the best in the kingdom, if not in Europe—is altogether inestimable. It is a resource which has restored health to many a man too old to begin learning the sports of the undergraduates. It has made the middle-aged man feel his youth renewed by giving him the full use of his muscles again—perhaps a fuller use than he ever had in his life.

One of the most striking evidences of Mr. McLaren's science and skill in physical training is the benefit he renders to children, on the one hand, and elderly men on the other. Many boys at our public schools are injured by the violent exercises to which they are tempted there,—the long and desperate running especially. In the holidays they are taken to Oxford, and put under Mr. McLaren, who at once discovers the seat of the mischief, and soon and infallibly redresses the balance of the muscular action. And so also with his oldest pupils. He measures the chest, he detects the enfeebled muscle, and by gentle and appropriate exercises strengthens the weak part, till the spindle-arms become muscular, the chest expands, the back becomes straight, with the head properly set on the top of it; there is an end of the need of easy chair and sofa after meals; nothing comes amiss at dinner, and there is no indigestion to make it remembered afterwards.

Mr. McLaren's pupils have lately expressed their gratitude to him by a splendid gift of plate, and words of strong acknowledgment. His best services of all will have been the establishment of scientific physical training among us, if his Oxford pupils will exert themselves in their respective future homes to promote the opening of a gymnasium in every place where there are inhabitants enough to support such a school.

So much for the physical life of the student. But the completest prudence in regard to daily habits of food, sleep, exercise, and study, may be baffled by deficient discipline in another direction. It is commonly observed and agreed upon that the most amiable, equable, cheerful-tempered class of men in society are the scientific men, and especially the naturalists; while, on the other hand, the most irritable and uncertain are first the artists, and next the literary people. If this is true, more or less, the reasons are sufficiently obvious. Scientific men, whose business lies among the tangible facts of the universe, have the combined advantages of intellectual exercise and a constant grasp of realities; whereas the artists—though they partly share the same advantage—are under special liabilities from the exercise of the imagination for purposes of mere representation, and from the inevitable mingling of self-regards with their labours. The literary men have to deal with words, and with the abstractions of things, instead of with things themselves; and there is easy opportunity and strong temptation to implicate egotism with their work.

When naturalists get into controversy they are sometimes as irritable as literary men: and when men of letters are engaged on great questions, and pass beyond considerations of self, they may be as gay and placid as the happiest *savant*. It is unnecessary to say more; for it is clear enough to all eyes that a candid, unselfish temper and well-amused mind tend to good sleep at night, and healthful moods during the hours of study and sociability. If the case is a higher one than this, and the studies are of the lofty kind which relate to the welfare of mankind, or the development of human intellect by the extension of abstract science, the daily life is not only amused but blessed in a very high degree; and the temper and spirits should be so disciplined as to correspond with the privilege. If the half-dwarfed, morbid, egotistical student is one of the most pitiable members of the human family, the well-developed, lofty-minded, calm-tempered enthusiast in the pursuit and propagation of true knowledge, and high literary art, is surely one of the supreme order of men. It can do no harm to any of us, of any class of workers, to mark the extent of the difference between the two.

CHAPTER XII.

THE YOUNG LADY IN TOWN AND COUNTRY.

HER HEALTH.

Visitors from many foreign countries speak with hearty admiration, when they return home, of the young ladies of England; and especially of their bloom and gaiety, as the results of a healthy organisation. These admirers, whose impressions reach us by books, or in conversation when we in turn visit them, describe our young maidens as they see them—riding about the country,—possibly viewing the hunt from afar; or walking for hours in the lanes and under the hedgerows, while father or brothers are among the stubbles or the turnips in autumn: or gardening in spring, or attending scenes of rural sport,—perhaps even taking a share in the archery-meeting, as well as the flower-show. When the foreigner meets in town his fair rural acquaintance, he sees them with the glow of country air and exercise still upon them; and he adds his testimony to the many which declare that the young daughters of England are the fairest in the world.

This is probably true of a portion of the girlhood of our nation. The young ladies who are met in that London society which is seen by travelled foreigners who write books, and send forth their impressions in conversation, are, for the most part, daughters of country gentlemen, or of the aristocracy. They are young ladies who live in a park in the autumn, and in Belgravia in the spring, and who have horses, and whatever else promotes health and pleasure. They are few in number, however, in comparison with the daughters of our graduated middle-class: and it may be a question whether foreign observers would give an equally favourable report of the health, spirit, and beauty of the daughters of our merchants and tradesmen, our physicians and surgeons, our lawyers, accountants, and manufacturers. Medical men, anxious parents, and observant moralists might indeed say, that from one cause or another,

one seldom sees a family of thoroughly healthy and cheerful young women of the middle-class, unless they are early married, or have to earn their living in some way, not in itself unhealthy. I am compelled to say, after a long life of observation of middle-class life in England, that I believe this allegation to be only too true.

How does it happen? What is the mode of life of girls of the middle-class?

Where girls have not full occupation and interest after the close of their school-life (which is crowded with interests of its own), they grow languid, indolent, irritable, or depressed; dissatisfied with themselves and everybody about them: morbid, in short, in mind and morals, as well as in physical condition. When, again, girls are seen in this morbid condition, the first thing that should occur to parents and physician is, that they may not have enough occupation and interest. Girls have the same need that other people have of a general exercise of the brain, in its physical, intellectual, and moral regions: yet it would seem, by our practice, that we think girls ought to thrive on a very small range of interests, and under the lowest degree of vital exercise.

Let us see how they live in their own homes in London. Let us take for observation the daughters of a silk manufacturer, or a sugar refiner, or a solicitor, or a surgeon. Let them be members of a household where there is neither wealth nor poverty. Let it be a genuine middle-class London household. What has the eldest daughter to do when her school-days are over?

If her mother and she are sensible women, she will vary her occupations, in the first place. The Ladies' Colleges in Harley Street and Bedford Square now afford an inestimable resource to women who desire to carry on their intellectual improvement beyond the ordinary school range. Every girl who comes home to her father's house intends to go on studying. The mother fits up some little room, or some corner of the dear child's bedroom, or says she shall have the dining-room to herself at certain hours, "for her own pursuits." But it seldom or never comes to anything. No man, woman, or child can go on long studying (as it is miscalled) without need, or special aim, and without companionship. There is less and less decision about the daily study: there are more and more interruptions; and, after some months, daughter and mother agree that, after all, "the duties

of society" are more imperative than the obligation to study. Then begins the slipping away of the knowledge obtained at school, and the lowering of the mind to the petty interests of the hour: and it is not long before the neglect of brain exercise and the absence of intellectual stimulus begin to tell upon the health. It is in cases like this, that the Ladies' Colleges are as great a blessing as they can be in training young women to be educators. The stimulus of companionship, the excellent teaching, the atmosphere of activity, the breadth of view laid open by the diversity of subjects, and the broad treatment of them by the professors, render study truly captivating to clever and thoughtful girls, and full of interest to any one who is in any degree worthy of the privilege. The study at home goes on vigorously when it is subsidiary to college-work. A kind-hearted parent will be well-pleased to afford his daughter such a pursuit. If he should be disposed to grudge the small expense, it might be well to remind him of the prudence of an expenditure which obviates doctors' fees, and those journeys for health which are rarely wanted by well-occupied young people.

Another profitable result from this college study will be the discovery of the bent of the girl's ability. If she has sufficient ability to do or learn some one thing better than others, she will find it out, and test the degree of the talent under the searching influence of this second education: and whether she has to work for an independence, sooner or later, or to fill up her life by her own mental resources, it is of vast importance to have, thus early, the means of self-knowledge.

Very soon after the opening of these colleges, it was observed that they were doing good in rendering girls independent and courageous, and their parents rational, about the walking habits of the pupils. In six months' time, many who never before would leave home unattended, or cross a square alone, were daily walking considerable distances alone, to and from the college. The steady walk of women bound on some business is usually a sufficient safeguard in London streets; and women of business seldom or never have anything to tell of adventures in London, any more than in a village street; while the timid young lady, apprehensive of she knows not what, if out in the broad noon of London, may naturally excite observation, and be insecure, because she supposes herself so. It is pleasant to think how many hundreds of girls have walked miles daily in all weathers, with

great benefit to health, nerve, and independence, since these colleges were opened.

Among home-studies, that of music has assumed a foremost place, in London, within a few years. Early in the century, one might hear more or less strumming on the piano in most middle-class houses; but not often what was worthy the name of music. Now, it is said that in the evenings, after shop-closing, all along Whitechapel, Cheapside, and the like, the back-parlours are little concert-rooms, where brothers and sisters play various instruments, or practise part-singing, as pupils of the great popular masters of the day, or members of the Sacred Harmonic, or other societies of a high order. Thus is a new and delightful interest introduced into citizen homes, to the great benefit of the daughters. The singing is good for the chest; but the ideas and emotions created and exercised by the study of good music are more important still.

A different kind of occupation from any of these is, in my opinion, no less essential to health of body and mind. Domestic employments of the commonest kind have their own charms to most, and their special value to all women who are properly trained to them. The worst thing about girls' schools is, that they put out of sight for the time all housekeeping matters, and break the salutary habit of domestic employment. When a girl comes home to her father's house, she should begin at once upon this chapter of feminine study. When a child, she had probably been allowed and encouraged to help her mother in the store-room and kitchen, as well as with the household needlework. She had probably gone with her mother to the fishmonger's and the green-grocer's. If so, she has now only to brush up her old associations, and set to work at a more advanced point. If not, it is high time she was beginning to learn.

I wish the people of a higher and a lower class, and Americans and other foreigners, could be made to understand how much domestic business is actually transacted by middle-class women in England. I do not like the discredit of the popular notion, that our English girls are too genteel to understand how to cook, and to do shopping, and manage the house. Whether the business is properly done or not, women should insist on its being regarded as a duty, that there may be the better chance for its being done. If the daughter we are now contemplating is a rational girl, she will presently be in possession of the key-

basket, and getting into training under her mother. She will be up early (thereby ensuring the early rising of the servants) and off to the fishmonger's, or the vegetable market,—having the benefit of an early choice of good things. She will have planned with her mother the dinners of the week (with a margin for unexpected occurrences); and therefore, when she has made breakfast, she is ready for her conference with the cook. She chooses to know how to do everything that she requires to be done; and, as far as may be, by experience. She experiments upon cakes and puddings; and the syllabubs, tarts, and preserves are of her making, till she is satisfied of her proficiency. The linen in the housemaid's department is under her care, and it will be her fault if a table-cloth has a jagged corner, or the sheets a slit in the middle. These matters, so far, occupy very little time, while they afford more or less of exercise and amusement to a healthy mind.

The sewing is another affair. It is still the curse of girlhood in too large a portion of the middle-class. There can hardly be another woman in that class more thoroughly fond of the needle than myself: and few, probably, have done more needlework of all kinds in the course of their lives: yet it is my belief that thousands of parents are actually cruel to their daughters in requiring from them the amount of needlework customary in this and a few other countries.

Fathers and brothers suppose that the women of the household are to sit down to make linen for the house and its inhabitants, every day after breakfast, and to stick to the work all day, as the men do to their business. If they knew the strain upon the nerves, and the general unhealthiness of the occupation, when a certain limit of hours is past, they would forbid it as peremptorily as intemperance in stimulating novels. I fear it is still too often the case, that all the girls of a family are seated at the work-table all day long, except when at meals, or when taking a walk; and that no one of them can attempt to steal half-an-hour's solitude in her own room without being sent for to join the sewing-party. There may be reading aloud; and this is a great improvement upon perpetual talk: but the need of solitude and of freedom of occupation, is too often forgotten in households where needlework is assumed to be the whole employment, if not the whole duty of women. I could say much more under this head; but the advent of the sewing-

machine supersedes much remonstrance and preaching. It will not happily take the needle out of women's hands, because there is much delicate and critical work which it cannot do: but it will soon put an end to the slavery to the needle under which so many English girls grow crooked, and sallow, and nervous, and miserable.

A few instances may go a long way in giving strangers an impression that our middle-class ladies do not condescend to domestic employments. I would fain hope that a few scattered cases have passed for more than they were worth, or I must think less well than I wish to do, of the cultivation of whole classes of my countrywomen. I once felt, and probably appeared, somewhat indignant, when a foreign clergyman crossed the room to ask me whether I could sew; and he was much surprised at a subsequent time, when we were better acquainted, to find that it would be considered insulting in this country to doubt any educated woman's being able to sew.

I wondered less when I saw, during a Nile voyage, the spectacle presented by a young English lady,—a daughter and sister of a clergyman,—to a considerable number of observers. She was accompanying her brother in his travels in search of health: and she was in intention a kind nurse and devoted companion; but she had had little or no training in feminine offices. She was aware of the deficiency; but she did not appear to regret it. She explained that her mother had vigilantly guarded her against every sort of communication with servants, and had prohibited all approach to the precincts of their department. (There was no doubt cause and effect in this method, as no mistress could have good servants who established such respect of persons in the household.) As there are no laundresses on the Nile boats, and the clothes of travellers are washed by the crew, in their primitive style, travellers must wear their linen rough-dried, unless female hands will iron them. My companions were a lady and two gentlemen. My lady friend and I took flat-irons with us; and during the ten weeks we were on the Nile, the gentlemen had collars and shirt-fronts, and we ladies had gowns and collars, as well starched and smoothed as they would have been at home, while all stockings were duly mended, and all damages repaired, with a very small sacrifice of time. The invalid clergyman and his sister, meanwhile, looked as wofully out of order as any ducal family, bereft of servants,

could appear: and servants are a mere nuisance on the Nile. *His* collars were rough and limp; *her* muslin dresses looked as if they had been wrung out of a washing-tub;—which was indeed the real state of the case. They tried to induce their dragoman to undertake the ironing,—a process which the Arabs conclude to be a sort of devilry,—or a charm against vermin. The obliging dragoman yielded to entreaty, and tried the experiment upon a pair of duck trousers, which looked particularly ill in a rough condition. At the very first touch, the operator took off a leg with his over-heated implement. He fled in a scared state, and could never be prevailed upon to try again. As the sister was acquainted with many of the parties on the river, and as she evidently did not envy us our power of "making things pleasant," the effect of the incident would probably be, to lead strangers to suppose the young lady an example of English middle-class education, and the more housewifely ladies eccentric or low-bred.

The two main difficulties for young women in London seem to be, to get enough of bodily exercise, and to pass beyond a too narrow circle of sympathies. Some kind-hearted people, it is true, are for ever on their feet, going about doing good, as they think: but, in the first place, they are not usually young ladies who do this; and next, it is never prudent to recommend philanthropic pursuits as express business or resource. Philanthropy is apt to be mischievous unless it comes of itself; that is, unless it arises out of natural circumstances; and it loses all its virtue when it is cultivated for the advantage of the dispenser of the good. While deprecating, on this account, the sending girls among the poor for exercise of body or mind,—as a sort of prescription for quickening the circulation, and stimulating the emotions,—we may yet bear in mind that all exercise is more salutary when it is means to an end than when it is taken as exercise. Daily governesses, if not overworked, derive more benefit from their walks than ladies who go out for constitutional exercise: and the excellent women who find it occur in their course of life to visit and aid the sick and unhappy, in prisons, workhouses, hospitals, reformatories, and in their wretched homes, certainly have fewer ailments, and more disposable daily strength, than women whose heads, hearts, and limbs are insufficiently employed. There is great difficulty in passing out of the small environment of personal acquaintance, and penetrating

the life of any who live outside of it; and I would not deal out censure upon London families whose interests have been restricted within their own class, and even their own coterie; but, at the same time, we cannot but see in this, as in other cases, that "where there's a will there's a way." Young ladies in London, who have no carriage to set them down at any point they wish to reach, and no footman at their heels, do get face to face with sufferers whom they can aid, and sinners whom they can retrieve. The truth seems to be, that it does not answer to go wandering forth, to find excitement for philanthropic, any more than other feelings: but that persons of kind hearts, and the open sense which belongs to benevolence, are always meeting with opportunities of doing something for somebody,—even in London, where it often happens that one knows nothing whatever of one's neighbour on either hand.

One good-natured and serious-minded girl will be deeply interested in a Sunday-School, and be thence led to know several families who may be the better for her acquaintance; while another girl, amiable in her way, may be heard to say (as one actually did say, to the horror of a foreign philanthropist), "I am thinking whether I ever in my life spoke to a poor person." After all her thinking, she could not get beyond the washerwoman and the baker's boy. This is certainly not the sort of life which agrees with our conceptions of social duty and personal disinterestedness. It is not the sort of life which can ever fully exercise the moral faculties of any intelligent person: and if living in London really involved the necessity of young women growing up in this narrowness and hardness, it would be the greatest of misfortunes to live in London. We all know it to be otherwise, however: and where we meet with the most active and self-forgetting kindliness we generally see the gleam of happiness in the eye, the glow of health on the cheek, and the cheerfulness and bloom of genuine vigour and enjoyment pervading the whole mind and countenance.

There remain the higher intellectual resources,—the study and practice of Art, for which London affords unequalled facilities; and the cultivation of literature, which is practicable everywhere. Intellectual privileges are at the command of all qualified to lay hold of them.

It appears, on the whole, that the main point in regard to health,—for persons who are well fed, clothed, and housed,—is

having plenty to do :—in other words, having the brain well and equably exercised. Where we see a permanent condition of vigorous health, this must be the case. Where we see the too common spectacle of sickly girlhood, and of families of sisters growing sallow, feeble, depressed, and indolent, we may be very sure that, whatever else may be amiss, they are leading a self-corroding life, and need, above everything, imperative duties and interests which would call them out of themselves. If parents would but see what it is for any human being to have to invent something to do and care about, they would allow the utmost practicable liberty to their daughters to follow their own pursuits and adopt their own objects. It is not every father who can build a schoolroom for one daughter, and glaze a painting room for another, and fit up a music-room for a third, and a conservatory for a fourth—like an old friend of mine : but every parent can so far respect the claims of his children as to consider their tastes, aid them in their objects, and abstain from confining them to petty interests and monotonous employments. It is the smallest consideration in the case, that the comfort and pleasure of his own home depend on the alternative he adopts.

In the country, it ought to be an unnatural circumstance that young ladies are ever out of health. Besides the fresh air and liberty and sociability of rural life, there is such various and abundant and charming employment for young people! Early hours, plentiful exercise, sunlight without stint, and an ocean of fresh air ; food perpetually fresh from the kitchen garden, the farm-yard, and the river—here are conditions of health of very high value. The higher still seem to be no less plentifully afforded. In a country neighbourhood everybody knows everybody ; and the calls for kindly action are incessant and perfectly natural. There are out-door pursuits for the whole year round, for girls of any spirit—the garden and green-house, the poultry-yard, the bees, and various branches of natural history, in which there is at present a demand for ability of every kind. Literature, again, and Art are treasures within reach ; and nowhere do they flourish more than in the bright atmosphere of rural life. Evenings of books are singularly charming after mornings of activity among the realities of the farm, the breezy common, the blossoming lanes, and the village school. Yet what do we actually see? Two contrasting cases

rise up before my mind's eye, which so illustrate the whole matter, that I may simply relate them, and then stop.

I once saw how a family may lead a prison life, by choice, in a breezy, open, pleasant country. It was so long ago that, considering their state of health and their determination not to get better, they must all be dead long since. If not, it is no matter. As they never read anything, nor heard of anything readable, they would never encounter any report of themselves: and if they did, they would stick to their own scheme of life, and sneer at every other.

The head of the family was an opulent man, the heir of a large and lucrative rural business which kept him constantly in the open air, on land or water. He rode many miles every day except Sundays. I saw him only once; but I well remember his healthy, brown complexion, his active gait; and especially the wistful, tender, anxious gaze with which he looked on his three young daughters. The wife was fat and foolish, but with life enough in her to give her orders, and make tea, and hope her guests were comfortable. Further conversation she had none. The daughters were a lamentable group. They appeared to be between eighteen and four-and-twenty. All had the same complexion, which was lemon colour: and the substance was more like dough than muscle and skin. Their eyes were half dead; the lids drooping and the brows contracted, as by a perpetual headache. One had a crooked shoulder; another a lame knee; and the third an obstinate liver complaint. They seemed never to speak, except to their mother. It was impossible to get from them an answer to even a direct question. They looked too languid to move; yet when a stranger drew near to any one of them, she fled to the others—the three squeezing upon two chairs rather than separate to fetch another. Winking in the blaze of fire and candles, shivering unless they were in the direct heat of an enormous fire, eating rich cake with the care required by aching teeth—looking as if they had never enjoyed an unmixed pleasure in their lives—there and thus lived the daughters of that stalwart father. They were in a spacious house, surrounded by a broad sunny garden: green-houses extended on the one hand and a paddock on the other. Across the road—a pretty winding road, checkered with hedgerow timber—spread a noble park; and outside the park was a gravelly, hillocky, thymy, furze-sprinkled common, where you

might smell the sea-air when the wind was east. What were all these charms to the poor girls? Unhappily, there was nothing that they liked; so they did nothing but sit still and sew. All the week days of the year they sat in the same places, doing fancy work, when their plain work was done. The fires were hot; the table was rich; they came down to a late breakfast, and went up to bed after an early supper. If a neighbour came to call, they were rather disconcerted; for they felt uncomfortable at going on with their work, and yet could not prevail on themselves to put it down. They were driven to church on Sundays; and, of course, they caught cold there nearly every week. The most pitiable thing was their tone of mind, when it could be more or less ascertained. Its stupid exclusiveness, mixed with an ignorant shyness, was really like something new under the sun: but I suppose one may meet with it in some convents where the nuns are kept idle. "We never go out." "We don't like walking." "We don't know what is in the garden." "We never look into the green-house." "We know nothing about politics." "Papa reads the newspaper, but we never look at it." "We are not fond of books," and so on. Even about fancy-work there was no getting on, so evident was their belief that nobody had patterns so good as theirs, and that nobody could work their patterns but themselves. Enough of them! for what could their lives be? They would certainly never marry. They were too far gone to change their habits. I doubt not they were carried to the churchyard, one after another, after a short and miserable life of disobedience to all the laws of health of body and mind.

In short and sharp contrast to this miserable group, let me disclose a much larger and happier one. No matter that it is on the other side of the Atlantic. It may be all the more instructive for that.

Some of my readers may remember hearing, above twenty years ago, of Angelina and Sarah Grimké, young Quaker ladies of South Carolina, and sisters of the learned Professor Grimké. The family were opulent; but the young sisters, troubled in conscience about slavery, freed their negroes, and sacrificed at once their fortune and their native State; for they could not live in South Carolina without having or hiring slaves. They went northwards; and Angelina, after a time, married the well-known abolitionist, Theodore Weld. They have, for many years,

dispensed an education of a very high quality indeed, to a long succession of girls; and, as it is a work of love, they go on with ever-growing skill and ease. Last summer a visitor spent a day in that country household, and what he saw was singularly impressive to him.

We hear much of the beauty of young American girls, and it is very true; but the beauty is sadly short-lived, because it is not based on physical vigour. It is otherwise with the full-grown young women in the Welds' house, where the girls beg to stay as long as can possibly be allowed. As the ordinary mode of dress is neither healthy nor convenient, the girls wear a model dress, which is said to be graceful, and agreeable in colour, as well as commendable in other respects. It is made of a grey fabric, of the alpaca kind, trimmed with a suitable shade of red. It is a good deal like the Bloomer dress, with some improvements. When the guest saw the singular prevalence of ruddy health in the household, he was not surprised to find that the gardening was done mainly by the pupils. The ease and animation of the conversation struck him next, the topics being very solid and the spirit serious.

In the afternoon an excursion on the river was proposed. The girls were the rowers. They got out and prepared the boat, and pulled good strokes with ungloved hands. They managed the expedition as well as any boatman could have done. While resting in a pretty spot, under the shade of the wooded bank, music was asked for. The girls sang glees and duets very charmingly,—with real excellence, the guest declares, both as to quality of voice and style. Now, this is like what many English parents want to see; a country life at school, where the health may be established without the sacrifice of intellectual cultivation during the period of intellectual activity and tenacity.

If English parents wish this enough to demand it, they will obtain it. There is no natural reason why girls should not be trained to that robust womanhood which manifests itself by fitness for all occasions. In our age and country marriage is uncertain in the middle classes, and becoming rather less than more frequent. Every girl should be rendered "equal to either fortune" by the completeness of the development of her faculties. The world abounds in occupations and interests for all; and if we see a young woman declining in health and energy,

and growing fretful or morose, or loquacious and trifling, in her father's house, we may be sure that her parents have not duly provided for her health of body and mind. If she is yet recoverable, it will be by some stroke of what the world calls misfortune, by which her own capacities will be proved to herself, and she will find, perhaps in the middle term of life, what it is to live.

CHAPTER XIII.

THE RURAL LABOURER.

HIS HEALTH.

If there were such a person as a youth of the working-class who considered bodily health the greatest of all blessings, so that it should be the main object in life, he would choose to be a rural labourer. It has always been supposed that a life spent in the open air, in full exercise, among pleasant objects, and without care, must be the very best for health and long life. The peasantry of England, that "bold peasantry, their country's pride," has been traditionally considered a class favoured by God and man, dwelling amidst the most charming scenes of life, and exempt from its wearing cares.

There must have been, according to our modern notions of welfare and comfort, many drawbacks on such a condition, even in the times most favourable to rural labourers; and there has been a long period during which it would have been a mere mockery to describe the ploughman or hedger as a favourite of Nature or society. Yet it has been true, throughout the dreary period of his depression, that he had as good a chance of health and long life (supposing him sober and prudent), as any other working-man, and better than almost any other. Other things being equal, he ought to live eight years longer than men employed in some dozen of occupations which might be pointed out. The deaths in his class, in the vigour of their years, is nine in the thousand, yearly; whereas the mortality of dwellers in unhealthy cities is, at the same time of life, twelve in the thousand; while the mortality of persons of all ages in the healthiest parts of England, is seventeen in the thousand.

It is true these facts are taken from the best specimens; that is, from members of some sort of Friendly Society; and, therefore, to a certain degree, enlightened, sober, and prudent; but still, the advantages of the occupation are so unquestionable that we might expect beforehand that agricultural labourers would have less to do with the doctor than men of perhaps any other calling.

Yet it is a common thing for residents in villages and rural places to see bent old men shuffling along, or to meet one hobbling between two sticks, or to hear from behind the hedge the young man's cough, which tells to the experienced ear that he will never draw a full, free breath again. It is a common thing in country houses to hear of some young girl taken into the kitchen to train, or some boy for whom employment is made about the premises, because the father has died untimely, and the widow is left with so many children that neighbours must help, if they are to be kept off the rates. Sometimes it is fever that has done the mischief—fever which carries off those who can least be spared, and makes more orphans than any war we have ever been engaged in. Sometimes it is brain disease, or exhaustion from drink (a very strange sort of drink). In cider countries it may be from colic, or stone, or some form of violent indigestion. In a marshy country, it may be from a long course of agues, or an obstinate dysentery. Too often it is from actual starvation, though the symptoms may be taken for the real cause, and various names of diseases may be given to as many cases which ought never to have occurred at all. It is quite natural that thinkers, meditating in their libraries, should decide that rural labourers must be the healthiest of mankind; but the country gentleman, abroad in the fields, and at the Board of Guardians, may easily doubt whether there are more piteous cases of sickness and death among the poor in manufacturing towns, than in his district of merry England.

If we review the life of any rural labourer who has reached old age, in order to see what his life has been like, we must necessarily dwell upon the most unfavourable period for that class known in our whole history—the period before the repeal of the Corn Laws. When we see how bad it was, we must comfort ourselves with the thought that it is over, and that, if ever men might anticipate "a good time coming" for any class, we may now for our peasantry. The evils of former adversity

have not yet passed away; and that is the chief reason why we should carefully bear them in mind; but, though thousands of labouring men die every year, who ought to live for many years longer, we see that the next generation must have a much better chance of fulfilling their natural term of life.

Let us see what has been the career of a labourer of the best order, as labourers were fifty years ago. The grass has not yet grown on his grave; and he worked to the latest day that he could hold spade or bill-hook; so that he is no obsolete specimen, but a man of the time, and an example of his calling. He shall be a good man, and an apt labourer; and his wife shall be a good woman, dutiful and housewifely; and their children such as might be expected from such parents. They shall live in an agricultural county where wealthy men's estates almost join for an extent of many miles, and where, therefore, there is understood to be employment for every working man, woman, and child.

In John's young days nobody questioned the luck of the rural labourer, who was provided for, if any man was. Those were the days of agricultural prosperity, when the farmers made a sudden start, and grew grand in their way of living, and when their landlords got high rents, while there was famine in the towns. Farm-labourers had low wages, because the Poor Law pressed heavily upon the farmers; but every hedger and ditcher was sure of a maintenance in one way or another. If wages failed, he could demand a subsistence; and then his wages would be paid out of the rate.

In times like these John arrived at that memorable day in the life of a boy—the day of first going out to work for wages. He was but seven; but he felt like a little man—and very properly. He was a bird-keeper first; and after a time he watched the cattle and the poultry, and got in the turnips for the beasts, and helped in the potato and bean planting. His work hours were as long as his father's; from eight till four in midwinter, and from six to six in summer, His wages rose from 9*d.* a week to 1*s.* 6*d.* while at this light kind of work. He must have been a strong boy; for at eleven years old he began to lead horses at plough, earning 2*s.* 6*d.* a week; and at fifteen he could hold the plough itself, and drive the team, and began to mow, and to help in the harvest-field, earning then 4*s.* a week. As he became a rather tall man, and a hearty

worker, his growth could not have been checked by either labour or want. His mother said his food cost half-a-crown a week; and so it ought, as he earned it, and wanted it for his growth. At the then price of bread, he could not make out with less than eighteen pennyworth; and the other shilling paid for potatoes, butter or cheese, milk, and afterwards tea; together with his share of the bacon from his father's pig, and some occasional cabbages from the garden. He earned his bacon and greens, his father said, by his help in the garden at over hours.

Long before he was twenty he was earning men's wages: that is, 9*s.* a week, with occasional opportunities of making more. He must have found or made many such opportunities; for he had laid by largely when he married at five-and-twenty. His parents had favoured him as much as they could; for they were proud of him, and he was in every way a credit to them. The young woman he married was a fit partner for him. She had laid by money in service, and had gained friends there; so that it was a prosperous and promising marriage. Neither John nor Susan had any learning. Neither could read; but both were lively and intelligent. They had 50*l.* laid by when they determined to marry: and, as John was not in the least likely to come upon the rate, he was chosen for superior and well-paid work, such as is carefully kept out of the hands of pauper labourers. They took a cottage of four rooms at 5*l.* a year, and a garden at a separate rent, large enough to grow potatoes and cabbages for themselves and the pig, even after the house was full of children. For the greater part of his life, from the day he entered this cottage, John paid poor-rate. It was with him a matter of conscience and of pride; and it was a dark day to him when at last he was obliged to give it up; and a darker still when he came upon the rate himself. He thought it hard, after his course of honest toil; but there were his wife and idiot daughter to be considered; and there was no help for it. This, however, did not happen till a dozen years ago.

After his marriage, the complaints of agricultural distress became more frequent and more bitter. Few townspeople believed the truth of them, seeing what a dash the farmers cut at intervals, and what regular grumblers they were: but the thing was true enough, as John could have borne witness, though he could not have explained the reason.

He was better off than most of his class; for he worked on

the estate of a nobleman who knew him by name and valued him, and his father before him: but the agent must do as others did; and as times grew bad, he retrenched labour and wages. It was well understood that families could not exist on what they earned or received from the parish; and private charity was nearly driven out by the operation of the Poor Law.

How, then, did they live? Nearly all were in debt to the shop, and held out for a time on credit. A more important resource was poaching. It is not my present business to describe the state of society as it then was. I mention the poaching to account for whole families not being starved when they had no sufficient income to support them. Sometimes they ate, in haste and secrecy, the hare or rabbits they obtained; and oftener they sold the game they got on winter nights to the agents of London poulterers, gaining more money on a Saturday night than by the whole week's toil of the entire family.

John was never tempted by practices of this kind. He was far above them. As his family came on fast, and earnings diminished, he worked harder. That his children should go to school he was resolved, for he felt the disadvantage of being unable to read and write: and to school they went—the elder ones, and for as long as he could manage it.

Before he had been married eight years, the trouble of sickness entered his home.

During his wife's fifth confinement, when he could not afford such attendance as at first, a sad accident happened. The eldest child, seven, was taking care of three little ones before the door, when one of the boys, in rough play, laid her head open with a shovel. A long illness followed, and she grew up an idiot.

By degrees, the money store in the bank all drained away; and then John was not so comfortably dressed as formerly. He could not change his clothes when wet, and went ill shod to his work. His feet were often wet all day; and he had not always dry ones at home. He had never been taught the mischief of sleeping in his day-shirt and flannel waistcoat, and had a notion of its being somehow a wholesome proceeding. When his wife became overtasked with her large family, and the washing was a heavy business, John spared too much in clean shirts. He began to feel changes of weather "in all his bones," as he said; and his work became less easy to him in cold and damp seasons.

At the same time the domestic table fell off in quality. For several years there had always been a goodly dish of meat on Sundays, baked in a dishful of potatoes; and two or three times a week there had been pies or meat-dumplings, made from the cheaper parts of the carcase of ox or sheep, timely bespoken from the butcher; or, very frequently, a dinner of "fry" when a neighbouring pig was killed, obtained by exchange for vegetables, or an hour's jobbing in some garden or at some fence.

As times grew worse, there was less and less of all this; and bacon became the only meat ever seen on the table, except in pig-killing week. Every effort was made to feed the growing children, body and mind. John denied himself the help in the field of one boy for nine years, which were given to schooling. It was not his fault that the self-denial was nearly useless. At the end of nine years the lad could not do more than "read a chapter" in a way half-intelligible to himself, and not at all intelligible to his eager parents, and just scrawl a letter in large, ill-spelt, ill-chosen words. The other boy was necessarily called off very early from his studies, and never could read at all. He was the better workman, though the "scholard" of the family did not want wit. The fault lay in the quality of the school.

The younger boy had the advantage of his father's talk and instruction as he helped him in hedge, ditch, or furrow; and this was better than doing nothing at school. As to the instruction, the boy grew up handy and diligent; and, though too fond of money, able and willing to soften his parents' hard lot. As to the father's talk—it was not what it had been. He was careworn: he was growing rheumatic, and lost sleep by the pain: he had no longer the flow of spirits of a hearty, well-fed, open-air labourer. His wife, too, was wearing down. Their minds grew contracted; and that feebleness of thought and feeling began to appear which is one consequence of overwork and under-feeding.

But how blessed was their state, even now, in comparison with that of many—even of most—of their neighbours! They themselves were neither unaware of this, nor unthankful for it, nor proud of their superiority. Every winter some cottage household was left desolate by the father or brother being carried off to jail for poaching, or carried to the grave, slain in the woods by keepers' guns. All the year round there were

wives and mothers hanging round the beer-shop or ale-house at midnight, trying in vain to get at the sots within, to take them home. The doors were closed; and within were the victims, lying on or under the benches, stupefied by something else than beer. It would be a painful, but a useful thing to know how many rural labourers die in a year of the drugged beer so familiar to residents in some of our agricultural counties. In the morning the victims are stupid, headachy, sick, and powerless for work. Their limbs grow shaky, their tempers violent, and their ideas confused, till some attack of brain or stomach carries them off, or they sink into a state of weakness and folly, and they are reported dead of "fits," or "cholera," or "decline." John and his sons have escaped these dangers by being honest and sober men. Yet there were persons—not the wisest and best, certainly—but well-meaning neighbours, who asked, when seeing John's funeral go by, how far he had been better off than his neighbours for his pride and honour, and his abstemious ways. He used himself to doubt whether either of his sons would ever be the stout man he once was: and neighbours then also asked one another how John was the better at sixty for having been such a stout fellow at twenty.

At sixty John was indeed sadly bent, and tremulous, and deaf. It was surprising that he could do such excellent work still with so feeble-looking a frame. He well earned his nine shillings a week, which was as much as any man of his class, except a few herdsmen and teamsters, was able to get. Some of the children had died young, two daughters (the third was the imbecile one) were supporting themselves, and the two sons were barely living on a precarious nine shillings a week in the same district. They were always welcome to a dinner at their father's, when out of work, as long as there was anything to set on the table: but it became a question, at one time, whether there would still be enough for the three poor creatures at home.

The estates changed hands; and a young man succeeded to them who had more power over human welfare than is often consigned to a man of his years. His own wants, however, were paramount in his mind and heart,—the bottomless needs of a man of pleasure. So he wrote to his agent that it seemed to him that John and two others must now be above sixty years of age, and therefore somewhat past their work; and his positive orders were that their wages should be reduced to six

shillings a week. It strikes one that the young man and the old must both have heard with very vivid feelings that passage read in church, from the Epistle of James, about the rich man and the hire of their labourers. It is true, John was so deaf that for a time there was no instruction for him at church,—unable as he was either to hear or read: but somebody gave him an ear-trumpet; and he cried through the whole service the first time he used it. One would like to know that the young landlord cried through the whole service after hearing that passage in the Epistle of James.

Before long the young man died, as such unprofitable servants of society often do,—untimely in every way. The wages of the three old men were immediately raised to what they were before. But it was too late for John,—except as a pleasure. For a time he tried to work three days in a week; and there was nothing for it but accepting an allowance from the parish. Then it came to two days in a week; and then to half-days. His children did what they could; and the old couple never actually wanted food and clothes in their latter days. But their long toil and hardship and anxiety had caused them sore ailments of body and mind. Their minds were narrow and weak to a degree which made it incredible that they were the same couple that had begun life so cheerily. They had no new knowledge, no conversation, no interests beyond the care of getting bread. Both had miserable nerves, as under-fed and anxious people always have; and John's deafness and his wife's weakness shut them up within themselves. At last, old Susan was undeniably childish; and one day, John sank his head upon his breast, was carried to his bed, and died,—a martyr to rheumatism, as the common talk has it.

Such was the life of the best sort of agricultural labourer in the first half of the nineteenth century. It is so painful and humiliating that it might not be justifiable to exhibit it, if it were not for one of two objects,—either to record a past state of society, or to obtain a reform of an existing one. I have had both these objects in view. There is much reform needed, at this moment, in the treatment of agricultural labourers, before their lot can at all answer to the conception of it as one of the healthiest and happiest of vocations: and, on the other hand, we all believe it impossible that the condition of the labourer should ever retrogress to what it has been.

His vocation is now becoming one of skilled labour; and his qualifications and his wages must both rise. For clodpoles we shall henceforth have agricultural operatives, working by machinery, and paid according to their intelligence and skill. We see this happening already, and more and more extensively every year. We see prizes won—not so much now for sparing the rates, as for superior skill in the arts of agriculture, and for success in the accomplishments of horticulture. We see leisure hours and spare pennies spent in floricultural rivalry, instead of at the public-house. We see men of John's order manifesting his virtues, with a fairer course before them.

Under such improved circumstances the health and longevity of the class must steadily and rapidly improve. Still, we shall have to go on registering unnecessary deaths, and grieving over unnecessary misery from year to year, while our peasantry have not habitations admitting of health, comfort, and decency, and while they are kept ignorant of the knowledge, and untrained in the habits by which men's health and life are put, as it were, into their own hands. Whenever this duty of rich men to the labourers who have tilled their fields is done, the lot of the peasant may again become what it once was, and, more deservedly than ever,—the cheerful theme of the poet and the moralist.

CHAPTER XIV.

THE STATESMAN.

HIS HEALTH.

"THE health of the Statesman!" some may say.

"Well: the health of public men is of importance, certainly; but they constitute a scarcely appreciable element in the mortality of the country."

Estimated by mere number—by the list of dead statesmen within any fixed term of years—this is true. But the lives of other men are bound up in those of rulers, for safety or destruction. Not only may one minister cause the loss of thousands of men by war, and another save tens of thousands by domestic improvements; but the lot and life of a multitude of citizens

depend on the length or shortness of the rule of a great minister, —that is to say, on his living or dying. Not only, therefore, is it very interesting to study the chances and liabilities of the health of public men, but it is also highly important. So few statesmen who have long wielded power die exactly like other men, or might not have been expected to live longer than they do, or to die differently—that they are certainly not a class to be omitted in any sanitary studies, however small their numbers may be.

Our study must be of British statesmen, to answer any practical purpose. On the continent, hitherto, the work and the anxieties of rulers have been of a different kind from anything seen or understood in England. In despotic politics, the ministers are simply the servants of their sovereigns, charged with definite business of a certain kind and amount; and outside that business, having only to obey orders, and to bear all consequences of their acts in their own persons, in favour or disgrace at court. If they are the masters of their sovereigns, they become virtually sovereigns, and subject to the liabilities of that function.

In revolutionary government the administrators have abundance of anxiety and responsibility; but their term of office is short, and their course of action so empirical and precarious that their occupation is rather an accident in their lives than its main pursuit. The constitutional governments of the continent are too recent to afford types of statesmen under that *régime*.

In the United States, again, all political offices are held for a short time. Men may and do devote themselves to politics for life; but no man is in office for many years together, except in the federal legislature; and the parliamentary function occupies much less of time and thought where the legislature has jurisdiction over only five subjects, than in England, where the whole political structure and its workings are under the charge of parliament.

In America each Sovereign State manages its own affairs, in so easy a style that there is hardly room for statesmanship; and the Government at Washington is concerned only with the few interests which belong to the States in federal union. Thus, though we may find there some illustrations of the effects of political life, we cannot reason from them to the effects of

political life in England, where the conditions are essentially different.

The conditions have changed very much in England, in course of centuries, and half and quarter centuries. When English Statesmen were responsible to the king or nobody, they lived a different life from their successors who had a parliament to manage, and from those more modern successors who are responsible to parliament in a fuller sense than at any former time. Ancient statesmen had an easier life of it—in all respects, perhaps, but that of dependence on the favour of the monarch. Modern statesmen have more wear and tear to endure, with less showy and more rare rewards, but not less substantial and heart-felt satisfactions. The anxieties to which they are subject are different from those of old times ; and so are their maladies and modes of living and dying. It may, indeed be doubted whether the life of the British statesman of the nineteenth century has ever been lived in any former time or other country. The vocation is as peculiar as the character and function of the English aristocracy which usually furnishes the supply of statesmen.

Our public men who have risen to high office, being derived hitherto from the aristocracy, have had a classical education more or less thorough. They have passed through some one of our great schools, or perhaps from the training of a private tutor, to the University. Men of their quality of mind are sure to have done a great deal at college ; for the idlers and mere pleasure seekers are not the stuff of which statesmen are made. Their studies are, to the real great men, a store of health, as well as capacity, laid by unconsciously to meet future needs, and ward off future dangers. In fostering and gratifying their love of classical lore, they were unawares obtaining that breadth of view, that depth of insight into human nature and affairs, that robustness of spirit which grows out of large experience of other than familiar modes of thought, and that serenity of intellect and temper which go far to secure a sound mind in a sound body. It is of immense importance to the orator to know the best oratory of other nations and ages : it gives an inexpressible charm to the utterance of a scholar that the philosophy and poetry of all times are breathing through his thought and speech : but there are richer blessings than these in high literary training. The ripe scholar, who is familiar

with the life and thought of remote ages, and has nourished his mind upon the choice remains of their best men and best times, is too strong to be moved by transient influences which alarm and disconcert men who know nothing beyond their own time and circumstances. The superficially-educated public man, of whose quality much was seen in the successive revolutions in France, and a good deal is constantly seen in the United States, is easily agitated,—is always either suspicious or liable to surprise, and fluctuates in his views and purposes, unless he find a stand-point for some particular question on some clear ethical principle. He has no support beyond the men and the incidents immediately about him. On the other hand, the scholar is familiar with the principles of liberty in all their forms; he knows the inevitable issues of despotism; he possesses the convictions and the experience of various races and many ages, and reinforces his own mind by any amount that he may need of the immortal store laid up for us in Greek and Roman literature. Hence the calmness and dignity of a long series of great ministers in England, compared with the stolidity of the agents of Czars and Kaisers, or the screaming passion of revolutionary office-holders, or the big talk and solemn alarms, and petulant sensitiveness common in the Capitol at Washington.

Thus in early life have our great statesmen provided themselves for the future strife of political existence with inexhaustible supplies of calm and natural and elevating pleasure, and with an expansion of mind able to render them masters of most situations in which they can be placed; or, at worst, masters of themselves in any position. When we have honoured the greatness of Lord Grey, carrying his Reform Bill through a political tempest almost unequalled in fierceness and duration, we follow him into his home and study. He must have been more or less chafed in the House, however calm was his bearing; and now, alone, and deep in the night, he charms away his troubles before he sleeps with his Horace, or some other poet beloved in his youth. Pitt used to forget all cares of empire when he indulged for an hour in a play of Aristophanes, or when he and Canning read Lucan or recited Horace under the trees at Wimbledon. It was so with Fox under cares less creditable than those of state. When two friends followed him home, believing him in a suicidal mood from losses at play, and entered his study two minutes after him, they found him lying

on his back on the hearth-rug,—not cutting his throat, but deep in an ode of Horace. He had thrown off his coat, and taken up his book, and proved himself a robuster man than his friends gave him credit for. It is true Pitt died broken-hearted; but public affairs were never too much for him till he gave up the only chance of health by giving up temperance and prudence in his personal affairs. His debts worried him; and port wine killed him. The habits of his class and time were against him. Pitt could bear everything before he was harassed by debt and weakened by the maladies which grow out of excess in wine. The account of Fox must be somewhat different. The wonder is, not that he died dropsical at fifty-seven, but that he lived so long in reckless habits of wine, play, and debt. In these men scholarship could have no more than an ameliorating effect. To see its true operation, we must study the fine examples which modern history presents of aged statesmen who have triumphed over care and irritation, and kept their freshness of mind and serenity of mood to the last.

Another consequence of our great statesmen being generally drawn from the aristocracy is, that they become early trained and inured to hard official life. The first step taken by any Pitt or Grenville, when a rising young man choosing a political career, was to go into parliament; and the next was to enter a public office in some working capacity. There were plenty of idlers, no doubt; but, as I said before, I am now speaking only of the efficient men.

Their minds thus became familiarised with large affairs and with the diligent transaction of business, while their habits were early formed on the observances of political life; on the work and hours of parliament, and the incessant application required by the administration of government. While the homely middle-class family was uneasy at being out of bed after ten or eleven o'clock, our public men formed the habit of taking their sleep when they could get it. Some appeared at places of public amusement after the House was up: some supped at their club: one, as we know, used to sit down by his own fire, with two or three new quarterlies and half a dozen pamphlets, and then and there empty all these into his own brain, and the contents of two full decanters into his own stomach;—sometimes, we are told, not going to bed at all, but shaving and dressing for breakfast, and appearing in the law-courts, ready for business. It

would perhaps be difficult to find three men in the whole nation who would not soon be killed, or driven mad, by such defiance of the laws of health. Nothing, of course, can justify it: but the lives of public men show us that the conditions of health range more widely than we are accustomed to suppose. One member of a recent cabinet cannot do his work unless he has eight hours of undisturbed sleep in the twenty-four; while another can sleep, like Lord Clyde, anywhere and at any moment, and may never need more than five hours altogether. It may be doubted whether men's appetite for sleep does not differ as widely as their appetite for food. There can be no doubt, however, that the late hours of the modern House of Commons are a sin and a folly. Among the six hundred and fifty members there must be many who cannot suit their brains and nerves to such arbitrary arrangements as those which involve sittings after midnight. However convenient the practice may be for the dispatch of business, and however difficult it may now be to change it, the objection remains incontrovertible, that midnight debates are violations of the laws of the human constitution.

What are the special dangers to health of the class of statesmen, over and above those belonging to parliamentary life, with its irregular hours?

Judging by observation, the perils are chiefly those which belong to moral anxiety.

It may be a question whether the old method of ruling the empire, or the new system of increased responsibility to parliament, involved the greater anxiety. In times when ministers made their own parliaments, and told them little more than was convenient to themselves, they had more responsibility, and less solicitude about the sayings and doings of parliament. What the wear and tear of the older time was, we partly learn from what Lord Liverpool said, towards the close of his career. He declared, in his own house on Wimbledon Common, that for twenty-five years of official life he had never for one day looked at *that*—pointing to a heap of official letters—without a qualm of apprehension, and a reluctance to break the seals—so keen was his sense of the probability of some misfortune having happened in some part or another of our empire, or our relations with other empires. Lord Liverpool had not the temperament of genius, with its keen sensibilities; and he stood the

siege of state cares for an unusual length of time: but at last he was found on the floor in a fit of apoplexy—politically dead. On the other hand, a later statesman has said two things, at different times, which, put together, constitute an awful disclosure. One day he said that there was no living without office, after having once held it. "Everything palls," he said, "and the restlessness is intolerable, and admits of only one cure." On another occasion, he said that an honest man enters upon office resolved against being disturbed by the newspapers, in regard to intended government measures, because Ministers must understand their own circumstances and plans better than anybody outside can understand them. But by degrees the anxiety grows. The antagonism does its work, sooner or later: till at last the Minister looks upon his pile of morning papers with as much dread of learning their contents as Lord Liverpool could feel at sight of his letters. The obvious reflection is that, if such be the life of a statesman, there can be no compensation for its sufferings.

This, it may be said, is a matter of individual taste and opinion. Moreover, it may be remarked that this is no affair of ours at this moment. But I am not so sure of this. As the study of the statesman's health involves that of his sufferings in his calling, so it also involves the cause of those sufferings. As the wear and tear of moral anxiety destroys his health and shortens his life, it comes within our present business to inquire into the nature and the necessity of that anxiety.

It is said, on occasion, that nothing wears a man down so certainly and rapidly, in a position of responsibility, as conscientiousness. This is probably true of the keen kind of conscientiousness which belongs to a delicate moral organisation. But the higher order of conscientiousness which works truly because it is robust, is the best known sustainer of the nerves and regulator of the brain. This will hardly be denied by any one. While it may be supposed, on the one hand, that the ambitious statesman who defies scruples, by his moral obtuseness escapes the sufferings and perils which better men undergo, it appears, on the other hand, that the advantage rests at last with the best patriot;—with the statesman who is harassed by no personal aims, and tormented by no weak misgivings. Having ascertained his own aims, and explored his means, he commits himself to a well-considered policy, hoping that it will succeed,

and resolved that it shall be no fault of his if it does not. A man who can thus form his design, and pursue it through whatever may befal, setting his face up the mountain, and climbing steadily in spite of the voices, is hardly the man to sink down with shattered nerves, or to wear away to a shaking spectre before the eyes of the nation.

After the deaths of Lord Liverpool and Mr. Canning, we were told that the average life of an English Premier was six years. This must mean six years of continuous office, without any relief. Of course, a sum of six years, divided by intervals, is altogether a different affair. Six years seems a sadly short time for the possession of the prize of a whole life's work. But, again, if we consider what it is to be charged with the destinies of a nation, and in a manner of many nations, without respite for six years, we cannot wonder at any consequence of such a strain. For the Prime Minister there is no holiday. In the comparatively easy days of ministerial and manageable parliaments, Mr. Pitt and Lord Liverpool could only go down to Bath when apprehending a fit of the gout,—merely transacting their business there with less convenience than at home. From the real pressure they had no escape whatever; and no Prime Minister ever can have it. The nearest approach to relief is an ever-increasing openness with parliament, and a growing publicity about the affairs which happen during the recess. It is not often that a nation meets with a statesman as buoyant and full of spirit as Lord Palmerston in his old age. It is a commoner thing to see our ministers wearing old before their time,—with shaky hands, stooping shoulders, anxious countenances, or petulant tempers. Sometimes a hardly-pressed statesman sinks under the first attack of illness, without a chance of rally. Sometimes a suicide occurs. Only too often we have heard of some subordinate member having died of brain-fever after the passage of some Bill committed to his charge: and again, of two or three brothers of a brilliant family being carried off in succession by the combined fatigue and fever of toil and political ambition. These are heavy costs for our being well served. Is there nothing to be done to save them?

The days of port wine and hereditary gout are passing away. Our Premiers have still gout occasionally: but it is wearing out under the more temperate habits of our time,—more temperate as to wine. Can nothing be done to reduce the other kinds of

intemperance—excess in passion or feeling—under which the brain sooner or later gives way?

Prudence in personal habits may do much. Avoiding long fasting and late full meals is one point: securing a sufficiency of sleep is another. The effect of ten minutes' sleep in bringing down the pulse of a worried man can be certified by many a good wife, who stands between her husband and the whole world for that length of time (if she cannot get more) every afternoon. Let horse exercise be a daily duty. Then let holiday be made conscientiously, when possible. Let the shooting season be made much of, and the Premier be heard of from the stubbles with satisfaction by every good citizen. Let Easter, Christmas, and all the feasts, and the Derby-day, and all holidays, be laid hold of for the refreshment of the over-tasked mind.

When all is done in the way of these external precautions and provisions, no good will ensue if the interior of the case be a bad one. If ambition enters into it, more or less, eating care enters with it. For every gratification, ambition pays the price of a hundred cares: whereas any heart-breaking discouragement is scarcely possible for a statesman who is sincerely and devotedly the servant of his country, and the well-wisher of every interest in it. If he can work towards his end, he must obtain more or less success: and if he is precluded from doing it, he yields up the responsibility to others, and still contends, for the satisfaction of the struggle. A steady will and a calm temper are almost certain of success in a good cause; and without the destruction of the winner.

We give up the great soldier on the battle-field, and the noble sailor at sea, in the moment of victory. We do so because amidst fire and slaughter we have no choice. It need not be so in the field of political administration. There a man need not do and die. He may do and live: and this is his duty, no less than his privilege. A calm mind disperses other foes than those of political conflict: it keeps disease at arm's length. And when the mind is at the same time full of noble aims, and the heart of rational hope, while the intellect is kept equably at work on the highest order of business, it would seem that the statesman should rather outlive his contemporaries than sink before them, as the rational man outlives the imbecile, and the benevolent are young and gay when egotists are wearing out. The higher the man and his work, the stronger his vitality. Such is Nature's

clear intention. It ought not to fail in such an order as that of statesmen in a progressive age of the world.

CHAPTER XV.

THE MAID OF ALL WORK.

HER HEALTH.

It can hardly be said that we have here a class too insignificant for study, in our contemplation of the needless mortality of England. Few of our readers may have a precise idea of the actual number of Maids-of-all-Work in our country; but all agree that it must be very large. There are more classes of householders who employ one domestic servant than of those who have even two: and when we look above the ordinary kitchen pair—the cook and housemaid—we find the number of employers diminishing rapidly. The fact is that, at the date of the last census, there were ten times as many maids-of-all-work as there were housemaids: nearly nine times as many as there were cooks, and twenty times as many as there were nursemaids.

When we come to consider, this ought not to surprise us. In the rural districts there are small farms at every step where one servant is kept to do the house business, that her mistress may attend to the dairy and poultry-yard. In villages, almost every house between the labourer's cottage and the squire's mansion has its single servant. In our towns there is a whole population of shopkeepers, superior artisans, and small manufacturers, who can afford one servant and no more. There are also large classes of the poorer clergy, of retired military and naval officers, of single and widowed ladies who cannot keep two servants, or do not need more than one. Thus, we ought not to be surprised if we find at the approaching census that nearly half a million of Englishwomen are maids-of-all-work. At the last census they were considerably more than 400,000.

"But why consider them separately from other domestic servants in regard to health?" it may be asked.

Because they are conspicuously more unhealthy.

Maid-servants ought to be among the very healthiest people

in the nation. They have generally enjoyed an active and hardy rearing: they are usually well-fed and lodged, and must be well clothed: they are singularly free from the most wearing anxieties of life; and their occupation involves a considerable degree of activity, usually without exhausting toil. They have severe annoyances at times and on occasion, from the faults of employers and fellow-servants; some find the mode of life dull; many miss the confiding and affectionate intercourses of home; and some must share the common lot of having personal griefs and cares. Domestic servants are not to be supposed happier than other people; but, when we are thinking of wearing anxieties in their effect upon health, we may observe that there are fewer of such anxieties involved in the lot of domestic servants than in that of most other classes. If, as we find to be the case, the maids-of-all-work are less healthy than other servants—and even than cooks—it will be interesting and important to discover why.

Nearly all of this class come from the country. Upwards of two-thirds of our women servants of all orders are country-born, and the humbler are almost universally so. The girl who is to be hereafter expected to do everything that wants to be done in a house is born in a labourer's cottage. As soon as she can crawl she tumbles about in the dirt, and learns the use of her limbs in Nature's own way—by having a mind to use them, and nobody to prevent it. Her limbs and spine are thus vigorous and strong. She is always in the open air, or in the windy cottage. The paternal dwelling is not damp, as too many cottages are, or she would never be fit for service. A girl with rheumatism or a cough, or subject to head colds, would simply fail of getting a place; for mistresses of servants very properly require health as a prime requisite in all candidates for their places.

It is true, there are kind-hearted ladies, widowed or single, who rather look out for delicate servant-girls, on the ground that a small household is the proper place for invalids who must earn a living to try to recover their health. Such employers in fact nurse and maintain their servants, helping them with their business, or indulgently excusing some irregularities in it; and I have seen a succession of unhealthy young women enter such a service, and leave it completely restored. But such employers are right in saying, that theirs are the houses in which such

a thing can be done, because it is of little consequence who does the daily business, and whether it is always exactly and punctually done: and such irregularity may even be good for single ladies who are only too likely to grow excessively "particular;" but it is out of the question in family dwellings where the business of life presses from day to day. In such households the first requisite in a domestic servant, after character, is health.

Our young servant, then, does not come in a mouldy or rotted condition from a damp cottage, but full of health and strength. She has lived on potatoes and buttermilk, for the most part, and they have agreed well with her. She can lift great weights; she can bear to be on her feet all day; she wakes always at the same minute in the early morning; and she never thinks about being ill. She does not think about her bodily condition at all; for there are no aches and pains to remind her. Some people go through life without having ever felt their lungs; and others are unaware, except by rational evidence, that they have a stomach. Thus, many country-bred young people feel nothing particular, and are unaware of their physical state altogether.

The future of the country girl depends mainly on what sort of service she enters. It may be a household of two persons, or of only one. If she is to serve an elderly couple, or two or three maiden ladies, or a widow with one or two children, there is nothing in her mode of life to affect her health injuriously, and nothing therefore to require much attention from us. In such small households in the country, there is plenty of time to get easily through the business of the day: everybody is early in bed, and not extremely early in the morning. In such houses, in short, there is no wear and tear, in parlour or kitchen. A servant may live there till she has nursed and buried her employers, and be as hale after it as when she entered service.

By far the largest proportion of places where a single servant is kept are in the opposite extreme. If there is too much quiet in the spinster's house, there is too much bustle in the town shopkeeper's or the lodging-house. It is from those bustling houses that a succession of maid-servants come out to die. To these, then, we must direct our observation.

The first ailment of country girls in service is usually indigestion. The mischief arises from the change of diet, and, in the majority of cases, from the intemperance of the novices when

set down in the midst of luxury. To a girl who has lived on potatoes and buttermilk, new white bread and fresh butter are an irresistible temptation. So is juicy fresh beef to one who has seen no meat but bacon. Fruit pies and sweet puddings are food of Paradise to one who comes from stir-about and rank cheese. This is no mere supposition. It is a very common thing for young servants to grow low-spirited after a few weeks in a first place—to feel a weight at the stomach, pains between the shoulders, cramp in the feet, nightmare, or stupid sleep, shortness of breathing during the day, and heavy head-aches in the morning. The yellow complexion and leaden eyes soon show what is the matter, and the doctor presently sets it right for the time. This is a temporary mischief, avoidable for the future by a little watchfulness on the part of the mistress, and a good deal of self-denial on that of the maid. It is referred to here because it is the first ailment, and extremely common. That it is no trifle is shown by the fact that girls have come crying to their mistresses, begging to be sent home again because they cannot help eating all the good things in the pantry. It makes them feel ill and wicked; but they cannot help it. They want to go back to stir-about, or bacon and potatoes.

This, however, is an evil which may be considered voluntary, and is undeniably avoidable. The inevitable dangers to health are the constant unsettledness in the kitchen, the hurry and bustle, the rarity of relief, and, usually, the deficiency of sleep.

Miss Nightingale says in her "Notes on Nursing" (p. 29): "I have never known persons who exposed themselves for years to constant interruption who did not muddle away their intellects by it at last." Nothing can be truer than this: and no persons are more hopeless, both as to intellect and nerve, than those who cannot sit still, cannot bear to be alone, cannot stick to the same occupation for as many hours or half-hours as it may require. Something worse than this is what the maid-of-all-work has to put up with every day, and all day long, in a bustling place.

She can do nothing well: and she is aware that she does nothing well. She has neither the time nor the liberty of mind to take pleasure in any one occupation, and learn to excel in it. How can she cook a dinner properly when she has to leave her fire to make the beds, or to sweep the chambers, and to answer the door and the parlour bell? Every knock must

be answered by her; every message must go through her; at the moment when her pudding, or her joint, or her sauce is in need of her mind and her hand, she is called off to admit visitors, or to receive orders, if not to be found fault with for not being about some other work. And thus it is from morning till night. She is rung up in the morning, heavy with sleep, for she is up late almost every night; and it is one continued hurry to get the water boiled, the rooms dusted, the breakfast laid, the shoes cleaned, &c., before the family come down; to say nothing of the sweeping of the hall and the cleaning of the door-steps. In a lodging-house, where there are three or four breakfasts in as many sitting-rooms, the case seems desperate—but I have seen the work done. There is but one dinner in such cases, as gentlemen dine anywhere rather than at their lodgings, in our days of degenerate domestic cookery: but still, the maid's day is one full-drive throughout. She cooks badly; she waits badly; she cleans badly, and is aware that under her everything gets dirty. She grows untidy in her own person. Her clothes give way, and she has no time, and too probably no skill, to mend them. Her hair is rough and dusty from her perpetual whisking about the house and the area. Her face and hands are hot and smutty, and her apron soiled all over. I have known such a servant try hard to preserve the habit of whipping on a clean cap and apron when visitors came to the door, and being even paid to do this, and who yet could not keep it up. Besides the disheartening loss of comfort and self-respect under the encroachment of untidy habits, and the sense of growing confusion in the mind, there is the dread of the future. She is losing the power of learning to do things well. She can never raise herself, for there is no superior place which she is, or can become, qualified to fill. Her wages are small, because domestic service is paid by quality rather than quantity. She cannot lay by any considerable portion of her wages, because she wears out her clothes fast, and has to pay for the making and mending of them. She cannot for ever support such a life as she is leading, and she sees nothing hopeful outside of it.

The gravest single item of mischief in such a life is probably the deficiency of sleep. There are all kinds of employers of domestic servants in the world, as of other orders of persons; and many are thoroughly considerate about the health of their servants; but it does sometimes astonish an observer to see

masters and mistresses who never bestow a thought on whether their domestics get sleep enough. There are families as well as lodging-houses where some member has as strong a passion for getting up early as another for sitting up late, while each expects to be waited on by the same servant. I have known gentlemen in London lodgings who never could remember to take the key, when going to hear a critical debate which would last half the night. I have known a lodging-house servant who got to bed anywhere between midnight and four in the morning, when at all; but, as one lodger must have his breakfast at seven, she occasionally spared herself the worry of going to bed only to get up again before she could compose her harassed nerves to sleep. What must be the consequences of such a mode of life as this?

The poor thing conceals as long as possible that there is anything the matter with her. In the very worst cases of the ill-ordered family or lodging-house, or the establishments connected with great shops, there is often a good deal of money earned. Lodgers, shopmen, guests, make presents to the servant. This is the inducement to stay in such a purgatory, when the servant has any reason to believe she could obtain and keep an easier place; but of a really superior service she has no hope, and therefore she holds on to the last moment.

Where does she go to then? Sometimes to a hospital, sometimes to the country cottage, or to some brother or sister who can ill afford the burden of her sickness. Very often indeed she is taken to a lunatic asylum. A quarter of a century ago, we were told that the female wards of such asylums were filled mainly by servant-maids and governesses; and, above all, by maids-of-all-work; and now we are told the same thing still. Physicians account for it in various ways; some speak chiefly of morbid religion; some of love; some of overwork and too little sleep; some of the privation of home affections; and many others of the anxiety caused by a hopeless future. Whatever may be the proportion among all these causes of insanity, the insanity itself is a plain and undisputed fact. And it does not stand alone. It points to an excess of mortality in the same class. For persons who become insane from specified causes, there are always many more who die.

Are these deaths needless?

Assuredly they are. It can hardly be conceived that the death and the insanity would take place if employers were fully

aware of the facts of the case. The lowest and most selfish dread of responsibility would induce a reordering and amelioration of the work done, and some consideration about quiet meals and sufficient sleep. If we could obtain the statistics of the case of maids-of-all-work in quiet, considerate, small households, and in large families or lodging-houses, we should soon witness a great change in the lot of the class. If so, there is nothing to prevent the change beginning now,—at any moment after any reader, or any witness becomes aware that this particular class of women servants is more liable than other persons to insanity, and premature decay and death.

The responsibility rests chiefly with the mistress of the household. Not quite always, for I have known a parsonage full of pupils where the maid who had been toiling from before six in the morning, was set down to her needle, when everybody else was gone to bed, to make her master's fine shirts; and when her eyes went, from sheer overwork and want of sleep, and she became nearly blind, it was through her master's pious encouragements and coaxings to work to the utmost, for Christ's sake. As often as she declared that she could not go on sitting up till one or two o'clock over her stitching, he urged her by praise and religious stimulus. When her friends asked her why she submitted to such perilous toil, she answered that she thought her mistress was inexperienced, and did not know what she required; and her master encouraged her so kindly, and afforded her such religious privileges, that, as often as she meant to go, she was again induced to stay. At last her sight was so much impaired that there was no longer any question of her staying.

Such instances occur here and there; but few employers would have courage to go so far; and especially, few husbands would choose to sustain the ignorant oppression perpetrated by their wives. On the contrary, if the full truth were known, we should see ladies undertaking that the maid should not be disturbed at her dinner, and so arranging as to dismiss her to bed before ten o'clock. They would also bethink themselves of lessening the disturbance and anxiety of their one domestic by doing more of those light offices which would be a very small fatigue to them, and a great relief to the kitchen member of the household. The relief would be out of all proportion to the work done; for it is the multifarious character of the maid's

work which oppresses her faculties more than the mere toil wearies her limbs. Her release from certain definite departments would lighten the pressure of all the rest.

There are other considerations of far greater importance. The loneliness of the solitary maid-servant is a thing which very few people seem to think of at all. Other servants have their mutual companionship, while the hardest worked of all has none. There is plenty of joking about policemen, and butchers' men, and bakers' boys, in connection with maid-servants; but, speaking with mournful gravity, there is something worse than intrusive policemen to be dreaded if any woman—and especially an educated woman—is consigned to a life of toil without the solace of human intercourse.

A sensible and humane mistress will be the friend of her servant;—will converse with her—tell her the news—inquire about her family—invite a friend to see her now and then, and permit the visits of respectable relations and acquaintance, within reasonable limits.

I have seen such a mistress repairing her maid's gown; and I considered it a very graceful occupation. I have known a lady plan, with real solicitude, the best way to manage about her maid's wardrobe, and the economy of her wages. I trust it is no uncommon thing to see mistresses undertaking the charge of the house, so that the maid may get her "Sunday out," or even a day at the Crystal Palace. But it seems to be too true that the haughtiest spirit appears among the lowest order of housekeepers, and that maids-of-all-work have therefore more hardship, more discouragement, and more loneliness of spirit, as well as of life, to bear, than the comparatively small classes of special servants.

Except in situations which bring in gifts or fees, such as lodging-houses, the maid-of-all-work has lower wages than the cook, housemaid, or nurse, while she has a continually decreasing chance of improving herself and her position. She is lonely day by day, and her future is fearful. Her spirits droop; her health fails; she rushes into some excitement of love or religion; she is disappointed or shocked, or despairing and she passes into Bedlam, or a workhouse infirmary; and, after a time, to a premature grave.

This is the fate of some—of many. No one will suppose that it is an average account of domestic service in the humble

households of England. The fact being disclosed that there is much insanity and premature mortality in a particular class of domestic servants, it has simply been shown how the thing happens.

The next effort ought to be to stop its happening in time to come.

CHAPTER XVI.

THE POLICEMAN.

HIS HEALTH.

Most of us have probably known some respectable working-class family, where it was the ambition of some spirited boy to get into the police-force in London, or a large county town. It may not be very difficult to imagine the reasons which recommend that sort of engagement to youths who do not show the same eagerness to enter the army, though the qualifications requisite for the two services are nearly the same. In both, the men must enter young: they must be of a certain stature and bodily vigour: they must undergo examinations about their health: and they are understood to be possessed of a sort of combative energy, which relishes instead of shrinking from personal danger. There is also a degree of personal distinction belonging to both services which is naturally attractive to ambitious youths on their entrance upon life. The red-coated soldier, and the blue-coated policeman, pass along the street somewhat more proudly, and under more notice than the artisan in his apron and paper cap, or the labourer in fustian, or bearing the porter's knot. If the men with the porter's knot were inquired of, they would tell, very many of them—that they had been policemen: and so would the watchmen and porters who guard warehouses and halls of great mansions; and they might also inform us why young men had rather be in the police than in the army, and yet serve so much shorter a time in the one than the other.

The police bear a higher character for respectability than the soldiery. Some of my readers may be surprised at this: but it is certainly true, just in proportion to the knowledge of the two classes entertained by those who declare an opinion. No set of

men in the world excels the British soldier in courage and patience, in spirit and patriotism, in attachment to worthy officers, and obedience to discipline : but when we come to speak of temperance, prudence, and personal self-respect, we find ourselves resting on the hope that the British soldier will do better in the future than hitherto. Some day I may go into the reasons which warrant such a hope, and explain how the soldier has been almost driven by mismanagement into intemperance, theft, and desertion ; or rather, why thieves, and drunkards, and deserters have been tempted into the army instead of better men : but at present our business is with the police, who are proved by the testimony of their medical and other officers, to be, generally speaking, a remarkably sober and self-respecting order of men. It is true we hear perpetual joking about the love-making of the policeman, by which he obtains good suppers from credulous cooks, and weighty money-gifts from soft-hearted housemaids : but a very small number of genuine anecdotes furnish a vast amount of imputation ; and it is certain that the records of the police prove a very high average of honest and reputable conduct in the force.

This good repute may therefore well be one ground of preference of the blue coat to the red one. Another seems to be the popular notion that the policeman is the wielder of power, instead of the slave of discipline. To the careless eye it seems that the soldier is a machine, moved by the voice of his officer ; whereas the policeman is absolute on his beat. The crowd opens to make way for the policeman : he commands help from men, and they yield it : he imposes quiet on women, and they stop brawling : he looks at children, and they slink out of sight. The old English reverence for the constable is renowned all over the world : and in the case of the policeman, there is something of the admiration and fear of the military office added to the awe felt for the constable. Throughout whole parishes of the metropolis, and wide districts of the country, there is nothing so formidable to the greatest number as the glance and the march of the policeman. The tax-collector, the vigilant pastor, the strict game-preserving squire, the severe landlord, the lecturing magistrate—are each and all less formidable to the popular imagination than the policeman who sustains the dignity of his office. A perpetual mystery hangs around him—that of his access to "information." Every day, everywhere,

"from information which he has received," he appears where he is least desired. If two women fight in the very middle of a closed house, he is fearfully expected to inquire into scratches and torn gowns. If a child is shut up in a dark closet till it goes into fits, the policeman is expected to come and inquire into its health. If there is any article at the bottom of a heap of marine stores, which could not be exactly classified with that description of goods, the policeman will be sure to sniff it out, and walk straight to the cellar where it is. The pedlar in remote regions will take the other side of the hill, or the other side of the hedge, if he has stolen thimbles in his pack, or smuggled cigars in his pocket, rather than meet the policeman on his beat: and the child who has gleaned fine ears of wheat before the last shock was carried, is afraid to go home, lest the omniscient man should follow and inform. Such possession of conspicuous power is very tempting, certainly; and especially to very young men. Thus we might expect a rush into the profession, though every female relation may hold up a picture of horrors at least as fearful as those which beset the soldier's trade. Mothers and wives and sisters do not like to think of the host of enemies which their lad will make among desperate thieves. They shudder at the thought of the kicks, the bitings, the blows, the throwings down stairs or out of the window, to be expected in such dreadful dens as the police have to visit: and then there are the perils of fires, and falling houses, and restive horses. In short, wherever there is danger, there the policeman must be; and the glory to be reaped is nothing like that which makes the soldier's reward. That there is a rush into the profession may perhaps hardly be said: but there is always a due supply of picked men, and a very large proportion of rejected candidates.

How is it, then, that the average length of service is no more than four years?

Is not this a remarkable fact? Is there any other occupation filled by picked men in the prime of their years, well-paid and highly privileged, reputable, and well superintended, which changes its members on an average every four years. Let us see what the mode of life is.

Widow Benning's second son, Tom, wishes to enter the Metropolitan Police force. That force consists, he is told, of somewhat under 6000 men; and more than 1000 are admitted

yearly, to fill vacancies. These must be under thirty years of age, unless a soldier or two proved of valuable quality should apply, and should be admitted as an exception. None under twenty need make application, as they are not considered fully grown and hardened for the work. Tom is three-and-twenty, and the average is five-and-twenty. He stands five feet ten in his stockings, and is satisfied that he can walk five-and-twenty miles a day for months together without injury to his health. He is smart-looking and walks well: and it is therefore probable that he will be appointed to day duty; and his mother rejoices at this, though Tom tells her that night-work is considered less laborious and wearing, from the quieter state of the streets. She can hardly credit this, because the day-work is divided into two portions, while the night police have to take their eight hours at a stretch, without even the liberty of sitting down for any part of the time. If Tom is chosen, she trusts it is true that he will have day-service.

As for the chances of his being one of the thousand engaged, —how many are the rejected likely to be? They are usually nearly double the number of the accepted. This seems remarkable, considering that the applicants are already so far sifted as to be of the specified age, and to bring the requisite twelve months' good character from their last situation, and a recommendation from two respectable housekeepers, not publicans. Many, however, who suppose themselves in good health, are reported otherwise by the surgeon: and the Commissioners find many reasons why young fellows of decent character will not answer their purpose. A hot temper would never do; nor any vanity which would lay a man open to arts of flirtation; nor a too innocent good-nature; nor a hesitating temper or manner; nor any weakness for drink; nor any degree of stupidity. While three times the requisite number apply, the Commissioners will choose the cool, smart, self-reliant, penetrating, temperate, forbearing men, who can take orders and yet exert their own faculties, and who have an honest character of their own while up to other men's tricks; and good fellows who are less able must wait, or give up the chance. In the same way, the surgeon will choose the men who have the broadest chests, the best built spine and trunk, the most healthy limbs, vigorous heart, clear brain, and acute senses; dismissing many who never imagined they had a flabby heart, or muscles which would not

bear a strain, or legs which would soon become diseased from eight hours per day spent on foot.

Tom goes in, when called to the surgeon ; he strips, is measured, and proved and tested as to his capacity of lungs, &c. ; and is declared sound in health,—as the Commissioners find him in character and apparent capacity. He is a made man now, if he does his duty well, of which of course his mother has no doubt : and the widow's heart sings for joy. She does not know, nor would Tom believe it to-day if he were told, that the average length of the policeman's service is only four years.

He is to begin, after a month of probation, on nineteen shillings a week, with many advantages : he hopes to rise to handsomely paid offices in course of time : after fifteen years of service he becomes entitled to a pension on retirement : and after five years he may hope for some gratuities, if he should become unfit for service. As he is a single man, he can be lodged at one of the Section Houses of the force, for a mere shilling a week. He will receive a considerable proportion of his clothing, and a fixed supply of coals : and as to his meals, the men are understood to live very well by messing together.

To his barrack therefore he goes, when he enters on his new employment. He has to try his capacity during four weeks of probation at lower wages, in the first instance. He finds he is to have yearly one coat, two pairs of trousers, and two pairs of boots, or three shillings a month to find them; and a great-coat and a cape once in two years. Belt, truncheon, and lantern are his apparatus. He must, however, be always provided with a neat suit of black at his own expense, in readiness for any occasion on which he may be sent out in plain clothes.

The first morning he wakes heavy and headachy. The beds in his barrack stand rather close, and most of the men refuse to let the windows be opened during any part of the evening, night, or morning before breakfast. Several of them are so drowsy, too, that they will not stir till the last minute, so that they have no time to wash, and make themselves comfortable. They might if they pleased. There are windows enough, and doors and fire-places ; but if the majority fasten the windows, and lock the door, and keep the chimney-board up, the minority must suffer for want of air ; but as to the washing, each man can act for himself. There is water ; and any one who provides himself with a tub and any sort of screen, and who chooses to

get up twenty minutes sooner for the purpose, can have the comfort of a fresh and clean skin to begin the day with.

The meals are less regular than messing is commonly understood to be. The notion of a mess is that of meals served punctually three times a day, at which the members may attend or not; but they have no claim for food at other hours. In a police barrack the men are never all collected together, as they serve in relays; and, besides that some are out while others are at home, there is always a considerable number in bed, night and day. Tom begins with being one of the first relay, which goes out at six in the morning for four hours. He must have his breakfast first. His mother is not the only one who has urged this upon him, for the sake not only of his health, but of freedom from temptation. If he went out hungry he would be obliged to get something at stalls or shops; and this would be undignified, and might lead him into inconvenient gossip and familiarities, and perhaps into the temptation of accepting presents of food and drink when he ought to be minding his duty. All this is true enough; but it is not always easy for a single man to obtain his breakfast before six in the morning, among comrades who are too lazy to get up for it, or too headachy to care for it. As breakfast has to be provided, however, for the men of the night force, who will be coming in presently, the first relay have only to hasten the cooking of the chops as far as their own wants go. Tom will therefore have his coffee, chop, and potato in time to fall into rank at 6 A.M.

As he and his comrades march forth—one of them being dropped at each point as they traverse the district—they displace the night force, and send them home to breakfast and bed. Every one of these must be in bed before eight, and re-appear at 3 P.M. They will be in their deepest sleep when Tom comes off his beat at 10 A.M.; and he will have dined and gone forth again before they wake. The only time when he can make the acquaintance of this body of his comrades is in the evening, between his return at 6 and their going forth at 10, for the night.

On this first occasion of relieving them, he is surprised that they do not look more weary after having been on foot for eight hours. His wonder is not likely to be lessened the second day, when he has had experience of the fatigues of his new occupation.

The morning term seems a rather easy affair at first. The streets are cool and not overfull. Workpeople go out quietly to their day's labour: the shops open gradually and in a leisurely way: the merchants do not appear, and the clerks are in no great number till after nine o'clock. The great people are not visibly stirring: and it is only about a railway-station, or in a market, that there is any overpowering noise or hurry. So Tom returns in good spirits, rather pitying his comrades who are to support the noontide heat and bustle.

There had been three breakfasts by this time; and soon the series of dinners must begin. Tom has three hours for some kind of employment, if he can find one which will leave him within instant call of his officers, in case of need, and will not use up the strength he will want in the afternoon. He can read a little for his own amusement; and he likes gossip as well as most young men: but he thinks he must find some handiwork which he can take up at odd hours, as he sits in the barrack-room.

The afternoon alters his view of his occupation a good deal. He had no previous conception of the difference between walking for four hours in London on one's own single and particular business, and doing the same thing in the pursuit of everybody else's. Every shop-door and cellar-window along miles of street is under his care. He must look to every child on the pavement, and every passenger at each crossing. Every high-couraged, and every stumbling, skinny horse must be watched by him. He must have his eye on every beggar, and must painfully discern suspicious from respectable persons, and make no mistakes. He has been recommended to acquaint himself with the faces of all the householders throughout his beat; a most tremendous task in itself. He is under a perfect pelt of questions for the four hours, as if there were a conspiracy to ask him things that he did not know. Half-a-dozen times he is angrily told that he has shown himself just too late on that particular spot, and that his superiors should be told that their men were never to be found when wanted. A few puzzling cases have already occurred which show him that he does not understand his own powers and duties so well as he had imagined: and when at length six o'clock strikes, he goes off his day's duty "dead beat," as his comrades jeeringly tell him. He is indeed nearly distracted with the noise, the hurry, the worry, and

the general pulling to pieces, which make this incomparably the most fatiguing day he ever remembers to have passed in his life.

His dinner had been prime beefsteak, potatoes, and porter: and his supper is to be the same. The butchers say the police buy no bone. The irregularity of their meals prevents their having good joints; and they live on prime steaks and cutlets.

As far as food is concerned, Tom will do very well. It is good meat, well cooked, and earned and digested by abundant exercise. The air in the house is not so good, as we have seen, and his duty leads him into various unwholesome places. Good food, sleep, and exercise may go a long way in guarding him against this danger: but the hurry and worry are his greatest enemies.

It did surprise him, on first entering his barrack, to observe how many invalids there were on the sick list; and he will see more and more of this every day. It seems strange that of a picked set of young men—the soundest and strongest that could be obtained between twenty and thirty—a larger proportion should be ill than of persons of all ages in many English towns; but the fact is, that 36½ out of every 1000 policemen are always ill, taking the year round. Of these, somewhat less than 4 are under treatment for injuries, to above 32 for sickness.

The married men, who live in homes of their own, are more numerous than the bachelors who live in the section-houses. They probably live in great comfort, as no candidate is admitted who has more than two children. The married men, therefore, are for the most part young husbands, recently settled on good pay. They are under the same medical care as the bachelors; and the doctors find that a smaller proportion of them are ill, and that they are ill for a shorter time. It would be an interesting thing to know whether any number of bachelor policemen marrying after five years' service, and continuing for another five years after removing to homes of their own, would show an improved state of health before the end of the ten years. If this should be proved, the natural inference would be that the quiet and convenience of a home arranged to suit a man's work and his rest, with meals cooked by his wife at the most convenient hours, are conducive to health to a very important extent. One can easily imagine, for instance, that night-workers—printers of daily papers, night porters, and policemen—may get better rest by day in a home of their own, with

a wife to keep all quiet, than in any barrack where companies of comrades are entering and leaving, and meals and business are always going on. At best, however, the amount of sickness is considerable. Taking the metropolitan force all round, married and single, new men and old hands, each is ill from twelve to thirteen days in the year; ill enough to be in the doctor's hands, and to have a stoppage of one shilling a day made out of his pay for expenses. Four weeks per year are allowed for sickness on these terms. If a man is likely to get well, he is treated with indulgence after that time: but permission must be obtained from the Secretary of State. If he can never again be fit for service, he must of course be dismissed; but if he has served for five entire years, he has a small gratuity; and if for fifteen, he has a pension.

Of the twelve or thirteen days of average illness in the year, less than one day and a half is from injuries received from violence or accident. Some readers may be surprised to hear how few deaths result from what they are apt to consider the special dangers of the police,—from assaults and accidents. These assaults and accidents, together with all diseases whatever except three kinds, caused only 62 deaths in five years, against 155 arising from those three kinds of disease. In the years from 1852 to 1856 (both inclusive) there were 25 deaths from cholera, 41 from fever, and 89 from consumption and other chest diseases. During those years there was not a single death from diarrhœa or dysentery, an evidence of both good diet and temperance on the part of the men. The other heads, at the same time, disclose the real sources of danger. Mothers, wives, and sisters need not be in any great terror of madmen, drunken women, or even brawling Irish, nor of street crushes, runaway horses, and burning or falling houses; but they may have some reasonable dread of the haunts of cholera and the nests of fever which the duty of the police requires them to enter and watch over. Far worse, however, is the disease which might be so easily guarded against,—the fatal consumption, which is directly bred of ignorance and carelessness. Too many of the police are as reckless as the soldiers, who die by thousands of night duty. It is not the wet weather that kills them; it is not the winter cold that kills them; but it is the fatal rashness with which they encounter both the one and the other.

The policeman's two pair of boots are required to be in good

order. He has, as we know, a great coat and waterproof cape, in addition to a good suit of cloth clothing. We know that getting wet does no man any harm while he keeps in exercise so as to be warm. We know that the bitterest cold is not injurious to a person in exercise, unless he encounters it in either a chilled or a heated condition. The well-clothed policeman, with his fixed time of duty, need never be wet to a hurtful extent : and if he prepares, with any common sense, for going out into the cold, by night or by day, his lungs need take no harm. But this is exactly what is neglected by the men who die of consumption. Their lungs were sound when they entered the force, or the doctor would not have passed them. How is it that they have gone so soon?

One man is lazy about changing his boots and socks when he comes in on a wet day; and he even sits by a great fire with his coat and trousers reeking with damp, instead of putting on the old suit, which should always be at hand for use.

The night-force think they cannot shut up too close at home, when their nights are spent in the open air ; so they stop up every chink where they sit and while they sleep, and go out in a state of perspiration to meet the bitter wind at the corners of streets, and probably stand in a draught under a gateway to escape a pelt of rain, which would not do them half as much harm as the wind.

If they were wise, they would keep their windows open at home at all hours of all seasons :—just an inch or two at top, if no more, as is done at all our hospitals for chest diseases. They should go out warm and well fed ; but neither in a perspiration nor a fever, from too much fire and meat and drink. Thus prepared, and in dry and sufficient clothes, they have only to keep their blood flowing with exercise, to be able to defy wind and weather in any season. This is what policemen should do : but they seem not to understand it: for of these picked young men, so sound in health at so late a date, eighty-nine died in the metropolitan police in five years from disease of the lungs.

After a time, Tom will have had his turn in the second relay of the day service, going out at 10 A.M., and returning at 2 P.M. : and being on his beat again from 6 till 10 in the evening. If he is like most of his comrades, he will find neither so agreeable as he expected ; and he will be glad to try night-duty,—little as he could once have supposed that he should desire to be on

foot for eight hours of every night for months together. But the quiet is a very great thing; and the duty is generally easy. To try the fastenings of shops and dwellings; to see the last carriages drive away from balls and theatres; to look to the proper closing of public-houses; to watch suspicious loiterers, and examine doubtful-looking bundles carried furtively; to keep mischievous people moving on, and take the destitute to some place of shelter; to be on the look out for the sight or smell of fire or smoke, and quick to hear the springing of a rattle in any direction; to keep order at the starting of the earliest railway trains, and at the entrance of the country waggons bringing vegetables, fish, meat, and flowers to market; all this is easy in comparison with the day-work, from the greater emptiness of the streets and absence of noise.

Still, there will be another change for Tom. He will marry. He ought to marry; for he can very well afford it; he should have the comfort of a home of his own; and he will be a more valuable member of the force for being a family man. He ought, after that, to rise. His mother may see him a sergeant: perhaps, in course of years, an inspector. She does not see why not.

Others do see why not:—that few men remain in the force many years. They see their comrades, fine young men like themselves, carried to the grave,—not in greater numbers per thousand perhaps than many in other occupations, but more than there should be of so select a class. Six or seven in the thousand each year is a high rate of death. Then, out of the thousand admitted each year, as many as 35 are invalided, above 40 more are dismissed, and above 130 resign from one cause or another. From one cause or another, nearly a quarter of the new men have left by the end of the first year; and, as we saw before, the average length of service is only four years.

It is therefore probable that Tom's vocation will not always be that of policeman. His having been one, especially if he leaves the force from his own free choice, will assist his settlement in some favourable post where the virtues of the constable, with a dash of the quality of the soldier, are prized and paid for. In future years, when his old mother is sitting on one side of his household fire, and his boys are home from school and work for the evening, and Tom is supping before going to his post as

watchman at the bank, or night-porter at one of the great hotels, he will bring out another of the thousand-and-one curious and romantic stories which all begin in the same way:—"When I was a policeman." Perhaps his old mother may sigh, and say there was a time when it was the first wish of his heart to be a policeman; and if he had kept to it, he would now have been very near receiving his pension for life: upon which, his wife may probably observe that there is another side to the case; and if he had not left the force before his health was lost, he might have been in his grave years ago, or a tottering invalid, on whom his epitaph would have been fixed while he was only half-dead:—"He was a good policeman."

CHAPTER XVII.

THE STEEL GRINDER.

HIS HEALTH.

An Asiatic despotism is a dreary thing to contemplate and describe; and the tyranny of the ruder sort of African kings is intolerable to the imagination of Christian nations. The barbarity of negro slavery in its grosser forms is no less painful: and our only consolation in reading or hearing of the things that are done under such authorities as these is in hoping that the spread of civilisation and Christianity will, in time render rulers and strong men aware of the value of human life, and more or less considerate in the expenditure of it. If we were to read of a country in Central Asia where a valuable mineral was found, which slowly poisoned everybody who came within reach of its fumes while it was smelted; and if we heard that the Khan of that country took strong men from their homes at his pleasure, and made them work upon that mineral till they were dying of the fumes, and then cast them adrift in their last days, we should think it a horrible destiny to be that Khan's subjects. If it was also the fact that means were known by which the poison might be partly neutralised, so that the workmen might live for twenty years instead of certainly dying

within ten : and if the Khan would not allow those means to be used, saying that ten years were long enough for his workmen to live, and that it was more convenient to him to have a rapid succession of them, we should proclaim such a ruler to be the monster of the world.

If we knew of a wild African king who required a certain quantity every week of weapons and other implements made of bamboo, and insisted on their being made in a particular way which caused the bamboo to fly in little spikes which stuck in the eyes and throats and lungs of the workmen, so that they began to cough the first day they went to work, and never stopped till they died choked in a few years—many being blinded also before that time—we should call the king a savage and his workmen slaves. If, moreover, the weapons might just as well be made without inflicting a single prick on anybody, and yet the king insisted that the pricking was precisely the part of the business which took his fancy most, we should call him a monster too. It is sufficiently horrible that there are slaveowners in Louisiana who say they find it answer better to "use up" (kill off) their negroes in a certain time, and get fresh ones, than to spare labour, and replenish their stock less frequently. It makes an Englishman's blood boil that such things should be said. But how could he find words for his indignation if the sugar could be grown and made just as well without the "using up," and the owner should refuse to adopt the machinery which would answer that purpose because he did not like new ways, or because he did like to whip the negroes up to their toil, and get work out of them to the last gasp? This man, too, would be execrated as a monster wherever he and his methods were heard of.

Suppose a sovereign and a set of officials in England who should propose to inflict these very sufferings on Englishmen.

Nobody will stop for a moment to suppose any such thing. It is an insult to our country, and to all the men in it, we shall be told, to admit even a passing imagination of men being wantonly murdered by inches—doomed to a ten or a five years' term of torture, ended only by a lingering death. It would be mere nonsense, if it were not also wickedness, to suppose that in England there are men who would submit to such tyranny in their own persons, or who would permit it to be inflicted on others.

Do we really think this? Do we confidently say it? Then we are mistaken; and we have some melancholy truths to learn about our country, and the men in it. Many hundreds of work-people die every year, in each of several branches of manufacture, after a slow torture which is as needless as the early death; the difference between the English case and those of Asia, Africa, and America being that here it is no sovereign, no official personage, and no master who inflicts the murder, but the victims themselves, and their neighbours of the same craft. It is true, the evil is not so great as it was: but it is still the fact that men are prevented by hundreds from saving their lives in dangerous occupations avowedly because their places are wanted for new-comers who had reckoned on their not living beyond a certain short term of years.

Did any of my readers ever happen to see the forging and finishing of a sail-maker's needle? After the steel is cut into lengths, each bit is separately treated—flattened at the head, and guttered, and filed, and punched with repeated strokes for the eye. Each needle is separately hammered into its three-sided form; and, what is most to my present purpose, each is separately pointed by being held to a gritstone cylinder. There was a time when every needle of every size was made in the same way, costing an infinity of time and trouble which is now saved by the use of improved mechanical methods. Every one of these needles, in the making, helped to shorten a man's life. The grinding of the points gave out a never-ceasing dust, composed of gritstone and steel particles, which infested the workmen's eyes, nostrils, mouth, and lungs, so that no one of them lived to forty years of age. This is the peril which makes life so short among the Sheffield cutlers, and which renders the grinders of steel everywhere, whether for needles, or razors, or scissors, or skates, or sickles, a peculiar class of men.

Going back a generation, the career of, say, a Redditch needle-maker was this.

A boy in any family of that craft heard, from his infancy upwards, of wages of from two guineas a week to a guinea a day; and he was accustomed to the ideas which belonged to such pay under the peculiar circumstances. He saw his father drunk very often; and he knew that he would be tippling for a week together, after which he would go to work for two or three weeks when he could get credit no longer: and those were the

times when there were capital suppers at home—the first delicacies of the season being upon the table. His father used to come home much out of breath; and he would be heard coughing in the night. When it was time for the boy to go to work, it seemed to be taken for granted on all hands that he should follow his father's trade. If any friend remonstrated on the ground that the occupation was an unhealthy one, and for some reason or other, not reputable, there was a family chorus of opposition. The father would not live long; nobody in his business lived to much beyond his present age; and then the good wages would be wanted. There were no such wages to be had in any other branch of manufacture in the place, and the boy could not think of taking up with less. He was not to begin sitting at the grindstone, however, till he was near twenty. That sacrifice to prudence was agreed to because it was a rule of experience that no boys employed in needle-pointing lived to be twenty.

At twenty, or somewhat earlier, the lad married, and sat down on his "horse," before his wheel. There, as he stooped over his work, hot atoms of steel and stone-dust filled the air he breathed, and were driven into his eyes, nose, and throat. His employer was a humane man, we may suppose; for most of them were so, as well as they knew how. There were as many doors as possible in the workshop; and they were supposed to be always standing open, in order that the dust might be blown away, to a certain extent. The men shut the doors whenever they had an opportunity, complaining of constant colds from the draughts. They were strictly ordered to go and rinse their mouths and throats once every hour: but when they were interested in their work, and, yet more, when they grew short of breath on moving, they were lazy about leaving their wheels for this rinsing. Moreover, they objected to it in itself. If it did no good, it was a needless trouble and loss of time: and if it did remove any of the dust, the men would be unwilling to take the benefit. No man in the business desired to lengthen his own life, or chose that his neighbour should have any advantage over him, or should keep the rising generation waiting too long.

The employers entirely disapproved this view of things; but they were actually afraid of the debauched set of fellows who pronounced for "a short life and a merry one," and threatened vengeance against any one who should lower their wages by prolonging their lives. A mask of magnetised wire was recom-

mended by Mr. Abraham, who pointed out how the wires were studded with particles of steel, after a morning at the wheel; particles which would have entered the mouth and nose of the grinder, if not thus intercepted. But not a man would wear the mask. The employers used every effort to get it adopted: but the men said, as on all such occasions, that to make the work safer was to lower the wages. Thus the lad who was a beginner had no chance of wearing this safeguard. The eyes of older men were upon him. He fancied, too, that recklessness was a mark of spirit and good fellowship. He told his little wife, however, that the mask was no good, as it did not dispose of the stone-dust.

To dispose of this stone-dust, some employers tried an experiment of fitting the wheels with canvas cylinders, up which a good deal of the dust might be carried by a proper draught. In one night every cylinder in Redditch was cut into strips; and every workman in that branch informed his employer that the craft would never allow either cylinder or mask. The lads were told that their employers had seen two, three, or four generations of needle-pointers to their graves, and were advised and entreated to take with good-will to a long succession of improvements, all directed to keeping their lungs clear of the fatal dust. It was no use. Ventilators, screens, fans,—all devices were destroyed or neglected.

In a few months, the young workman found he never was well. In a few years, he had a habitual cough. Mother and wife urged him to eat; as the hearty eaters bear the work longest. Much of the money went to keep an expensive table. Then drink followed; and then rows, riots, midnight vengeance for trade quarrels; a soured temper, when every breath was drawn with pain; an anxious mind when there was a long score at the public-house, and several hungry children at home; and finally the poor fellow, old at five-and-thirty, and sinking under "the grinders' rot," knew that his lungs were black as ink, and tough as parchment, and were on the point of stopping for ever, while his fine wages were gone, he could not tell how, and there was nothing for his widow and little ones but to go into the workhouse. So much for "a short life and a merry one!"

The sons who walked in his funeral train as infants now find their occupation a very different one, and not much more dangerous than many other employments. Happily for them,

though not for all parties at the time, there was, in their youth, a disastrous strike in their little town, and their father's trade. The needle-pointers were misled, and suffered much hardship: and when they petitioned for work at the old wages, the employers imposed a new condition;—that they should honestly use the means provided for the preservation of their health. A fan-wheel in the midst of a group of grinding-benches, each of which has its wheel covered so artfully as that the dust is whirled away from the workman's face, conveys the whole collection of stone and steel particles out of the work-room, and blows it into some harmless place in the open air. I have seen the cloud issuing from an opening, and actually whitening a green bank for a considerable space. This white stuff would have turned human lungs black by the inflammation it would have caused; and, but for the apparatus, and the will to use it, the present workers at the wheel would long ago have been in their graves.

The same improvement has not taken place wherever steel is ground. We think at once of Sheffield, where the fork-grinder expects to die at thirty, and the grinders of razors and scissors a year or two later; and the tableknife grinders at five-and-thirty; and the grinders of saws and sickles at nearer forty; but none so late as forty. The wretched men,—who, however, are proud of the peculiarity of their lot,—seem to be at about the same point that the needle-pointers elsewhere were at in the days of the mask and the canvas cylinder, and before the strike, to the failure of which so many lives are owing. Some of the first cutlers in the world have applied themselves to obviate the mortality among their men; but almost in vain. When they set up the fan-wheel, the men will take every opportunity of stopping its working. The words which they are reported to have used are these: "Trade is bad enough as it is. If the men live longer, it will be so overfull that there will be no such thing as getting a living." They do, however, permit the dry-grinding to be turned into wet, as improved machinery works this effect. Knowing as they do that it is the dry-grinders who die, on an average, before thirty, while the wet-grinders live from two to ten years longer, they allow of such a quickening of their wheel, and such a drip of water over it as may detain a portion of the dust from entering their lungs. Of the dry-grinders, however,

there are five hundred employed on forks only in the one town of Sheffield :—five hundred young men who have doomed themselves deliberately to an early death ; and in such a way as to excite only disgust, instead of the sympathy and admiration with which all men are wont to regard any loose hold on life which has any respectability about it whatever.

The position of Sheffield is singularly bad in the scale of comparative sickness undergone by the working-classes, as ascertained by the managers of Friendly Societies ; and yet there is no note taken of the fact that the lives, out of which this sickness is computed, are little more than half the ordinary length. In comparing the sick weeks in the life of a rural labourer and a Sheffield artisan, we ought to note, not only that the one has 52 weeks of illness to 95 of the other, but that the rural labourer's term may extend to 60 years, while the Sheffield man's ends at 40, or even 30.

Even without this, and supposing that all have an equal right to talk of their life "from twenty to sixty years of age," what a preponderance of sickness there is in Sheffield ! In town life generally in England the proportion of sick weeks in those years is somewhat under 55. In city life it is under 66 weeks ; whereas in Sheffield it is just upon 95. No other town, and no city on the list before me, comes near it, even Leeds being under 63, and Rochdale under 57 ; and the ill-favoured and unpopular Stockport, the worst after Sheffield, under 85.

We shall know more about all these matters after the approaching Census : but we now perceive plainly enough that there is an enormous sacrifice of life in the commonest processes of manufacture, which a little more knowledge may enable us to obviate entirely, and which a better morality would at this day materially check. It is the terrible attribute of this sort of mischief, however, that it is at once cause and effect. Peril to life, of this particular kind, generates the immorality which, in its turn, creates the recklessness which again imperils life. The mere mention of Sheffield brings up the image of such recklessness in the minds of all who hear the name. The low regard for human life, and the propensity to violence for which the working population of Sheffield are notorious, must have some explanation : and the explanation is easily found in the excessive sickness and mortality of the place, through hardships for which the victims would murder any tyrant who imposed them,

but which they inflict on themselves against all remonstrance and preventive efforts on the part of their employers. It is impossible to remain many days in Sheffield without perceiving how low and wild are the habits of a portion of the population; and every newspaper reader in the kingdom is familiar with "fearful outrages" of which the scene is Sheffield, and the occasion generally some trades'-union dispute. For the deeper cause we may look to the depraved state of bodily health, and the self-imposed doom of death under which a certain proportion of the citizens pass what they choose to call "a short life and a merry one."

Their case is not like that of the Redditch needle-makers, an improved and improving one. In old times the grinders of Sheffield were scattered about over the neighbourhood—small groups of them being found beside any or all of the waterfalls which abound in that hilly district. They were always a rather wild and rough set of people; but they lived a free life of less toil than at present: or rather, as they now vary their toil with intervals of dissipation, we may say that their fits and starts of labour and holiday were more wholesome when they depended on the flow of the waters than now when they are determined by the inclination of the workers. When, in former days, there was not water enough for the wheels, the grinding stopped perforce. As the flow might begin again at any moment, the men could not go far from the spot: so they used to sleep, or play, or drink and gossip on a green bank, or beside the weir. Where there was a whole hamlet of fork-grinders, eight or ten men might be collected in one room; and the dust from their wheels was then abundantly pernicious. But, on the whole, there seems to have been more air, and less of an aspect of fatality about the occupation than of late years. It is rational and wise to supersede water power by steam, wherever it can be done, not only for reasons of commercial economy, but to save health and life and good land by abolishing the practice of dams on flowing streams; but when the Sheffield grinders were collected from these country spots, and assembled to grind in steam-mills, it was essential that they should use every precaution on behalf of their health. This is exactly what they will not do. They work cooped up in an atmosphere of grit and steel. A few of the more intelligent make more or less use of some apparatus for carrying off the dust: but the greater

number oppose and resent all such concessions to reason; and the cry of all who would help them is now for an Act of Parliament to compel them to save their own lives. To protect the women and children in factories we have passed a law which would be wholly indefensible, under our constitutional system, on behalf of men: and it would disgrace our country in the eyes of all the world if we were to pass such a censure on the working men of England as to make a law to prevent any class of them from wantonly throwing away their own lives, without any pretence of a reason, to keep up a high rate of wages. We must hope that some better method than an Act of Parliament will in time avail to stop this disgraceful form of suicide. Meantime, a well-known Sheffield physician has published the fact that whereas, in the kingdom generally, the number in a thousand who die between twenty and nine-and-twenty years old is 160—among the Sheffield fork-grinders the number is 475!

Many of the people complain that the fortunes of the town are sinking; and it is only too notorious that the character of the place has long been declining. As to its poverty—there is, we are told, a large class always in precarious circumstances—the small manufacturers who have been journeymen or jobmen, and who set up for themselves as soon as they have a little money in hand. With a fair chance of an even trade these small makers might do well, as their brethren in Birmingham do, on the whole; but the ravage of trades'-union tyranny has prevented any fair play to the Sheffield men. The largest capitalists cannot sustain the prosperity of the place while the labour-market is disordered by the interference of trades'-union dictation: the manufacture leaves the place, and goes over to America and other countries, in spite of the eminent natural advantages of Sheffield. As the trade declines the men bring more and more of their children into it, and insist that wages shall not be lowered. They threaten the employers, and are jealous of one another; and they insist, among other things, on the grinders dying off as fast as they ever did. From time to time we hear of some plot to ruin or murder an employer; and every year or two there is an explosion in some working-man's bedroom or cellar, from a can of powder introduced by an enemy, in the name of the unionists; and thus Sheffield has acquired its bad name and its low place in the scale of English civilisation. It would be very interesting to see that popula-

tion—naturally hardy, apt, strenuous, and skilful in toil—work its way up into a condition of health, comfort, prosperity, and good repute : and we should like to see it begin its reform with that great cause of disturbance—the grinder's health.

If the grinder could once consider himself a man on equal terms with other men, as likely as they to live to threescore years and ten, he would at once be a wiser, a better, and a happier man. The Redditch needle-pointers have come round to show a sort of complacency in the clever contrivances for the preservation of their health, and a contemptuous pity for a man who can take no satisfaction in them. If the fork-grinders could attain thus much wisdom, any man of their class would soon be ashamed, instead of proud, of being pointed out as an old man at five-and-thirty. Their habits would be those of health, instead of reckless disease. Their skins would be cleaner if their lungs were not so foul. They would eat plain wholesome meals, instead of pampering themselves with costly diet—"feeding high to keep themselves up," when every hour's work is pulling them down. They would work and play more temperately and regularly when the ordinary prospect of bringing up and establishing a family of children was before them, instead of the excuse of custom for spending their great gains in debauchery for a few years, and leaving their widows and orphans to the charity of the world.

This class thus raised, the moral atmosphere would be purified to a certain extent, and the selfishness and violence which now render all law and order precarious would moderate by degrees, till the peculiar facilities at present afforded to tyranny over the working man would disappear. The managers of strikes have more scope for their cruel tyranny now in Sheffield than in more enlightened and orderly places ; and great are the sufferings of employers and employed, whether they at once submit to slavery or resist it. If the matter is not settled sooner by the good sense and proper spirit of the citizens of all classes, it will by the loss of the trade of the town and district —already grievously reduced ; but it is fair to hope that a body of workmen, renewed in health and heart and hope, by casting off a dreary doom, might reinstate the labour market and its liberties, and retrieve the fortunes of the place. If the thing is ever to be done, could it begin at a better point ?

If the men now at the wheel are too far gone, physically and

morally, there are the children. If they can be brought up to understand the nature and value of health, and the sin and disgrace of throwing it away, the supply of working-class suicides may be cut off, as that of juvenile thieves is by reformatory schools. One point which should be looked to is their notion of honour or spirit. From their fathers they are apt to pick up a notion that there is something fine in recklessness of life, and contempt of early death. It is not difficult to make it clear to anybody who will listen, that it makes the entire difference whether life is held lightly for one reason or for another. If it is in devotedness for Man—for one man or many—it *is* a fine act to risk life; and we honour accordingly the Deliverer, like Garibaldi—and the Doctor and Nurse in a plague-stricken city—and the Martyr at the stake, who dies for what he believes to be the truth, be its form of profession what it may, and the Explorers of the globe, who brave the terrors of the pole and the equator to enlarge our science, and thereby enrich our human life. But the recklessness of life which proceeds from self-indulgence and ignorant obstinacy has nothing fine about it, and is often found to cover a tendency to cowardice. It ought not to be difficult to enlist the sympathies of any Briton, in early life, on behalf of the true courage which faces the duty of life, and prepares for it by building up a sound body, as the power and agency of a brave mind. There is no fear for the arts of life. Steel will be ground, whether men thrive or die over the work. They need not die; and it rests with the educators of society to decree that the present generation shall be the last of such ignoble martyrs.

CHAPTER XVIII.

THE GOVERNESS.

HER HEALTH.

"THE Governess! What sort of governess?" my readers may ask, in the first place.

Of four orders of female teachers, I do not propose to consider the case of those who have a home. Women who have a home usually have their health in their own hands; and all that I can say to such has been said already.

It may be considered that there are four orders of female teachers: schoolmistresses, private governesses, daily-governesses, and teachers of music, drawing, dancing, and other arts.

There is no apparent peculiarity in the condition of the schoolmistress which can have much bearing on her health. She has few or no special liabilities to ill-health; and, if she is properly qualified, she has the essential advantage of exemption from that dismal class of ailments, the *maladies d'ennui*. She has her trials, like everybody else. There is a suburb of London where the rules of the book-club contain, or did recently contain, a provision that no person engaged in education shall be admitted as a subscriber. There are still wives of merchants and manufacturers who, pondering the prospects of their daughters, say, "The truth is, no woman who has been engaged in education ever can obtain the position of one who has not." There is still a reluctance in men to refer to the fact that their mothers or sisters have kept a school. Between this mode of feeling among grown people, and the awe and dread with which young people regard all educators, the schoolmistress may encounter some little difficulty in society, till she has won her own way, and made her own friends; but this is no hardship worth mentioning in connection with health. A woman whose nerves cannot stand the prejudices of the ignorant and vulgar is unfit to be a schoolmistress, and is not worth our consideration here.

The schoolmistress has the grand advantage of a line of duty accordant with her faculties. Women are made for domestic administration; and the little realm of a school is precisely the proper kingdom for an able woman who enjoys the exercise of her faculties. She may be an egotist, as anybody may; but her occupation affords no encouragement to that source of disease and misery. Naturally, she should be incessantly occupied, exercised, interested; so as to have her nerves in a good state. There are anxieties belonging to the function. The children are faulty, of course, more or less; and occasionally one is corrupt—a heavy anxiety, and grave embarrassment and grief. Parents are often unreasonable, ungrateful, or ill-mannered; but they can impose only occasional annoyance. In a general way the schoolmistress reigns supreme in her proper domain, seeing, on the whole, a happy progress made by her pupils in growth and countenance, and in moral intelligence; and finding at last that she has been providing for her latter years a rich store of friends, and the means of independence when her working days ought to cease. It is true, we see women mismanage their health in that as in other positions. I have known a pair of them who set up a pony carriage, and spent the afternoons in country drives, who declared that they "had not time" to wash below their shoulders. They had poor health; and this was the excuse for the afternoon absence; but they could not be induced to rise one quarter of an hour earlier, to relieve themselves of the obvious cause of their ailments. Under no circumstances would they have "had time" to do what they did not like. The same may be said of habits of late sitting-up, insufficient exercise, an unfavourable mode of dress, and other follies of the kind; but the vocation itself seems, by the number of aged schoolmistresses, to be, on the whole, favourable to longevity. Many of us may recall some cheerful specimen of the order; some gay old lady, always sought and courted by old pupils or their children, free from personal cares, and full of scholarly interests, as well as instructive experiences. Not long ago, one was seen closing a very long life, in the course of which she and her younger sisters had educated many hundreds of girls in a way which was then superior to anything commonly seen, though it would hardly do now: but it was so congenial a mode of life to the venerable head of the household that, during a long decline, and to the

very last, her never-failing delight was in the Odes of Horace. Charming old pedagogue that she was! nobody would have insulted her by pity for her mode of life.

The daily-governess also has that great security for health—a home. That is, in the provinces, and for the most part in London, the daily-governess lives with parents, brother or sister: and if alone in a lodging, that retreat has the comfort of independence and quietness, at all events. To a woman who has seen many faces in the course of the day, heard many lessons, and walked several miles, there is great comfort in the solitary room in the evening, where she can study, or think, over her sewing, or write letters, or otherwise institute some contrast with the bustle of the day. "Let me only have some room where I can throw myself down on the rug in the evening, and have myself to myself," was once the aspiration of a diligent worker; and the same thing is in the minds of hundreds of women always. In possessing this partial liberty and repose, daily governesses have one of the advantages of the school-mistress. But much of the benefit is lost from the absence of another.

When physicians tell us that by far the largest classes of insane women in asylums are the maids-of-all-work and the governesses, we see at once that the two classes may have been affected by the same evil influences,—overwork and underpay. The daily-governess is not usually so overworked as to be deprived of a due supply of sleep, as the maid-of-all-work is: but, if successful, her vocation is one of great fatigue; and if not particularly successful, she is sadly poor. At best, if she is employed in two or three families for six days in the week, and about her work from seven or eight in the morning till seven or eight in the evening, she cannot possibly save money to secure anything like an independence for her latter days. Moreover, few women so employed are at liberty to appropriate the whole of their own earnings. They are seldom alone in the world; and some broken-down parent, some young brothers needing education, or means to start in life; some sick sister, or some graceless member of the family, may carry off every shilling that is left, after the barest food and clothing are paid for. It is probable that very few of the sixty thousand female teachers in England work for themselves alone: and it is certain that an exceedingly small proportion of them have any effectual pro-

vision whatever laid by for the years when they can no longer earn. It is no wonder that the gloom and the risks of such a prospect weigh upon the spirits, and fret the nerves. It is rather anxious work, counting the weeks till the pay-day comes round; wondering whether the employer will remember to be punctual, when the landlord is sure to be so; and when a new dress is absolutely wanted, and perhaps school-books and stationery have to be paid for; or family calls are pressing. It is dreary work emptying the purse when all is received that can come in for weeks or months, and there is no way of planning which will make the sum suffice. If any is laid by, it is such a trifle that each act of deposit is a reminder of the long series of years during which the same pinching must go on, without any chance of a sufficiency at last. This sort of anxiety, acting upon a frame already worn with fatigue, may account for the overthrow of many minds, and the shortening of many lives.

The daily-governess is subject to the evils of our climate, like any out-door worker, and with less choice than most as to working or staying at home. Weary or rested, with or without a headache or a cold, the giver of daily lessons must fulfil her engagements, in all weathers, and with perfect punctuality. She cannot rest in bed an hour longer. She cannot wait till a shower is over: at each house she must appear as the clock strikes, through all difficulties. The omnibus is an admirable invention for the class — cabs being entirely out of the question, except at the sacrifice of the means of living; but the omnibus is no longer to be depended upon for speed or regularity: and a mere sixpence a day—two threepenny rides—amount to nearly 8*l.* in a year of working days. A stout heart and generous spirit will reduce these evils to something very endurable. The necessity of disregarding variations of health is an evil, certainly; but it presses upon many of the most prosperous people in society, from cabinet ministers and the Speaker of the Commons down to the popular preacher and the commercial traveller. The weather is really a matter of small consequence to a healthy, active woman, prudently dressed, and sensible in self-management. Rain-proof coverings and stout shoes, put off on entering the house; a bonnet that covers the head; and under-garments that may defy keen winds, may make the worst weather as safe as the best. The regular exercise is anything but a hardship, if it is not immo-

derate in amount; and it need not often be that. Perhaps the greatest temptation to a solitary, hard-working woman is to live too low. If the physicians are right in saying that few English-women take enough of nourishing food (though enough in bulk of food that is not serviceable), the solitary diner is too likely to take up with what is cheapest and gives least trouble, instead of regarding it as a duty to get good meals of the best articles of diet.

A great blessing to this class has lately risen up in the Ladies' Reading-room, at 19, Langham Place. This institution, which has grown up out of various needs, answers various excellent purposes; and among these there is none more pleasant to think of than the comfort and privilege it yields to working-ladies. Till now there has been no establishment where a lady could go alone for a luncheon, or half an hour's rest, such as daily-governesses need in the intervals of their engagements. Now, by an easy subscription, and satisfactory references, the daily teacher obtains a comfortable place to go to in an odd half hour; a place where there is a good fire, soap and water, the newspapers of the day, and the best periodicals, and a comfortable luncheon to be had cheap. There are few chances for daily-governesses seeing newspapers and reviews: and hitherto it has been much too common to go hungry for many hours of the day, or to snatch food in a shop, at a dear rate, and in awkward circumstances. Now that improvement has begun, we may hope it will go on. The new refreshment houses may prove a valuable resource to ladies employed within distances which will enable them to meet for dinner, at a moderate contract price, or who may keep one another in countenance at such *tables d'hôte* as will probably be instituted at the new establishments.

When the ill-health of governesses is spoken of, however, the allusion is to the family-governess class, which undergoes all the evils of the other varieties, with grave and peculiar sufferings of its own. I am not disposed to repeat here the well-known descriptions and appeals, of which the world's heart is weary, derived from the life and lot of the governess, and used as tragic material for fiction, or opportunity for declamation against society. I have too much sympathy with the class who suffer keenly and indignantly under such picture-drawing as the Brontes, and many other novelists, have thrust into every

house. Keenly indignant women may reasonably be, who know that the Brontes' prodigious portraits and analyses of love-lorn governesses have been read by their employers, and their pupils, and every visitor who comes to the house. They feel that they have their troubles in life, like everybody else; and that they ought, like other people, to have the privilege of privacy, and of getting over their griefs as they may. They have no gratitude for the Brontes; and will have none for any self-constituted artist, or any champion, who raises a sensation at their expense, or a clamour on their behalf. Moreover, there is too much to be said on the part of the employers to render it at all fair to carry on the advocacy which has thus far been entirely one-sided. The worthiest of the governess order are among the readiest people in society to discern and admit the hardships of the employing class, who are at present very unpopular. They see and feel what the sacrifice is when parents receive into their home a stranger who must either be discontented from neglect, or an intruder upon their domestic party, who is scarcely likely to be happy herself, or acceptable to them; and who is, at best, a constant care upon their minds, and a perpetual restraint in their home. If it is so at the best, what description could exaggerate the misery of the household in which there is a series of bad governesses? From the overcrowding of the vocation, bad governesses are very numerous;—adventuresses who hope to catch a husband and an establishment of one or another degree of value; fawning liars, who try to obtain a maintenance and more or less luxury by flattery and subservience; ignorant pretenders, who, wanting bread, promise things which they cannot do:—these, and the merely infirm in health or temper, might furnish as much true material for domestic tragedy as any number of oppressed governesses. While the fact is so, it must be wrong to make a party in favour of an employed class at the expense of an employing one which might make a strong impression in its own favour by condescending to an appeal to the imagination and passions of society. Some of the best members of both classes tell us that the relation of parents and domestic governess is an essentially false one; and that all declamation and all reproach is consequently thrown away upon it. This is a view of extreme importance, which demands grave consideration. Meantime, as there are actually far more governesses than are qualified for the work to be done,

and as the order will certainly continue to exist for some time to come, we ought to consider what to desire, and what to aim at, in the case of the very suffering class of governesses.

The physicians have something else to tell us, besides the disproportion of insanity in that class. The propensity to drink is occasionally seen among them; and hence, no doubt, much of the insanity. What is it that incites to drink?—wretchedness. What is the cause of that wretchedness?—There are several causes. These must be understood before the health and morals of the class can be rectified.

Among the commonest items of popular ignorance, are the two ideas that to know a thing is to be able to teach it; and that intercourse with children is a thing which everybody is capable of. Hence arises much of the suffering and destruction of governesses.

As to intercourse with children's minds,—there are multitudes of parents who are incapable of it. It is even a rare spectacle when the mother who has been the best possible guardian and playmate of her infants is an equally good friend in their childhood and youth. If it is so with parents who have the divine aid of maternal instinct and passion, how can it be with the host of strangers who enter into relations with the children for the sake of bread? What are the chances that, in that multitude, any considerable number can be found who can pass easily into a child's heart and mind, and be happy there? Again, if we see in actual life that the faculty of developing and instructing inferior minds is wholly separate from that of acquiring, holding, and using knowledge,—the former being also more rare than the latter,—what are the chances in favour of children being well taught and made intelligent by any out of a host of candidates who are examined in regard to their acquirements, but not about their faculty and art of enabling others to learn? Our business now is only with the effect of these mistakes on the health of governesses.

In their class, as in society generally, there are very few who have such sympathy with children as is necessary for passing life with them. Those who have that sympathy generally find a natural exercise for it, and are not likely to take up their objects of affection at random. To all others, a life spent with children only is a terrible penalty. The peculiar requisite organisation being absent, not even mothers can get over the

irksomeness. We see it by the number of mothers who are strict and hard with their children; who are making their children feel *de trop* in their presence and in the house; who first consign their little ones to nursemaids and then to governesses, without a sense of sacrifice on their own part, till jealousy awakes, when nurse or governess has won the little hearts.

The same temperament in a governess makes her life almost unbearable. So does a love of study, whether in the way of books or art. So do a dozen other characters of mind which are aggrieved by the perpetual restlessness of children,—by the incessant interruption they cause,—by their importunity, their irritability, and the pettiness of their minds and interests. Living all day and every day with these little companions, with a consciousness of not getting on well with them, or doing well by them, is cause enough for a perpetual fever of mind and wear of nerves, leading to illness, to failure of temper, to a resort to stimulants by slow degrees. A lower order of governess will, in the same circumstances, grow despotic and savage,—the demons of the school-room who have destroyed so much young promise, and shed a blight over the whole life of early victims.

The mere absence of the special power of teaching is nearly as bad. The children seem stupid: lessons become to them a mere infliction, and the notion of knowledge a terror. A child who cries every day from the same distress is doomed to ill-health; and so is the teacher who sees no result from her toil but growing stupidity on the part of her pupils. These are the governesses who are to go to Bedlam by-and-by.

A wise and experienced clergyman once said the very kindest thing, and the richest in meaning, which could be said to a young governess about to leave home for the first time: "Don't be too anxious to give satisfaction." There is no need to enlarge on the significance of this advice. It is in itself guidance to power, health, comfort and cheerfulness: but it is for the few only who have the natural gifts requisite for their work. Those who are not in instinctive alliance with the children must be anxious about giving satisfaction to the parents.

These are the wearing cares under which health decays. Then there are the privations. No mother, brother, sister, or friend to speak to every day—or any day; no domestic freedom under which life flows on in a full and easy stream; none of the social

consideration which persons of all ranks enjoy in their own homes; no choice of friends and companions with whom to travel with relish the daily stage of life; none of the support which family love and pride afford to self-respect! These and many more are the privations endured by the alien of the household.

Of the mortifications I will not speak, because I could not do it without having to explain why I consider that the weakest point of the governess's case. I have no sympathy with the governess who thinks so much more of herself than the children as to stipulate for a place at the table when there are dinner parties, and for a permanent invitation to the drawing-room in the evening. Her pupils want her most when everybody else is engaged in hospitality; and she certainly cannot keep up her qualifications, or increase her knowledge, if she spends all her evenings in society instead of study.

One of the embarrassments of the conscientious governess is to decide between gaining knowledge and losing ease and good manners by solitary study in leisure hours; and keeping her social ease and losing knowledge and power by going from the school-room to the drawing-room. Each must decide for herself in her own case; but there seems to be no doubt that the ease of mind which arises from a cultivated intelligence is best promoted by a general habit of intellectual pursuit, sufficiently varied by social intercourse. A close and equal friendship in the house or neighbourhood is an impossible blessing to a resident governess. With the mother it is out of the question, from their irreconcileable positions in regard to the children; and with any one else it is practically (and naturally) never tolerated.

Then come the personal anxieties,—inseparable from the position. Every governess must want to earn money, or she would not be where she is; and she has no means of earning enough for her peace of mind. The salary does not afford any prospect of a sufficient provision when health and energy are worn out.

Sir George Stephen, who, as the legal champion of a host of governesses, knew more of their circumstances than perhaps any other man of his time, declared* that he knew of one governess being paid 400*l.* a-year; of three receiving 300*l.*, and

* "Guide to Service." The Governess. 1844.

a few more 200*l.*; but that 120*l.* was the received limit of salary for the most accomplished ladies. Not many get more than 80*l.* There is no occasion to set about proving that a woman can lay by very little out of 80*l.* or 100*l.* a-year, after paying for her clothes and washing; her annual journey home or elsewhere; medical advice, and the means of pursuing her arts and studies. The accumulation must be so small at best, that the encouragement to save is very weak. It rarely happens, too, that the governess has only herself to maintain. In most instances, every shilling is wanted as it comes in. And then, how vast is the majority of cases in which there cannot possibly be any surplus at all! Every few months some sort of protest is publicly made against parents who advertise for a governess who is to do the work of three persons for ten or fifteen guineas a-year; but the evil of insufficient pay goes on. It must go on till governesses are a less numerous and better qualified body than they have ever been yet. I have seen Quakers surprised at my exclamations on hearing that in wealthy families in their body fifteen pounds was considered a sufficient salary for the family governess. It is true, the Quakers permit no pauperism and no actual want in their sect; so that worn-out servants, gentle or simple, are secure from the workhouse; but it is a fearful thing to give, and yet more to receive, such a pittance as can barely provide clothing in acknowledgment of the entire devotion of the life, of all the time and all the powers. Persons who are not Quakers, however, nor bound by the Quaker rule of maintaining the helpless of their own sect, pay less than that pitiful salary; twelve pounds, ten, and even eight. The comparison of such salaries with the wages of servants has become a common theme. My business with the subject now is in view of its effect upon the health of this class of hard workers. What can be the state of nerves of a woman who, by laborious and precarious means, is earning a present subsistence, with no prospect whatever before her at the end of a few years, and no particular relish for the time which lies between? She cannot avoid hearing the dreadful stories that we all hear, every year of our lives, of old governesses, starved, worn out, blind, paralytic, insane, after having maintained relatives, educated nephews and nieces, put themselves out of the way of marriage, resisted temptations of which no one but the desolate can comprehend the force, and fought a noble fight, without receiving crown or tribute. If the

testimony of physicians is true as to the existence of intemperance among this class of working nuns, how can we wonder, any more than we should at the same weakness, if it were practicable, within the walls of a convent?

Sir George Stephen pointed out, sixteen years ago, that one of the singular evils of the lot of governesses was the absence of combination, and even of *esprit de corps*. Servants stand by each other, almost as artisans and operatives do; but the governess is, or was then, all alone and desolate. The anecdotes given by him of the helpless misery of girls worth ten times more than their oppressors in all but wealth, would be scarcely credible, if they were not seriously disclosed as evidence on which legal proceedings had been grounded. Matters have mended since then. Governesses are protected, pensioned, counselled, and aided; and they can insure, and save, and buy annuities to advantage. Various new occupations have been opened to women, and more will open continually, lessening the pressure upon the profession of education. Still, there is misery enough to impel us to inquire what more can be done; and ill-health, in particular, which affords the gravest admonition that there is something yet fearfully wrong.

The profession is understood to preclude marriage in all but a few exceptional cases. I will not go over ground fully treated by Sir George Stephen, but assume that the fact is so; as indeed the observation of any person living in society must pronounce that it is. This enforced celibacy can be got rid of only (or must be got rid of first) by shortening the period of professional work, in the case of young governesses. This can be done only by means of a large increase of salary; and that increased salary again can be had only by raising the quality and lowering the number of governesses. We shall arrive at the same issue in considering every one of the special disadvantages of the occupation. The conclusion is always the same—that there must be far fewer governesses, and of a far better quality. Then the experiment may be fairly tried, whether the whole arrangement is too faulty to last, or whether its advantages are sufficient to afford it a new start, on better terms for all parties.

Meantime, female education is somewhat improving. That is perhaps the chief consideration in the case. A high order of education among women who may have to become governesses will keep out of the profession a multitude who now get a foot-

ing in it; and the more highly qualified a woman is for the office of educator, the less she will suffer in it. The main obstacle to the immediate improvement of female education,—the indifference or the grudging reluctance of parents,—is a sore trouble at present; and when fresh instances of close economy in the education of girls, combined with ostentation in other matters, come under our notice, we are apt to doubt whether the day of grace and justice will ever arrive. But it is approaching. With such institutions as the Ladies' Colleges of London and Edinburgh before us, and while observing the troops of certificated students whom they send forth to educate the rising generation, we cannot rationally doubt that the profession of the governess is about to assume a new aspect. The time must be nearly at an end when parents can save the expense of schooling for their whole batch of daughters, including sons under ten years old, by engaging a young lady on the wages of a nursemaid. When the time comes for the schooling to be paid for in the governess, if not directly for the children, there may and will be fewer governesses employed; but there will be more money spent upon them, and a higher consideration awarded to them. Either that, or the arrangement will expire. Each is only a question of time.

The next point of importance is the opening of a variety of industrial occupations to women, by which the greater number may earn a respectable maintenance more suitably and happily than by attempting to teach what they have never properly learned. The relief to the over-crowded governess class of every draught from their numbers into a fresh employment needs no showing. All encouragement given to the efforts and the industry of any other class of working women benefits the governesses.

There is another resource, of such evident fitness and efficacy, that I wonder more and more that English parents have not long ago adopted it with the vigour they will one day show about it. Wherever we go among parents of the middle class, we find the one gnawing anxiety which abides in their hearts is the dread of their daughters "having to go out as governesses." "Anything but that!" says the father, when talking confidentially after his day's work at the office, or the mill, or the counting-house, or in going the rounds of his patients. "Anything but that!" sighs the mother, as she thinks of her own

girls placed and treated as she has seen so many. Yet we see, year by year, the dispersion of families of petted darlings, or proud aspirants, whose fathers have died, leaving them penniless. Now a barrister,—now a physician,—now a clergyman,—with a merchant or banker, or country gentleman here and there,—dies in middle life, or in full age, without having had courage to warn his dear ones, or to admit to himself what was coming. There is nothing for the girls but to "go out," either as governesses or emigrants; and it is impossible to say which is the hardest. There is a way of saving all this, and, at the same time, of improving the prospects of the governess class. If the method were generally known, it must surely have been extensively adopted by this time: and if it is not so known, it ought to be.

Mr. Brace, the American traveller, has explained to us the structure and operation of the Danish institution of "the Cloisters," which, if we knew anything about it at all, we had supposed to be something in the way of a convent; whereas its main principle is the commercial one of mutual assurance, applied to the case of a provision for daughters. In ancient days, no doubt, it must have had more or less of the conventual character; but the essential parts of the scheme are fit for the handling of middle-class parents in our manufacturing towns, or the professional classes in the London of our own day.

The Maiden Assurance Companies, which are the present form of the old "Cloister" institution of the Danish nobility, consist chiefly of the daughters of gentry of small fortune; for nobility there, as in Russia, extends very far down in society. When a daughter is born, the father deposits a sum—say 2000 dollars—in the funds of one of the societies, registering the infant as a member. By beginning thus early, and whole classes joining in the scheme, all unpleasant speculation as to probable marriage or single life is obviated. The child receives four per cent. interest on the deposit till she is married. When she is married, or if she dies, the sum lapses into the general fund.

While single, she enters, with the names above her, into the enjoyment of the privileges of the institution, according as marriage and death occasion vacancies. There are three stages of privilege. The lowest, whose occupants are called the third class, confers an income of 250 dollars, and rooms and appointments in the institution, where there is no conventual restraint,

but simply a comfortable private residence. The members of the second class have an income of 500 dollars, and those of the first class of 1000 dollars, also with residence and appointments.

A member who has received nothing beyond the interest of her deposit is entitled to a grant of 500 dollars, in case of becoming a widow in needy circumstances. A member marrying after receiving nothing more than the interest may, when the fund permits, have a dower of 1000 dollars from it.

The property of these institutions has increased very largely by means of the principle of assurance. There is so much more marriage and death among the members than ultimate celibacy that a sound basis of assurance is afforded; while the parents find their share of advantage in the peace of mind attendant on the certainty of a provision for unmarried daughters in good time, and meanwhile a small income for purposes of education.

Who can doubt that, such associations once formed, they would be eagerly supported by professional men, and parents of all classes in which there is not a large accumulated property? We might have associations differing in their scale of deposit and allowance with the station and prospects of the members—from the physician, or barrister, or engineer in large practice, who could deposit 1000*l.* for each daughter, down to the tradesman who could spare only 100*l.* Even this lowest sum might go far to keep unqualified women out of the education market; while the highest would afford a real independence. The project, illustrated by centuries of success in action in Denmark, commends itself to the attention of parents in all European countries—as Mr. Brace says it does in the American States. If it ever gains a footing in England, it will be the brightest event in the history of the governess class.

It does not follow from any detail of the evils of the governess system that it is always a failure. Most of us have known some one happy governess. It certainly takes a great deal to make one—natural constitution, in harmony with the nature of childhood; intellectual and moral power adequate to a great work; a nice union of self-respect and modesty; a steady good sense, resolution, fortitude, and generous cheerfulness, not to be daunted by personal privations and solicitudes—all these are requisite to make a happy governess. Some will suggest as an addition, favourable circumstances in her position; but such a

governess makes her own circumstances—not in the form of money, but of opportunity to do her duty well. Such a governess has also as fair a chance as any woman of a vigorous old age, rich in ideas and affections, if not in fortune.

CHAPTER XIX.

THE ARTIST.

HIS HEALTH.

"THE ARTIST!" What kind of artist? There are so many sorts of art! What can there be in common among them affecting health?

Let us see how the matter stands,—how artists are employed in their various departments,—and whether there is anything remarkable about the health of any or all of them. And first of all, what do we mean by Art, in the present instance?

ART is, by the progress of civilisation, more and more brought into the field of the arts. In other words, the commodities used in our daily life are rendered more and more expressive of something beyond their primary use. Hence, our Schools of Design are full of Students who pass into some region or other of our manufactures. They will paint porcelain or papier-mâché, or design ribbons or muslin dresses, or carpets or shawls, or paper-hangings, or lace curtains, or the colouring of damasks, or the forms of pitchers, or lamps, or flower-vases, or the devices of picture-frames, or of the binding of books. We are scarcely more busy in applying science to the arts, than Art to the arts. Looking at the matter in this way, we should reckon our artists by tens of thousands, without including the poet said to be retained in the service of Moses and Son. In their case, however, the aim of their occupation is ornamentation. The various classes of artists proper have to study the rendering of beauty too; but their first object is expression;—expression of whatever is, within the limits of the secondary consideration,—that of beauty.

When the artist is spoken of, the supposition is that he is a Painter. The reason of this pre-eminence probably is, not so

much that painting once occupied the greater part of the field of art, as that it comprehended a set of symbols, universal and permanent, and thus was as expressive as language, in a way unapproached by any other method of art. Sculpture shared more or less in this characteristic; and so did architecture; but their range of types was much narrower, and agreed upon, and understood by much fewer minds. It is impossible to gain anything by glancing at or studying the life of the painter, without keeping in mind the difference between the two methods of reading pictures, which the progress of the human mind has set up in opposition to each other; and the painter's own condition of mind and life is largely determined by his addressing himself to the one set of requirements or the other.

In the old days of polytheism first, and on through the Romish centuries, painting and sculpture told their tale by means of established symbols. There might be endless modifications of these, innumerable combinations, and inexhaustible varieties of beauty; but no one could mistake the meaning of the marble group or the mediæval picture before him. Diana and Apollo, the Virgin and the Baptist were types, as statues and pictures can never be again. We cannot stop to consider here the causes of the change: it is enough to perceive how real and how thorough it was. Now, when a picture of merit is studied, the gazer brings metaphysics to bear on it,—or did till very lately. As every one sees according to his visual organ, or even sees outside of him just what he carries within, there have been as many interpretations of pictures as of oracles. At the beginning of the present century, whatever subtle notions were in a man's own head were found by him in pictures; and the reign of metaphysics affected even the reading of landscapes and portraits. The artist's mind could not but travel the same road with the spectator's; and hence the number of pictures painted for an immortality which they will not have, and full of meanings which are now lost, if indeed, the works themselves are not wholly forgotten. Though these have passed away, there is no return to the period of broad, intelligible types, for good reasons, which it would take much space to show; but we have taken another tack. That which will hereafter be the essential means to the great aim of painting, is now pursued as if it were the end itself. Accurate representation is almost enough of itself to secure a great reputation in art, as vague meaning and

ambitious colouring, covering bad drawing, were in an intermediate period. Even the truly great artists who have something to express greater than the terms of expression, are a puzzle to their own generation, and will be to a future one, for their indisposition to the representation of beauty. Their study is, as it ought to be, to express; and they deserve well of their time by endeavouring to carry over their art from its elevation in the past, to an elevation which shall befit the future, (into the terms of which, this is not the place to enter); but their position and their influence are unfavourably affected by their incompetence to represent beauty,—whether the inability arises from a neglect of the consideration of beauty, or from a peculiarity in their own notion of the beautiful.

Changes like these determine much of the mode of life of the artist. In landscape-painting, and the accessories of figure-painting, there was nothing like the study formerly that is now the rage. The greatest of our landscape-painters were formerly mannerists, presenting a nobly true general conception, nobly true also in its leading features; but filled up with inborn details, supplied by imagination at home.

At present, the minute study of nature (which will enrich art hereafter as much as it seems to impoverish it now), imposes severe labour of body and mind. To become a painter in any style, at present, requires strength and hardihood of the bodily, as persistence and endurance in the mental frame. It is one thing to lie in bed till noon, in a "simmering" state of thought, or gazing at visionary scenes, and another to be abroad at day-break, studying the earth and sky, and, each day for a life-time, some new feature or fresh product of Nature. It is one thing to represent historical tragedy in painting by means of established symbols as accessories, and quite another to go to the actual scene, and in suffering and privation, with labour and anxiety, under an eastern sun, or an ocean hurricane, investigate what Nature has there to express, and how she there expresses it.

The minor conditions of a painter's life depend much on his course as a whole. There used to be much talk of the artist's health in the days when Sir Joshua Reynolds pointed out how much he owed to the practice of always standing at his easel. We have all heard much of the confinement, the smell of the oils, the constant interruptions, when the artist has become

eminent, and the more irritating loneliness if he does not become famous. We hear of the fatigues of study, in schools, in the world, and at home; but, above all, of the mortifications arising from want of appreciation, and the cares which must precede success. A good deal is said, too, of the troubles which are always arising in the profession, from jealousy in one quarter or another. These things tell on the health of body and mind. There is no doubt of that. The question is, first, whether these are necessary sufferings, and next, whether the artist considers it worth while to encounter these particular trials for the sake of the privileges of his calling. There have been suicides among painters; there have been paralytics, prostrated by debt and anxiety; there have been maniacs, raving of the jealousy of all the world. But there have been more aged men, serene and genial; and not a few who have paid brethren's debts, instead of having any of their own, and whose judgment and affections went on improving long after hand and eye refused to express the richest ideas and sentiment of the whole life.

Like all artists, the painter must depend much for success and stimulus, and for professional rewards, on the opinions of others; and his position is one which draws attention to the world's opinion of him. He must therefore be strong in his love of his art, and in his self-respect, before he commits himself to his career, or he may pass his life in misery, and end it in despair. With a brave spirit, a true love of art, and a power of manly self-discipline, even a painter may live happily on a small measure of success; though such an one is hardly likely to hold a mortifying position as a painter. As for the rest, the painter has the advantage of exemption from the grosser temptations of intemperance, which beset artists of some other classes. He is anxious to preserve the full power of his senses and of his hand. His vocation favours early hours, diversified study of men and Nature, and therefore exercise of the various powers of body and mind. The grand danger is of a growing egotism, less gross but more engrossing than in men of other pursuits. Any one must see this who considers what is comprehended in the exclusive study of beauty and expression, for which a superiority to other people in a special direction is indispensable. It is this fearful snare, lying in the midst of the field of art, which renders moralists so timid, or even hostile, to the pursuit of art as a profession. It is this which gives the

physician so many mournful tales to tell of the catastrophe of the artist-life; for the cares and disturbances of egotism wear the brain, like other anxieties and troubles. The danger must be met, if at all successfully, by a diligent use of the ordinary means of health,—exercise of all the faculties in an equable way, bodily activity and temperance, intellectual study, and social energy and benevolence. A hearty love of art will go a long way towards discrediting self in the painter's imagination; but there is no security from more or less undue consideration of his own needs or merits, except in getting the world, with its praises and censures, under his feet.

The Sculptor is, for the most part, under the same conditions as the painter. His studies, however, are different; his public is a smaller one; and his success is of a somewhat more retired and less material character. So it seems to be in our time, however different it may have been formerly, and may be again. His study of the human frame (and also of the brute) must be of the deepest and most elaborate kind; and so must his study of ancient art, and of every-day Nature. His workings in clay may be paralleled with the painter's on canvas: but the results arrived at are different. The painter may stand anywhere in a long gradation of ranks; but the sculptor either succeeds greatly or fails. There are always people who will buy paintings of any degree of merit, even to the lowest: but, for so costly a luxury as sculpture, orders are given only to an eminent artist,—whether his eminence be well grounded, or a matter of fashion. The sculptor, therefore, has need, even more than the painter, of an intrepid spirit, and the magnanimity to propose a great stake, and accept his destiny. Without this, he may eat his heart out before his destiny is determined, and the highest success may be rendered injurious to body and mind; for, where there is a lack of magnanimity, any exceptional lot is pretty surely fatal. The brilliant load crushes the bearer: the strong gale overthrows the house upon the sand. The sculptor should, then, have a heart and mind as large and lofty among men as his pursuit is noble among the arts: and, in order to this, he should set his life by the laws of Nature, as his dial is set by the sun. Either may be clouded over: but neither can go wrong.

There remain Music and the Drama, scarcely separable as to their effect on the artist.

An actor may have no concern with music, but a great singer or instrumental performer exercises the faculties appropriate to the drama in the musical form of expression. The modes and conditions of life are nearly the same in the two branches of the profession. There are the same trying conditions of health, the same moral dangers, the same peculiar social circumstances; and therefore we may here consider them together.

To those who know the profession of public performer only from the outside, it seems that the singer or actor is always in circumstances dangerous to health, and yet lives on into old age, at least as often as other people. We hear of desperate fatigues, of constant dread of cold, of perilous excitements of mind and tension of nerves, so that we expect nothing short of fever, apoplexy, paralysis, or something as bad; and then, years after, we see the ancient favourite of the public driving about at leisure in a fine old age, and read the notice of his death at last, at long past the three-score years and ten. This is surely very remarkable. How can it be?

We hear of the life of the singer or actor as it is when the eyes of the public are upon it,—in the thick of the business of the year. We are apt to overlook the weeks (I fear I must not say months) during which the artist takes rest and makes holiday. The singer must exercise his voice for hours of every day;—the female artist, at least, says that she must: whereas the theatrical artist may, I suppose, dismiss work altogether during the holiday time. This annual interval given to repose, travel, rural quiet or seaside amusement, to family and friendly intercourse, reading, and as much sleep as comes naturally, does certainly recruit the forces of body and mind considerably. During the working months, the wear and tear must be prodigious. Unlike the painter, whose executive labour stops necessarily at sunset, and to whom the morning hours are therefore precious, the stage artist is in as heavy a sleep till near noon as the editor of a London daily newspaper. Till past midnight he is in a state of vivid excitement, on the nights of performance; and then he has to undergo the state of collapse before he can sleep. He has to put off his trappings, his paint, and his stage associations, and get into a new train before he is fit for sleep. One member of the profession I have known who had his own method of fitting himself for true repose. If he came home after midnight too much exhausted

even to speak to wife or sister while having his tea, he was never unable to spend half an hour over his systematic Bible reading and habitual prayer before going to bed. He said it was the first part of his night's rest. If people of all orders find it desirable to clear scores with the world and themselves in this way before they sleep, casting out passion, soothing down irritability, forgiving offences in others, and reconciling all within themselves, it is easy to imagine how eminently salutary the practice may be found in a profession which is supposed to abound beyond all others in irritations, collisions, and excitements.—After this, the sleep should be complete,—regulated by the need and not by the hour; for the hours after breakfast are wanted for study. It is not always so; but, unless the actor is playing the same character for a course of nights, he needs more or less study; and when he is preparing for a new or revived part, the study is very intense, and requires wide-awake faculties. When the great actor goes into his study, and shuts the double door, it is understood that he must not be interrupted. A glance at his own desk-copy of the play, with its broad margins, bearing an infinity of minute notes and marks, will show what intellectual exercise goes on upon that theme. As to the other preparation than that which goes on at the desk, I know nothing. The nearest approach to it which has come under my own observation was when I was staying in the same house with an American politician and much applauded orator, who was to deliver an oration in a day or two. Others knew his habits better than I did, and were therefore less astonished, though perhaps not less amused, than I was, when, in the deepest stillness of the night, strains of oratory rang through the house, from the great man's chamber. The rehearsal was of certain particular passages, the turns of which were repeated over and over again, till the effect of so planning such an amount of spontaneous emotion was ridiculous beyond measure. As the tones expressive of surprise, inquiry, or passion were practised patiently till the right gradation was obtained, the household lay laughing in their beds. There was no appearance of shame or misgiving the next morning; and, as the need of a big looking-glass in this gentleman's room, whenever he was on an oratorical expedition, was known to his hostesses, it is probable that he was unconscious of anything absurd in his proceedings. But it was rather extravagant to expect us, on

the grand occasion, to be thrilled, as he declared himself to be, with horror, amazement, grief, &c. Tones which had been heard so often over, under different circumstances, failed to thrill, and tears would not come at passages which had been laughed at for their cadence when the words could not be distinguished. My own impression certainly was that, if he felt enough on the particular occasion to be justified in speaking, he would have gained all desirable ends better by sleeping in the night, and trusting to his natural thoughts and feelings for his speech,—all the technical practice having been familiar to him from his youth.—In the actor's case, the same kind of practice is a grave and respectable affair, free from all taint of ridicule. He has to deliver, not his own pretended thoughts and feelings of the moment, but the recognised art-production of the tragic or comic poet; and what is hypocrisy in the orator, is his professional business. I must leave him at it, for how he transacts it I do not know.

Then there is the business at the theatre; among draughts and discomfort, and the mixed disgust and amusement caused by seeing the inside of the puppet-show,—the devices by which moving or brilliant impressions are to be made on the audience of the evening. The rehearsal at a theatre, I have been told, is enough to chill the enterprise of the most able or ambitious artist that ever trod the stage.

Happy those actors who live where they can see something of the face of Nature every day! If they can get out to the fields, or upon a common for even half an hour, it is the best kind of exhilaration. A walk in the Park is good; or a game at romps with the children in a garden, if there is one; or an hour's gardening: but the evening comes very soon after so late a rising and term of study; and there is little time for anything between.

As for the wear and tear of the next few hours, everybody sees what it must be; and no description can magnify the impression of it. Mere publicity is wear and tear; and here the intellect has to work intensely under the concentrated gaze of a crowd. In the presence of everything that can agitate the nerves, the brain must produce its greatest achievements; and a severer trial, for the hour, of physical and intellectual power can hardly be conceived. Of all the nonsense that is talked by people who pretend to judge other people's business, none is

more extreme than that which treats the actor's or opera-singer's work as frivolous, slight, and of no account. It would be less exhausting if the work were either solitary,—as that of the great orator's,—or sustained by hearty fellowship with a group of fellow-labourers. The great actor has the disadvantage of partial dependence on the ability of comrades, who not only discourage him more or less by their inferiority, but cannot be more than adventitious associates. It is well if even a bare good understanding can be kept with them by forbearance and generosity. The green-room may be often a very merry, and a very instructive place; but it can scarcely be a happy one to anybody but an occasional visitor.—If the exhaustion is not too great, the actor is in the mood for an exciting supper, where wine, and praise, and good fellowship with admirers end his day with more or less moral intoxication, though the physical one may be avoided.

So much for the external appearance of this mode of life. To judge of the effect on the welfare of the individual, we must look a little deeper.

As far as my intercourses have led me to any understanding of the matter, it seems to me that there are two theories of this profession which cannot be too clearly distinguished from each other, for the sake of the welfare of its members, and the morality of society.

According to the one theory, the performer's point of view lies outside of and above the part he or she is to represent. He is to study it intellectually, and so to invest his imagination in it, as to act and speak as he is certain a real being would have acted and spoken under the circumstances. He throws all his convictions, both of experience and imagination, into his part, being the more, instead of the less, himself for this diligent use of his faculties and means. According to the other theory, the performer's point of view lies within the part he assumes. He must be in the very mood of passion to be represented, and must lose himself in the imaginary scene and circumstances. The difference between these two views is a very serious matter indeed, as I once had occasion to perceive, when conversing with a very eminent member of the college of critics.

A particular case being under discussion, this learned personage began lamenting the irreconcilable requirements of social life in England and art,—operatic and dramatic. The highest

attainment in art demands a mood of passion as lasting as the professional life; whereas English social life requires respectable marriage, or a respectable single life. Now, marriage is the immediate extinguisher of the capacity for passion; and besides, the gifted individual who can attain the heights of art must presently discover the inferiority of his or her mate, and must find marriage a yoke, under which power must continually decline—and so forth. There is, my informant added, no other way of pursuing art with the highest success than surrendering the passionate nature to a succession of attachments—and so forth. Thus only can the variety and power of expression be preserved till the time has arrived for quitting the stage. Such was the insoluble problem of dramatic art.

I ventured to ask what was to be done, if this were true;—which should give way, our daily human life, with its natural succession and discipline of affections, and its sweet and solemn sanctions, or the life of the stage, with its eternal childhood (according to the critic) of passions. Of course, the critic was of opinion that art could never die out: and I need not add that my opinion was, and is, that human life will hold its natural course, perpetually maturing, rather than lapsing into inferior stages of experience. The critic supposed I therefore gave up art. Not so. I believe that art is long, and that life is long too; and that there is no reason why they should not live on together, each helping the other. What I do not believe is, that true art can ever require the perpetuating of one stage of human experience beyond its natural limits, to the destruction of the individual, and the injury of both the character and reputation of art.

As for the other view, there is fact enough in its favour to save the necessity of argument. The name of Mrs. Siddons alone would suffice to shame the bad doctrine of the oracular critic. Mrs. Siddons, looking after her children's clothes and lessons at home, and devoting herself to her husband's comfort and will and pleasure, certainly thrilled and transported an audience quite as effectively as any lady who has since hesitated to marry, because she could not rise to the height of her professional ambition otherwise than by a succession of love-affairs. It would be insulting to mention the names of living persons in such a connection; but we may safely ask, whether, among the greatest artists of our time, we have not seen devoted husbands

and wives, and performers who were always thinking more of their art than of themselves, without pretending to the heroism of going to perdition for it.

This difference of view is entertained to a sufficient extent to require thus much notice in considering the welfare of the dramatic artist. A few more words will convey all else that I am able to suggest.

We have been lately informed that the dramatic artists of all classes in Europe, constitute a population of tens of thousands; —a number large enough to render their welfare an important element in human happiness. Of the greater proportion the earnings are very small, and the rewards of their labour are very scanty. If they keep their morals, they suffer under the corrosions of poverty and humiliation; and if they succumb to temptation—in their case fearfully strong—their fate is, of course, worse. It seems to be commonly agreed, that the musical and the theatrical career is not a prosperous lot in life, except to the very few who attain the heights of the profession.

Their case, in regard to health and happiness, seems to be this.

Their nature is not the highest, to begin with. This is saying little; for how many in a nation could be pointed out as of the highest original quality? They have no desire of concentrated wisdom,—no craving for peace of mind arising from harmony of the faculties and affections. The highest moral condition,—that of habitual moderation, attained through a varied experience,—is not within their view. It does not come directly within the range of any art of expression, and it is therefore scarcely a part of human life to them. All else that is heroic, they can appreciate and adore. Their notion of life, however, is of an endless drama of passions and sentiments, interacting with events. They also commit themselves to a life from which tranquillity is excluded,—practically, if not theoretically; and thus they set out with a sacrifice of welfare of a grave character. They know that jealousies, mortifications, irritations of all sorts beset the career: and they must intend to put up with these miseries for the sake of art or ambition; for it is inconceivable that any man or woman can expect to be always superior to such trials.

They are under graver liabilities than these. It may be

doubted whether any art of expression can be exclusively studied without destroying the simplicity and integrity of the mind in that particular direction. Without summoning as a witness the designer of patterns for the Coventry manufacturer, who complained that he had got to see ribbons in everything,—in sunsets, in the sea waves, in the woods, and everywhere, we may refer to the landscape-painter's phrase of "the innocent eye,"—the eye of unconscious spectators, who see colours as they appear to the general sense: whereas the painter sees them through a medium which affects his very perceptions. It is not a trifle to have exchanged the natural relish of a morning landscape, or a fair face, for a professional view of it: but the penalty becomes much graver when the art of expression relates to human character. The natural springs of action and emotion then become means of art, and simplicity and unconsciousness are lost. Leaving as a fair subject for opinion the quality of Mrs. Siddons's act of hastening across the street when a child was run over, to study the countenance of the mother, in furtherance of her art, the fact remains that human feelings and fortunes, when once made an art-study by a fellow being, cease to be a ground of companionship and sympathy. The ordinary complaint is, that actors are affected, or formal, or self-conscious: but the full truth is, that they have forsworn the freemasonry of direct sympathy, and have compelled themselves to take life at second-hand, as it were. They have lost their direct grasp upon it, their direct apprehension of it. The case is clear enough in the instance of authors who have become bewitched by the theatre. There have been such in the last generation, and there are such in the present. The public cannot conceive the meaning of their delight in theatrical associations, and has no reason to be pleased with the effect on *their* mode of art. They are mannerists, in an extreme degree; and their pictures of life are, however able, only natural to their own manner. They are scenes beheld by lamplight, and commented on from the green-room point of view; and they bear no resemblance to the clear noon-day aspects of life presented by authors of parallel ability, who have never been bewitched by the theatre. Such is the difference between the dramatic artist's and other men's apprehension of the great phenomena of human existence. The consideration is a serious one. The question is, what had best be done.

The only recommendation that I know of is, to live as much like other people as possible, and to counteract to the utmost, by a homely method of life, the besetting danger of artificial habits of looking, moving, and speaking. To lend a hand as often as possible to the common business of life, to repress all indulgence in merely uttered sentiment, and to make such a home as must remove the egotism at least one degree from its centre, is good. To cultivate, in short, the reality of life, and to restrict profession and demonstration to the domain of art, is essential to the welfare of the artist in any department. If he is able to do this, and further to raise himself in fact above his ostensible position of dependence on the opinion of the public, he may keep his nature healthy, and his life satisfactory. Each kind of art has its high enjoyments : each its happy influences; each its lofty function. The drawback is, that so many have sunk under the peculiar liabilities, living irksome, or turbulent, or disreputable lives, and dying in a state of feebleness or disturbance. Happily, there have been robust, and self-respecting, and simple-minded, and generous, and amiable artists, as well as soldiers, or doctors, or divines, or merchants. Such men, in all callings, have secured their physical and moral health in the same way,—by harmonising their lives with the laws of Nature, precisely to the extent of that health.

CHAPTER XX.

THE BAKER.

HIS HEALTH.

William Cobbett was gone before we heard the rising of the storm which has since raged so furiously against the adulteration of our food and drink; yet no one has written more strongly than Cobbett against baker's bread. I own that my heart warms to his descriptions of the cottager's wife at her bread-board and oven. He would have had everybody, even the day-labourer's wife, brew at home also; and there is something fascinating in his eloquence on behalf of meals of home-made bread, fat bacon, and beer, in contrast with the potatoes he so abhorred, and wishy-washy tea. He declared that the consumption of fuel in boiling potatoes and making tea was more than a set-off against the bacon and beer. Though he was unjust to the potato, from being unaware of its eminently nutritious quality when properly used, he was no doubt right about the value of a more varied diet, and in his estimate of really good bread, beer, and bacon. Where he was wrong in his advice was in neglecting the economy of time and labour. He would have set fifty cottagers' wives brewing, with their fifty sets of utensils, and at a cost of fifty days' labour, when they might get their beer more cheaply as to money, and without any expenditure of time, at the brewery. If there is any question as to the quality, I should say that for one housewife who makes better beer than the brewery there are a score who make worse. The uncertainty is a great drawback on both beer and bread that are made at home. On the whole, the economy of division of employments is sure to prevail; so that there was little use in opposing it, even in Cobbett's day; but yet we may be permitted to think it a pleasant sight, in town or country, when we enter a humble kitchen just as the steaming loaves are cooling on the clean dresser.

It is also pleasant to country housekeepers to see the relish with which London guests take to the home-made loaf,—cutting

bit after bit, after they have done, and excusing themselves by the goodness of the bread. Even in the houses where this pleasant sight is seen, however, there is sometimes a reverse. The next cook that comes may not succeed well with her bread, either from want of practice or want of skill. Then there is the difficulty about yeast,—still recurring, after all the advice that has been shed abroad upon it. Then there is the varying quality of the flour, and of the weather. There are few houses in which a batch of bad bread is never seen. Considering this, and the defective education of girls in household matters, and the new modes of female industry among the working-classes, it is not surprising that the professional bakers do by far the greater part of the bread-making in all societies; and if they are more or less superseded, it will not be by a return to the old article of home-made bread, but by the increasing use of machinery. Meantime, the craft is an important one for numbers in other ways. There are twelve thousand bakers in London alone.

I can just remember the case of the bakers in the miserable days of bad bread after the harvests of the early years of the century. I will not nauseate my readers by telling them what some of the bread in those days was like, when the sound old wheat was all consumed, and the soft, sticky flour from the new crop was the only thing that could be had. The large towns were particularly afflicted, and none more so than Birmingham. Some monied men believed that, by forming themselves into a company, they could provide better bread, because they could command better wheat, and grind it themselves. They succeeded in supplying good bread at the same cost as the bad, and of course they were popular with the buyers; but the millers and bakers were furious. They organised a strong persecution against the company, and at last, in 1809, induced the authorities to prosecute the directors in the name of the crown.

The public were aware that it was a curious sign of the times, and they watched the result very anxiously. The charge was that the company—an illegal institution—was injuring the interests of the millers and bakers. The verdict of the jury was undeniably true, and highly offensive to both parties. They declared that the object of the company was good—that the town was much benefited by its operations—that it commanded resources which were out of the reach of the trade generally, and that the millers and bakers had suffered by the competition.

The millers and bakers had the best of it for some years after this; but there are now some half-dozen great mills at Birmingham, in public and private hands, sending out flour and bread in a way too potential to be interfered with. We are not likely to hear of Queen Victoria prosecuting any bread-making association, on the ground of its injuring the bakers. It seems strange now that such a thing could have been done in the name of her grandfather.

We may well doubt whether there are fewer bakers employed in consequence of the introduction of larger capital and new machinery into the trade. There is not only the increased number of bread-eaters to be considered, but the diminution in the quantity of home-made bread. The new census will soon tell us how many millers and bakers there are in the United Kingdom; and meantime we are informed, as I have said, that there are twelve thousand bakers in London alone. The class is thus a large one, and their welfare is a matter of deep social concern.

The ill-health of the class is a well-established fact. The miller's cough is a too familiar sound in the neighbourhood of any old-fashioned mill, and in the family of almost every baker. If any of us remember what it was in childhood to play in or about a windmill, to sit on the steps, to watch the tremendous sails in a wind, and keep timidly away from them when not a breath was stirring,—to hear the fizz of the grain in the hopper, and sneeze in the mealy atmosphere, and play among the sacks, and laugh at the miller's powdery appearance, we must remember the miller's cough. He may well cough, for he is breathing dust all the time he is at work. The dust of flour is not so bad as that of needles and razor-blades, nor of the stone-cutter's work; but it forms a paste in the lungs and air-passages, which brings on deadly disease at last. The miller early begins to wheeze: and too commonly he spits blood, after a few years, and dies consumptive. His skin is clogged in the same way; and unless he is extremely careful to relieve it by frequent washing, he is subject to the inflammatory complaints which are caused by a loaded skin. Nobody knows more of the symptoms of asthma and consumption than the widows of the millers of twenty or thirty years ago. One of the greatest facts in the history of steam-flour mills is that they have put a stop to this sickness and mortality. Such a draught is made, and it

is so directed, as to carry up the meal dust, in covered ways, and to throw it out into the upper air.

This particular danger is shared by the bakers: and it is only one of many; so that, as a body, they must be very unhealthy. Are they not visibly so? If we think over the bakers we have known, or observe them in their shops, or when distributing the bread, we shall find that they are a pale-faced, flabby, anxious-looking race. They are a nervous set of men too, owing to the irregularity and deficiency of their sleep, as well as to their uneasy condition of body. From the accounts given by themselves and their friends of their liabilities, it might seem wonderful that any bakers are to be hired, but that we know there is no occupation, however unwholesome or disgusting, that is not pursued almost as eagerly as the most agreeable. In some crafts the pay is in proportion to the risk or the noisomeness. It is not so with the bakers; and this is clear evidence that there is no lack of hands, however serious are the disadvantages of the employment.

A dozen years ago these disadvantages engaged so much attention that efforts were made (which have since been renewed) to obtain legislative protection for the health of bakers. We should have had cause for shame if the attempt had succeeded; but we need not be sorry that it was made, because it has stimulated the master-bakers to do their best for the welfare of their journeymen; it has taught the men that they must not look to the legislature for a kind of protection which they ought not to need, and which could never be secured by Act of Parliament; and it has afforded assurance to all thoughtful persons that the time is at hand when improvements in art will cure many mischiefs not otherwise curable. As the millers are now relieved of the deadly evil of meal-dust, the bakers will be relieved of the causes of their bad health and early death. As there are plenty of healthy bakers in bread mills at this moment, we may be sure that there will not long be in private establishments 31 per cent. of journeymen bakers spitting blood, or 80 per cent. ailing in the chest in one way or another.

What, then, is the baker's state of health? What is his chance of life? What ought he to do in his particular circumstances?

The tables of Friendly Societies tell us that the bakers stand

fifth on their lists. There are four trades that are more sickly, and nineteen that are less so. During the period of relief in sickness, in other words, from 20 to 70 years of age, the bakers claim for 178 weeks of sickness; that is, nearly three years and a half of such illness as renders them unable to work. The very most burdensome class is that of the potters, who are ill for 333 weeks of the same period; and the best are the clerks and schoolmasters, who claim for 48 weeks, or less than a year. But these figures do not show the full strength of the case. The clerks and schoolmasters are, in large proportion, living at nearly or quite the end of the term; whereas the potters were, for the most part, dead in a few years from the outset, and the bakers disappear, on an average, before the middle of the term. Those who live for 10 years of the time have fewer weeks of chargeable sickness; and those who live 30 have more; and the computation made is the average; but if the term were not from 20 to 70, but from 20 to 50, the bad case of the potters and bakers would be seen to be very much worse than it now appears.

The bakers do not suffer from fever so much as several other trades. Fever invariably proceeds from bad air; and bad air cannot therefore be the most prominent grievance of the bakers, though we hear much of the closeness and bad smells of the places in which they work. There was naturally a good deal of exaggeration and partiality in the reports made on behalf of the journeymen at first; and it is probable that the employers have been roused to do their best for their men. At all events, here is the fact that fever does not prevail among them: and we have the testimony of medical officers of health who have examined the London bakehouses, to the good ventilation of most of them, and the really admirable management of many in this respect, and to the readiness and anxiety of the master-bakers to consider the health of their men. If the men were equally wise, there would be such a contrast between healthy and unhealthy bakehouses, that no legislation would be demanded by the most superficial or ignorant friend of the bakers.

Their particular liability is to diseases of the chest. The men grow hoarse; they lose voice; they become short of breath; they spit blood, and die consumptive. They suffer extremes of temperature, and have ailments from that cause.

They carry heavy weights when exhausted with labour; and they work at night, and have cruelly long hours; and hence the nervous diseases which attend protracted wakefulness. It was a remarkable fact to foreigners, as well as to many people at home, that while the London builders were striking for ten hours' wages for nine hours' work, the bakers were agitating for twelve hours' work—which was a reduction very startling to the masters. Under the circumstances, nobody can be surprised that the chance of life is so low as it is. The average life of a journeyman baker ends at 42: some say at 40. They do not talk, as the steel-grinders do, of a short life and a merry one. It may be that they are apt to seek, like the needle-pointers and razor-grinders, a pernicious solace under the depression of ill-health; but they are a less reckless and audacious order of craftsmen; and one cannot but wonder why they choose that trade, if they are really convinced that it is the lot of the baker to die at forty-two.

Next—what can be done under the circumstances?

We may answer this question by looking at what *has* been done.

A dozen years ago, the main article of our food was made in the most disgusting places in London and other large towns, and in the most disgusting manner that could be conceived of in a civilised country. People keep away from shambles, lest what they would see there should come back upon their imaginations at dinner time: but it would have been worse to visit a bake-house, because, while the state of things is no less disagreeable, it has always been unnecessary, and therefore more revolting than anything that occurs in the shambles. When I was a little child, the nursemaid made a call on some relations, on our return from a walk. It was not for the first time; and I always betook myself to a sawpit behind the house to watch the men at work, while the maid finished her gossip. On this occasion a gate was open, and I strayed into the next yard, which was a butcher's; and there I saw the early part of the cutting up of a beast, only just killed, and still reeking. The sight made a deep impression; and I believe my mother was surprised to find me in possession of some anatomical facts not usually known to little children. I dared not tell what I had seen; for I was pulled roughly away from the gate, and desired never to speak of "the dead cow:" but even that terrible picture is less repulsive than a visit to a

certain order of bakehouses would have been a dozen years ago. I will not describe nastiness which has disappeared. Let it suffice that the nuisances which belong to the basement of houses were to be found in the bakehouses, because the bakehouse was in the basement. There were foul smells and rats, as well as excessive heat and crickets. There was so little light that the men lived in flaring gaslight. There was so little air that they were heavy, sick, and stupid, and had to go up into the air before they could eat. If we consider what such places must have been like when crowded with men toiling at such work as kneading dough, we need look no further.

Except on the premises of the lower orders—the "cheap and nasty" order of bakers—matters are arranged very differently now. The officers of health tell us that the nuisances are turned away from the bakehouses; that every corner is clean, the walls whitened, the utensils in a proper state; and the food and sleeping places of the men such as ought to content them. We know something of the humility required of rich men's servants in London—as to their bedrooms—how they are put among the black beetles in underground closets, in the height of the season, or all the year round; for, where there are kitchen fires, it is always the season for black beetles. In comparison with many a powdered footman's bed-closet, the sleeping places of the journeymen bakers are desirable chambers. This is better than the feverish napping on the board, or in the troughs, which used to be the practice. Moreover, the employers are, generally speaking, anxious to learn how they can improve the condition of their men, and willing to act on the suggestions of competent advisers.

Still, as the health of bakers continues bad, in comparison with most other people's, there must be much that is wrong. There certainly is.

It is an enormous evil that most bakehouses are under ground. The reason of this is, we are told, that the requisite space cannot be had above ground, except at a cost which the sale of bread will not repay. If this is true, we need not the ghosts of all the bakers who have died of bad air and heat to tell us that bread-making by machinery will drive out the old method. The Americans have told us the secret of how cheap bread may become when made by machinery on an extensive scale; and the steam-bakers can afford to have premises above

ground, if the old bakers cannot. Some bakehouses we have in yards, behind the dwellings; and there the lot of the journeyman is comparatively easy.

If there can be a worse evil than bad air, joined with extreme heat and perpetual gaslight, it is excessive work; and the long hours of the bakers are probably the worst known in the whole circuit of trades.

London must be supplied with hot rolls and new bread by hundreds of cart-loads early every morning, and every noon, and every evening. The journeyman baker, who had gone home wearied and exhausted, at five in the afternoon, must be called from his bed when other people are going to theirs, before he has got half his sleep out. He must be at his work by eleven o'clock; and there he is, under the gas, and amidst the floating flour which makes the air thick. There he is to be till five the next evening—sometimes till six or seven—with only snatches of sleep and eating, from an hour and a half to three hours, in all that time. The work is all hard—the mixing, the kneading, the baking, and the carrying out—which some of the men have to do.

It may be thought that the air of the streets must be refreshing after the night among the ovens below ground; and so, no doubt, it often is: but there are the chances of wind and weather, dangerous to an over-heated man who has been at work all night: and there is the weight he has to carry,—sometimes amounting to 1 cwt. Then, back to the troughs and ovens, to make another batch for the evening demand; and another carrying round before he can go home to his tea and bed, for a mere four hours' rest.

If this is overwork on Mondays and Tuesdays, what is it between Thursdays and Sundays! The complaint of the men is that, in a great number of cases, the interval is not allowed on Friday evenings, and sometimes not on Saturdays: that is, they work from eleven on Thursday nights to the Saturday night, or even Sunday morning. It is incomprehensible how they stand this. Nothing can justify such a demand being made on them, or their agreeing, on any terms, to such a demand. To save his country from an invasion, or to rescue fellow-beings from perishing under an avalanche, or in a coalpit, a man may meritoriously work at that rate when occasion arises; but not to provide hot and new bread to London tables, from

week to week, for 17*s.* a-week. Not that there is any use in requesting London or any other town to go without fresh bread. No good comes of efforts to turn aside the regular stream of business. The remedy is of another kind. Machinery, and methods by which bread is made more rapidly, will put an end to overwork as destructive as the toil on a Louisiana sugar-plantation, where the overseer tells you it answers better to "use up" so many "hands" per season than to reduce the production.

These are the two main evils which too often subsist where all the rest have been got rid of. Not always; for there are master-bakers who have managed to reduce the hours of work without losing their custom. It is for the trade at large to consider whether they can do this, or whether they will retire from the contest with machinery. The most unlikely thing of all is that they can go on in their present way of conducting their business.

So much for the masters. Now, what can the men do?

It is for them to say whether they do the best they can for their health. When their turn comes for an hour or two's sleep, do they go at once to their proper bed, and get into it undressed and washed? or do they fling themselves down on the nearest place that will hold them, among the fumes of yeast, and the heat or the draughts which are common in bakehouses? Do they give themselves the best chance for an appetite by taking nothing between meals, according to the practice of educated and well-mannered people; or do they drink between meals, to support their strength, as they say?

When work is over, do they go straight home, to a wholesome tea and bed? or do they turn into the public-house, and game, and quarrel, and drink till the night hour comes round? If their order has not the best character for sobriety, and frugality, and good-temper, there is great excuse for them, from the irritated condition of brain which their mode of life establishes: but no degree of allowance can lessen the misfortune. There are such people as elderly bakers, and even healthy bakers; and this shows that the men, to a certain extent, hold their lot in their own hands. The masters are perfectly justified in pointing out a man here and there, who has sense and prudence in the management of himself, and a good wife to make his home the pleasantest and most restful place he can go

to, and in bidding us observe that the baker's lot need not be a bad one; while, again, the men are perfectly justified in pointing to the bad health and the moral infirmities of their order, as an evidence that there must be something essentially wrong in the conditions of their occupation.

We shall all come round to machinery, I doubt not. Surely the journeymen bakers, who have appealed to parliament and the public for protection, will not quarrel with redress because it is brought by machinery. By doing so, they would forfeit the sympathy which has caused already much improvement in their lot. They will not, indeed, have any choice in the matter, now that the fact has become known that the "steam bakeries" in the American cities afford prime bread at 6*d.* which is here 7*d.* or 7½*d.*, though, supposing flour to be at the same price, every other requisite is cheaper in London than at New York. Dear as labour is there, and all tools and materials, the cheapness of machinery and steam, in comparison with the long labour of the human arm and the oven-fires, enables the American bakers to sell cheaper bread.

It appears that the tax paid by London alone in the form of the needless penny on the sixpence, is above five millions of, not dollars, but pounds, sterling per annum. Why should London go on paying this,—not to do anybody any good, but to send hundreds of poor men to the grave every year? We must remember that, including the men's families, 25,000 persons have their lot bound up with that of the journeymen bakers of London.

There would be a very small reduction of numbers in the trade, and little or no reduction of wages. The machinery is of a kind which does not supersede human attendance, while doing the hardest part of the work. The most important circumstance is the saving of time. If the most laborious processes are got through in one-fifth of the time at present required, there is an end of the long hours. If the baking is still done in the night, the men are not toiling all the day too.

It is a mistake to suppose that bread made by machinery must be of a kind that the public does not like. Because the bread made at the Dockhead Mills has no yeast in it, it does not follow that American and Birmingham bread cannot be fermented. The Birmingham people like what Londoners call bitter bread, and consider London bread insipid: yet both kinds

are made in "steam bakeries," as the Americans call the mills. Neither is it true that such machinery must be on a large scale, so as to drive all but wealthy capitalists out of the trade. The bread-making on board the Great Eastern may be considered to be on a large scale: and so may that in such institutions as Greenwich Hospital, Aldershott Camp, and our prisons and workhouses and hospitals: but in much smaller establishments than these the mixing and kneading is done by mechanical means; and, as the newspapers have lately told us, there are small bakehouses in London where it answers as well in proportion to make a dozen loaves in this way as a thousand. Putting all these things together, can there be a doubt that the journeyman baker's grievances are coming to an end, by a better means than an Act of Parliament, which would be turned into ridicule by events as soon as it was passed? There will not be a speedy end—if an end at all—to home-made bread; but the kneading will not long be done by the cook's stout arm. There will not probably be a speedy end to fermented bread; but men will not be wanted to work twenty or forty hours at a stretch to produce it. There will not be a speedy end to private bakehouses, unless the masters show themselves to be less sensible than they are supposed to be. If they were to attempt to go on causing their men to die at forty-two, they must be pushed aside by companies or individuals more fit to be employers of labour: but there is no reason for supposing them to be, as a class, either so foolish or so heartless. As soon as they see how, they will be doing what is best for everybody in the great work of supplying the staff of life.

In the interval, the men may do much for themselves by cleanliness, prudence, and self-control. Pure and orderly habits of body and of life, a good home, and an attachment to it rather than to excitements elsewhere, are the best precaution against the worst evils of the baker's craft, and the only remedy for such ills as have not yet been got rid of. Let us hope that some bakers of the existing generation—some, perhaps, whom we know—may live to make us such bread as at present, without the present sacrifice of health and comfort. Their best friends are much mistaken if a baker of threescore years and ten will be a stranger spectacle to the next generation than a gray-headed clerk or wheelwright—those very durable members of Friendly Societies! When that happens, the image of men

kneading for hours together in an underground hothouse will be regarded as a barbaric picture of the customs of the antique world.

CHAPTER XXI.

THE NEEDLEWOMAN.

HER HEALTH.

If my readers were at this moment to tell their thoughts, we should find them ready to turn away from the disagreeable and well-worn subject of Distressed Needlewomen, that class which has been the grief and shame of society from the day when Hood published the "Song of the Shirt." We all grow weary of any hopeless prospect; and we may well think that everything that can be said about the poor needlewomen has been said many times over, through many years. But perhaps I am not going to say much of poor sempstresses; and perhaps, also, their condition is not the desperate and hopeless thing it was. Perhaps the topic of the health of women who sew may have some interest of another kind than that which makes us miserable.

Who are the needlewomen of our country?

I wish I could reply, all the women in the country. I should be heartily glad if there were no women, from the palace to the cottage, who were unable to cut out and make clothes, and to amuse their minds and gratify their taste by ornamental needlework. It is the unequal distribution of the art which causes so much misery in many ways among us, and which causes the art itself to deteriorate as it does.

Here it may be objected that the very reason of the depression of the needlewomen as a class is that sewing is a universal feminine employment, so that professional sempstresses are reduced to the very lowest rate of pay by the competition of the whole sex; whereas, in other occupations, the competition arises from some restricted rivalry in their own trade. This is partly true. It is true, no doubt, in regard to the shirts and petticoats, and the children's clothes in ordinary domestic use.

Middle-class families make these things at home, by the hands of mothers, daughters, and maids; and throughout that order of society it would be thought strange to spend money in paying sempstresses liberally for work which can be done at home. Thus, when plain-work is given out at all by household managers, it is at a rate so low that one wonders how it answers to the sempstress; but here again comes in the peculiarity of the case. The sempstress is, nine times in ten, a wife or mother engaged in a home of her own, and wishing to earn something in the hours when she can sew. In short, sewing both is and is not, a professional occupation; and the consequence is that it is the worst paid, because every private needlewoman helps to reduce the pay of the professional sempstress. But it does not follow from this that all domestic women can sew.

If girls had fair play in education, I believe that all would be needlewomen, from natural liking. I have seen many bad needlewomen, and some who could hardly sew at all; but I never saw one who might not, I believe, have enjoyed the satisfactions of the art, if there had not been neglect and mismanagement. One would think that girls of the labouring class, whose lives are not overfull of pleasures, might be provided with this simple and pleasant occupation, which would be profitable to them in every way: yet how many are there of that very large class who are skilful in the art? Here we come upon the unequal distribution. I know a rural neighbourhood where the great lady, a countess, had such a passion for plain needlework, that she employed nearly all her time in making shirts and shifts; while the cottagers' wives for miles round used their needles like skewers, or let their husbands and sons go in rags. The countess gave away fine linen shirts by dozens among her friends, while her husband's labourers rarely got a cotton shirt to fit. One consequence of this incapacity in poor women is, that the professional class of slop-workers has grown to what we have seen it. Besides the army and navy, there is almost the whole range of our labouring classes to be supplied with cheap garments, ready made; and thus, while the wives and daughters, who ought to be making the shirts, are unable to do it, there are thousands of needlewomen slaving at it day and night, for a hire which does not give them bread.

Even so, there is more good needlework done in cottages than in the homes of factory workers. That is a sad story, the

inability of factory "hands" to sew, or cook, or clean a floor; but my topic now is the health of needlewomen; and factory women are in no way concerned in that.

I have spoken of the poor sempstresses as a class that was; and of their troubles as of something past. I trust we may consider their position as already ameliorated by the introduction of the sewing-machine, loud as would be the outcry from some of them, if they were to hear this said. The truth is, they were reduced to be themselves sewing machines of an imperfect sort, whose work was sure to be superseded by a machine which cannot suffer, and pine, and grow blind, and drop stitches, and spoil fastenings. It must be a mercy to stop the working of human machines, driven by the force of hunger, and disordered by misery. If the work can be done by an inanimate machine, it ought to be so done; and if the poor women ask what is to become of them, the answer is, that their lot really could not be made worse; while, for a large proportion of them, the new machine is an actual redemption. Their work had become too bad to be endured; while their lot was too hard to be endured. Now, there is good work again, more perfect work than was ever before seen; and the machine-workers get, as women's wages go, good pay. The transition stage, during which women's labour must be turned towards other occupations, is a very hard one. Last spring, an association was formed in London for the purpose of bringing the needlewomen and their proper employers, the outfitters, face to face, and ousting the middle-men, the contractors; who, giving security for the materials in a way impossible to the workers, are charged with the whole business of providing the garments, and secure their profits by enforcing the extremity of cheapness in the article of pay.

This society, known as that which abides at 26, Lamb's Conduit Street, must have done good, and may yet have time to do more, while the operation of the sewing-machine is getting settled; but it is the machine which must put an end to the straining of eyes over the single candle, and the fearful irritation which attends the exhaustion of certain muscles, while the rest of the frame is left unexercised. There are thousands of the lowest order of needlewomen who would be better in the workhouse than in their actual condition; and there is some comfort—though a melancholy one enough—in perceiving that

in a little while that lowest class will have disappeared. In another generation there will be no call for such a class. They have, poor souls! caused such a decline of good needlework in the country, that some radical remedy was sure to be found. While we were hearing of the woes of their class from overcrowding, it was the universal complaint of housewives that they could get no needlework well done. It was whipstitch, and fastenings that gave way, and buttonholes that burst, and hemming that you might pull out from end to end by a tug at the thread. A young friend of mine, of German extraction, about to be married, had made, with family assistance, most of her new clothes: but some having to be put out, a sewing-school of considerable credit was selected, and patterns were sent. The answer to the application was that the commission would be executed, but that the lady must not expect work like her own; that such work was, in fact, not known in our country. I wished the authorities of the school could have seen how fast the work went off under fingers and eyes trained as they are trained in Germany. We shall now have the option of good work, on the one hand; and, on the other, a clearance made of the murderous competition which has reduced the *physique* and the *morale* of our poor needlewomen to the lowest condition. What the change will be we may judge, not only by what we see in walking through the streets of London, but by attending to the results of the sewing-machine in the United States, where it was invented.

The annual money value of the sewing required by the American nation that can be done by the machine is estimated at fifty-eight millions of pounds sterling; and a large proportion of the saving is already made. In the city of New York alone, the annual saving is a million and a half on the clothing of men and boys. The same amount is saved in Massachusetts on shoes and boots alone. The machine has revolutionised about forty distinct branches of manufacture, besides creating new ones. Here lies the solace of the poor needlewomen. A multitude of them will sooner or later be employed in these fresh areas of industry; and not a few are already tasting a degree of comfort they never knew before. As slaves of the contractors for the outfitters they may have earned three or four shillings a week, at the expense of eyesight and health. Those among them who can adapt themselves to the new circumstances will earn more

than twice as much, with little fatigue. We may then decline going further into the consideration of the health of this class of needlewomen, in the hope that the causes of their miseries are about to be removed.

There is nothing in the introduction of the sewing-machine which need affect the object of training girls to be good sempstresses. Some of my readers may have seen the Report (1855) of the Rev. J. P. Norris, one of the Inspectors of Schools, in which he gives his view of the importance of needlework in the education of girls. He thinks that, apart from the value of the art, it would be worth while to spend half the school hours in sewing, for the sake of the effect on the girls' characters. He speaks of the order, quiet, cleanliness, and cheerful repose with activity, which prevail in afternoon school hours devoted to sewing,—a real training for the home, while the occupation also tends to impress the intellectual lessons of the morning. Looking forward a few years, the sense of the fitness of the training to make good wives and mothers must be very strong; for one may almost divide into sheep and goats the cottage households in which the wife and mother is a capable needlewoman or not one at all. The sewing mother, with her children round her, makes the husband proud of his home, while dirty brats, playing out of doors in rags and tatters, with an idle or a muddling mother within, are more likely to deter a man from coming home than to tempt him from the public-house. I, for one, feel obliged to Mr. Norris for what he has said on behalf of the girls, whose education is so deplorably perverted or neglected in the classes of which he speaks. I think, moreover, that it would be well if needlework were thoroughly taught, as formerly, to girls who, when wives, will not be the heads of cottage households.

There would be no occasion to make growing children sit on hard seats, without backs, or rests for the feet, as I have elsewhere complained, on the part of a past generation. Due care should be taken to vary the posture sufficiently often, to afford a sufficiency of light, and to let the spirit of enterprise enter into a girl's project of work. Such points being duly attended to, there will be no difficulty in getting the children interested in the employment. For one that twirls her thimble on her finger, and looks at the clock, there will be scores who will be unwilling to leave their job for play or dinner. In their own drawing-rooms, in after life, the difference will be seen between

those who have been trained to the needle and those who have not. The ease and mastery of a thorough needlewoman, who works out her thought on her material, and produces something perfect in its way, are perceptible to the veriest old bachelor who calls sewing "working," and working "sewing;" while there is something annoying to "real ladies" (as their maids say), as well as to gentlemen, in the awkwardness of unskilful hands, which tangle the thread, and pull the stitches, and break the needle, and leave the skein of cotton or silk on the floor, and produce something ugly, after all their toil.

These last are apt to discourse of the unhealthiness of needlework. To them it is no doubt laborious. They stoop, and put themselves in a constrained posture: they pore over their work, and set their muscles to work expressly and consciously with every drawing of the thread. There must be much fatigue in this. It cannot be denied, either, that prolonged sewing is very hurtful, and constant sewing probably fatal. Any mechanical action which employs a few muscles almost exclusively must be bad; and any diligent needlewoman can describe the sensation between the shoulders, and the nervous irritability which constitute real suffering when the needle has been plied too long. Young wives preparing the infant wardrobe for the first time, have often done themselves harm by getting into this overwrought condition over their enchanting employment. They are very wrong. They should stop before they feel irritable or weary, and they should at once go for a walk, or pass to some active employment. It is nonsense, too, in these days of marking inks, to strain their precious eyesight over the pedantic marking methods of our grandmothers, who made a great point of marking fine cambric as true as coarse linen. But needlework is not to be condemned because some women still pursue it without moderation or good sense.

Some months since I was petitioned to speak up for fancy-work as a solace to invalids and sorrowful people. I certainly can do it with a safe conscience; for my needle has been an inestimable blessing to me during years of ill health. It is sometimes said that the needle is to a woman what the cigar is to the man—a tranquillising, equalising influence, conservative and restorative. It is at least this; and I should imagine more. We are apt to underrate the positive pleasure there is in mechanical employment, pursued with aptness and skill. Mr. Chad-

wick is fond of telling of a man in a chalk-pit who admitted to him that, during years spent in simply cutting square blocks of chalk, he had never, he believed, failed to enjoy an actual relish, on each occasion, of the act of producing his block of chalk. I can well believe this from the perpetual pleasantness of setting stitches, when it is effectually done. But in fancy-work—the elaborate fancywork of invalids—there is much more. If I say that it is somewhat like the gratification of the artist, I shall be told that it is infinitely better to paint or draw; that better effects are far more speedily produced, and so on. It is true that any good drawing is of a higher quality than the best needlework; but then the employment is of a totally different kind. Needlework is a solace for women far too ill to draw well, or to commit themselves to the excitements of art. Each is good in its own place; and, in its own place, I claim for the much abused fancywork (I include woolwork) of the drawing-room some respect, over and above mere toleration. I mean, if it is good of its kind. Bad fancy-work no more deserves toleration than bad pictures or bad music.

My readers may perhaps have no idea how many professional needlewomen there are in Great Britain; and they may not have considered into how many classes the whole may be divided. There is no branch of industry in which it is so difficult to ascertain the numbers, because, as I said before, there are so many women who take in work to employ some spare hours profitably. They take pay, but are not professional sempstresses. Again, there are about 100,000 shoemakers' wives, most of whom, no doubt, help to support the family by shoebinding. Drawing the line as well as they could, the Census Commissioners of 1851 returned the number of sewing women in Great Britain as being (without the shoemakers' wives) 388,302.

These are divided into five classes; and a sixth head includes the miscellaneous sorts of needlework which cannot be classed.

The dressmakers and milliners make up considerably more than half of the total, their numbers being 202,448. The shirt-makers and other plain sewers come next, being 60,588. Then come the glovers and hosiers (40,766), the hat and bonnet-makers (27,176), the shoebinders and sewers (22,657), and the staymakers (10,383). Nearly 25,000 come under the head of "miscellaneous." If the same rules of arrangement are em-

ployed next spring, we shall be able to learn by the Census of 1861 whether the sewing machine has dismissed more needlewomen than the increase of national numbers and wealth has brought into the business. It should be remembered in this connection that the opening of new and remunerative employments to women must operate in increasing the business, and therefore in time the number of professional needlewomen, while it tends to raise their pay. Women employed as compositors or accountants now put out their sewing, or some of it; whereas before, they not only made all their own clothes, but probably trenched upon the professional needlewomen by taking in more. The better occupied other women are, the more will the needlewomen prosper; and the coming Census cannot but show some expansion in the field of female industry.

Next to the shirtmakers, the dressmakers and milliners move most compassion in the rest of society. I wish that means could be found to move those whose fault it is that these women work long hours—hours murderously long. The shirtmaker works long hours because she cannot otherwise earn her three or four shillings a week. The dressmaker works long hours in London because ladies all rush to give their orders at the same time, and are all in a hurry to have them executed. So much has been said about this—the sinfulness of such thoughtlessness and selfishness has been so plainly exposed at public-meetings, and through the press, that it is inconceivable that the evil should be now what it once was. I had occasion to know something of the way of going on twenty years ago. I knew the story of a reduced widow lady whose daughter was apprenticed to a great dressmaker at the West End. The girl drooped and became ill; and at last it was necessary to sacrifice her prospects, and the premium paid, if brain or life was to be saved. During the throng of orders in the London season, the girl left the workroom only every two or three days or nights. The room was kept hot and light; the workers were fed with prime beef and porter, and well plied at night with strong green tea. When any one fainted (as this girl did) she was laid on the floor to revive, and as soon as she could sit up again, she had more tea, or more porter, and was set to work again. She repeatedly went on for three days and two nights, with mere snatches of sleep in her chair. It is needless to say that her eyes were strained, her brain was dizzy, her liver was disordered, and she

was fearfully nervous. Her mother shrank from the feel of her hands. Remonstrance with the employer was of no avail. She said her customers left her no option; and those who entered her concern must conform to circumstances. She was herself driven, and she must drive others while the season lasted. When the season was over they could all rest.

Since that time there have been houses which observe reasonable hours. But there will be no cure for the evil till the customers attend to their duty in the case. The most thoughtless fine ladies must know long before what dresses they will be likely to want during the season; and they might order at least all the plainer sorts, if not the whole, at a sufficiently long interval to enable the business to be better distributed than it can be under the ordinary pressure which precedes a drawing-room. There is something childish in the haste which unemployed women put into their little affairs, sufficiently mortifying to the wiser part of their sex; but the feeling of contempt rises into strong indignation when the habit of haste inflicts such mortal injury as it does among the dressmakers. It is a child's "way" to fidget and fret for its food while it is cooling on the plate before its eyes. It is the "way" of certain imperious young men in Batavia, effeminate to excess, to cry like babies if kept waiting for their tea. It is a pity to be obliged to add that it is the "way" of not a few ladies in England to be in such a hurry for a new dress as to inflict torture on the makers, in spite of all warning and remonstrance.

It is a common observation that blind persons are apt to hurry those who serve them. Not seeing how any work gets on, they are always fancying it more advanced than it can possibly be, and make their own observations on the slowness into which mankind are falling,—so different from the activity in *their* young day. The letter would have been written—the cap would have been made—in half the time, or they would have rued it. Fine ladies who never tried to make a dress themselves have no excuse for criticising the workers in the same way. Before they dare to do it they should enter a work-room, and see how long it takes to flounce a skirt, even amidst the feverish and trembling haste of the overwrought workers. An hour so spent would be salutary to all parties. But there are even more ladies who do not consider the subject at all. They buy a dress, and then only know that they long to see it

home—want to have it and wear it—and use all the power of employer over employed to get the toy brought home at the earliest possible moment. Such women may be soft-hearted in their way about human suffering. They may give money freely to charitable institutions, or to cases of individual distress. If so, there should be some one to tell them that, while giving a sovereign or two to a hospital, and another sovereign or two for the relief of some reduced gentlewomen who have pawned their last shawl or gown, they have themselves blinded one or two apprentices, thrown another into a brain fever, or compelled others to throw up their apprenticeship, and be the reduced gentlewoman who has to pawn her last gown. Such things as these she has done in the course of showing how childish a woman can be who passes for sane. If any such woman, or any other kind of woman, supposes me romancing, let her look as the evidence given before the Select Committee of the Lords, in 1855, on the condition of Needlewomen. There was an earlier report on the case of the milliners which made such an impression on the highest lady in the land, that she repeatedly inquired of those about her who were most likely to know, whether such things could be true. No one so impressed could ever hurry her dressmaker again.

The dressmaker ought to understand her liabilities, before she pledges herself to the employment. If this were properly attended to, there would be fewer dressmakers, and they would make a better stand for their health. I should be sorry to have a hand in inducing any girl to apprentice herself to the business, within the range of the London season. In provincial towns it is another affair.

The workwoman should make certain stipulations, which nothing should induce her to surrender. If she is lodged in the establishment, she should insist on being allowed to air her room. The collective workers should take care that their day-room is kept cool and airy, and the fire and lights properly managed. Each should ensure a daily walk,—either by being sent out on business, or by the work being so arranged as to admit of an hour's exercise, morning or evening. Every encroachment on moderate hours of work should be resisted, except on special occasions, such as a large order for mourning, when all must accommodate. In London, at times of extreme pressure, the meals are bolted in the smallest number of

minutes. Then the cutter-out and the attendants in the show-room are glad to sit down; and the sewers are equally glad to get up; and they may be seen swallowing their meals standing. In the dressmaker's ordinary life, the meals should be comfortably put on table in a fresh room, and a sufficient time allowed for leisurely eating,—to say nothing of some little time being allowed for rest after the dinner. It is a substantial gain when the worker lives in a home or a lodging of her own; for then she can make arrangements for counteracting much of the mischief of her occupation. A bedroom to herself, quiet and airy; an early morning walk; and a change of scene and associates every twenty-four hours, may improve a woman's chances of health incalculably.

The dressmaker's and milliner's aspect is familiar to doctors, and all other observers of countenances. The eyes have a dead look; the complexion is not clear, and usually more or less yellow; the frown shows that there is a tight band round the forehead; the carriage betokens a chill down the back; the movements show that the feet are cold: the respiration is not free, and the only doubt is whether the mischief is in the lungs or the liver; and, above all, the anxiety of the countenance tells the tale of an unnatural mode of life. On inquiry, it appears that the appetite is not good,—that the sleep is not good,—that the spirits are not good. It would be a wonder if they were; for the sight is failing. Oculists tell us that they have always many needlewomen on their lists, and that they always expect more after a general mourning. It is quite right to recommend, as they do, that the workwomen should change the colours on which they are employed very frequently; and also, that there should be green furniture,—curtains at least,—in the workrooms, as is the frequent practice among lacemakers, and the constant usage among embroiderers in China.

There is no use in preaching against tea to needlewomen. They cannot do without it, and ought not to be asked; for it is a genuine medicine to sedentary persons. When taken—strong, green, and hot—to keep people awake when they ought to be asleep, it is poison: but black tea is a medicine for a delicate liver, when taken in moderation, at breakfast and teatime. There is much more need of warning about the porter and ale and mutton three times a day, with which overwrought dress-

makers and shopwomen (and shopmen too) are kept up to the calls upon them.

On the whole, it is best, even now, when so few occupations are open to women, to sacrifice much, where there is any option, rather than enter on an occupation so injurious as that of incessant needlework. Where the necessity is imperative, it is a duty to take every possible precaution against the dangers of the case. There are hundreds now among us, blind, consumptive, or suffering under spinal disease, who might by timely care have been saved. How many more are in their graves, who shall tell us?

In Ireland there is a class different from any yet mentioned. The "hand-sewing," paid for by Glasgow merchants chiefly, employs 400,000 women and girls in their own cabins. The work is embroidery on muslin,—the patterns being stamped by men in the great houses in Glasgow and Belfast, from which the work is given out. It was a great thing for Ireland, after the famine, that the women and girls earned in this way between eighty and ninety thousand pounds per week; but the growing children pay dear for the honour of helping to support the family. They earned only sixpence a day, poor things! and it was sad to see them leaning their weary backs against the door-posts, or growing crooked in their unchanging and constrained position. Now that times have improved, and are improving, in their country, we should be glad to hear of fewer "hand-sewers," and of more women being engaged in the linen manufacture, from the flax-growing process up to the final act of finishing the packages of beautiful damasks, linens and muslins.

The sewing-machine may intervene here, as in almost every department of needlework. It can embroider beautifully already. Some may imagine that it will preclude human sewing altogether; but this need not be believed, any more than it can at present be wished. It seems as if there must always be parts of the work (whatever its kind) which must be done by hand; and those parts will always be best done by hands which are skilful in the whole process. Thus we need not fear that the graceful and pleasant art of the needle will die out, within any assignable time, but may apply ourselves to stop the sacrifice of life and health which is the barbarous feature of the art, and retain and refine whatever in it is serviceable and elegant. We

must not stop in our improvements till needlewomen are indistinguishable from the rest of the world on the ground of health.

CHAPTER XXII.

THE SOLDIER AND SAILOR.

THEIR HEALTH.

In former days it would have been a dreary task to describe the condition and prospects of our Soldiers and Sailors in regard to health. Neither the men themselves, nor society in general, knew that the perils of warfare and of wind and weather were less to be dreaded than those of disease in the barrack and the ship; but there was some general notion of the ravages of ship fever, and of epidemics in camps abroad. The Walcheren expedition in 1809 has ever since been regarded as an illustration of the very worst circumstances in which a body of soldiers can find themselves; but till we had warning from the Crimean war, we were not fully aware that the calamities of the Walcheren expedition might be reproduced at any time, and that a mortality quite as needless, though less excessive, was always going on, wherever the British army was distributed over the world. We know all about it now; and this is the same thing as saying that such mischief can never happen again.

I can just remember the sending out of those 40,000 men to Walcheren. Mr. Wilberforce stood on the cliffs in Sussex, one summer day, and saw the great armament pass; and very uneasy he was, because he suspected where they were going; and it was known how unhealthy the region was. Except Batavia, Walcheren was the worst known place for marsh fever in the world: yet no precautions were taken, no special provision of doctors, nurses, medicines, and comforts was made, because it was to be a secret where the force was going. So the men sank down by hundreds in a day, among the slimy sands on which they slept, and the stagnant water, alive with insects, which was all they had to drink; and within three months there were only 4000 of the 40,000 men fit for duty What reinforcements were sent, I do not know; and the records of the Walcheren camp are actually lost for want of understanding the value of

experience; but we are in possession of the astounding fact that, after the thousands of deaths on the spot, there were 35,500 of the Walcheren soldiery admitted into the hospitals at home, in the course of the next winter and spring.

The mischief did not end even here. Lord Wellington was conducting the Peninsular war at that time. All his resources were scanty—men, supplies, money, and everything; and yet he had, on an average, twenty-one men ill in every hundred. The poor fellows were not only useless but dreadfully burdensome. They could not be moved; they occupied healthy men in taking care of them, and they were a prodigious expense. How was it that nearly a quarter of his force was always ill? It was partly owing to the general ignorance of the management of health on a large scale; but it was yet more because the Walcheren patients were sent out to Portugal as soon as they were able to go. The voyage and the southern climate, it was thought, would set them up completely; but the first broiling noon or night dew prostrated them again; and they lay, as ill as ever, in every town and village along the march of the British army.

Where there is a constant low state of health, there is a constant low state of morals; and it is no wonder that the British soldier was, in those days, a rather disreputable member of society. It always went against the national instinct, and hurt the national feeling, to say so: but it was undeniably true. Wellington's despatches show that *he* thought so; and he caused great offence in the army by the plainness with which he spoke in certain of his public orders. The wonder would have been if the case had been otherwise. Sickly men, reckless of life because they do not expect to live, always do, and always will, make their short life what they call a merry one: and so our soldiers in the Peninsula, always brave in battle, were mischievous at other times—breaking into the wine cellars, and indulging in every kind of excess. The natural consequence of such conduct was punishment by the lash; and the consequence of that punishment was debasement and further recklessness, disease, and death.

This was not the way to make the British army a safe defence at home, or an honour to our country abroad; and in fact the evil reputation which has hitherto attached to the ordinary soldiery of all countries, was the lot of the English soldier half a century ago, and up nearly to the present time. Even at this

day it is but too true that the scamp element is large in our army. All our soldiers are volunteers; and till very recently there have been drawbacks in the lot of the soldier which deterred thousands of men who would have been a great advantage to the national defence, while their proper place has been filled by worthless fellows who have entered the army as a refuge, or for swindling purposes. Even now the amount of desertion is shocking, because it shows how many thieves have got into the force. These rogues enlist, desert, and sell their outfit, and enlist again under another name. They are not only an affliction in themselves, but they deter good men from entering. They have seriously lowered the character of the whole force; and it will take some time to bring up the general character of the British soldier to a level with his reputation for valour. The process has been fairly entered upon at last. The condition and prospect of the soldier are immeasurably superior to what they were five years ago; and there is no longer the excuse for recklessness of conduct that the soldier's life is of less value than that of other men.

We may remember that, about a dozen years ago, there was a stir in the public mind about improving the mind and life of the soldier. We heard of a good deal of effort to supply the men with instruction in regimental schools, and with books and newspapers for evening reading. Much kindly feeling was called forth, valuable suggestions were offered; and not a little good was really effected. If it had been only that the soldiers saw that their fellow-citizens cared for them, in peace as well as in war, the benefit would not have been small. But experience has since shown us that we had not then got hold of the right handle. The soldier must, like other people, have his life, health, and comfort provided for, before he can be raised in the scale of intelligence, morals, and manners. I can remember the days when it was a stunning blow to the family of a respectable artisan or labourer when one member of it had "gone for a soldier." It was regarded as not only an act of folly, but as something disreputable. Matters have been mending much; and we sympathise with our soldiers elsewhere than when they are marching through our streets away to the war: but it still remains for the rising generation to see the vocation raised to the position it should hold in our age of the world. I trust the time is not far off when the profession will be regarded as

honourable and desirable by young men of thoughtful and cultivated minds and high character. No pains have been spared to make it so since it was clearly ascertained how a calling so indispensable and so gallant came to be so deeply discredited.

Instead of going over the dreary ground of former mismanagement, I will turn to the improved prospect which has been opened to the profession.

The advantages of the soldier's calling would seem to be great. He is exempt from the anxieties which belong to uncertainty of employment and earnings; his wants are provided for with absolute certainty in regard to food, clothing, and habitation. His money earnings, if small, are constant; he has not to go through an apprenticeship to his business, but receives pay from the hour when he begins to learn his work. Except in rare seasons of warfare, he is never overtasked; and, in those seasons, the novelty of travel, the complacency belonging to personal importance, the opportunity of distinction, and all the strong emotions which belong to campaigning, are much more than a compensation for toil; so that all real soldiers rejoice in the summons to go out to the scene of war. In case of wounds there is a pension; and there is now a long perspective of honours and rewards for military merit open to the humblest member of the army. All these advantages failed, as we have seen, to attract the young men of the middle as well as the lower classes, while the discomfort of the soldier's life lowered the soldier's quality. Now they may have their fair effect, because the health and welfare of the profession are cared for as they never were before. Among mechanics, the rate of death has been a little more than 13 per thousand; but as soon as the mechanics turned soldiers, they died at the rate of from 17 to 20 per thousand, according to the places and circumstances in which they were appointed to live. Once more the turn has been taken; and, generally speaking, it is the soldier's own fault if his chance for life and health is lower than that of his brothers on the farm or in the workshop.

Beginning with the article of habitation, we can see some way into the prospect, though we are not yet in possession of the Barrack Report, which will tell us what has been actually done to improve the soldier's dwelling, and what more is recommended. Meantime, we all understand that the overcrowding of sleeping-rooms, and the consequent heat and bad air, are largely owing

to the soldiers themselves. At least, it is plain that the men themselves lower the better sort of rooms to the level of the worse by stopping up all air-holes. Not only will they not leave the windows open at top, day and night, as all sensible people in private houses are learning to do, but they stuff up every opening by which air can get into the room. The air becomes poisoned very soon, by the breath of the inmates: and this, by itself, may account for a considerable number of the yearly deaths in the army. There is henceforth to be such an inspection of every apartment in every barrack as shall prevent such poisoning through the lungs. It will not be in the power of any inmate to stop out the air; no more than the proper number will be put into any one room: there will be an end of the barbarous old practices by which bad smells are caused in barrack rooms; and a regular care of the drainage is already a matter of course. The Duke of Wellington was once appealed to by parties in the Tower who could not agree whether men or blankets should be put into a barrack which was excessively damp. The official who had charge of the blankets alleged that they must have the dry barrack because they would be ruined in the damp one; and the regimental officer said the same about his men, whom he considered the more valuable article of the two. The Duke agreed with him. In regard to damp barracks everywhere the question is now virtually settled, though there is much to do yet before our soldiers can be lodged as well as they ought to be, even at home. In India, Sir Charles Napier began an improvement in military building so remarkable that the soldiers persist in calling the new edifices Napier barracks. The reform is secure there; but there are several of our colonies still unfavourably distinguished for the mortality in the regiments stationed there. In Parliament and out of it such places must be watched till all our soldiers are placed high and dry, in well-ventilated barracks.

A provision is matured for our troops being better lodged in camp, and on the march, than any other army perhaps ever was.

Till recently, the choice of lodgings, or of the spot for encampment, was the business of the quarter-master, who had no concern with the health of the troops, but only with the supply of their main wants. He looked for wood and water, and for space enough; and if he found these, with ground which would

bear the weight of the camp, he was satisfied. If the medical men saw reason to disapprove the choice, they could do nothing. They were not charged with the care of men in health, but only with the sick and wounded. They were not asked for an opinion; and they had no right to urge their views on the officer in command. If any one ventured to do so, he was likely to be told that when his advice on military matters was desired, it would be asked. All this is mended now.

It is recognised at present, that an education which prepares doctors to deal with sickness and wounds is altogether different from one which teaches the conditions of health, and how to secure them. For the first time, the care of the health (as well as of the sickness) of the army is committed to a body of officers, properly educated for the purpose. The vague and comprehensive office of the army-doctor is now distributed among three functionaries. One order of inspectors and doctors takes charge of the sick and wounded, and the hospitals which contain them. Another takes charge of the health of the force, and is responsible for the good situation of the camp, unless the commanding officer sees reason to overrule the advice he is always to receive. The drainage, cleanliness, dryness, and wholesomeness of the ground, and the airiness and wholesomeness of quarters in towns, are in the charge of these sanitary officers. The third set take care of the statistics of the medical department of the army. They note all the facts of soil, climate, and local diseases: they keep the medical case books, and register the sicknesses under heads carefully arranged, and the recoveries and deaths. In a few years we shall thus know what the liabilities of soldiers are in various climates and situations, and what are the commonest diseases among a great body of men collected at home or abroad; and we shall no longer make our preparations at random, but, in each case, with a clear and intelligent aim. All this is of immense importance to every soldier; and so it is that the doctors are now better prepared than in any other age or country. The army doctors are henceforth to go through the ordinary medical and surgical education first, and then to have an additional training to fit them to manage the diseases which most afflict armies, and the hurts which are received in battle. They are to study the diseases of tropical countries, and the epidemics which prevail in different places, as well as army surgery. Thus, when the

soldier lands on a foreign shore, care is taken that he is put upon a good soil, sheltered from hurtful winds, sun, or damp, and preserved from stenches and other mischief. If he falls ill of any disease of the climate, the doctors know how to treat it, and have the proper medicines with them. If he gets wounded, he knows that the surgeons have not everything to learn, from gunshot wounds being rare at home, but that they have had a special training in treating hurts of this kind. Moreover, he has not to take his chance of any hasty accommodation that may be found for him, but everything is prepared for his comfort. There are easy vehicles for carrying the wounded to the hospital, and all means on the spot for treating wounds, and rallying the strength of the wounded. All this is such a change from the old methods that the difference in the mortality of our armies is already very remarkable. Yet we have only looked at the one consideration of the accommodation of the soldier.

Next, there is the clothing.

I need not spend space or time in telling the faults of the dress of our soldiers, up to a very recent date. A dress which compresses the throat, confines the chest and arms, and loads the head with a great weight, and galls the temples without shading the eyes, and pinches the feet, and makes the wearer cold in winter and hot in summer, and wears out as soon as possible, and gathers dust, and shrinks in damp; a dress like this has every imaginable fault, and scarcely a single recommendation; yet this has hitherto been the dress of the British soldier. He has not complained of it so much as might be expected. In fact, he has been rather vain of his tight coat, stiff stock, towering shako, and the knapsack which pulled at the leather belts across his chest. But if his English admirers could see him on the march or at work, they would find him less fond of his costume. They would see him unbuttoning, and throwing open or throwing off every article that had most distinguished him. Shako and stock have disappeared; the jacket hangs loose; the trousers are tucked up; and, moreover, the scarlet cloth has slit in half-a-dozen places, and the boots have burst at the sides, or are too stiff to get on and off.

We now know that the head must be well sheltered in all weathers and climates, and particularly in hot countries, without being loaded; and that the throat and chest must be free from

pressure, and the feet well fitted with well-seasoned boots. Hence the reforms now in course of introduction. We are trying different caps and head-coverings, in India and everywhere. The chief of the department of army clothing has been studying the French methods of making everything that the soldier uses or wears, from the tent over his head to the shoes on his feet. Though the boots and shoes are made entirely by machinery, from the cutting out of the leather to the finishing stitches, every French soldier is fitted, and no French soldier has corns. The reason is that there are twenty-four sizes and shapes, out of which men of all dimensions can suit themselves. We are to adopt this method of proceeding : and when we have done it, and become duly particular about our leather, we shall hear little more of our soldiers being foot-sore.

When we have ascertained what sort of head-gear, with its white covering, suits tropical service best, we shall not lose so many soldiers by sun-stroke as we do now. Meantime, the new tunic in the place of the tight coat, and the growing discountenance of the stock and the shako ; and the improvement in all materials, and the good sewing by the machine, and the increased use of flannel, and the careful superintendence of the washing, both of clothing and of the person, are all guarantees of a better state of health for the soldier than was even imagined half a century ago.

More striking still is the reform in the food.

The absurdity of feeding our soldiery on boiled beef, every day of their lives, as long as they were in the army, will scarcely be believed hereafter. We know better now. We know the mischief of giving men the same dinner every day : and we have obtained the advice of good chemists as to the best diet for healthy men. By means of more knowledge and a better use of inventions, we can now give our soldiers a variety of meats, soups, puddings, and vegetables, such as they would not have enjoyed at home ; and fresh bread, and good tea or coffee,—and all for the same money that the old system cost, or less. There can be roasting, stewing, and baking, just as well as the eternal boiling of old times. Thus may the modern soldier enjoy his meals, and keep up his strength on them, instead of being tempted to refuse his dinner, and spend his money on dainties and drink.

With this enlargement of the dietary, another change, no less

beneficial, has come in. Worse than overcrowded rooms at night, and disgusting food, and troublesome dress, has been the curse of the soldier,—the dulness of his life. People in ordinary life who pine for want of something to do and to care about, are subject to ailments which are called "the maladies of *ennui*." These are real diseases, though arising from moral causes. The unoccupied brain wears upon itself, and the nerves become disordered, and the various bodily functions are disturbed, just as in the case of a restless prisoner who is said to "eat his heart out" in captivity.

Soldiers in barracks, whether at home or abroad, have had some experience of this kind of misery. They have suffered under idleness and restraint at once. After parade, and after duly hurting their lungs by breathing the dust of pipeclay in dressing their belts, and then cleaning their arms, there was nothing before them but a dinner which they loathed, and parade again ; and at night either a wet and cold guard, or the hot and pestilential barrack-room, crowded with hard-breathing sleepers. Drink, desertion, suicide, were the consequences of such a life ; and it was on account of these manifest evils that the stir on behalf of regimental schools and reading-rooms began, many years ago.

We are doing better now, and shall improve further. The most intelligent of the learners and readers were still helpless, outside their narrow range of exercises. When they went out to war, no one of them could make himself a shelter, or mend his clothes or shoes, or bake bread, or cook meat and vegetables. In adopting the new cooking apparatus, which has attracted so much delighted attention, the authorities have provided an excellent employment and strong interest for the soldiers. They are learning to cook as the soldiers of other countries do. Once having discovered the benefit of being able to shift for themselves in one respect, they naturally desire to extend their attempts. They are learning to provide a shelter and warmth under difficulties. When encamped somewhere or other in the summer, they practise all the arts of camp life, — keeping themselves dry, keeping themselves warm, killing and trimming meat, getting good meals, draining and cleansing the camp, and taking care of the horses, and repairing accidents to their clothes.

This year there was such a camp on the Curragh of Kildare.

There was a chorus of complaints and pity that men should be encamped on such a place in such a season: but the real friends of the soldier contended that it was the best kindness to him to let him take the run of seasons and circumstances. If men and horses were so badly off as was reported, it was from bad management; for there were facilities for drainage and road-making; and every soldier worthy of his vocation would rejoice in an opportunity of practising the arts of his profession, and putting his own courage, and skill, and endurance to the proof. Some of the men did so welcome the experience.

But what was the remark of foreigners who heard the grumbling? Their remark bears a close relation to our present subject. They said, "the English soldier is the best paid, the best fed, and the best clothed soldier in Europe, and is always grumbling. The fact is, he is spoiled. He can provide nothing for himself; and when once out of the regular routine of barrack-life, is helpless."

If the English soldier ceases to be helpless, we may hope that the profession in which men are better paid, fed, clothed, and considered, than in any other country in Europe, will not be so largely occupied as hitherto with scamps who get what they can, and then desert.

I read an anecdote lately* of military service in India, which explains, to a certain extent, the evil reputation of some of our soldiers, not in tropical regions only, but wherever they are too severely tried by dulness. Good officers in India encourage trustworthy soldiers in hunting in game regions, because all vigorous interests are of immense importance to men overwhelmed with *ennui*. The dulness of the hot season drives barrack soldiers, not only to drink, but to a kind of craziness. In order to get transported—that is, to get to Australia—the men of the Bengal army have affected insubordination to their officers. One after another threw a pair of gloves, or his cap, at the first officer he met. This went so far that the authorities announced that the punishment of death would be inflicted henceforth, instead of transportation.

The men disbelieved this. One of them threw his cap at a perfect stranger in the road,—judging him to be an officer by the gold band on his cap. It was an assistant-surgeon from

* Dunlop's "Hunting in the Himalaya." Chap. 5th.

Meerut. The surgeon was reluctant to give evidence, and did all he could to save the man; but the threat must be fulfilled, and the soldier was to be shot. The firing party took care not to hit him. In case of the aim failing, the sergeant's duty is to shoot the criminal with a pistol. The sergeant did his duty in this case; but he could not bear the thought of it. He was found dead, floating in a well a few days after, having thrown himself in, to get rid of his life.

The natural comment on such a story as this is that in other armies, the amusement of the soldiers is one of the institutions of the force; and Indian officers declare that any amount of money laid out in newspapers, illustrated periodicals, games, &c., for soldiers, in India and the colonies, would be well spent. These things are, in fact, medicine for mind and body.

At home, the dulness is likely to be cured through the universal agreement that soldiers should have the change and recreation which are necessary to all other men. In addition to schools and reading-rooms, and to the new variety of practising the arts of life, as far as the soldier is concerned in them, we may hope to see a great spread of those manly sports which are the best possible recreation for soldiers. The authorities are encouraging the introduction of cricket and other games. Gardening, also, will be gladly countenanced and assisted on all hands.

While I write the good news arrives from India that a system of full and agreeable employment for the soldiers is instituted. Gardens, to be cultivated for their profit, handicrafts, games, and intellectual pursuits and amusements are planned, and the proposal is received with enthusiasm.

Now, here is a career which ought to be eagerly sought. To the foreign account of the indulgence which the soldier enjoys, we English can add the higher considerations which attend a calling in which every man is called, not by the stern voice of law and authority, but by his own free thought and feeling. With us, every soldier is a volunteer. We have no conscription; and we are supposed to pamper our soldiers, and make "dandies" of them, in order to keep up our force. Yet, if our numbers are kept up, the quality has not hitherto been what we desire.

I do not believe that money will avail—mere high pay. It is far more probable that certain reforms, present and future, will do it. Of those reforms, the very greatest is, no doubt, the

practical abolition of the lash, within this year. The man worthy to be a soldier is no longer liable to flogging. Flogging cannot be altogether abolished till the scamp-element is rooted out of the army; but fellows of that order only are now liable to it. The new plan is to reduce any offender to a *floggable* condition first; and this affords opportunity for reform, and even for return into the class which cannot be flogged. A respectable soldier will not sink into the degraded rank; or if, by some unhappy lapse, he should do so, he will rise again, and not subject himself to the further degradation of the lash. In fact, a respectable soldier is now no more liable to the lash than a man of any other calling.

As for other reforms, we may see what they are by looking at our forces in China. The health of our troops there is higher than the health of soldiers was ever known to be, unless in the last days in the Crimea, when our army was re-created, and brought into the finest condition. In China, our troops are well fed, well clothed, well managed in health, and well cared for when wounded. Of the sick, there are scarcely any to speak of. From the date of that spectacle, the military profession assumes a new and bright aspect for the private soldier, as well as for his officers.

The profession ought to show the very largest amount of health and strength. The members of it are picked men for physical soundness and vigour. The recruit cannot pass unless he has a firm and straight spine, a chest that will expand freely, joints that will work well, eyes that will see well, a voice that will resound well, ears that will hear well, strong limbs, a distinct utterance, a healthy throat, supple hands, an arched foot, and so on. Even sound teeth and straight and supple toes are required; and all signs of old disease are a cause of rejection. Men who set out with bodily advantages like these ought to have health and long life, apart from the perils of the battle-field, which destroy a very small proportion of the soldiers who die. There is every reason for confidence that the soldier will flourish henceforth. The causes of the great mortality are detected, exposed, and in course of rapid removal; and, as we see, there are already places to which we can point as showing the fine state of vigour to which the soldiery of England and her dependencies can be brought.

The state having done what it can, the rest will depend on

the individual soldier. If he eschews excess of every kind, and indolence, he may pass a long life in comfort and vigour. If, moreover, he has a patriotic heart in his breast, or knowledge enough in his head to be aware what it is to be at once a citizen and a defender of Old England, he may have a life of that higher order which is seasoned with a temper of heroism, and exalted by a severe spirit of honour. There is no reason why every private soldier and sailor should not be a "Happy Warrior," as well as a Wellington or a Nelson.

Now for the Sailor.

The reform in the sailor's condition began many years before we took the lot of the soldier to heart. There can hardly be any one now living who could speak from observation of the penalties of a long voyage in the shape of vile smells in the ship, scurvy among the men, and mortality from ship-fever. It was long ago found possible to get rid of much of the bilge-water, and to clean and dry and air the berths, and to ventilate every place below decks, and to give the crews something else to eat than invariable salt beef and biscuit; and, lastly, to carry a preventive of scurvy in the form of lemon-juice. Now that preserved vegetables are becoming common, and meats are preserved otherwise than in pickle, and that it is found easy to have fresh bread, we may fully expect that the common diet at sea may be nearly as varied as that on shore. In the American navy there are several Temperance ships which carry no spirits, except some brandy among the medical stores. Coffee is substituted for grog; and I have been assured by an experienced commander in that navy that the health of the coffee-drinking crews is of a higher quality than that of grog-drinking crews. It is with a sort of wondering disgust that we think now of the scurvy-stricken ships' companies of old days, with nothing but hard biscuit and hard salt beef to eat, with their loose teeth and sore gums;—men actually rotting to death for want of a variety of food. We understand now what elements in food are necessary to the supply of the frame, and in what proportion they should be given; and most of these are so easily stowed, and keep so well, that there is no reason (though there is still some prejudice), in favour of the sailor going on to live on salt meat and biscuit, without any change. Part of the fault lies with Jack himself. He is an old-fashioned fellow, and sticks to old ways. Even our sickly soldiers in the Crimea had a notion that

they did not like preserved vegetables, and pointed with contempt to the small dimensions of the compressed sort: but they learned their value at last, and found them a most effectual medicine and welcome luxury. So will Jack learn in time to prize several kinds of food, and modes of cookery, which will keep out scurvy; and sooner or later there will be, in ordinary cases, no more excuse for disease from faulty diet on board ship than anywhere else.

Jack likes to be clean. There are some nasty fellows in that way of life, as in every other; but, take our marine all round, the crews are above the average of men in cleanliness of person and lodging. This being the case, it is felt to be a great blessing that the chemists have given us a soap which will wash clothes clean in salt water. In old times, the crew's linen was never thoroughly dry, and never thoroughly clean, with all the washing and drying that could be bestowed upon it. Now it is real proper washing; and this, and the constant airing of the bedding, and the careful watch kept over the damp and dirt, lengthens the life of the sailor for many years.

The remaining evils are partly due to the calling itself, and partly to Jack's own folly.

The interrupted sleep of all seamen, from the commander to the cabin-boy, is injurious, and tends to shorten life. If it is so in the case of medical men on shore, it must be more so at sea, where it is the regular practice to take sleep in small portions, and at varying times. Two hours now, and four hours another time, and then two hours again, and seldom more than four hours at a stretch, is not a due supply for hardworking men. The plan may be the best practicable, on the whole, for the safety of the ship, and the welfare of the crew; but it cannot be called good for anybody's brain.

I need say nothing about trying climates and vicissitudes of weather, except to observe that as so many ships' companies have gone to the poles and round the globe, without loss of life from cold, heat or storm, the lot of the sailor cannot be considered worse than that of other workers whose vocation is outdoor labour.

It is only in extremely long voyages that the dulness of the way of life can be complained of; and the few cases in which it might occur are met in such a generous and genial spirit by the authorities at home, and the officers on board, that the occasion

causes more admiration than regret or pity. At the North Pole, or the South, in the midst of the Pacific, or when detained on remote stations for weeks or months together, amusements are introduced, as soon as there is danger of Jack's time hanging heavy on his hands. There is music ; there is dancing ; there are games ; moreover, there are amateur theatricals. Nobody loves the theatre better than Jack, and very well does he usually act his part upon the stage. While the affair of a play is on hand, there is no dulness among the crew. In ordinary times and short voyages, the old fashion of story-telling answers as well as ever ; and it probably always will, when it is too dark on deck to read.

Jack will become a reader too, before long, in the Royal Navy, if not in the Merchant Service. There are schools now for seamen as well as soldiers. There is also a much higher practice of observation, and scientific study and reporting, in our navy than at any former time : and the humblest seaman may take an interest, and perhaps give assistance, in these matters, if he has intelligence and good taste enough to do so. There is plenty of occasion for Jack to exercise his intellects in the whole course of his wanderings over the globe.

The great peril to his health—that which outweighs all others put together—arises from his own weakness. I need only refer to his too common behaviour on first coming ashore after a long voyage. He wastes his health in excess of every kind, and his money in silly extravagance, and his reputation in wild follies. He is sadly weak and wild sometimes in remote countries, where he may contrive to land ; and the ship's surgeon gravely laments such opportunities of Jack's playing the fool ; but nowhere is he more grossly imprudent than in the first place in England where he goes ashore. Who can tell how many of our promising young seamen have poisoned their whole after lives by excesses for which there is no excuse ?

Or, if our seamen believed formerly that there was some excuse for them, they cannot say so now. There are so many Seamen's Homes now open in our ports, so well provided with comforts at an economical rate, and offering such advantages in their banks for securing savings at once, that a sailor who puts himself in the way of sickness and sorrow on his arrival at home can only hang his head in bitter shame. And there I leave him.

As for the wiser ones, who use the Homes, and take rational

care of their health and fortunes, they will certainly admit that their lot in life is, on the whole, a good one. Sailors are generally and strongly attached to their profession ; and landsmen can easily understand what charms it may have. It has also involved some hardships so serious, that we cannot wonder that some prejudice should hang about the service in the Royal Navy at this day. Instead of describing these, it is necessary only to point out the reform which is to begin on the 1st of April next. As in the army, it is only the lowest scamps who will after that be subject to the lash. Offenders will have a trial by court-martial on board, and the punishments will be more varied, and better graduated. The commander has power to judge and punish summarily in urgent cases ; but crews will be protected from the hasty humours of ill-tempered captains, and be under the jurisdiction of a court, like landsmen. There will be no new licence for them, but, rather, increased strictness against neglect of duty, desertion, and misconduct before the enemy, as well as bad language and misbehaviour at all times. It is for Jack so to conduct himself under the change as to afford no occasion to prejudiced persons to wish to re-establish the unchecked power of the lash.

If Parliament should grant the means for substituting barracks for hulks, as we are told is likely, there will be little more for the British sailor to ask of a well-disposed nation. It is the greatest improvement that could be offered him.

I say nothing of the cruelties we too often hear of as practised on board merchant vessels by others besides American captains. A seaman who puts himself in the way of such treatment, when the Royal Navy is open to him, with all its security, its comforts, its increased pay, and its pensions and rewards, may get such redress as the law affords, but will not be so pitied as if he had not made a foolish choice of an employer. It has been at times quite true that the Merchant Service yielded higher pay; and it is always true that it takes Jack a long time to understand new arrangements : and thus it is that we have not nearly so many seamen as we want. But this mistake will be mended. The new advantages of the naval service will become known and believed in our ports, and discussed in our Sailors' Homes, and then England will have a body of defenders in her seas as full of health and vigour as they have always been of zeal and love for their country.

CHAPTER XXIII.

THE AGED.

THEIR HEALTH.

WHAT is Old Age? It must strike thoughtful people, now and then, how very little we consider what the thing really is that we talk about so often, and with so much feeling. The poets, the moralists, persons of strong domestic affections, and dramatic delineators have plenty to say on certain characteristics of the last stage of human existence; so that, as far as description of the condition, and every possible pathetic presentment of it can go, it would be scarcely possible to add to our wealth of literary portraiture. But none of these methods of treatment show us what old age is; and, till we know this, our way of regarding and treating the condition must be mere guesswork.

One who has the strongest right to speak* decidedly on the subject, says, "The general theory of death is certainly in a very backward state, since the ablest physiological researches on this subject have usually related to violent or accidental death." He adds that even so far the investigation has been anything but thorough; whereas we do but half our business if we study the growth and development of the frame, and neglect the process of its decline. One glimpse has been obtained, the physiologists tell us; and only one, as far as the organic life of the frame is concerned: and that is that the turning point between maturity and decline is the moment when the balance changes between the functions of composition and decomposition; or, in other words, when the frame begins to give out more than it receives.

During the first years of life, the fluids abound over the solids, and the elements which go to expand the frame are received and appropriated very plentifully, while a much smaller amount is exhaled. The stage of maturity is that in which the balance is equal; and this period is supposed to include, at the outside,

* Auguste Comte.

twenty years of human life. Then begins the process of dying, as the philosophers say; or, as less learned persons express it, we turn our faces towards old age; or, according to the common figure of speech, we begin to go down the hill. The age of forty-five is assigned for this change. The change itself consists simply in the exhalation of particles beginning to exceed the reception of them—the waste becoming greater than the nutrition—nutrition meaning not only the operation of the food swallowed, but of the gases breathed, and the appliances of every sort which are administered through the incessant action of the frame, and of the materials which surround it. The necessary consequence is a gradual drying up,—extremely gradual in the case of vigorous frames,—but incessant, till the consolidation becomes too great to admit of vital action. To go through this process without disturbance from disease is to die of old age. This is, we are told, about all that is known about the decline and death of organised bodies. It is enough to guide us in observing the facts and appearances of old age.

It is clear that there has been no noticeable change in the method of human life between the Psalmist's time and our own. No doubt there has been of late years a considerable diminution of mortality in proportion to numbers, which is the same thing as its proportion to time, as all die at last; but this is owing to the increased power we have over disease, and not to anything we can do in arresting the process of decline. Thousands of men and women who would have died young of small-pox, a century ago, may now live as long as the universal law of the human frame allows; but we have no power over the operation of that law.

Men have dreamed of such a power in all ages,—have longed for it, have striven for it, and have not seldom fancied that they had obtained it. Among the oldest and commonest stories in every nation, and every literature, are those which tell of some medicine for the renewal of youth discovered by a philosopher, and handed down from one person tired of living to another,—always as a secret, and always a burdensome one. The great chemists who used to imagine they had discovered this elixir of life, were not such fools as they are commonly considered. They, as well as the astrologers, and the gold seekers, had an idea, and a not absurd idea, at the core of their enterprise. Modern science shows us where they were wrong; but we are just like them in

the interest we all feel in the subject, differing from them chiefly in being aware that there is no known way of resisting the law of natural decline.

How long is that stage of decline, speaking accurately? It is so long that giddy readers may laugh at the mention of it. To be tending towards death from five-and-forty seems to them ridiculous. So it would be as a matter of sentiment, among people who think about death in such an exaggerated way as we, of this age, do. But I am here speaking of the natural facts which bear upon the condition of old age; and that is my concern with forty-five. In a rough way, the physiological distribution of our life is set down as including five-and-twenty years of growth, five-and-twenty of decline, and twenty of maturity between them. This makes up the threescore years and ten which the Psalmist speaks of as the natural duration of human life. He adds that if, by reason of strength, we reach fourscore years, yet is that strength labour and sorrow, and soon cut off.

"Labour and sorrow." Are these the characteristics of old age? I should say the words give a singularly precise description of that stage of human existence. I do not mean that it is complete; for there are antidotes, comforts and pleasures appropriate to the case: but the liabilities of the condition are precisely "labour and sorrow."

It is rarely understood by persons who have the full use of their animal powers that the worst evil of the absence of any of them is not the pain of privation (bad as that is), but the laboriousness thus occasioned in the act of living. I do not know that I have ever met with any person who had thought of this truth without being told; and certainly no person has ever first mentioned the fact to me. Yet there can be no doubt about it. A "well-favoured" person, as the ancient expression is—a person endowed with health and comeliness, and with the keen senses which belong to thorough health, has a very easy life of it, whatever tricks fortune may play him in regard to his surroundings. Impressions flow in upon him incessantly, setting mind and body to work in a natural way, exercising and entertaining his faculties, and rendering easy and plain what he has to do. One with purblind eyes or dull ears has much harder work to do in the mere act of living on from day to day; and the blind, or the deaf, have a lot so laborious as it would

astonish their neighbours to become aware of. Instead of influences of sight and sound flowing in upon them, and working within them, they have either to do without that inestimable benefit and aid, or to seek it with pains and toil. They have to make express and laborious effort, from hour to hour of every day, where others simply receive as a free gift the means of thought, feeling, and action. I could say much about this, but my business here is with so much of the truth as is involved in the experience of old age. The "labour" is of this description. The "sorrow" arises from the trials of the affective nature, chiefly, with considerable additions from other sources.

I remember the way in which, when I was young, an elderly friend of mine reasoned with, and laughed at, himself, about this matter of the laboriousness of advancing age. A man of active mind and habits, he felt the stiffening of his joints, the twinges of rheumatism, and the conflict between mind and body about moving hither and thither, which were growing upon him. He told me he had found himself making long faces at having to mount his horse slowly, and leave off running, and give up waiting on sisters and daughters, like the young fellows. Lying awake with rheumatism, or mere sleeplessness, was worse : but he had remembered that he had been glad to live thus long rather than die earlier, and that it was absurd to quarrel with the conditions. He accepted the "labour," or, as we commonly call it, the burden of years, as a lot which he would have chosen if a choice had been offered him how long he would live. His merry face and philosophical temper impressed me strongly, though the incident may look very small and commonplace to others.

The failure of the senses is a far graver matter than that of the limbs, involving more labour as well as more privation. To young persons suffering under the loss of a sense there is something frightful, as well as painful, in the process. The sense of exclusion from the sights or sounds (whichever it may be) of nature and society is terribly painful ; but yet worse is the converse sense of imprisonment—of being secluded from the life of other people, and more and more helplessly. We all shudder at the story of the octagon prison-chamber, one side of which disappeared in the course of each night, till it must become a mere closet—a triangular case to stand in—and then, a crushing machine. The same horror of the imagination seizes

on a person who, becoming blind or deaf, is daily aware of losing something of the common influences of life, and is aware that he must go on alone into deeper seclusion, finding the mere act of living more difficult every day. The aged do not suffer so acutely as those on whom the calamity falls untimely; but they can tell what the labour is, while caring less for the privation. It does not matter so much to them, they say, how the remnant of their life is passed: they have not active duties, nor heavy responsibilities resting upon them; their accounts with society are made up, and it is their own affair what they are thenceforth fit for; so, if they are sensible and amiable, they keep themselves quiet, and amuse themselves as well as they can. But still there is the laboriousness! Nothing can relieve that. When they were young, the contact between external objects and their special organ (whichever it be) was so natural as to be unobserved; so was the function of the nervous fibre, and so was the cerebral reception of the impression; and its effect on mind or body followed of course. Now, when the consolidation of the frame has gone too far, there is obstruction somewhere in the process, or everywhere; the impression is faint, or it is spoiled, or it is wholly absent, and a natural stimulant and guide to action or thought is withdrawn. Its loss must be supplied somehow, if thought and action are to go on; and to supply it is a heavy and unremitting task.

How this is to be made the best of, depends mainly on the moral strength and temper of the aged person. A superannuated man or woman who sinks under the trouble, or frets under the pain, must be merely humoured and borne with. No other aid is possible, because the sufferer cannot get away from the evil which no one can remedy. A stronger and wiser person has much less to suffer, and for a shorter time. As age advances, the activity subsides, the actual fact of daily existence becomes more acceptable; and monotony itself becomes easiest, while proving anything but dull. One of the characteristics of old age is its susceptibility to old impressions revived, which forms a remarkable contrast to the apathy about new experiences. It is common for aged people to say, that the pleasure of the opening of spring is more vivid than ever to them. Granting that they may have forgotten somewhat of the intensity of the pleasure in youth, it is evidently true that they do keenly relish the enjoyments they have known longest. Göthe, whose mental

resources might be supposed sufficient for all situations, if any man's ever were, was in a state of manifest exhilaration every year, when the shortest day was passed; and he was like a very wise child, when the first wood anemone, or violet, or brood of chicks, or young lamb came across him, up to the last year of his life. It is the same thing with old music for those who can hear; and old flowers and sunsets for those who can see. The delight is transient in the extreme, after a certain point of superannuation is reached; but, if this is a sign of second childhood, so is the vividness of the enjoyment. If both these chief senses are dulled past exciting, the next question is about the provision of inner material.

If the mind cannot act without a stimulus of external influences, a state of general apathy will ensue on the decay of sight and hearing. If the mental constitution be of a higher order, self-sustaining and self-moving, the aged person himself is surprised to find what complete satisfaction he is still capable of. If his interests have been of an intellectual order, he *lives* almost as much now as ever. Literature is as charming to him as if he kept the substance of what he reads for use, whereas the impression is now very superficial. Philosophy exalts and chastens his mood, and sustains his habit of composure and patience, though he can no longer lay it down as the foundation of some work of wisdom or beauty. Such a kind of superannuation is too rare and select, however, to be dwelt upon as a sample of this experience of human life. We must look lower, among average people, for a lesson for the many.

Average people, if their minds are alive when their senses are shut up, may, if they have but good tempers, take up for themselves that exquisite song* intended for a different kind of enforced seclusion :—

> Stone walls do not a prison make,
> Nor iron bars a cage;
> Minds innocent and quiet take
> That for a hermitage.
> If I have freedom in my love,
> And in my soul am free,—
> Angels alone, that soar above,
> Enjoy such liberty.

If their hearts are warm, and their habits of mind simple, unselfish, and self-respecting, they often show themselves sur-

* Sir William Lovelace.

prised that their "quiet way of life" is so full of amusement, so devoid of dulness, though few sights or sounds reach them, and they have no pleasure in eating and drinking, and seldom have a good night's sleep. When they are ill, they sometimes say, "Never mind, my dear! What can it signify whether I go now or some months hence?" but perhaps it happens oftener that they say, "I should have liked to live a little longer, if it had pleased God: but no doubt it is all right."

This is the saying which shows that the "sorrow"—the peculiar sorrow of old age—is no great burden. There are hours when the sorrows of survivorship are certainly very dreary, as any of us can tell who have witnessed the consternation or the tears of aged persons who say that there is now "not one left" of the companions of their earlier life. But the impression is brief. On the one hand there is the consolation "I shall not be long after them;" and on the other there are the interests of the hour—the newer generations round about them, and the wonderful new spectacles of an advancing century. Instead of grumbling old people, who insist that "the former days were better than these," we now more commonly meet with ancients who are proud, as Humboldt was, of surviving so many of the world's elders, and of having lived to see the human race getting on so fast with its improvements. This is a pleasanter spectacle than that of the grumblers: but there is a better still. I have seen an aged person who would have bowed her head before the youngest of Humboldt's order, who yet rose above everybody, philosopher or other, who had any vanity about living so long. She never compared herself with anybody, because she had no self-regards. She was always ready, to a minute, to depart; while she daily triumphed in the spread of education, and of the moral and material arts of life.

Before going on to the remaining case—the one other aspect—of superannuation, we may consider for a moment what is the proper treatment of this decline of human vitality.

The physical symptoms are familiar enough. Old people are chilly, apt to eat what for others would be too little or too much (generally too little); unapt to sleep at night, and therefore frequently drowsy in the day; apt to forget the time and be unpunctual; or, on the other hand, over precise and jealous of interference. The commonest vanity of old age is very like that of childhood,—a conceit of being able to take care of itself.

Amidst the noblest and sweetest moral graces of old age, some one of these liabilities is pretty sure to appear. The hoary head is indeed a crown of glory to one who is exempt from them all.

In treating them, the best method, generally, is indulgence. It is a sad mistake to medicate and discipline old age as one would a morbid condition of earlier life. I once heard a dutiful daughter of a very old mother say, after her mother's death, that the illness had taught her one lesson,—never to tease an aged invalid to eat, or to do anything undesired by the patient. Even where the food taken is little or none, so that life cannot be prolonged, it is better, we agreed, to let things take their course. "It is of less consequence," said she, "that one in that condition should live a month more or less, than that she should be spared all contradiction and opposition." Some difficulty there must be with one who has a jealousy of independence, without prudence to justify it, like a certain aged marchioness who wore high caps, and would sit alone, writing and sealing letters, and nodding over the candles. She was burnt, with the great mansion which her high head-dress set on fire. This is the most embarrassing particular, perhaps, in the case of aged people. I have known one who, in the last year, before she became too ill to be left, set herself on fire three times, by choosing to read the newspaper late at night, and falling asleep over it. Another was fond of stirring the fire when unable to see how to do it; and she was perpetually turning the coals back over the top-bar. One night a burning mass fell in that way on the skirts of her dress, and was discovered only by the smell of burning woollen. If it had fallen on cotton or silk, she must have been burnt. I see nothing to be done in such cases but to have locked fireguards, and to explain simply that the family could not be easy to leave their charge without that precaution.

Very like this is the persistence of some aged people in going out alone into the streets—crowded streets where crossing is difficult, and where good sight and some agility are necessary to guard against embarrassments and dangers. I have known more than one infirm septuagenarian who would slip out at a back door, or lie in wait for the hall being empty, to get out unobserved; and in a few minutes, a horse was rearing over the head of one, and a porter was knocking another up against the

wall; and the wonder was, when either was safe at home again. They came home in a state of vexation from having been plainly told by their rescuers, "You ought not to be out in the streets alone;" "You should be better taken care of;" and the more obviously true this was, the greater was the irritation.

It is not easy,—indeed I know few things that require more resolution than it does to mortify this little vanity in persons to whom we have always looked up with deference, and whose will we have been accustomed to obey. To trench on their personal rights, and invade their liberty, seems something monstrous, no doubt, to all parties: yet, in these instances, it must be done. If possible, the pain with which it is done should be covered over with cheerfulness; and, instead of any solemn remonstrance or announcement, the guardianship should be imposed as a matter of course, and treated like the household customs of regular meals and going to bed. I have witnessed every sort of dutiful and beautiful care of the aged, and none with more respect and admiration than that in which the children—themselves elderly—have been the managers, as well as the nurses, of their parents; yet I have never got over painful kind of surprise at the spectacle,—the violation of all one's associations of deference with age, and all one's feelings of the sacredness of the liberty and the will of one's elders.

The more necessary such offences are, the more scrupulous should be the indulgence in every instance which does not involve personal danger. The aged should be allowed to follow their own prejudices, and live according to their own notions, even to their own disadvantage, since opposition would cause them more pain than their own mistakes. If, when short of breath, they like going about the house on their own errands, let them do so, rather than wait upon them against their will. If they oppose themselves to modern sanitary practices, let them go to their graves as their fathers did. About exercise, food, and hours let them suit themselves. About dress, few would wish to interfere. It is painful to see old ladies in gay or youthful dress; and a little tact may soften the absurdity, in many a case; but the opposite tendency is more common, and quite unobjectionable. I remember more than one old gentleman, in my childhood, who wore pigtail and powder, and knee-breeches for everyday wear; and old ladies in ruffles and long gloves, and outside muslin handkerchiefs, and muslin aprons; and their antique appearance

inspired unmingled respect, as the Quaker dress always does. If it did not, we should still wish to avoid interference, and to help our old folks to gratify their taste and judgment in dress to the end. So it should be also in regard to their little hoards of relics,—their worm-eaten furniture, their bits of china, their antiquated sermon-books, and their curiosities in the way of old shoes, and gloves, and trinkets. Let all be tenderly used, and allowed to take up room, however inconveniently. It is not for long; and the one great duty to the aged is to save them from fret, and, above all, from the fret of mortification.

I have seen a very self-complacent and sentimental woman do a thing which put me more in mind of King Lear than I could have wished. An aged an infirm relative had lent, as a privilege, some beautiful verses of a close personal interest, to be read, enjoining care of this her only copy. For many days she modestly asked for them back again, till, the self-complacent lady being induced to search, the precious document was found torn by the children; and the only apology offered was a snub about "making such a fuss about a sheet of paper." If, instead of being a thing of real value like this, it had been a page out of a copybook, it ought to have been respected as prized by one whose smallest wish should be honoured.

A sympathy which is sufficient for these things should naturally be more ready than it usually appears to be to enter into the immediate prospect of the aged. It is natural for persons on the verge of life to speak sometimes of leaving it: but nobody responds. Few have a word to say on what so closely concerns their charge; they make haste to talk of something else, or go away; or even, as in an instance which I remember, say, "Oh, nonsense; don't talk so. You are no nearer death than ever you were." They would not have done so about a voyage to Australia, twenty years before; and the departing one would like some sympathy now, even better than then. The fault lies mainly, no doubt, in the common exaggerated view of the importance of death. The exaggeration still influences the younger nurses, and is detected by the elders as they approach their departure; but the departure *is* their prospect, and it is a failure of sympathy to shrink from speaking of what the waiting one thinks of with freedom and cheerfulness. One meditative old man whom I knew was self-sufficing in this respect. He had on his table—the table at which he read and wrote daily—a

pretty cast of a sleeping child. His friends wondered at his constancy to this cheap bit of art; but one of them soon divined its meaning. When weary, as such very old people are, and longing for rest, it soothed him to see the image of rest. I suspect he might have waited long for anyone to minister to his need by speech. Who ever does say to the aged, except as comfort under bereavement, that they have not to wait long, and that their end is perceptibly approaching?

One consideration remains—the case of failing faculties in the aged. Of course, this is by far the most painful aspect of the case; but there is something to be done, and where there is something to be done there should be something said.

Most elderly persons among us must have read Dugald Stewart's writings when they were young, and none who read them can have forgotten the following description:—"One old man, I have, myself, had the good fortune to know, who, after a long, an active, and an honourable life, having begun to feel some of the usual effects of advanced years, has been able to find resources in his own sagacity against most of the inconveniences with which they are commonly attended, and who, by watching his gradual decline with the cool eye of an indifferent observer, and employing his ingenuity to retard its progress, has converted even the infirmities of age into a source of philosophical amusement." *

This old man was Dr. Reid; and his noble use of an opportunity of studying phenomena through his own bodily failure reminds us of Sydenham, the physician, whose last moments were employed in noting his own pulse, for a scientific object—a death which I have heard Dr. Channing declare to be the most enviable he knew of. How indeed can there be a nobler close to life than providing light for others out of one's own eclipse?

There are few, perhaps, who could do this; and certainly not many could be expected to think of doing it. But there is a preparation for that peculiar trial and difficulty which it is in the power of most aged persons to make, who are happily placed in regard to home and friends. Most who have advanced far in the "labour and sorrow" of old age must be conscious of more or less failure; and all are aware of the liability they shall be

* Stewart's Philosophy of the Human Mind. Chap. VI. Sec. 1.

under if they live so long. Is it not possible—is it not even easy—to predetermine our own welfare in that condition? Can we not make a resolve, too determinate to be ever forgotten by the feeblest memory, to put ourselves entirely into the hands of some guardian whom we can trust in such circumstances better than ourselves? Do we not *know* that we cannot be judges in our own case as to whether our judgment is as sound as ever, and our temper as calm and strong, and our understanding as clear. From the moment when any failure is probable, or is recognised by anybody, it should be our plan, long formed and dwelt upon, to resign ourselves to decisions more trustworthy than our own, and to yield obedience to a better guidance. There can be no doubt of the benefit of this course to health, peace of mind, and serenity of the daily life. It is not always easy, of course; for it requires a resolute repression of self-love and self-will; but, when the work of repression is chiefly done beforehand, there is no pain remaining that can for a moment compare with that of conflict, internal or external, with that of making mistakes, discrediting ourselves and disconcerting others—of sinking, in short, under infirmity, instead of conquering its worst liabilities. What can be more painful and humbling to witness, than the struggle which a failing mind keeps up; arguing in favour of its own abilities with saddened friends whom common humanity keeps from replying; quarrelling with the comrades of old times, or resenting their refusal to quarrel with him; fidgeting about everybody's opinion of him, and straining his mind to show how sharp he still is; refusing all suggestion as to what he shall do, and how he shall live; subject to exploitation by those who will flatter him about his independence and his dignity; and at last humoured in his tempers and caprices because "it is his way," and "he cannot help it now!" What can be more consoling than the spectacle, on the other hand, of the old man or woman who, however weakened, is still noble—however dulled, is still venerable—from the good sense and unselfish consideration still pervading the course of daily life! He has engaged some trusty friend or friends to tell him plainly when it is time for him to retire from work and the competitions of life; and the moment he is told, he settles his accounts with the world, and gives himself to the interests and amusements of retreat—not seclusion, but leisure. He is wholly tractable in the hands he has chosen to guide him.

and is thankful for guardianship, instead of resenting it. By thus depositing his cares, he reduces care all round to the minimum. His own life and its remaining powers are well husbanded, for there is no needless irritation to chafe his temper by day, or spoil his sleep at night. He has no more to bear than what Dr. Johnson called "the natural force of the evil" of his superannuation. And when he is gone, survivors will not have to put away the impression of his latter days, in order to think of his life as, on the whole, it deserves.

No doubt it may be objected, that this is requiring from the aged exactly what they are disabled from doing. This would be true if it was proposed that the failing should choose their course at the moment of failure, and hold it from choice when the power of choice is gone: but the actual suggestion is the widely different one, that the resolve should be made in anticipation of the need, and the habit of amenableness formed in good time. I cannot help thinking that such a purpose and such a habit may spread their influence far into the season of infirmity, and generally carry the meek philosopher through in safety and honour.

There will be little difficulty about passing the latter hours pleasantly if there is wisdom enough to follow a natural course. Let the aged person read or be read to, however soon he may forget. This is not a time for getting knowledge for use; but why not for pleasure? The chief delight will always be in old poetry—old divinity—old music—old history: but if there are new discoveries—new views—which can be understood for the moment, let them be enjoyed, even if lost again in an hour. The object is the calm entertainment of each passing day: no use beyond this need be considered; and here, as usual, the most thorough humility is the completest wisdom.

I need not speak of the opposite condition. The fret and passion of imbecility, unchastened by self-control, are speedily fatal to the worn-out frame. Apathy may last long; serenity is highly conservative in its influence; and folly and self-love together create a constitutional irritation, under which the low vital powers soon give way. It is a dreary and terrible mode of dying. The contrast of the two courses taken by old age is the contrast between the child under possession at the foot of the Mount, and the sleeping child which the old sage set before him,

for his daily admonition and solace. No one can say that he has no power of choice between the two.

Beginning with the earliest stage of life, and ending with the latest, I have pointed out some of the causes of the needless mortality, and the prevalent imperfection of health, for which society is answerable. Slight and superficial as my treatment of the subject must be in a series of essays like these, I believe I have exhibited facts enough to show that we have all something to do in checking untimely death, both in our own persons and in those of our neighbours.

If half the thought and sentiment that are spent on the subject of Death were bestowed on the practical duty of strengthening, lengthening, and ennobling Life, we should be more fit to live worthily, and die contentedly. Let us prepare the way for the next generation to try whether it is not so.

HUSBANDRY.

CHAPTER I.

OUR FARM OF TWO ACRES.

TERRAIN AND TILLAGE.

HALF a century ago there was a good deal of sauciness in the temper and manners of people who had the management of land. The great landowners were introducing improvements; the small farmers were giving up an unprofitable game; and the large farmers—trusting in the Corn-laws—claimed to have their own way, did not care to study their art, unless they lived near Mr. Coke or the Duke of Bedford, and laughed at everybody who attempted tillage on a small scale.

This sauciness brought out William Cobbett, with his strong spirit of antagonism, to contradict every insolent saying, and almost every received maxim of the class; and he broadly and positively declared that a cow and pig could be kept on a quarter of an acre of land. He explained in detail how this might be done; and a great number of people have followed his instructions, finding, for the most part, that though the thing might be practicable for one year, or occasionally at intervals, it is not true that, one year with another, a cow and pig can be kept on a quarter of an acre of land. Since the repeal of the Corn-laws great changes have taken place in the general mind as to what quantity of land will and will not repay the efforts of the husbandman. The prodigious improvements which have been introduced into agriculture have benefited small properties as well as large; and the same science and art which render it good economy to expend thousands of pounds on the tillage of a large farm enable the intelligent husbandman to obtain from a few roods an amount of value which nobody but Cobbett dreamed of in the last generation. We do not know that the regular "small-farming" of a former century has as yet revived

among us ; the competition of the holder of thirty or fifty acres with the tenant of a thousand : but the experiment of making the most of two or three acres is at present one which attracts a good deal of attention. There are few signs of the times in economy and social affairs more thoroughly worthy of the interest it has excited.

There are two classes of persons, broadly speaking, to whom this experiment is of consequence—the husbandman who lives by his land, and gentry, especially ladies, who happen to have a little ground attached to their dwellings, from which it is just as well to derive comfort and luxury, or pecuniary profit, as not. Two remarkable and very interesting statements have been published on the part of these two classes ; and I, the present writer, am about to offer a third, in order to render the presentment of the case of miniature farming complete.

John Sillett, the Suffolk shopkeeper, who forsook the shop and took to the spade, recovering his health, and maintaining his family in comfort on two acres of land, has given us his experience in his well-known pamphlet of seven years ago, on "Fork and Spade Husbandry." The great extension of Freehold Land Societies affords to a multitude of townsmen in England the means of leaving town-industry for rural independence, as John Sillett did, if they choose to work as he did ; and it seems probable that a future generation may see a revival of the order of peasant proprietors in this country which was supposed to have died out for ever. As to the other class to whom small-farming may and does answer, we have just* been presented with an agreeable description of their case in the little volume called "Our Farm of Four Acres, and the Money we made by it." In my opinion the book is somewhat too tempting. The statements, each one no doubt perfectly true in itself, will require some modification when taken to represent the first six years, instead of the first six months of the experiment ; but the narrative is so fresh and animated—the example of enterprise and energy is so wholesome, and the scheme of life is so wise, that the book must be a real boon to a class of society which sorely needs such aid ;—the class of gentlewomen who have not enough to do. We hear a great deal of the penalties of an unnatural mode of life endured by single and widowed women in confined circumstances, who pine away their lives in

*1859.

towns; and we see many who do not suffer from poverty, losing health and energy for want of interesting occupation. If that book should induce only one in a hundred of these languid women to try a country life, with the amusement of a little farming in a safe way, it will have been a blessing to our generation.

John Sillett's experiment was one of fork and spade husbandry exclusively. That of the ladies on their Four Acres was an experiment of grazing, almost exclusively. Mine is one of an intermediate order. I do not derive the subsistence of a household from my two acres; nor do I keep cows and pigs on the easy conditions of a plentiful allowance of grass and arable land, with the resource of a Right of Common, to serve at every pinch. I am obliged to keep a considerable portion of my little plot in grass; but my main dependence for the subsistence of my cows is on fork and spade husbandry. Thus, like the ladies, I keep cows for comfort and luxury, to which I may add the serious consideration of creating a subsistence for a labourer and his wife; while, with John Sillett, I obtain the value of the ground and animals chiefly by tillage, instead of merely gathering in the expensive commodity of grass. The case is this:—

I bought a field, in order to build myself a house, in a beautiful valley in the north of England. The quantity of land was somewhat less than two acres and a quarter, of which more than half an acre was rock. On the rocky portion stands the house, with its terrace and the drive up to it, and little oak and sycamore and ash copses behind and flanking it. An acre and a quarter was left in grass, which I at first let for grazing for £4 10*s.* a year. Enough ground was left for a few vegetable and flower beds, which the women of the household took such care of as they could. At the end of a year from our entrance upon our pretty house in the field, the state of things was this. The meadow was a constant eyesore; for the tenant took no sort of care of it. His cow was there, rain or shine, without shelter or shade, and usually ill, one way or another. The grass was lumpy and weedy. Sheep burst in through the hedge on the south boundary, that hedge being no business of mine, but belonging to the tenant on the other side. It was a broad, straggling, weedy hedge, which harboured vermin, and sent showers of seeds of pestilent weeds into my garden ground;

and as sure as my cabbages began to grow, the hungry sheep—sharpset as they are in March—made their way in, and ate off a whole crop in a night. It cost me from 6*l.* to 10*l.* a year to hire an occasional gardener, by whom the aspect of the place was barely kept decent.

At the same time, my household were badly off for some essential comforts. The supply of milk in our neighbourhood could never be depended on; and it failed when it was most wanted—in the travelling season when the district was thronged with strangers. During that season, even the supply of meat was precarious. Fowls, hams, eggs, butter, everything was precarious or unattainable; so that housekeeping was, in the guest season, a real anxiety.

Becoming nearly desperate under difficulties which townsfolk scarcely dreamt of, I ventured upon the experiment—more bold twelve years ago than now—of using my own patch of land for the production of comforts for my own household. I have made this explanation because I wish it to be clearly understood that I did not propose to *make money* by my miniature farming, and should never have undertaken it with any such view. I could not afford to lose money. The experiment must pay itself or stop. But, here was the land, with its attendant expenses; here were our needs and discomforts; the experiment was to make the one compensate the other. At the end of twelve years, I find that the plan has been unquestionably successful, though some of the estimates of the first two or three seasons have been modified, and an average of agricultural mishaps has occurred, as if to render the enterprise a fair specimen. It has, on the whole, been sufficiently successful to attract a great deal of notice, and influence some proceedings in the neighbourhood; and, therefore, as I conceive, to justify my adding one more illustration to those which already exist of the benefit of making the most of a small area of land.

The first essential was a labourer. I obtained one from an agricultural county, as spade husbandry was a thing unheard-of in my own neighbourhood. He brought his wife; and his wages were at first 12*s.* a week, out of which he paid the low rent of 1*s.* 6*d.* per week for his cottage; a model cottage which I built, with the cow-house adjoining, for 130*l.* These stone dwellings last for ever, and need few or no repairs, so that money is well invested in them; and I regard as a good investment the money

afterwards laid out in a hay-house, a little boiling-house, a root-house, two fowl yards, and a commodious stone dwelling for the pig. My man's wages were raised by degrees; and they are now 14*s.* a week all the year round, with the cottage rent free. The wife has the use of my wash-house and its apparatus, and opportunities of earning a good deal by means of them. In case of my scheme not answering, there was a certainty that the cottage and other buildings would let at any moment, with the land; while their quality would not deteriorate with time, like that of brick or wooden buildings.

The other requisite preparations were tanks for manure, implements, and some additional fencing. Two tanks, well cemented within, and covered by heavy stone lids, receive the sewage and slops of every kind from the house, cottage, and cow stable; and a larger tank, among a clump of trees in a far corner of the field, receives the sweepings of stable and stye, and the bulk of the manure. The implements are spades, an elastic steel fork, hoes, rakes, a scythe, shears, and clippers, a heavy roller for the meadow, a chaff-cutter, a curry-comb and brushes for the cows' coats; troughs, milk-pails, and the apparatus of the boiling-house and dairy; to which were afterwards added a barrel on wheels to receive soap-suds and other slops at back doors for the liquid manure pit; a garden-engine of large powers, and a frame and hand-glasses for the kitchen-garden. About a third part of these implements were necessary for the mere gardening which we attempted so unprofitably before we had a labourer on the premises.

I am not going to speak of our dairy affairs now; I will do so hereafter; but my present subject is the tillage of the soil: and I will therefore say no more here about cows than that we began with one, and finding that we could keep two for almost as little trouble as one—the stable and the man being provided—I rented another half acre adjoining my field, at 1*l.* 15*s.* a-year, and kept two cows, thus securing a supply of milk for the whole year. We produce food enough for about a cow and a half, besides vegetables and fruit for the household, and find it answer to buy the requisite addition to the winter food, as I will explain at another time.

Here, then, we were at the outset, with simply our cow-stable, pig-house, and tanks, and an acre and a quarter of ground on which to work, to produce food for a cow and pig, besides

household vegetables; fettered also with the necessity, that, on account of the view from the windows, at least three-quarters of an acre must remain in grass, the most expensive of all conditions. We pared off the corners, and laid them into the arable part, in the first instance, so as to leave the grassy area just three-quarters of an acre. To finish with the pasture first, the treatment it requires is this: Before the winter rains, we give the grass a good dressing of guano every alternate year, or of bones broken, but not to powder, every third year. Early in winter the whole is strewn with manure from the tank, and a compost heap we have in a hidden corner of the new half-acre. At the end of February this is raked away, and the meadow is bush-harrowed. A month later it is well rolled and weeded, if any noxious weeds, such as oxeye daisies, or bishop's weed, are found rooted in it. If any moss appears after long rains it is treated with lime. This care is well repaid by the beauty of the surface and the value of the grass. The little spot is conspicuous for its greenness when all the rest of the valley is of a uniform hay colour; and there is no hay in the neighbourhood to compare with ours. The cows eat off the first growth in April. It is then shut up for six weeks or so for hay, and is mown towards the end of June, when it yields nearly three tons to the acre. We do not exhaust the ground by mowing it twice, but allow the cows to feed it pretty close till November. After two winters we found that the anxiety of keeping such hay stacked in a rainy climate was more than the thing was worth; and I therefore built a hay-house, and was only sorry that I had put it off so long. Knowing what the plague of rats is in such buildings, I adopted the only perfect security—that of using such materials as no vermin can penetrate. The floor was flagged as carefully as a kitchen-floor, and slate stones went deep into the ground below the flags. A few years later, when a winter inundation penetrated every place in the levels of the valley, and wetted our hay, I granted a raised wooden floor to the entreaties of our farm-man: and there our hay and straw keep perfectly well in all kinds of winters.

Hay, however, is an extravagant kind of food for cows; and ours have it only for variety, and as a resource when other things fail, and when they calve, or happen to be ill. Our main dependence is on roots and vegetables, straw and condiments. As this was nearly a new idea in the neighbourhood, we were

prodigiously ridiculed, till our success induced first respect and then imitation. It was a current maxim, that it takes three acres of land to feed a cow; and this may be very true in the hill pastures, which are mossy and untended. Our milk would cost us sixpence a quart, it was said—we were starving our poor cow—we were petting our cow, so that she was like a spoiled child—such were the remarks till events silenced them, and people came to see how we arranged our ground, so as to get such crops out of it. We constantly gave in explanation the current rule: "the more manure, the more green crops; the more green crops, the more stock; the more stock, the more manure." And by degrees the true principle of stall-feeding and spade-tillage became clear to all inquirers.

Our soil is light,—not very deep (lying above slaty-stone) sufficiently fertile, and easily treated, but so stony in parts as to dismay a labourer from a clay or sand district. The neighbours advised my man to cover up the stones, and think no more of them; but we concluded that it would be better to make use of some of them. We dug deep where the garden paths were to be, and filled in the stones, so as to make drains of all the garden walks. Others went to mend the occupation-road which runs along the field, and through the half-acre. On the south side, and in the half-acre, there is scarcely a stone, and the tillage is perfectly easy. Our way is to dig two spits deep, straight down, manure richly, and leave abundant space between both the plants and the rows. Hence our fine roots, and our weight of produce.

I need say nothing of our garden tillage, except that, with the exception of winter potatoes, we obtain an abundant supply of vegetables for a household of four persons, and their occasional guests. All common fruits become more plentiful every year. This being understood, we are here concerned only with the food for the cows and pig. In summer we sow cabbage-seed,—being careful about the kind, as the common cow-cabbage spoils the milk and butter. A kind between the Ham and Victoria cabbage is by the Norfolk people considered the best. The young plants are pricked out in early autumn, some hundreds per week for six weeks, to secure a succession next year. They should be eighteen inches apart, in rows a yard apart: and if they can be allowed to keep their places till they weigh ten or twelve pounds apiece, they of course afford a great

bulk of food for the animals. Anywhere above four pounds is, however, worth the ground. The rows being placed so wide apart is to allow of the sowing of roots between them.

In April and May we sow turnips (Swedes especially), carrots (particularly Belgian), and mangold in the centre of the spaces left; and, by the time the root crops have been thinned, and are past the danger of the fly, the cabbages are fit to be cut. The alternate ones are taken first, and light and air are thus let in freely. The cabbages begin to be very substantial about mowing time, and fill up all intervals till November; that is, while the grass is growing after hay-making, and between the first, second, and third gathering of the mangold leaves. It is the fashion now to discourage the thinning of the mangold: but we find the roots rather the better than the worse for the process. If they were not, we could still hardly spare the resource of those three leaf crops; but the fact is, no such mangold as ours is grown anywhere near; and strangers come to look at it, both in the ground and in the root-house. We now devote the arable part of our rented half-acre to this root, except when it is necessary to grow grain for a change, which happens every third or fourth year; and this last year we obtained about six tons of mangold from a quarter of an acre. It keeps admirably; and our cows were still enjoying it a month before Midsummer. There is an occupation-road through the half-acre which produces only grass; and the same is true of a strip running its whole length, under a row of noble ash trees, which of course prevent all tillage under their shade and within the circuit of their roots. The arable portion amounts, in fact, to hardly one-third of an acre.

We early obtained a small addition to our territory in a rather odd way. After we had suffered from two or three invasions of sheep through the great ugly hedge, I received an occasional hint that the neighbouring tenant wished I would take that hedge into my own hands. Seeing no reason why I should trouble myself with such a vexatious and unprofitable piece of property, I paid no attention to the hints: but my farm-man at length intimated that he could make a good thing of it, if I would let him demolish the hedge, which he would undertake, except felling the pollard-ashes, with his own hands. He was sure the contents of the hedge, and the ground we should get by it, would pay for a good new fence. It did indeed pay.

We had firewood enough for more than one winter, and a good deal of soil; and we gained a strip of ground about three feet wide, the whole length of the field. Moreover, my neighbour obtained the same quantity, to the great augmentation of his friendship for us. The new fence cost 9*l.* It is a crosspole fence—the only kind which is found effectual here against the incursions of sheep. They leap upon a wall; they burst through a hedge; they thrust themselves through a post-and-rail fence; but they can get no footing on a crosspole fence; and only the youngest lambs can creep through the interstices. The material used is split larch-poles; and those who object that such a fence is not durable, must have omitted the precaution of tarring the ends which enter the ground. With that precaution it may last a lifetime; and it is easily mended if a pole here and there should go before the rest. It occupies the smallest portion of ground—is no hindrance to air and sunshine, and is remarkably pretty. When covered with roses, as mine is for the greater part, it is a luxury to look upon, reminding travellers of the rose-covered trellises of hot countries,—as in Louisiana, Damascus, and Egypt. We were so delighted with it that I carried it along the bottom of the field, where also I was not chargeable with the care of the fence. I see strangers come in and examine it, and try to shake it, as if they thought it a flimsy affair for a farm, even on a miniature scale; but I believe it will outlast the present generation of inhabitants, human and quadruped.

It will be necessary to give some account of our live stock and its produce before we can form an estimate of profit or loss on the whole scheme of my little farm. Meantime, we may say thus much:

Twelve years ago, we saw about our dwelling an acre and a quarter of grass, in unsightly condition, grazed by a sickly cow; a few beds of flowers and a few more of vegetables—the former not well kept, and the latter far from productive—and, for the rest, a drive and little plantations, and slopes rarely neat, and always craving more care than we could give. For the grass I obtained, as I said, 4*l.* 10*s.* a-year; and, to an occasional gardener, I paid from 6*l.* to 10*l.* a-year. In connection with these particulars, we must remember the housekeeping troubles—bad butter, blue milk, and thin cream; costly vegetables which had travelled in the sun; hams costing 1*l.* at least; eggs at 1*d.* each, and fowls scarce and skinny; and all this in a place

where the supply of meat is precarious at the most important time of year.

The state of things now is wonderfully different. The whole place is in the neatest order conceivable ; the slopes are mown, and the shrubs trimmed, and the paths clean ; and the parterres gay, almost all the year round. With only three-quarters of an acre of grass, we have about 12*l.* worth of hay ; and part grazing for two cows for six months of the year. We have roots to the value of about 8*l.* a year, exclusive of the benefit of their green part, which affords several cwts. of food. Then, there are the cabbages for the cows, which, in favourable seasons, have afforded the staple of their food for three or four months. In southern and eastern counties they would be a more ample and certain dependence than in the north. Then for the house, we have always had an over-supply of vegetables (except the winter store of potatoes), the surplus going, rather wastefully, to the pig. Beginning with cress, and radishes, lettuce, and early potatoes, and going through the whole series of peas and beans, turnips and carrots, spinach, onions and herbs, vegetable marrow and cucumbers, cabbages, cauliflowers, and broccoli, up to winter greens, we have abounded in that luxury of fresh-cut vegetables which townspeople can appreciate. All the common fruits follow of course. The comfort of having an active man on the premises, ready for every turn, is no small consideration in a household of women.

All these things have been created, we must observe—called out of the ground where they lay hid, as it were. This creation of subsistence and comfort is a good thing in itself ; it remains to be seen whether it is justified by paying its own cost. This we shall learn when we have reviewed the history of our Dairy and Poultry-yard.

CHAPTER II.

OUR FARM OF TWO ACRES.

DAIRY AND BACON.

"I SHOULD have said you would be more humane," observed a London friend to me, "than to shut up your cows. I could not have believed you would be so cruel."

A few minutes' conversation made a wonderful difference in this benevolent lady's impressions. She was a thorough Londoner, and knew nothing of cow tastes and habits. With the ordinary human tendency to fetishism she regarded cow-life from her own point of view, and pitied my Meggie and Ailsie for not seeing the lovely landscape as they lay ruminating. The argument may be shortly given. Granting that the so-called "natural condition" of animals is the happiest, which may not be true in the quadruped any more than the human case, it is impossible at this time of day to put our domestic cattle under the conditions of the primitive life of their race. When they roamed our island wild they could shelter themselves from the noonday heat in the forest, and escape the flies by getting into the water; whereas, when once cows are domesticated, there is an end of forest shade, and of recourse to lakes and rivers; and the question is, whether something better is not given. Taking the winter into the question, there can be no doubt about the matter. Lean cows were slaughtered in autumn, and salted down for winter food, in old times, because there were no means of feeding them during the interval between the late and early grass; and, as for those which were spared from the slaughter, we know what their wildness from hunger was by the end of winter. The cows on a small farm (or on a large one either) cannot have open woods and waters to resort to; and, if sent out to feed, have a half-and-half sort of life, the superiority of which to stall-feeding may be questionable. They have neither the natural nor the artificial protection from heat and flies, and their condition is less equable than that of

the stall-fed cow. In high summer they may be very fat and sleek,—too fat to be perfect milkers; but in early spring they are meagre, ragged, and half dry, when the stall-fed animals are nearly as sleek and prosperous as at any other season.

Every observer remarks on the good plight of my cows when those of the neighbouring farmers are turned out upon the fells in spring: and, during the summer, if Meggie and Ailsie happen to be out towards noon, they turn into their stable of their own accord to escape the flies and enjoy the coolness. The test is the health of the animals; and, by all I have been able to learn, stall-fed cows, properly managed, live longer, give more milk in the long run, have fewer illnesses, and are better tempered than those which are treated in the ordinary method of our old-fashioned farming. When Cow Life Insurance societies become as numerous as they ought to be, their tables will soon show whether stall-feeding is favourable to life and health, or the contrary. Meantime, the world is grievously in want of agricultural statistics in that department, as in every other.

I may remark here, that the ladies who tell us of their four-acre farm, and all other farmers, large and small, will be wise to insure their cows' lives, if any well-established society for the purpose exists within reach. At this season in 1858, when I lost a cow for the first time, I should have been very glad of such a resource. The few shillings per year for each cow are worth paying, if never wanted back again: for the peace of mind is a main feature in the bargain, as in the case of life and fire insurance. One of the finest and healthiest young cows I ever saw, which had calved prosperously a year before, calved in June, 1858, in the midst of the thundery weather which then prevailed. The storm burst just after; my poor cow sank down, and never got up again. This was a case of sheer accident: no management could have prevented it; and the appropriate consolation would have been receiving her value from an Insurance Society if I had had the opportunity.

Country residents who know how often the familiar petition comes round on behalf of the cottager or small farmer who has lost a cow or two, can bear witness to the policy of establishing such a society in every rural neighbourhood, and taking care of its being founded on a safe basis. The subscriptions now given on petition would be better bestowed on such a foundation. Good would be done, and ease of mind afforded, all round; and after

ten years or so, the collective records would yield some very valuable knowledge as to the life and health of farm-stock.

The combined experience of a neighbourhood or district must surely lead to an improved medical treatment of animals. The greatest drawback on small farming is the helplessness of the proprietor when a cow or a pig is ill. It requires to be on the spot to believe the nonsense that is talked on such occasions in retired villages, and what passions are called into play. A few months after I began, I was told that my cow was ill. The local doctor was sent for, and he gave his verdict and instituted the treatment. But I could make nothing of the matter at all —neither what ailed the cow, nor whether it was serious, nor even whether she might die. By the bustle and solemnity, and my man being seen to brush away tears when my back was turned, I augured the worst; but I do not at this moment know how far she was in danger. The report was: "'Tis the worm in the tail, that go all along her back and up into her head, so that her teeth are loose, and she can't properly eat." She was bled in the tail, dosed with physic, fed with meal, and rubbed, and in a day or two she was quite well. Other alarms of the same kind have occurred since; and the sense of blank ignorance in one's self, and of the quackery of those who pretend to know more, while the suffering animal is sinking before one's eyes, is decidedly the most disagreeable experience of rural life in my case. And then, if one asks a question, or demurs to bleeding (from which a cow rarely recovers completely), or proposes any simple method, or fails to send for the local oracle, or, worst of all, sends for a real veterinary surgeon too, there is an astonishing outburst of passions. Doctor and farm-man quarrel: "The lady may cure her own cows"—"Nobody will set a foot on the premises if new notions are to be tried"—and so forth. Happy they who live within immediate reach of a qualified veterinary surgeon! In the absence of such a resource there is, I believe, no doubt whatever that the simple rules and facts of homœopathic practice are the greatest possible boon. The operation of that method of practice in the case of cattle and horses is too remarkable to leave room for question, I understand, among those most opposed to it in the human case.

I have said all the harm I have to say of my first cow. She was a rather large but very pretty short-horn, of the local kind. It does not do for small farmers to try many experiments with

different kinds of cows: and it is generally safest to be content with the local sort. I live too far north for Alderneys, which ladies often incline to, to their cost in the long run; but I hoped much from a cheap, hardy little Kerry cow, such as I have known to be very profitable in the midland counties; but she did not answer. Meggie, however, my first experiment, served and pleased me well for six years. I gave 15*l.* for her at six years old, and she was valued at 7*l.* when I exchanged her at the end of six years. Thus, spreading her prime cost—viz., 8*l.*—over the six years, together with 4 per cent. interest on the 15*l.*, she cost me, as a purchase, 1*l.* 18*s.* a-year.

The cost of her maintenance cannot be given with equal precision, because her food was as various as we could make it, and it is impossible to estimate the value of every article we grew. But we can ascertain within a narrow margin how much Meggie cost, and how well it answered to keep her. The proper amount of food for a milch cow is not less than 70lb. per day—a fatting bullock requiring about 90lb. For stall-feeding we must reckon the winter as lasting five months, in our northern counties. Each cow, therefore, must have four tons of roots and one ton of hay, with a few extras, such as I will presently mention. Allowing for calving-times, exigencies, and indulgences, throughout the year, we purchase about a ton of hay for each cow, in addition to our own crop. I pay a pound or two here and there in the neighbourhood for grass and brewers' grains, and buy Thorley's cattle-food, an occasional load of straw, and a little meal at calving-times. In ordinary seasons, the bought food may be set down at about 10*l.* for each cow. Her share of the man's wages may be reckoned at one-third, or 11*l.*, and of the cost of tillage at 1*l.* 10*s.* The extra manure, beyond her own yield, is about 1*l.* 5*s.*, and her share of the cost of utensils and their repairs, 1*l.* 5*s.*, and of the interest of the capital invested in her stable and all the accessories by which she benefits, 1*l.* 10*s.* I think this is all that Meggie can have cost me.

As for her produce, there was the annual calf, which brought, if a bull-calf, only 5*s.*, and if a wye (cow-calf), a guinea at the end of a week. She gave us, on the average of the year, ten quarts of milk per day. After calving, she gave sixteen quarts or more for a time; to set against which there was the decline and dryness before calving; so that we reckon the average at ten quarts. Her manure is already set off against her food.

We have not here the London prices, which so brighten the accounts of the Four-Acre farm. We must reckon the new milk at 2*d.* the quart, and butter as averaging 11*d.* per lb. Our lowest price is 8*d.*, and the highest 1*s.* 3*d.* Reckoning the produce as milk, it brings 30*l.* 8*s.* 4*d.* per cow, for the year. I might magnify it by reckoning a part as butter; but I wish to be on the safe side, and will, therefore, put our sales and gains at the lowest.

COST OF EACH COW.	£	*s.*	*d.*
Food bought	10	0	0
Attendance	11	0	0
Tillage	1	10	0
Manure	1	5	0
Utensils and repairs	1	5	0
Interest on capital	1	10	0
Prime cost and interest	1	18	0
	£28	8	0

PRODUCE OF EACH COW.	£	*s.*	*d.*
Milk	30	8	4
Calf (average)	0	13	0
	£31	1	4
Cost	28	8	0
	£2	13	4

This small surplus may be set apart to meet accidents; and thus Meggie just paid her own expenses, leaving to me and my household the satisfaction of seeing man, wife, and animals maintained, the place rendered fertile, and ourselves supplied with rural luxuries which were not to be had for money.

Afraid of the responsibility of inducing any rash experiment, I have rather over-estimated than underrated the expenses, and made the very least of our gains; and it must be remembered that in the neighbourhood of London, or any other large town, the expense of food and wages would be the same, while the sale of produce would bring in about one-third more.

The mode of life of a stall-fed cow is very simple. By 6 A. M., at latest, in summer, and 7 A. M., in winter, her stable should be cleaned out,—all liquids swept into the drain and tank, all solids barrowed to the large tank down the field, and powdered charcoal, or Dr. Smith's Disinfectant, deposited where most needed.* A plentiful supply of air has been provided

* We find Dr Smith's Disinfectant of such value that my farm man says he would on no account be without it for a day. We get it from Mr. McDougall, Manchester, and find it preferable even to powdered charcoal.

during the night by the opening of some of the windows, of which there are three. A small window in the roof, opened by a cord, secures the escape of foul air. The stable, being close to the cottage, is well warmed in winter. We find the cows do better without litter than with any kind we have been able to try. Cocoa-nut fibre mats were presented to me for trial, when it appeared that fern, haulm, and straw, tempted the cows to eat their litter; but the mats were too warm, and the animal's hoofs grew long and became brittle. A smooth surface of cement or asphalte appears to answer best, provided it is kept in thorough repair, and made sloping in the slightest possible degree, so as to allow liquid to run off, without fatiguing the cow by depriving her of a level standing-place.

The cleaning of the place being done, the next thing is the milking; and then the breakfast; and then the rubbing down of the animal. Her coat should be first curried, and then brushed every day, and her legs—particularly the hind legs—well rubbed. Her coat ought to be as glossy as that of a horse; and if she is not thoroughly freed from dirt, she will be restless in her eagernes to rub herself against wall or post on every side. Duly dressed, she lies down to ruminate in calm content.

In summer, when the hay is growing, she has cut grass, more or less every day. We get it from sundry patches on our own ground—from strips under the trees, from the slopes, the borders, and three-cornered bits in angles of the garden, and from the ditch, hedge, and road in the half-acre; and also from any neighbour who will let us have it for the cutting, or a trifle over. There is some every day, till the cows can turn out after the hay-making. Meantime, there are the last of the mangold roots, and there is chopped straw dressed with Thorley's cattle-food, which is a great comfort as a resource, when food is scanty or precarious. The tradition of our district, of the eagerness of the cattle of the monks of Furness after the ash and holly sprays on the mountains, guides us to another resource. A cow will brave many obstacles to get at the young sprays of the ash; so we crop ours from the pollards. The same with nettles in their season. We must not suppose these things bad food, because *we* should not like them. Brewers' grains are another resource. Cows are very fond of them. When the roots are done, the cabbages are coming on; and then many helps arise; the thinnings of the growing turnips and mangold, and after-

wards their crops of leaves. These things, with the ever-growing grass, carry us on to November, when the last cabbage is eaten, and the pasture must be manured. Then begins the winter routine. The cinders from the house, and a penny sack of shavings from the bobbin-mill light the boiler fire, which keeps the food warm for the day. The turnips are eaten first, because they do not keep so well as the mangold. A cwt. of turnips per day is rather more than two cows want, if there are carrots for them, or cut straw, with Thorley's food. The roots are sliced and boiled with the straw. The secret of giving turnips without fatal damage to the cream and butter is to pour off all the water, and give the roots dry, with fresh water to drink, of course. The hay is the dessert—given dry if the cows prefer it so. To keep their teeth in use, they may have a mangold root or two in the course of the day—"to amuse themselves with," as the man says. They have three regular meals in the day, and something more during the longest days. In winter, they settle well for the night after six o'clock.

Our dairy is in rather an odd place—under the library. It is the place of most equable temperature on the premises; the coolest in summer, and the warmest in winter—being a part of the cellar blasted out of the rock, and its windows nearly level with the garden ground outside. It is fitted up with slate-stone shelves, and leaded cisterns for the milk. We have tried various new devices—glass, earthenware, and wood; but we find that the cream rises better in the old cisterns, lined with lead, than under any other circumstances. Our butter rarely gives any trouble in the making; and, since we fairly learned the art, it has had an excellent reputation. We do not often obtain so much as a pound from one quart of cream; and we are satisfied that this quantity cannot be got on an average of seasons and of cows; but on occasion we obtain it. The pig has the buttermilk and what skim-milk we do not use for our bread and cakes, nor sell. The consumption of cream in the household is not small. We relish it with our fruit and otherwise. We like custards and trifle and fruit-creams and white soups; and, now it is understood to have the properties which make cod-liver oil so much the fashion for weakly people, we agree how far preferable the domestic article is to the imported, and indulge largely in the medicine, ill or well.

It should not be omitted that our keeping cows is a social

benefit. The troop of children coming for milk, morning and evening, is a pretty sight. I have added to the advantage of the supply that of requiring ready money for it. In old-fashioned places, where money matters are irregular, and long credits cause perpetual mischief and frequent ruin, and where some of the gentry give away milk to people perfectly able to pay for it, it is a social service to insist on both paying and receiving ready money. My cook is therefore charged with the dairy concerns, and upheld by her employers in giving no credit. Before we learned the ways of the place, customers who could afford strong drink and fine clothes went into debt to us for milk up to nearly 1*l.*, and then went to another dairy. It was no better kindness to them than to ourselves to allow this: and, now that our rule is inflexible, as to paying and being paid, we have no difficulty, except when, at times, our cows are to calve at too short an interval, and the supply runs short, and the customers "are fit to tear us to pieces," as cook says, for what we have to sell.

There is not much to tell of the pig. We bespeak one of a good breed each spring and autumn, bringing him home at from six to ten weeks old—old enough to keep himself warm and comfortable. His cost is then from 15*s.* to 25*s*, according to the state of the world in regard to pig-keeping. Before the potato-rot, one might get for 10*s.* such a pig as afterwards cost 20*s.* Our pig's house is a substantial stone edifice, cool in summer and warm in winter, with a paved yard for eating, exercise, and basking in the sun. The pavement should come up every few years, and the soil below should be removed for manure, and new laid. A liberal use of disinfectants will be repaid by the health of the pig and the content of the neighbours; and there is no more valuable manure than the disinfectants which have done their work of purification. The house and yard must be kept swept and clean, and the straw frequently renewed, and then the animal itself will have good habits. Pigs are not dirty when they have any encouragement to be clean. Ours is washed every week, in warm soap and water, and well scrubbed behind the ears and everywhere, to its great ease and comfort. A highly economical remark of my man about this part of his work was, that he scrubbed the pig on washing days, because the soapsuds did just as well for manure after the pig had done with them, "and that," said he, "makes the soap serve three times over."

Buttermilk, skim-milk, refuse vegetables, kitchen-stuff bought for sixpence per week, grains now and then, and any coarse food rendered nutritious and delectable by Thorley's food or malt dust being sprinkled over it, keep our pig in health and happiness till he has accomplished the first six or seven months of his life. Then he must be fattened for three weeks. The more he is induced to eat during that time, the more profitable will he be; and his food must be of the best kind. Opinions differ as to whether oatmeal or barley-meal answers best. Our belief is that a mixture is the true thing. The barley is cheaper, and requires a month to produce its effect: the oat is dearer, but requires less than three weeks. It is the better, however, for being qualified with the barley; and we use them half-and-half, till the pig has had sixteen stone, costing £1 4*s*. His weight when killed is, on the average, twelve stone, which has fetched, within my experience, from 5*s*. to 7*s*. 3*d*. per stone. Our money gain, after all expenses are deducted, may thus vary from £1 to nothing on the pig; but the privilege of well-educated bacon, and hams of high quality, is no contemptible one, as will be owned by doubting and scrupulous purchasers of pork in towns. We and our friends can enjoy our sausages, pork-pies, hams, and bacon without drawback; and the value of the two latter in the commissariat in a region where the very legs of mutton in the butcher's shop have to be divided between urgent petitioners in the season, cannot be described.

No party is better pleased than the man in charge,—unless it be his wife. He buys half the pig at wholesale price: has his bacon cheap; and can, if he chooses, sell the ham at a great profit in the season. We kill our pork in the first days of November and the last of March.

There remains the produce of the poultry-yard to make out our bill of fare. That story is too long for this place, and must be told in another chapter.

CHAPTER III.

OUR FARM OF TWO ACRES.

THE POULTRY-YARD.

In order to make money by poultry, in any proportion to the attention given to them, the speculator should be either a capitalist who provides an extensive apparatus for the supply of fowls and eggs to a neighbouring community, or a cottager or small farmer who can rear fowls in a chance-medley way, on what they can pick up for themselves. As I am neither a professional breeder of poultry, nor a cottager, nor yet a small farmer in the ordinary use of the term, I cannot and do not expect to make money to any notable extent by our fowls and ducks. As I have already intimated, the object is security against famine, where a whole neighbourhood depends on the justice and mercy of one butcher. When I relate that at an inn not three miles off, forty-five couples of fowls have been killed in one day, from the beef and lamb falling short of the demand, it will be easily conceived that it is no small comfort to be supplied, at all events, with eggs and bacon, fowls and ham, within our own gates. The country people would like very much to see the Queen among our mountains. They would give her a dinner of eggs and ham, and set her on a pony, and show her everything. It is certain beforehand what her diet would be if she came *incog.* At the little country inns,—each the sole house of entertainment in its dale or waterhead,—you always know what you will have.

"Can we have dinner?"

"O, yes."

"What can you give us?"

"What you like."

After inquiring in vain for beef or mutton, we are told,—

"But there's ham, and there's eggs."

"Very well: and what else?"

"Why there's eggs; and there's ham, and bacon."

If the Queen came unawares to some dwellings which are not inns, there might, in the height of the season, be the same bill of fare, and no other. The value of the resource must be the measure of our gain, under such circumstances; and not the money we make.

It becomes an increasing wonder every year why the rural cottagers of the United Kingdom do not rear fowls, almost universally, seeing how little the cost would be, and how great is the demand. We import many millions of eggs annually. Why should we import any? It seems as strange as that Ireland should import all its cheese, while exporting butter largely. After spending the morning among dairy-farms in Kerry, you have at dinner cheese from London: and, in the same way, after passing dozens of cottages on commons or in lanes in England, where the children have nothing to do, and would be glad of pets, you meet a man with gold rings in his ears, who asks you in broken English to buy eggs from the continent. Wherever there is a cottage family, whether living on potatoes or better fare, and grass growing anywhere near, there it would be worth while to nail up a little pent-house, and make nests of clean straw, and go in for a speculation in eggs and chickens. Seeds, worms, and insects go a great way in feeding poultry in such places; and then there are the small and refuse potatoes from the heap, and the outside cabbage leaves, and the scraps of all sorts. Very small purchases of broken rice (which is extremely cheap), inferior grain, and mixed meal, would do all else that is necessary. There would probably be larger losses from "vermin" than in better guarded places; but these could be well afforded, as a mere deduction from considerable gains. It is understood that the keeping of poultry is largely on the increase in the country generally, and even among cottagers; but the prevailing idea is of competition as to races and specimens for the poultry-yard, rather than of meeting the demand for eggs and fowls for the table. The pursuit is an excellent one, and everybody rejoices at the growth of such an interest: but the labourer and his family are not benefited by it, as a steady resource, as they might be by a constant succession of commonplace eggs and chickens, to be sold in the next town. As for any farmer who grows grain and has a homefield and a barn, he must be badly off for wife or daughter if he cannot depend on his poultry for a respectable

amount of annual profit. We remember the exultation of a German settler in a western state of America, in speaking of his rise in life, shown by his "fifty head of hen." Perhaps it is not necessary to go so far as the prairies to acquire a stock in trade, —not so large, indeed, but profitable in equal proportion.

The least advantageous way of rearing fowls is just that which is now under our notice—that of a lady's poultry-yard on a small bit of land in a populous neighbourhood. The fowls cannot have full liberty; they must not trespass on the neighbours; and they are grievously trespassed on by the neighbours' cats and dogs. Yet the experiment answers in our case soundly and thoroughly, through the care and interest invested in the enterprise by my companion. She has worked through many difficulties, and raised the project to paying point, and beyond it, to the comfort of the household, her own great amusement and that of her guests, and the edification and benefit of the servants.

Our average stock is twenty hens, two cocks, five ducks, and one drake. Our accommodation will not allow any large increase of our average. The ducks are uncommonly fine specimens of the Aylesbury breed. One cock is Cochin-China: the other of some common sort which makes less impression on strangers. A visitor lately met the Cochin-China sultan in the drive, and was so prodigiously impressed as to take off his hat to his majesty, who is indeed too heavy to be often met out walking.

The ducks were a present, some years ago, and the silk stocking has become worsted, and perhaps silk again, in the interval, from the changes necessary to keep up the vigour of the stock. Besides substituting a new drake every three years or so, we exchange some brood-eggs every season with some neighbour who has the same breed. We have not conveniences for rearing any great number of young ducks, and prefer selling the eggs, of which we have above 600 per annum. We kill a few ducks for our own table, reckoning their value, not at the London rate, but at 2*s.* 6*d.* each. In London, 7*s.* a couple would be asked for ducks which would not have two-thirds of their substantial merit when brought to table. Our duck eggs are in great request for poaching, and puddings, and custards; and well they may be, for their cubic contents must be nearly double those of ordinary hens' eggs.

It might be difficult to say which is cause and which effect in regard to our having two cocks and two poultry-yards. The double arrangement is desirable in every way. There should always be opportunities for separation and seclusion, in that community as in every other. For instance, the favourite aversion of the drake is his own ducklings. He would destroy them every one if we did not separate them from their passionate parent. The whole feathered colony is, at times, so like the Irish quarter in a port town, with its brawls and faction fights, that imprisonment or banishment is occasionally necessary, on the one hand, and an accident-ward for the victims on the other. We have one roosting-chamber in the upper part of the coal-shed, and the other in the upper part of the pig-house, each opening into its own yard, and having its ladder without and its perches within. In the small enclosures, made of trellised wood and wire netting, are pent-houses for the nests, which should always be on the ground, for the sake not only of the convenience of the sitting hen, but of the vigour of the brood. The shallow troughs for food and pans for water make up the rest of the apparatus. The places should be swept out several times a week, and strewn with some disinfectant in hot weather; and there should always be soft soil enough for the hens to make dust-baths in, and gravel enough to afford them pebble diet, according to their needs. There must always be a little heap of lime in some dry corner, if the egg-shells are to be worthy of their contents.

So much for what may be called the retreats or refuges of the fowls: but their lives cannot be passed there. So we found. They must have a further range. The best plan, where space can be afforded (which is not our case), is to lay out for the fowls a long strip of grass fenced with wire—a regular Rotten Row for their daily trot, race, or stately walk. As the nearest approach we could make to this, we fenced in with galvanised wire netting the belt of plantation which adjoins the lower fowl-house. There they have room to run and make dust-baths, and strut in the sun or repose in the shade at pleasure. A deep trough is sunk there, and filled with water for the ducks when they must be kept at home, and for the ducklings, which are not allowed to range the meadows, because such liberty is almost invariably fatal to them. Whether it is any particular food, animal or vegetable (we suspect a particular slug), or other

dangers—as entanglement in the grass and weeds, cramp, enemies, or what not—it is very rarely that ducklings survive an attempt at a roving life. After witnessing every accident now stated, we believe the deleterious food to be sufficient reason for keeping the broods at home till they are well grown. The drake and his hareem spend the day abroad for several months of the year, going forth into the meadows—where they make a serviceable clearance of slugs—in the morning, after laying, and coming home in the evening for their supper. While the grass is growing for hay, we are obliged to keep them at home; and it is necessary to watch them when young vegetables are coming up and fruit is ripening. Nobody would believe without seeing it how high they can reach with their bills when currants and gooseberries hang temptingly; and in their love of strawberries they vie with humanity. After being kept at home, the ducks relax in their laying, and their feeding is expensive; but they really seem to go on laying longer every year: so perhaps we may train them, in course of time, to be "equal to either fortune."

For the sake of the young chicks, we have yet one other enclosure at the service of the fowls. There is a pretty little quarry below the terrace and orchard, from whence the stone for the terrace-wall was taken. A little wire fence is now drawn across the entrance, and the young broods and their mothers have it to themselves.

Such is their mode of life. As for what they live on, we make their food as various as possible, as in the case of the cows and the pig. The most expensive of all food we find to be barley *au naturel*. Not only is a considerable proportion thrown about and wasted, but much that is swallowed is never digested. We, therefore, give it as a change and indulgence; and by no means as the staple of their food. Indian meal is the best staple, according to our experience. It is well scalded, that the swelling may be done before it is swallowed instead of after—thus avoiding various maladies and perils from over-eating. Broken rice well boiled is good to a certain extent. Malt dust is a valuable resource. The demand is becoming so great that it will probably soon cease to be a cheap food; but while it remains so, it is a real boon, both to the fowls and their owner. They will eat almost anything that is sprinkled with malt-dust; and a 6*s*. sack of it goes a long way. A certain proportion of

green food, and also of animal food, is indispensable. Lettuce-leaves, turnip-tops, cabbage-leaves, celery, should be thrown to them. They should have access to grass, to pick seeds and insects; and it is well to put a fresh sod into the poultry-yard whenever such a valuable thing can be spared. All the worms and insects that come in the gardener's way should be presented to them; and, when insects are scarce, scraps of raw meat, minced as fine as pins' heads, should be given. Add finely chopped egg for infant chicks, and I think the bill of fare is complete. As for the peppercorn, which old wives recommend as the first thing to be swallowed, we reprobate the notion as we should in the case of any other new-born creature. In fact, it irritates the crop very mischievously, if it gives out its savour: and if it does not dissolve, it is nothing.

We do not find it necessary to make distinctions of seasons in hatching broods, as some people do. We like beginning early; but we know what we may expect from frosts and storms in March, and are content with what we get. If we have not a pretty full school by June, we shake our heads: but some July broods have been as fine and complete as any others on our list. An autumn brood or two—even a late one—is valuable; for the chickens are short-legged, and make excellent sitters.

By careful management, my companion has succeeded in distributing the moulting over a considerable space of time, and therefore in obtaining eggs in early winter. We have them now throughout the year. We lay by a hundred or more in lime water in the most plentiful season, for puddings in the time of scarcity; and then our small supply of November and December eggs is disposable for invalids, or other neighbours anxious to secure the delicacy.

Under this mode of management, our fowl account has stood thus for the last two years.

In 1857, we paid for food 17*l.* 1*s.* 8*d.*; and for improvements in the hen-house, 1*l.* 15*s.*; that is, our expenses were 18*l.* 16*s.* 8*d.*; eggs and fowls used and sold were worth 18*l.* 4*s.* 2*d.*; ten chickens and one young cock in stock, 1*l.* 5*s.*; making 19*l.* 9*s.* 2d.; which shows our profit to have been 12*s.* 6*d.*; in 1858, the cost of food was 16*l.* 8*s.* 2*d.*; and of improvement of stock, 11*s.* 9*d.*; together making 16*l.* 19*s.* 11*d.*; while our sales and use yielded 17*l.* 10*s.* 6*d.*; our profit, therefore, being 10*s.* 7*d.* London prices

would have enriched us mightily; for we had 3,039 eggs, and killed sixty-three fowls (including a few ducks). Within a dozen miles of the General Post-Office, our produce would have been worth above 30*l.*; but it must be remembered that, in regard to our domestic consumption, we have the benefit of the country prices. As it is, we have a balance on the right side, instead of the wrong, after all accidents and misfortunes are allowed for.

Those accidents are not only vexatious but grievous. The finest young cock we had ever reared was found dead and stiff one morning. His crop, alas! was full of ivy-leaves, which he had reached and snatched from the wall of the house, by some vigorous climbing out of bounds. Chicks, and even hens, now and then are cramped by change of weather, or other mysterious causes. If observed in time, they may be recovered by warmth, friction, and apparently by the unaccountable influence of the human hand: but if they hide their trouble they will be found dead. A stray duckling may lose itself in tall grass as in a jungle. A chick may be found drowned in an inch or two of water in a pan. At one time a hawk haunted us, and we either missed a chicken occasionally, or found it dropped, with a hole in its breast. Rats are to be expected wherever a lake or river is near; but they are easily disposed of by taking up a flag, and, when their runs are traced, putting down strychnine on bread and butter. Nowhere but under pavement should that poison be placed, because it may be swallowed by some other creature than a rat: but in a subterranean way it is very useful. We have never made war in that way, as some people do, against the sparrows and chaffinches, which really are a nuisance. Where a house is covered with ivy and climbing-plants, and sheltered by copses, and where fowls are fed in the open air, freebooting tribes of birds will be encroaching and audacious. We fear that a large portion of our good meal and grain goes to glut our enemies in the ivy and the trees. But what can we do? We make nets to cover our sprouting vegetables and ripening fruit; and that is all we can do. But about the accidents. The worst are from prowling cats. The ladies of the Four Acres lost eight chickens by cats in one night, and we have lost eight chickens by cats in one day. Such a thing as the destruction of poultry by the neighbours' cats ought never to happen when it is once known how easy prevention is. We educate our own cat, and

that at the cottage; and if the neighbours would do the same, there would be an end everywhere to the loss and discontent and ill-will which arise from this cause. When a cat is seen to catch a chicken, tie it round her neck, and make her wear it for two or three days. Fasten it securely; for she will make incredible efforts to get rid of it. Be firm for that time, and the cat is cured. She will never again desire to touch a bird. This is what we do with our own cats, and what we recommend to our neighbours; and when they try the experiment, they and their pets are secure from reproach and danger henceforth. Wild, homeless, hungry, ragged, savage cats are more difficult to catch; but they are outlaws, and may be shot with the certainty that all neighbours will be thankful.

My entire poultry-yard, except a few of the old hens on the perches, was in danger of destruction by an accident one summer night, and was saved by what I cannot but consider a remarkable exercise of energy on the part of my companion, M——. Few persons in the north of England will ever forget the thunder-storm on the night of the 24th of July, 1857. At 11, P.M., the rain came down in one sheet, instantly flooding the level ground to the depth of more than a foot, and the continuous thunder seemed to crack on one's very skull, while the blue lightning never intermitted for two seconds for above an hour. The heat was almost intolerable. Our maids, however, who keep very early hours, were sleeping through it all, when M—— escorted me (very feeble from illness) up-stairs, settled me with my book in my easy-chair, and bade me Good-night.

Presently I drew up a window-blind, to see the lightning better from my seat. In the midst of its blue blazes there was, more than once, a yellow flicker on the window-frame which I could not understand. I went to look out, and saw a yellow light whisking about far below, sometimes in the quarry, and then mounting or descending the terrace steps. It was M——, saving the fowls. She would not allow the maids, who were stirring enough now, to go out straight from their beds into the storm; and she knew it was useless to call the man from the cottage, who was a mere encumbrance on critical occasions. In fact, he and his wife were at that moment entirely persuaded that the end of the world was come. It was no form of speech, but their real conviction; and it could not have been asked of them to care about ducks and chickens. The maids were lighting

a fire in the back-kitchen, and strewing the floor with straw, while M—— was out in a dress which could not be spoiled, lantern, basket and apron. Some of the hens and chickens were too cramped to move, sitting in the water. Some were taking refuge in the shrubs. Two ducklings were dead, and two more died afterwards. M—— went again and again, and to both the poultry-yards, and brought up forty fowls,—all that were in danger, every one of which would have been dead before morning. Of course she had not a dry thread about her, nor a dry hair on her head; but the wetting was a trifle in comparison with the bewildering effect of the thunder and lightning in such a midnight. She did not suffer for it more or less, and our poultry-yard was saved. The poor fowls were dried and rubbed, and made comfortable on their straw. A few were delicate for a little while; but only five died in all. It was not the pecuniary loss which M—— dreaded, but the destruction of her whole school of dependents, and the total discouragement which must have followed such a catastrophe. If the deluge had destroyed the colony that night, we should have had no more to tell of our poultry-yard. As it is, we have contemplated the proceedings of our hens and broods ever since with a stronger interest than ever before.

When a neighbour here and there said, "*I* would have let all the fowls of the air perish before I would have gone out on such a night," we think these friends of ours have yet to learn the pleasure and true interest of a rural charge, like that of a poultry-yard.

This is an impression often renewed in regard, not only to the poultry-yard, but to all the interests involved in a genuine country life. The ladies of the Four Acre Farm tell us of a visitor of theirs who could not conceive that women who can make butter could care for books. She wondered at their subscribing to Mudie's. This is, to be sure, the very worst piece of ignorance of country-life and its influences that I ever read of; but it is only an exaggeration of a sentiment very common in both town and country. Some country as well as town gentry may say to us miniature farmers, "What is the use of so much doing for so little profit? A few shillings, or a few pounds, or a certain degree of domestic comfort and luxury,—this is all; and is it worth while?"

"No, this is not all," we reply. When we say what more

there is, it will be for others to decide for themselves whether it is worth while to use small portions of land, or to leave them undeveloped. It is a grave and yet a cheerful consideration that the maintenance of our man and his wife is absolutely created by our plan of living; and it is worth something that the same may be said of several animals which are called into existence by it. As for ourselves and our servants, our domestic luxuries are the smallest benefit we derive from our out-door engagements. We should under no circumstances be an idle household. We have abundance of social duties and literary pleasures, in parlour and kitchen; but these are promoted, and not hindered, by our out-door interests. The amount of knowledge gained by actual handling of the earth and its productions, and by personal interest in the economy of agriculture, even on the smallest scale, is greater than any inconsiderate person would suppose; and the exercise of a whole range of faculties on practical objects, which have no sordidness in them, is a valuable and most agreeable method of adult education.

Whoever grows anything feels a new interest in everything that grows; and, as to the mood of mind in which the occupation is pursued, it is, to town-bred women, singularly elevating and refining. To have been reared in a farm-house, remote from society and books, and ignorant of everything beyond the bounds of the parish, is one thing; and to pass from an indolent or a literary life in town to rural pursuits, adopted with purpose, is another. In the first case, the state of mind may be narrow, dull, and coarse; in the latter, it should naturally be expansive, cheery, and elevated. The genuine poetry of man and nature invests an intellectual and active life in the open universe of rural scenery. If listless young ladies from any town in England could witness the way in which hours slip by in tending the garden, and consulting about the crops, and gathering fruit and flowers, they would think there must be something in it more than they understand. If they would but try their hand at making a batch of butter, or condescend to gather eggs, and court acquaintance with hens and their broods, or assume the charge of a single nest, from the hen taking her seat to the maturity of the brood, they would find that life has pleasures for them that they knew not of,—pleasures that have as much "romance" and "poetry" about them as any book in Mudie's library. "But the time!" say some. "How can you spare

the time?" Well! what is it? People must have bodily exercise, in town or country, or they cannot live in health, if they can live at all. Why should country folk have nothing better than the constitutional walk which is the duty and pleasure of townsfolk? Sometimes there is not half-an-hour's occupation in the field or garden in the day; and then is the occasion for an extended ramble over the hills. On other days, two, three, four hours slip away, and the morning is gone unawares: and why not? The things done are useful; the exercise is healthful and exhilarating,—in every way at least as good as a walk for health's sake; and there is the rest of the day for books, pen, and needle. The fact is, the out-door amusements leave abundance of time, and ever-renewed energy for the life of books, the pen, and domestic and social offices of duty and love.

Let those ladies whose lot it is to live in the country consider whether they shall lead a town or a country life there. A town life in the country is perhaps the lowest of all. It is having eyes which see not,—ears which hear not,—and minds which do not understand. A lady who had lived from early childhood in a country-house politely looked into my poultry-yard when it was new, and ran after me with a warm compliment.

"*What* a beautiful hen you have there;—what beautiful long feathers in its tail!"

"Why, S——," said I, "that is the cock."

"O—oh—oh!" said she, "I did not know."

Mr. Howitt tells us somewhere of a guest of his who, seeing a goose and her fourteen goslings on a common, thought it must be very exhausting to the bird to suckle so many young ones. To women who do not know a cock from a hen, or green crops from white, or fruit-trees from forest-trees, or how to produce herb, flower, root, or fruit from the soil, it would be new life to turn up the ground which lies about them. Miniature farming would, in that very common case, not only create the material subsistence of the servants employed, but develop the mind and heart of the employer. This, and not the money made, is the true consideration when the question arises,—What shall a woman do with two or four acres?

CHAPTER IV.

THE WEATHER AND THE PRICE OF FOOD IN 1860.

Our knowledge of the causes of Weather is so superficial and so narrow, that we are exposed to embarrassments and dangers from our ignorance in that department, as the ancients were in that and many others. We say sometimes how strange it must be to have lived in the early times, when men understood next to nothing of the heaven above or the earth beneath, or of the workings of nature all around them! How like guess-work their ways of living and seeking a living must have been! and how their daily life must have been made up of accidents!

It is a wholesome check to our vanity of knowledge, that we are almost as helpless as the most ancient people in everything that depends on meteorology. We are trying to learn, by means of observations made all over the world. We can explain something of the order of nature about hot and cold weather, about calm and windy weather, and about rainy and dry weather; but we are nearly as much at the mercy of accidents in regard to the production of our food as our forefathers of the remotest generation.

The practical good that we have gained by study and improvement in the application of science to the arts of life is considerable; but it does not affect our actual slavery to the mysteries of the weather. We have learned that we may save the lives of many hundreds of fishermen every year by putting up barometers for public use in our fishing-stations all round the coast. The fishermen, at first scoffing or timid about such venturesome ways of fore-reading the will of Providence, are becoming very glad to be warned of approaching storms. We have just bethought ourselves that we may as well use our electric telegraphs in giving notice all over the country of any considerable storm in any one direction; because, as we are beginning to understand the laws of storms, and can tell what

course any hurricane is sure to take, we are able to give warning of the danger to threatened places. All this is a great gain; and so is all agricultural art which renders us less dependent on weather. A hay-making machine, which finishes off in eight hours the crop which must otherwise take the risks of the weather for three or four days, and perhaps lie spoiling for a month, is a great advantage: and so is the reaping-machine, for the same reason: and so are all methods of draining, irrigating, and preparing and using the ground which render rain, and frost, and drought less injurious than they used to be. But, after all, we remain at the mercy of that mysterious and all-powerful abstraction which we call the Weather, for our very existence, because we depend upon it for our food.

It still happens, as through all recorded time, that in countries in the temperate zone, at least, the seasons come in batches of good or bad. We read of five or seven years of good weather and plenty; and of five or seven years of bad weather and scanty crops; and we ourselves have heard our fathers tell of such groups of seasons in their time; and we can remember some ourselves, unless we are very young. But however we may have advanced in science, we have no more power over the seasons than the Hebrews and the Pharaohs had in Egypt. Joseph had the good sense to lay by stores in the good years to avert famine in the bad; but he could not control the causes of the difference: and this is just our case. We can be on our guard against adversity; but we have no means of encountering such a drought as that of 1859, or of stopping the rains of 1860, and turning the cold storms into warm sunshine. We all probably have an idea that it will be otherwise hereafter. Meantime, it is exceedingly interesting, and it ought to be very cheering, to look forth from the level of our common ignorance of the causes of seasons, and compare the consequences of them, as seen formerly and now.

The inhabitants of more countries than one have lately been apprehending a scarcity of food for man and beast,—the last and the present year having been unfavourable to the production of grain, roots, grass, and therefore animals for domestic consumption. The danger seemed to threaten our own country particularly; and our condition is something like this.

For several years before 1860, the rain-fall had been much under the average; so that for two or three autumns at least

there had been difficulty in watering the cattle. In some parts of the country the graziers and farmers had to pay by the gallon for water from a distance,—paying also as much as 1*s.* 6*d.* a day toll for the passage of the water-carts. The weaker cattle gave way, or were got rid of under these difficulties; and thus we began the last winter with a diminished stock. The drought had seriously affected the hay and root crops, so that the farmers hoped for an early spring as the only chance for keeping up their stock. But, before the root crops were half got in, the October frost overtook them. Some perished in the ground, and some in the pit or stack. I will not dwell on the miseries of the following winter and spring. The story of them will go down to remote generations in our rural districts. It is enough to say, that the mortality among cattle and sheep has been beyond example in modern times.

We heard of 2000 sheep in one flock being actually dying of hunger, after the owner had bought every kind and amount of food he could procure from the ports. In some markets hundreds of dead lambs were offered for sale at threepence a-piece. In places where farming goes on on a smaller scale, it was dreary to go from homestead to homestead, and look into the yards. In one you might see two horses lying dead, after having gnawed the bark of three or four trees so as to destroy them. In the next there lay the skins of five cows—the whole stock of the owner. In the next case you might find the place empty, the farmer having sold off all his animals early, while somebody would buy. In another house you would find dismay and horror. When the last scrap of fodder was consumed, the owner had turned out his herd of thirty cows into the wood to pick what they could find: and by the next morning nearly all were dead, from having cropped the yew trees. When the cows could not be kept, the bulls were not likely to be preserved; and in many districts there is now scarcely a bull within many miles; and the charges are so high that the cows are kept in milk; and thus the prospect of increase is narrowed for next year. This is in some small degree met by the behaviour of some of the people in the villages who do not yet understand their case and prospect. They have clamorously refused to pay an increased price for milk; and in some places have entered into a combination to leave off milk till the farmers will sell it at the ordinary price. While heaping defiance and abuse on

the farmers who have suffered so much more heavily than themselves, these recusants have discovered themselves to be the weaker party. The farmers have quietly ceased to sell milk at a price which would not pay, and have reared more calves—foreseeing that meat must become very dear. Where there are children milk cannot be long refused, and for some time past there has been a thronging to the farm-yards, and a scramble among people with their money in their hands, eager to pay the high price they refused when the milk was brought to their doors.

As the year wore on the prospect did not improve. All stocks of food being exhausted, the new grass was looked for with extraordinary eagerness; but never did it seem so slow in growing. The mortality of cattle and sheep became greater than ever at the time when it had been hoped that they would be grazing in comfort. Before June arrived it was plain that the hay crop, on which our prospects for 1861 so largely depend, would be far below the average. Everywhere one might see lean beasts feeding where the grass ought to be then in flower for cutting; or, worse, trusses or cartsful of immature grass cut for the beasts in the yard: showing that, for the season, the only way of getting on was "from hand to mouth," leaving the future to take care of itself. What prices became in this state of affairs I need not remind my readers. For some time past Londoners have talked of the phenomenon on all occasions, in all companies; and in the country the prices have risen nearly, and the anxiety quite, as high.

To deepen the anxiety, the prospects of the harvest were dark up to the last moment. A burst of fine weather averted some of the apprehended mischief: but there must, at best, be such partial failure as must bring the image of scarcity distinctly before the minds of the people of England.

Here, then, is the moment for looking back to former scarcity, in order to derive a lesson about that which is to come.

At the opening of this century there was a great scarcity. At that time, when the population of England and Wales was only three times as much as that of London is now, the labouring classes ate more meat in proportion to their numbers than our present labourers do, though the condition of the latter is, on the whole, much improved. In the scarcity of sixty years since, the complaint was that beef and mutton were 9*d.* per

pound, and butter 2*s*. These prices were supposed to put meat and butter beyond the reach of the poor; but they had not the resource of wholesome bread. The quartern loaf was 1*s*. 10*d*.; and the quality was bad. Agriculture was in such a backward state that the new proposal to manure the soil with dressings advised by Sir Humphry Davy and other competent judges was received with mockery and anger by the landed interest, and the crops were left to the caprice of the season. There are men living who remember the loaf of those times—the hard pinching of the poor to get a loaf at all; and then the look of it! When the outside crust was broken the inside poured out, looking like the contents of a cup of dirty paste. None but the starving could swallow it. In middle-class families the bread was one-third potatoes; and the poor took to the nettles by the wayside—not as a delicate dish of greens, composed of young shoots, as Soyer's cookery-book advises, but pulled up, or cut whole, as the only thing that could be got to eat. Salt would seem to be indispensable in such a case; but the salt tax was then 15*s*. per bushel. In comfortable houses where servants were kept, families dined two or three times a week on shell-fish or herrings, or some cheap substitute for meat, and eked out their home-made bread with any substance which would mix with flour, and fill the stomach without injury. Parliament tried its hand at mending matters, as it had often tried before. A law was made against the sale of bread less than twenty-four hours old: and a Committee reported against selling flour or bread cheap to the poor, and against all lavish and needless consumption of it at the tables of the rich; and in favour of giving charity, legal or private, in the form of soups, rice, and good vegetables. The Lords recommended associations of gentry, who should solemnly pledge themselves to abstain as far as possible, in their persons and their households, from the use of flour, carefully adopting such substitutes as they could hear of. The poor, meantime, were thrown upon the poor-rate, which increased to four millions sterling in a population of nine millions. The farmers took their rates easily, as they were getting from 112*s*. to 120*s*. per quarter for their corn; but the shopkeepers daily sank into ruin. The working-men of the towns made their own rule, which the bakers would violate at their peril, that flour should be 3*s*. a stone and no more. When the result was disappointment, the angry populace rioted,

burned the militia rolls, broke to bits every implement which they fancied could supersede human labour, poached the game, mobbed the Irish who appeared at haymaking, harvest, or hop-gathering; skulked from the press-gang, or took the shilling from the recruiting-sergeant, leaving their families to the parish. Murders, thefts, coining, smuggling, poaching, rioting, became so frequent that prisoners were condemned to be hanged by the score in a day in a single court. When two-thirds were let off (to the weakening of the authority of the law), and the remaining third were strung up in a row on a market-day, the spirit of the populace became more and more brutalised. Wise men and good patriots said that the spirit of the English people seemed to have undergone some unaccountable and portentous change. Such was the operation of dearth from fifty to sixty years ago.

But we must remember that at that time we could not trade freely in food, corn or other. Our manufactures had not yet enabled us to trade abroad according to our needs. We lived under an ill-managed poor-law, itself unsuited to modern times, by which virtuous industry and economy were ruined, and idleness and profligacy rewarded. All articles of food were kept at an arbitrary price by the privileges of the landed interest, among which was an atrocious system of game preservation. The production of food was an unskilled department of industry. The labouring classes were then more ignorant, in proportion to the rest of society, than perhaps at any time before or since.

Now, again, Englishmen find themselves thinking about a scarcity; but under how much more hopeful circumstances!

The bad sign of the present occasion is, that there is still a notion abroad among some of the working-classes that the scarcity is artificial, and brought about by selfish traders for their own gain. It is true that, in all former times of difficulty, the populace showed the same tendency to ignorant suspicion and bad construction. They have fancied, at the time of an epidemic, that the wells were tampered with, and that the doctors poisoned the poor. When hungering they have hunted the authorities, or hanged the bakers. But in our age and country it might have been supposed that such mistakes had been outgrown. It is not so yet. We may hope that the time for violence has gone by; but the mistake about the facts

remains. Recent meetings at Bristol, Sheffield, and other places have shown us that much of the mischief of ignorance still exists to mar our efforts to repair our misfortunes. Some of the speakers at these meetings have uttered wild imaginations about provision dealers, jobbers, stock-owners, and others having put fancy prices upon cattle and sheep, and being enabled to do so by having "a monopoly." All this is very sad. It is sad that any of our citizens should not know what is meant by "a monopoly." They ought to be aware that the trade in cattle and provisions is open to everybody, and that foreign beasts and meat can be freely imported; so that there is no restriction at all in favour of the dealers, and to the disadvantage of the consumer. The dealers cannot put any price upon their articles greater than the public will give; and any one, or any dozen, who tried it would be immediately undersold by others. High as the price of meat is, it is the natural price under the circumstances of the season.

Beyond this one incident the case of Englishmen in the prospect of scarcity has a less gloomy aspect than at any time in the life of our fathers. The circumstances are more favourable, all round.

The improvement in agriculture is so great that the same area of cultivable land can feed twice the number that it did at the beginning of the century. The soil is itself improved by treatment, and the produce by improvement of the soil: and to this we must add the increased speed and skill in gathering the produce; so that what is a scarcity now would have been a famine in old times. Again, we can at this day buy food freely wherever it is to be had. Foreign countries are not now called upon to supply our needs in a vast hurry, and without preparation. The fertile lands of our colonists and our allies, all over the world, produce crops for our market, so that we are always sure of getting enough to eat, at more or less cost. It is true this unusual demand affects the money-market, and our own industry and commerce, so as to act very mischievously upon our fortunes; but this is something very different from the wholesale starvation which our forefathers had to apprehend after a bad season.

Again, our countrymen have now been well employed and well paid for a long period of time in their various departments

of industry; and they are, therefore, well prepared to meet a season of adversity. The poor-law, in its present state; affords a refuge for the helpless, without corrupting those who can work, and ruining the tradesman class. It is now a sound part of our institutions, instead of being the most ruinous of them all. Again, we are, as a people, better educated, more civilised, less likely to fly at one another's throats, when exasperated by suffering. We shall not suffer so much as formerly; we shall not aggravate our miseries by bad laws and arrangements: and we shall not rush into violence when good sense and patience are our only chance of getting through. We have no press-gangs to madden the fathers, husbands, and sons whom they may entrap: the recruiting sergeant is a very different person from what he was: and there is no temptation to make bonfires of militia rolls, or anything else. Smuggling has been extinguished by free-trade. Men have been too comfortable and busy, generally speaking, to be any longer prone to the brutal crimes which formerly multiplied as soon as beef and bread became dear. It is evident at a glance that our case is every way milder and more manageable than any case of impending scarcity ever was in former times.

Still, it is serious enough to require very grave, careful, and complete consideration. This consideration should include the two points of our Present Resources in the way of food, and the Prospect of the further interval, before new crops can have grown, and the mortality among the cattle and sheep have been repaired.

Such a thing was never heard of before as the price of wheat being moderate while a scarcity was known to be impending. Far on in the spring, when the prospects of the crops are usually discussed with some confidence, but when, this year, there was thick ice in the cattle troughs in the mornings, and snow lying on the hills, wheat was selling for from 45*s.* to 48*s.* per quarter. In every market the farmers were reporting badly of their wheat. In clay districts much land remained unsown: and elsewhere much was ploughed up. At the same time, last year's crop was turning out ill in the threshing. In former times these circumstances would have carried up the price of wheat to 60*s.*, 70*s.*, 80*s.*, or higher. I need not explain that the difference between former days and the present is

owing to free-trade in corn; and I need spend no words in describing the blessedness of the change.

Here, then, is the grand resource of all. The corn markets of the world are always open; and there we can get, at more or less cost, the wherewithal to feed our people, till the time of good harvests comes round again. The customary lowness of the price of wheat, and the slowness of the price in rising, is inducing more and more of our farmers to rely on other crops for their rent. In our great wheat-growing counties the change is becoming very marked; and it is owing to the secure and complete establishment of a trade in corn with the wheat-growing districts of the world.

And what is it that our farmers think of growing instead? More barley, more oats, and roots to a great extent—the object being to raise sheep and cattle. Here opens a prospect of a largely increased supply hereafter of animal food, to say nothing now of the augmented wool-supply for our manufactures. It will be a long time, however, before we obtain the promised beef, veal, and mutton: and we cannot buy meat from abroad ready for use from the continental cattle countries. The Denmark cattle which we import, require much feeding and tending before they are turned over to the butcher; and the deficiency of fodder, by which we lost our own cattle, prevents our entirely filling up the gap by live importation.

From another continent, however, we can procure meat ready for use. At the working-men's meetings I have referred to, the sensible suggestion to abstain from British meat was accompanied by a favourable mention of American beef and pork, which are to be had at *5d.* and *6d.* per lb. To all of us this ought to appear an inestimable boon. The meat is excellent when properly cooked; and no time should be lost in ascertaining how much we can get of it. The excellence of the Ohio pork is due to the same cause as the fame of the Westphalian hams—the diet of the swine. The beech woods of Ohio shower down mast enough to feed legions of hogs; and free trade now gives us the produce when, in our own markets, pigs of six weeks old are selling for 27*s.* to 30*s.* As for the American beef, when we hear of its being tough, we may be sure that the complainant does not know how to cook it. We have been kindly furnished by the highest possible authority with instruc-

tions on this head, which I will here quote as more to the point than anything I can say :—

"AMERICAN BEEF.

"*To the Editor of the Times.*

"Sir,—In consequence of the high price of provisions, the press has drawn the attention of the public to the American beef. As a great prejudice exists against it, resulting from the want of knowing how to prepare and cook it, I have thought that the following suggestions might be useful, if you would give them publicity.

"The American salt beef comes to this country in pieces from 8lb. to 12lb. in weight; before being cooked they should be well washed, and soaked in cold water for 24 hours, changing the water three times.

"For boiling it should be placed in a stewpan of cold water, and made to boil quickly; as soon as the water boils the meat must be taken out, the water thrown away, and fresh cold water placed in it, with the meat still warm; boil it the usual time, according to the description of joint.

"Baked or Roasted Salt Ribs of Beef.—Prepare the meat as above; make a paste of flour and water, cover the meat with it (as hams are done in many parts of England), and bake it in a slow oven for 20 minutes for every pound of meat; do not cut it when hot, and it is fit for the breakfast tables of incomes of 1000*l.* a-year.

"Stewed Salt Beef.—Prepare it as above, and cut it into steaks of the usual thickness; have some cabbage or other greens, ready boiled; chop them up, and, with the meat, place in a stewpan with a gill of water to every pound of meat, one teaspoonful of sugar to each pound, and a teaspoonful of pepper to every four pounds of meat; stew gently for two hours, and serve. The flavour of this may be varied by adding either carrots, potatoes, haricot beans, chesnuts, or boiled maccaroni, cut up into pieces about an inch long: and it may be flavoured with vinegar, mustard, or sauce, and, in fact, in many other ways, in order to give a change, and render it agreeable.

"This beef contains much more nourishment than the majority of that which is now sold in the London market.

"I am, sir, your obedient servant,

"G. WARRINER,

"Instructor of Cookery to the Army."

There is a still better beef than the American,—"primer pieces, and of better quality," as my authority assures me,—to be had from Galatz on the Danube. These are from the rich plains of Hungary, which can send us any amount we choose to ask for, after due notice.

I find it objected that the American beef wastes so much in the preparation for the table as to be anything but a cheap meat, after all. I have myself witnessed a waste of 3lbs. in 7lbs. and 3lbs. in 8lbs. But it should be remembered that there is waste also in beef cured at home, and wherever there is salt to melt, and get rid of. I have taken some pains to inquire into the facts; and I believe the truth to be that there is little difference in regard to waste between *the best* American and English cured beef, while inferior American meat is usually a bad bargain; and the beef from the Danube a very great boon indeed. In my own household the best American beef, procured from Liverpool, is found excellent, and its close fine grain makes it go so far as to render it a cheap meat at any time. Its cost, in the tierce, and after all expense of carriage, is 5¼*d.* per lb.; and it can be sold by an agent over the shop counter at 6*d.* If by waste it becomes 8*d.* or 9*d.* when cooked, we must remember that English meat would, on the same conditions, cost from 10*d.* to 1*s.*

If the aristocracy and gentry would take the hint to try the best imported beef and pork, it would be a great benefit to their neighbours. Every joint of English meat which they dispense with will be left for others who may want it more; while the superior cookery of their kitchens would prove whether this food might not be made as agreeable as it is certainly nourishing. We ought to prepare immediately for the greatest possible economy of home-grown meat, and a large consumption of all good foreign meat, for many months to come. The speakers at the meetings are undoubtedly right in their recommendation, though not exactly for the reasons they assign. They will not find that the withdrawal of their custom for a month, or for two or more months, will compel the provision dealers or stock merchants to lower their prices; but it will economise the existing supply, and spread it over a longer time, for the benefit of all parties.

It is clear that we should be looking after our supplies of meat without delay; for other nations are doing so, who have

suffered less than ourselves. At the very moment when I am recommending a recourse to imported provisions, one single house in London is preserving mutton for the Emperor of the French at the rate of 6000lbs. per week. The people of Paris are eating English mutton, while we are thinking about sending for Hungarian and American beef.

The next obvious resource is—fish. What can I say on this familiar subject, but that it is a bitter disgrace that anybody should suffer for the want of animal food while we live in the middle of the sea, and have winding coasts which might seem to invite us to live upon fish? At present, every citizen who has any authority or influence should exert himself for four objects: and, first, to see that the laws are observed all round the coasts, and along the rivers, for the protection of fish in spawn and young fry. Because the fishermen offend, and nobody looks after them, our supplies of herrings and other fish which come in shoals are perpetually dwindling away; and times and seasons and the meshes of nets must be looked to, if we are not to lose the resource altogether. Again, let our importation of fish be looked to at once. In April we heard complaints of the depreciation of British herrings by a vast importation of Norwegian herrings, while the high duties in France and Spain and other countries exclude our fish from their markets. There may be such a market at home this year as may make up for our exclusion from some foreign ones; and we ought to have every facility for importing. Again, let those of us who live on the coast see that an understanding is established between inland consumers and the fishermen, who are usually slow in hearing of public affairs. There ought to be no burying of tons of good fish in the sands, or rotting of them for manure, to keep up the price, under the notion that only gentry eat fish. Let every basket be sent by the nearest railway to some inland market. And, once more, let some pains be taken inland to get the fish under the notice and command of the classes who want it most. There are many small towns, villages, and populous road-sides, where the labourers never see or hear of fish, except as a luxury which comes to the squire's. A little zeal and attention on the part of public-spirited men would easily have brought mackerel into ten thousand cottages this dear spring, and may yet bring shoals of herrings among the labourers during any dear autumn which is to come. At best,

we shall not for a long time have nearly the quantity of fish that we ought: but let us have as much as we can.

Why do we buy eighty millions of eggs annually from the continent? and why are chickens and ducks reckoned a luxury in England and Ireland, when there might be poultry reared on every common and in every lane, and housed at the end of every cottage? Working men's wives and children manage to keep fowls in the alleys and yards of our great towns, finding them so profitable that they never eat eggs or chickens at home. If our rural labourers would take to this gainful enterprise at once, we might have a large addition made to our stock of animal food by this time next year. There are pigeons, again —not so substantial a resource, but well worth attention. Formerly, we should have been met by the objection that these creatures would consume more grain than could be spared in our present condition: but, besides that inferior grain answers for them, we are growing too wise to waste hard barley upon fowls while Indian corn-meal is to be had. It is not only a question of swelling the food before it is swallowed instead of after, but of the fowls getting the nourishment or going without it. The amount of hard grain which passes undigested is a serious consideration in the best times; and the practice of presenting the food in the most digestible state is fast superseding the flinging away of good barley to make mere manure.

In such a year as this the landlords ought to provide for a free sale of their rabbits. Every year the rabbits do the farmers more mischief than almost any amount of bad weather; and every year certain gamekeepers are understood to make two, three, or four hundred pounds each by the sale of this particular perquisite. We may believe this from the fact of one landowner having sold 40,000 rabbits in one year, after taking a farm into his own hands,—his tenant having thrown it up on account of the rabbits. The farmers ought, in such times as these, to use freely their right of taking the rabbits, wherever they have not foolishly parted with that right. There ought to be a sweep of the rabbits, whatever the gamekeepers may say,—both for the sake of present food and next year's crops. It will be objected that there is no getting at the creatures when they choose to hide. Well; let us have all that can be got at. We know that one gentleman got at 40,000 in one year. Let us see how

many more may be obtained by early watching in the mornings, and by all known methods.

As for game,—we shall have such an amount of poaching as has not been known since the great war, if the price of meat continues as high as we may expect. Something may come out of it. One year of actual popular hunger, or of any severe pressure for food, would put an end to the preservation of game in England. Sportsmen would be plainly directed to the Scotch moors and Norwegian rivers, and foreign or colonial hunting grounds for their amusement, while at home there would be a vast reduction of rural crime, and an important increase of food. The produce laid waste, over and above what is eaten, by game and rabbits, would feed herds of cattle and flocks of sheep; and it would never be allowed to lapse to the game when once a winter of hardship had driven our labourers into the covers for such food as could be got. Let us hope that the landowners generally are already turning over in their minds some such course as the Duke of Bedford and several others of their class took long ago,—not under the pressure of any scarcity, but from a sense of justice to the producers and consumers of food.

The duty is off cheese, happily. Cheese stands high in the scale of animal food, from its amount of concentrated nourishment. Let us, in short, consider what animal food of any sort may be imported at a popular price, and make known the facts.

The vegetarians have the chance of a great triumph at such a time as this, if they can prove their point. Let them show what they can do in the economy of food, as well as in providing the best available substitutes for meat. One suggestion of theirs is, that it is a criminal waste to make starch for the laundry from wheat and potatoes when there are substances, not eatable, which would answer the purpose sufficiently well. Horsechesnuts, the root of the common harebell, and the powder of the cuckoo-pint root, are among the substances indicated. We should consult our chemists as to various ways of economising the materials of food.

The vegetarians themselves, however, have not a very bright prospect. Potatoes and other roots are no more likely to abound than animal food. Do the wealthy consider whether the entire produce of their kitchen gardens is disposed of as it ought to be? I have seen some kitchen gardens made a blessing to a wide neighbourhood by the simple means of sending every spare

cabbage and turnip to somebody who would be glad of it; and I have seen others where the waste is enormous. Many roots of good vegetables are left to rot, or are stolen, or illicitly sold, or given to domestic animals, instead of appearing on dinner-tables all round the neighbourhood. Now is the time for a reform.

There is another thing to be done;—and it is for our country-women to do it. It cannot be effectually done in a day, or a month, or a year; but it may be begun to-morrow. Let the people of England be taught to cook. If we could obviate the waste from mere bad cookery, the service would be equivalent to a vast grant of food. Every lady, every retired cook, every good-natured housekeeper of any rank, who shall enable three or four labourers' wives or daughters to make the most of the food they have in the house, will be saving her country from a certain portion of calamity. Before the next batch of bad seasons, we ought to be secure from the disgraceful aggravation of ignorance about the treatment of our food.

I can now only just indicate what can be done in the direction of next season. It is clear that we must get, not only our corn, but our cattle-fodder from abroad, in proportion to our failures at home. Lord John Russell has promoted a system of inquiry of our consuls in countries which produce dates, carob-beans, and other nutritious products which are good for cattle, and relished by them. We must acquaint ourselves with all practicable resources of this kind, grains, meal, oilcakes, fruits, roots, &c. No less diligently must we look at home to make the most of every foot of ground, in compensation for the shortness of the hay crop, and the exhaustion of our reserve stores. Let us have winter vegetables for mankind, and the largest breadths of cabbages and early grasses ever seen for the cattle, as the roots are turning out ill for the winter, and the crisis of the spring may ruin us again. It is not too early now to be preparing for the weeks which precede a late grass-springing. The walls which straggle over mountain-sides in Cumberland and Westmoreland were first built to enclose crofts in which the ash and holly were protected, to protect in their turn the sheep and cattle on the Fells. The young shoots and sprays of the holly and ash were, as they still are, a favourite food of cattle; and so are the tender sprouts of the gorse. We need not disdain these as cattle food in hard seasons, if the cows themselves, in all seasons, seek them eagerly. We may now, too, learn to value the new

condiments by which coarse food is improved up to a very good value, in the estimation of beasts and owners alike.

Such are some of the considerations suggested by the misfortunes of the year. It seems to be the right course for all of us to look out all our resources, to communicate freely with one another, to understand the case before we blame anybody for it, to admit that demand, supply, and prices must hold their natural course; to be thankful that the conditions of our case are so much improved within the memory of one generation; and to be careful that they are improved still further by our own patriotism, and our regard for future generations.

CHAPTER V.

PEATAL AGGRESSION.

When I was travelling from Dublin to Galway, in 1852, it struck me that the economy of a bog was an interesting study. Here is its aspect, as it appeared to me.

Once upon a time, no one can say how long ago, there were, if wise men say true, broad shining lakes and smaller ponds in the middle of Ireland, where now there are no such lakes at all. The middle of Ireland is a mass of limestone, with heights and hollows which vary its surface in all manner of ways, from sea to sea; from the Irish Channel to the Atlantic. How this stone foundation is covered now, we may see by and by. Let us first look at it under its ancient aspect, as far as our very scanty knowledge enables us to do so.

First—some thousands of years ago—we see, from such a point of view as Kildare, ridge behind ridge of hills retiring to the north-west; and on these hills thick forests of oaks, beeches, elms, ash, and fir. These woods are terrible places for wolves. In the vales there are fresh green pastures lying between the lakes and ponds; and here cattle are seen grazing by day, and swine come out from the woods at evening, to pass the night near the dwellings of men. These dwellings are a sort of box, open at one side. They are made of oak logs or thick planks; with the roof flat and a sort of shelf laid all through the middle,

dividing the house of nine feet high into two rooms, each four feet high. Nothing being known of nails as yet, grooves and holes are made with a stone chisel; and the pieces of wood are fitted together, so as to make a strong box of twelve feet square, where the people may sleep, and find shelter in bad weather. It is not a place for cooking; and that is the reason why we see a little path, paved with stones, leading away from the dwelling to some place behind, where a smoke is rising from the ground. This place is the family hearthstone, made of freestone slabs, nicely laid. There are logs of wood burning; and in the ashes are roasting, if we are not mistaken, acorns, and chesnuts and roots. And what a quantity of nutshells one may see scattered about! It is late autumn, and the people are in a hurry, evidently, to get on with that strange work that they are doing in the middle of the water. What *are* they about, those strange little men, with their very small heads, and their dress of skins of beasts merely strapped about them, and their mallets—mere stones, with a wooden handle run through any accidental hole? Look at those two getting into their boat. Can one call it a boat—a mere skin stretched over a frame? Off they drift, like a couple of witches in a sieve. And what for? Are they beavers making a dam? They are driving in stockades, and plastering them with mud. They are certainly making an island: and there is a second artificial island! and far away, in the middle of that river to the north, there is a third. When they have made their circle of piles, they bale out the water, and put in stones, and wood, and earth, till they have an island high and dry. Very odd! when they have hills and green pastures ready made to their hands! Winter is coming, and they are afraid of the wolves by night, and, perhaps, of foes by day. See how they settle themselves, huddled together on the island, with their boats hung up to dry on the stockades.

What now? Music? A procession? It is either a wedding, or a royal feast, or something of that kind. What a glittering of gold! Look at the diadems of gold, and the curious round plates as large as the palms of my hands, fitting close to the cheek-bones. It is a becoming head-dress is it not? And so is the circle—like a twisted cord—of gold round the men's heads, and round their waists. Those ornaments, like cymbals, hung round their necks, and the heavy finger-rings of the same shape, and the neck-plates, are all very well to show how much

gold people can hang about them; but they are not very pretty. But you see these people have got hold of at least one metal. Of more than one? True! That man has a sword — a bronze sword — just like the old Greek. Their bronze will not bear an edge that will split or saw wood, I suppose; but it may give a very ugly thrust in a hand-to-hand fight. Has that little child got one? He seems to be flourishing a sword about. No; it is only a toy — a wooden sword; but it is just like the bronze one at this distance. Now they are going to feast. There are roasted animals steaming away! To think that the smell should be wafted to our nostrils across this great space of centuries! What a pity they have no salt, though! They do not seem to miss it. They might find some, not so very far off, if they had any longing for it. Hark! how the wild beasts howl from the forest, as the scent of the feast is borne on the evening breeze, and the fires from the islands shine broad and red over the surface of the waters. See by that light how the revellers are making a clearance, throwing the bones and refuse into the water over the stockade. That is one convenience, to be sure, of living on an artificial island. But I should be afraid that something useful—tools, arms, utensils, even people—would slip over now and then, and go to the bottom.

Look at that long string of wild fowl winging their way to the south, showing clear against the last red light of the western sky. Listen to the bustle of the wild swans in the sedgy creeks of the lake. Is that the raven's night cry, ringing hard, as from a solid firmament? Peep into the covert, and see what is doing there. Here are deer crouched down in the withering fern. I wonder they can sleep with foes so near. What shakes the ground as with the tread of Goliath? It is not a giant, with a pine-tree for his staff, that is coming from between the hills, but, as it were, a branching oak moving towards the water? Heaven and earth! What a creature! The elk of fable, beside which the cattle show like dogs, and the young fawns like mice. As it bends to the brink, what a shadow it casts far into the lake; and how the fishing-boats draw off to the further shore! Something humbler is it that you want me to see—something very small and mean? Is it the snake under the fallen leaves, or . . . it is under the water, you say. Is it the salmon, come up from the sea, lurking in its sandy cove

under the shadow of the bank? Is it . . . . Nothing of that kind, you say, but a very small thing, with a very small movement, which is destined to outlast and to bury all the living creatures we have seen, with their posterity, and even these oaks of a thousand years, rooted firm in the everlasting hills. And what is this very small thing? That little moss?—that tiny plant which the child with the wooden sword could pluck up with his finger and thumb? O yes; we will watch it;—for two or three thousand years, if you please.

Small and silent as it is, I see it does grow and work diligently. Here is where it began—here, where this water-hen's nest stopped the flow of this little drip into the cove. Here sprang the moss; and see how its filaments are now spread among all the vegetation on the bank, and how it is stealing out all along the margin of the lake, even covering its bottom for some way in. Already it intercepts and soaks up the smaller tributaries that feed the lake. Already it holds, as in a sponge, the water of the lake itself. By absorbing its supplies, and at the same time encroaching upon its bed, it is actually starving the lake. See, in half a century, it is perceptibly smaller; and instead of the sandy and pebbly beach, which was so pretty and convenient, there is now a margin of wet sponge, which it is not easy to cross. There is a natural bridge—that fallen tree: it was the little moss that gave us that bridge. That yew stood firm, a few years since. The soaking of the sour water about its roots loosened them, and down it sank by its own weight. Yes—you promised me that the moss should bury everything; and I see that it is creeping about the fallen yew—growing up among its branches. At the rate of an inch and a half a year is it growing? Then the poor yew will be soon covered up—away from human sight for ever. Not so? Are we to see it again? Well, time will show. But I see no oaks down, as you promised. Their turn is by and by, is it? Ay, I see that they are rooted differently from the firs and other inferior trees; they stand rooted each in its own hillock of gravel and firm soil: they may resist the moss for a good while.

But what is to become of this whole district, if the moss goes on unchecked? It is higher now than the surface of the lake. It is rising in the middle, and sending back the waters where there is no channel for them; so that they soak and loosen the

soil far and wide. The cushion is climbing the stockade, and will quite cover the island soon ; and nobody will resist this, for the place has long been deserted—there being no approach to it now but over a shaking bog, which is neither land nor water. The live cushion is creeping over the green sward where the cattle used to graze. Some of those strange old cattle, unwilling to give up their pasture, venture to pick their meals there still. There ! there goes one poor animal, down to death ! She was deceived by the greenness of that knoll, and, committing her weight to it, down she went—the deeper, the more she struggled in the slough, till the black mud closed over her horns. I am certain I saw that heavy oak shake. See ! down it goes, with a snap and crash, and a plunging sound as it buries itself in the wet moss. Its roots are still firm, you see : it was the trunk that snapped, and now it lies along on its bed of sponge, ten feet thick. Now that one is gone, more will quickly follow. I see now how the little moss may lay low and bury the mighty forest.

What now ? What is all this ? The little moss grows very greedy and impatient. What a slide there was ! Half an acre of parasitic soil pushing on over what was once the track of the royal boats ; and from the cracks and chasms a bubbling up of hideous black mud, rolling on and actually surrounding that old house that we saw building. The bog had long ago begun to grow up about it, but now it is to be buried in this pitchy stream of decayed vegetation. See how the mud fills up the house, and how it flows on to the hearthstone, and covers up everything, leaving only a level black surface, on which vegetation will soon again sprout and spread.

A century passes away, and the house is covered deep ; and the oak is hidden, both the scraggy root and the fallen trunk. The mossy surface is strong enough now to bear the tread of small animals ; and some one of them has dropped an acorn in a favourable spot, where it sprouts and grows ; so that an oak strikes root on a level considerably higher than the old one, even directly over it. There is a new layer of firs, and more are tumbled down from their places on the hills. There is a new race of people in the land, who do not suspect that there was ever a lake occupying the space usurped by the ambitious and devouring moss. These people wear steel arms and curious dresses, and have come from abroad ; and those unaccountable

round towers which appear here and there must, one would think, have been built by them. Then comes in another race, with iron armour and utensils, and new wars and ways. How generation after generation, race after race, comes to the edge of the moss, and tries to set foot on it, and draws back because it is a treacherous slough! And how they pursue their enemies to the shelter of the forest, and slay them and the wolves together! And how, when this is found dangerous and troublesome, they fell whole acres of the woodland, to destroy the harbourage of man and beast; and the moss grows and spreads, and rises all the while, to receive whatever falls from the hills, and swallow up all that lies at their base! Ah! there is to be a new prey for the cruel moss in consequence of this felling of the woodland. Fugitives, outlaws, rebels, must have a place of refuge. The limestone hills are laid bare, and a rough grass, which affords no shelter, is soon the only covering of the ridges. See how the hunted fugitives learn by necessity to walk where wolf and wild-cat would not venture! First, they shoe themselves with light boards or plates of wicker-work, and go fearfully into the swamp; but soon they learn how to pick their way from clump to clump of moss and heath, and can go best barefoot. They find out dry spots where they can hide their heads and kindle a sod to warm themselves, secure from being followed by armed men, whose weight would sink them. One has ventured, and presently sunk, stifled in black mud; there sticks his body, without other burial. Another has tried, and perished at once—drowned in dark brown water. Day by day, for scores of years, must their bones dissolve in the juices of the bog—the skull melting and evaporating, and the brain and muscle shrivelling up, and the skin turning to leather in this natural tanpit. The antique cattle are lying far below, the modern men near the surface,—the hazel with its nuts, the oak with its acorns, the yews and firs in successive layers, all tanning together in this mighty tanpit of four thousand acres, without break.

And what is to be the end of it? Is the moss to go on growing, till it has swallowed up all Ireland? Oh no; for a wall is enough to stop its growth; and there are strong rivers to check it in more directions than one. This bog will not outgrow its four thousand acres; and indeed, if that space does not satisfy the ambition of the little moss, it is hard to say

what would. The change is sad and dreary enough. Instead of forests, we see hills, carpeted, it is true, with oats and grass, but without a single tree. We see, instead of gleaming lakes and bright alluvions between, a dingy, brown expanse, tufted with hillocks, and . . . But what is this? What are these people doing?

What are they doing? They are visiting the little moss with retribution. It is very late, after thousands of years: but the hour of retribution has come at last. There are plenty of people engaged in undoing the work of so many ages, and beginning a new era on the spot which has seen so many changes. Which corner shall we look at first?

Here are men probing the bog, to find a good place to dig in on their own account. They trench deep; and, having pared away the loose fibrous sponge near the top, find beneath a brown peat, which they know will be worth digging out. But below that again is a black peat of a closer grain; and this goes down and down, blacker and denser with every foot, from having borne the weight of more centuries, and the pressure of a thicker overgrowth. Into the trench dribbles and drips the black water which has been imprisoned so long—too far below the sunshine to be evaporated, and too far away from any natural channel to flow down into any stream. It is hardly like water now—salt, astringent, and spirituous; but it will still reflect the blue sky from its surface, and it can run away down hill, as fast as ever. As it dribbles out and runs away, the banks of the trench sink, and the soil becomes more compact. The poor come to slice the peat away, and cut it into oblong pieces like bricks, and set the pieces on end in little groups to dry; and when they are dry, pack them into a sort of large hamper, which is fastened on a truck drawn by an ass or pony—the whole being dignified with the name of a car. There goes the train of cars along the road—the burial procession of the little moss, which is being carried to its funeral pile.

What is that group of buildings at the edge of the bog—the tall chimney—the brick houses—the curious range of metal pipes, dripping and splashing with water—and the yards, with sheds, and tubs of black liquor, and spirituous and pungent smells hanging all about, and men, bearded and begrimed, flitting about the place?

Why, this is the very centre of retribution, whence vengeance goes forth against the usurping moss. This is the head-quarters of those who have pledged themselves to the utter annihilation of the destroyer. These are the premises of the Irish Peat Company. They undertake so to deal with the peat moss as that it shall be utterly decomposed, and every part turned to use. They have taken in hand five hundred acres of this bog; and there, scattered as far as one can see, are a hundred labourers —men, women, and children. The trenches are so wide and deep as to be like little canals. The depth is already fourteen feet; and it is understood that it is to go down to thirty-two feet. To the eye, the mass of peat appears inexhaustible. There are the men, barelegged in the trenches, slicing the vegetable earth, and throwing it up, to be caught by the "catchers" above, who, for sixpence a day, receive and deliver the sods. There are the women who, for sixpence a day, place or set up the sods, and turn them to dry. There is something picturesque in the wild scene; the brown waste in clear contrast with the blue hills; the lines and patches of sunlight, catching a bunch of yellow weeds or purple heather here—a little pool there—a group of women or of diggers elsewhere. These people say that it was quite another sight last February,* when the scene was wrapped in flame. They say it was a frightful sight; but it must have been, as a mere spectacle, very grand. A man had carried out a live sod into the bog with him, to light his pipe. It was far away from the Company's land: but fire observes no boundaries. The man piled up his little heap of fuel about his sod, and blew up the spark. It was a windy day; and the heap burst into flame, and the flame burst away to seize upon anything that would burn. The spikes of fire shot up the slopes of the turf stacks of the Company. The stacks (called clamps) were burned from the top downwards—no less than sixty-eight of them. The flame went leaping, running, and dancing towards the buildings, and threatened to devour them; but they were saved. It was the river that stopped the mischief at last, and not till six hundred pounds' worth of damage had been done. This was a great blow to the Company; though no triumph to the little moss. Fewer people have been employed since; the tone of the establishment is relaxed, and its spirits are

* February, 1852.

lowered. But its demolition of the works of the little moss is as thorough as ever, within the scope of its operations. There is the great furnace, into which air is perpetually blown by the steam-engine. If we peep within certain slits in the furnace door, we see the gases alight, fuming and dancing—blue and yellow—keeping everything within reach at a mighty heat. Elsewhere there is the tar, oozing hither and thither: and the oils in casks, scenting the air; and the paraffine, of which candles are to be made, but which now is seen in the form of yellow waxy cakes, blistered and unshapen, and lying between oily woollens. It has had some of its oil pressed out; but it is to be steamed and bleached, and squeezed in the hydraulic press, before it is fit to make such candles as those which were lighted, as a specimen, on the table of the House of Commons. And there lies a lump of salt—salt got out of the vegetable decay of the spot where the ancient inhabitants ate their food without salt. There is not much in this salt, however, that would give a relish to food. It is worse than the flakes that whiten the shores of the Dead Sea. The minutest grain poisons the palate and throat for many hours. And there is a great heap of slag—the black, light, shining refuse of the small part of the peat that is actually burnt. Here is the little moss so treated as to come out for human use, in the forms of sperm, oils, salt, spirit, and gases. This is being used up, with a vengeance.

The work, however, seems not to be carried on with altogether so much activity as the little moss used in building up its vast structure. It is said on the spot that all the declarations of the chemists have been made good; that the most sanguine anticipations have been proved reasonable: but it seems strange that there should be only one languid establishment among the three millions (nearly) of acres of Irish bog, if the bog itself be such a mine of wealth as the first estimates of this process led us to expect. Time will prove the facts. The furnaces once set up, and the products once in the market, the case is fairly on its trial, and must establish its own merits. It has everybody's good will meanwhile.

What is doing in that far corner of the bog, quite out of sight of the Peat Works? A man digging for fuel is carefully extracting sundry logs of wood. The scraggy roots and lighter branches he puts aside to dry; they are fir, and their fate is to be burnt, as people burn cannel coal in England for the sake of

the cheerful blaze in the autumn evenings. Why are the digger and his wife covering up so carefully those blocks of black wood? They are oak, those blocks, and worthy of so careful and gradual a drying as will prevent their splitting. If they split and crack, they will be good for nothing but the fire: if carefully and successfully dried, they will sell at a good price to the carvers. So yonder log is covered with damp sods; and the wife will come pretty often and look to it—turning it, and shading it, and, at last, sunning it, till it is absolutely dry, and so tough that it will not splinter under any treatment. And then it will go into the bare garret in Dublin, and some of it into the comfortless prison where the reckless artist who can make his two guineas a day is confined for debt. In such places, breathed upon by many sighs, will this Irish ebony be carved, and perforated, and beautifully wrought into forms of the extinct Irish wolf-dog, and the national oak, and shamrock, and round tower, and harp, and whatever is Irish. Beautiful ink-stands, and paper-knives, and snuff-boxes, and little trays come out of these long-drowned oak logs; and they are of an everlasting wear. A great number of wood-carvers make from ten shillings to two guineas a day as their share of the profits from the destruction of the fabric of the little moss.

But what now? See the people running from far and near, and clustering round the ditch in the bog! On they come, in a sort of huddled procession, carrying something. A mummy! actually a mummy! but not swathed like those of Egypt, nor embalmed, except in the primitive antiseptics of the place. He is clad in the skin of a beast, and has a sort of sandal on his feet. He is a man of an ancient race. But we must not judge of the stature of his race by his. He is almost as light as a doll, and as small as a child of ten years old. Well he may be, for his bones were all gone, centuries ago—dissolved in the juices of the bog. His head is just as hard as the rest of him. He is a piece of stiff leather, through and through, from his wasted foot to his shrunk crown. He was one of the first persons murdered by the little moss—probably as he was coming home to his hearthstone from fishing in the narrowing lake, or hunting on the wooded hills. His lot now is to be made a show of in a Dublin museum; and there, alas! to have his leather limbs filched, bit by bit, by persons who believe mummy to be a fine cure for the falling sickness; till at length, to preserve any

remains of this antique citizen, he is locked up carefully under the charge of learned men.

This is not the last of the treasures which the moss is compelled to yield up—not by many. Again and again, the surveyors and their men, who are exploring the land and deepening the rivers, gather about some new mystery or marvel. What is this brown floor on which the spades strike, at a depth of twenty feet from where the surveyor is looking down? The surveyor scrambles down to see. The edge of the floor is found, and they dig down nine feet further, declaring that they have found a cupboard twelve feet square. It is the old house, to be sure, that stood so prettily upon the green. They are finding the paved pathway to the hearthstone, and now the hearthstone; and now they are picking up the charred nuts that were gathered to be eaten thousands of years ago. Instead of being eaten, the destiny of those nuts was to lie in tan for tens of centuries, and then to repose on the shelves of a cabinet for successive generations to wonder at. Something more touching than that is going on at some distance. What can be a more transitory affair than a child's toy! We talk of childhood itself as transient, gone while we are admiring it; and its toys are childhood's experience of transience. Yet here is the toy—the wooden sword—that was wielded by a little hand hundreds of generations back. That hand, probably hardened in war and the chase, was dissolved ages ago; and here is the wooden sword, brown, polished, entire, singular in its antique shape, and mysterious as to a certain knob upon it, but otherwise fit to be made a toy again. No child is to have it, however. It has become a grave affair by lapse of time, and it is to lie among the treasures of the Royal Irish Academy for the consideration of the learned. Truly, here the great and the small have lain down together. The mock sword lay lightly, as if put down upon a cushion. Here is something so firmly bedded in, that it seems to be rooted in the rock below. Here are bones, but they are like gnarled limbs of a great tree. It takes a dozen men with ropes and strong arms to move the mass. Then up it comes—an awful head of an unknown beast. Can it be the head of a beast? Feel for the spine; dig down along the expanse of shoulder, and the depth of limb. It is the skeleton of an animal. When a naturalist sees a bone or two he pronounces it an extinct elk; and when it is set up, men

gaze up from below, and walk between its legs, and talk wonderingly of the days when the earth contained such gigantic creatures as these. The sea has them still; and in far climes there is the elephant; but that little Ireland should have been trodden by these hoofs—how eloquent it makes our philosophers about the olden time, when the elk came to drink at the margin of our lakes!

At different stages of the cuttings, the woods reveal themselves—some growing (as may be calculated) a hundred years under the roots of others. The compactness of the lowest soil may be judged of by this. In this compact soil lies a stem, its wood of the closest grain. It is the yew that we saw fall one of the first victims of the moss. Where is it last seen in the block? In a garret, where a young artist lays it across his bench, and saws a slice off it laboriously, and indents it with his chisel to show a stranger from over the sea how fine is the chocolate-coloured grain, and how well-tempered are the tools required to carve such a rare piece of ancient yew.

If the natural lake and woods have been absorbed and devoured, it is no wonder that the artificial islands are dissolved. The stream is to flow here again, and the people are deepening the channel. In doing so, they come upon a curious variety of old treasures, scattered abroad. The more modern iron and steel weapons have been found on a higher level—such as were light enough to be borne up by the little moss. The heavier ones and the most ancient bronze weapons are found the last—sunk in the soil under the bog. Around are picked up bones—the bones of the cattle and game eaten at the ancient feasts; and skins which may have covered boats, or served as clothing. Last of all—down in the sand, half buried in the clay, there is a shining of gold. Those old ornaments are there, once more glancing to the sun now that it is too late ever to know what was the race that wore them, and why they were shaped and worn as they were. Here are the cheek-plates, and the diadems, and the gorgets, and the heavy cymbals, and the strange rings, and the twisted coronals and belts. Here they are! and when they too are locked up in a metropolitan museum, we may consider the little moss pulled up by the roots, and visited with its full retribution.

The long series of ages is past; the valleys have been filled up with sponge, four thousand acres large; and they are in

course of being cleaned out again. What then? Will the lakes and ponds be brought back, and the woods made to spring afresh upon the hills? Will all things be as they were before except the men who live there? No: such a restoration as that is a thing that never happens. We should like to see some woods in the hollows, and on the ridges; but there are none planted yet. Where the lake was, the soil is ploughed up, and drained, and fertilised; and the valley will in time be smiling with waving corn and green pastures. Where there were fish there will be flocks. Where there were perishable islands, there will be human dwellings. Where there was the howling of wolves, there is already the lowing of herds. Where there were murderous conflicts with barbaric swords, there will be reaping and binding by men armed with nothing worse than the peaceful sickle. So we may hope it will be in the end; but there are hundreds of acres of desolation to clear away first. It is only in prospect and in purpose that we have yet plucked up the little moss by the roots.

CHAPTER VI.

THE LIFE OF A SALMON.

No creature can well have a quieter birth-place than the trout which is spawned in the Bann. The Bann is not, on the whole, a quiet river, for it has a prodigious deal of work to do, and it does its work in a prodigious bustle at times; though occasionally it relaxes somewhat, and seems to remember the great truth, that nothing is worth the loss of composure. The work that the Bann has to do is to carry away into the sea all the water that other rivers pour into the largest lake of our three kingdoms—Lough Neagh. This lake measures eighty miles round; and several rivers pour their waters into it, while there is only this one river Bann to carry them away. So it must move quickly to get its work done; and it does push on, and drive between its banks, and fume and splash at a grand rate, where rocks are obstinate in refusing to get out of its way. In other spots, whence the rocks got rolled away ages ago, and

where thick woods overhang the stream, its current becomes not less rapid but more still. Clear, deep, and dark, it there flows on swiftly and silently. There it is that the salmon, if they are wise, look about them for some little cove—some recess in the banks—which is seldom violently flooded, but which receives a gentle ripple as the stream sweeps by. In such a little cove, with a floor of pure sand, the eggs of the salmon may lie unharmed by any disturbance till they are hatched. Some of the fish deposit their spawn where the waters lash the sand, or where animals like to drink: and there the eggs come to nothing and are lost. This is now so well understood, that in some places fishermen are making fortunes by looking in good time to the eggs and milt, and seeing that they are deposited in favourable places. Hundreds of thousands, ay, countless millions of fish may be provided for human food by this simple precaution, for want of which some of our Scotch and English rivers are supplying less and less salmon every year.

In such a quiet pool, with its clean sandy bottom, does the fish pass its earliest days. From its first wriggle as a minute insect (as we should call it if we could see it at that stage of its life) to its first use of its fins and tail, that little pool is its world. Its world is quite big enough for it, and altogether beyond its comprehension. Even there it is not wholly beyond the reach of the tides—not shut out from the influences of the moon, and the laws which keep a universe full of firmaments in their due place and order: but the little fish is very like us in being frightened, and fancying that everything is out of order when any commotion happens that it did not foresee. If it suppose that the universe was made for the sake of infant trout, it may well be alarmed when a strong ripple spreads over its pool, and the water makes a bubble or two against the bank;—just as men used to take for granted that the world was coming to an end when there was an eclipse; or when an unusual aurora borealis turned the calm, cool night sky into a blood-red dome. Mankind has grown wiser with experience, and is learning that all goes on in the noblest and most regular and steadfast way under laws which never change; so that the wise man fears nothing: and even the infant trout grows bolder and happier as it learns more of its own world of waters. It wields its fins, it practises with its tail; it finds it can rise to the surface, and drop down to the sand, and get into the

shade at noon under the roots of some water-loving tree, or make new glancing lights in the shallows by playing off its scales in the sunshine. By degrees, it goes out further into the current, and delights in being swept along by it, even though it is whirled away from its own native cove. It may not be for ever. In a year or two it may come up the stream again—as so many do every season.

Meantime, down it goes; not all at once, but as may suit its growing strength and size, and the provision of food it finds. Towards the end of winter the waters grow cold. The melting snows make them chilly. The salt water will be warmer; and the young creature it strong enough now to bear a salt-water life. So down it goes, faster and faster. It does not know why, but it is carried on faster and faster, under banks where the hazels are hanging out their catkins, and the willow-palm its velvet tufts. Here and there a well-sheltered primrose puts forth a pale bud, in some hollow of the bank, and the wild ducks are making a splutter among the ripening reeds. But now the river rushes so fast that the sun-gleams are like lightning, and there is a rumbling roar like thunder, and a splash like a deluge. On shoots the little creature, setting its rudder—that is, its tail—steady, like the older fish that go before, and in a trice it is over the Falls of the Bann, and beginning to feel what the salt water is like. Still the old fish promise that it shall see its native cove again. It must be done by leaping this barrier of rocks; but thousands of salmon do that every year. What fish has done, fish may do.

And now, a shroud of mystery encloses the life of the salmon. During the first year its age is known by the state of its scales; and its generation is then called grilse, or grailse, or grawls. After that, its mode of living is so completely lost sight of that there is not a naturalist, nor a fisherman, along the whole north coast of Ireland who can tell when or how the trout passes into the salmon (if indeed it be the trout which certainly becomes the salmon), or how old the salmon may live to be; or at what age its savoury flakes make the best eating; or, in short, anything whatever beyond this:—that the same fish return every season to the same river; the salmon of the Bann being short and thick, and those of the Bush river long and slim in comparison; and so on. So we must treat salmon as we do ladies—neglect all considerations of age—make no inquiries on that

obscure point, and sympathise in their activities and pleasures without asking whether they had a beginning, or will ever come to an end.

It is the fashion to talk of every body's "sphere." What a sphere is that of the salmon of the Bann! What a coast has it to range, whether, when carried out to sea with the rush of waters, it turns to the right hand or to the left! That it does range along the coast is certain, as the watcher on many a promontory can avouch. Let the observer stand on the precipice of Fairhead—the salient point of the Antrim coast. At first, he will be curious about the little lake which discharges its waters by a fissure in the rock, making a waterfall down that steep—more than six hundred feet above the busy surge. Already, on the face of this rock, are there traces of that strange architecture of Nature which comes out to more perfection further to the west. If the observer looks out to sea, his eye will be fixed by the outlines of the Scotch islands, as they lie calmly anchored in the deep blue sea, or the Mull of Cantire closing in the eastern horizon. He sees more than their outlines. In clear weather he sees the bright eminences and dark ravines on the mountain sides. Now let him look below—sheer down into the transparent waters. Are there not silvery flickerings, bright glancings, which show that the salmon are there at play? There they are; and near a great danger. A rock stands out, an islet separated by sixty feet of roaring tide from the shore, directly in the path that the salmon take off the coast. Not knowing that enemies may come there and waylay them, the fish do not make a good sweep out to sea, but just swim unsuspiciously round Carrick-a-rede. For a good part of the year, they may do this safely, during the months when salmon are not allowed to be taken; but, when the doom day comes, the bold fishermen do a great feat. They sling two ropes from the shore to the islet, at a height of ninety feet above the tossing waves; and, by laying short planks across, they make a bridge,—a suspension bridge with a vengeance—with no guard but a single rope for a hand-rail. The stranger usually declines being swung in mid air on such a bridge as this; but the fisherman—who lives, during the salmon season, in a cottage on the islet—runs backwards and forwards as tranquilly as if he were passing London Bridge: and so do his comrades. If the salmon did but know their own case, they would glance up from amidst the

waters, and, warned by that great inverted arch in their sky, would strike off,—well out to the north, and not approach the coast again for miles. But all that the salmon know of their own case is that they want to go up the rivers, to deposit their spawn and milt; so they hug the shore, in search of the rivers' mouths.

Soon they come to that strange place, where, as we are informed, the great giant, Fin McCoul, had a mind to make a path for himself and his wife to pass over to Scotland, without getting their feet wet. Were any salmon present to see that causeway begun? and did they fear that it would bar them out from the Bush and the Bann? There are the wonderful paving-stones at this day—cut so neatly to fit into one another, like the cells in a bee-hive, and built in so firmly that the winter surge, in all these thousands of years, has never washed them asunder. Were there any salmon to see the accident by which those stones were spilled, which are now seen lying, all in a heap, toppled all manner of ways? Giantesses who act as masons' labourers to their husbands, should see, before they go out to work, that they have strong strings to their aprons. Fin McCoul's wife forgot this. She brought him plenty of stones in her apron, and he paved them in; jammed them firm into the bottom of the sea with a stamp of his heel. But, one day, her apron-string broke, and her load of stones fell out—where they now lie. Whether her husband was put out of humour by so small an accident as this, as does happen to husbands sometimes, or whether his attention was called off by some pressure of business elsewhere, we cannot say; but the causeway certainly never was finished. A beginning was made at the opposite end—at Staffa—that Scotch islet in which the giant had a cave where he liked to be cool at noonday (and a green, cool cave it is); but the path never stretched very far out, at either end; and the salmon get round, quite easily, at this day.

Some salmon seem to have no eye for cork floats. They swim in among them without a thought of a trap. But they find themselves in one; and, after floundering among ropes and cords, perhaps from Monday to Saturday, they find themselves drawn to shore, whether they will or no, and seized by the hot, cruel hands of man. If our trout of the Bann kept outside, or were alert enough to spring over at the last moment, it is on its way to its own river, rejoicing. The Bush river comes first,

and there the Bush salmon take leave of all the rest for a season, and part off to their country seats for the autumn and Christmas. When the mouth of the Bann is reached, so do the Bann fish, whisking up stream, under Coleraine bridge, and onwards another mile, to where the salt water meets the fresh.

Here is a point of such danger, that we pause to take breath. There are some few chances of escape; but the perils are awful. All that the poor fish has any doubt about is as to whether it can leap up those rocks, over which the fresh waters are pouring like a cataract. It can make the leap, no doubt; every salmon does. And it will no doubt keep at the top when it has got there—which is the most wonderful part of the business to the human observer. How it is that the rush of the stream over the natural weir does not carry back the fish in a moment is a mystery to us: but the salmon would probably despise us if we asked any questions, even as old women despise kings who inquire how the apple gets into the dumpling. So we will merely say that the young salmon obeys instructions as it did in going down; sets its rudder straight, stiffens its body, and shoots forward with all its might, against the rush of waters.

And is it safe after all? There are so many perils that it knows not of! There are buildings in the bed of the river, every stone and every brick of which was laid in malice prepense against the salmon of the Bann. There are half-a-dozen stout stone walls or piers, built backwards from the rocky weir, enclosing spaces which are (all but the middle one) as many traps for the fish. At the upper end, there are iron gratings to each trap—doors which open and shut; and at the lower end there are also iron gratings which are nearly closed, but not quite. A space of a few inches is left between the gratings, which incline backwards so as to direct, as it were, the approaching fish to the little gap. When they have once leaped in, they can never more get out. For a few moments, amidst the dash and roar of the descending waters, they are unconscious of their fate. They are whirled back; they shoot across the pool; and at length they dash themselves madly against the upper gratings: but it is all in vain. If they could pass this one grating, they would be safe for this year; for there is no net—no salmon fishing above the weir. The Irish Society, to whom the fishery belongs, take care of that: and if, as at present, they let the fishery to an individual, he is no less careful. One

of the two neat red-brick cottages which are built on the outermost piers, is for the watchman who looks to the poachers. The other has the great scales for weighing the fish, and other apparatus. It is somewhat piteous to see the silvery scales of many a fish sticking to the balance, while the seething traps below are tempting more to their fate. As for the other cottage, it contains a little bed, where the watchman takes his sleep in the daytime, amidst such a din of waters as would make a fierce lullaby to most of us. By night, while his solitary candle burns within, throwing a feeble gleam from the lattice upon the surrounding foam, he is stealing about along the piers, and across the shaking planks, which make bridges from one to another. He peeps and prys and peers about, to see if any improper nets be in the water. Perhaps while he is doing so, the poachers may be watching his dim form from under the shadow of the solemn woods which come down to the river banks. Perhaps they may be actually in the river—up to their waists in water, under the shadow of the piers. If caught, their punishment is a fine of about six pounds for each offence; in default of payment, six months' imprisonment.

The flapping and frightened fish remain in their trap till the next Tuesday, Thursday, or Saturday morning, when the men fish them out with landing-nets. Last Thursday morning there were seventy-three salmon: this morning, there were sixty-one. The youngest and smallest weigh four pounds: the greater number rise from twelve pounds to twenty pounds; and even twenty-five pounds is not an uncommon weight. The price of salmon in the towns along the coast is about sixpence per pound —unless where hotel-keepers impose on inexperienced travellers. But the fish from these traps are packed in boxes, and forwarded by cart to Port Rush for export. When the railway to Londonderry is finished, they will, no doubt, be sent there too, on their way to many new places. The ice in which they are packed is supplied in hard winters, from Irish lakes and ponds: but the last two winters* have been too mild to supply the requisite quantity; so that the fish from the green depths of this solemn coast have been preserved in ice from the still, unfathomable lakes, freezing below the black pine forests of Norway.

Our subject has grown sombre and somewhat too pathetic. Let us take a brighter view.

* 1852.

Our young salmon was certainly not caught on this, its first ascent; for it is known to have revisited the haunts of its infancy. We have said that there was one space (it is the centre one) between the piers which is not a trap. It is called the Queen's Gap; and any fish which are lucky or discreet enough to go straight up mid-stream, pass here without impediment. It is wide open at both ends. The same may be said of all on Sundays, except that any fish that have entered between the drawing on Saturday morning and the opening of the traps that night, are turned into a special little dungeon, railed off on one side, there to pass their Sunday. For all others, the way is completely clear from Saturday night to six o'clock on Monday morning. Whether our young fish went up by the Queen's Gap, or on the Sunday, it got through, and without knowing anything of the perils it had escaped. How sweet the lapse of the fresh waters was, after the incessant roll and crash of the surge on the iron-bound coast of the Atlantic; how the autumnal woods contrasted with the black basaltic precipices above the main; how lovely the wild flowers on the banks appeared after so many miles of tangled and floatingseaweeds! Which looked best, the little column of blue peat-smoke from the peasant's cabin under the woods, or the brown smoke-clouds from the kelp-fires in the stony amphitheatres of the coast?—Which was the most loveable, the swallow skimming the meadows, and brushing the blue waters with the tip of its wing, or the red-legged crow throwing the drops about in the little salt-pools in the rock, poking its red bill into salt crevices; or, again, the cormorant perched on its solitary basaltic pillar amidst the translucent green waters: now rearing its head to survey the whole land and sea, and then intent once more on its fishing? Which of these varieties may be most charming to a salmon, we will not undertake to decide. We only show that the salmon has the opportunity of judging, as it lives and moves among them all.

Having found the tranquil cove it hoped for, and deposited its spawn where itself first began to move in the universe; having done that great duty of the year, and somewhat replenished its strength with alternate repose under the banks, and pleasure excursions among the windings and inlets of the great river, the salmon set about its descent. There was no fear of molestation now. The descending salmon are too poor in flesh and condition to be a desirable prize. So, once more, in the

midst of spring, it found itself again with its comrades in the deep. Perhaps it is because the eastern coast is somewhat too sombre, that our fish now turns its head westward. Ah! there are perils there, too. Wherever there is a cluster of black rocks near the shore, and therefore in the path of the salmon, there may the white cottage of the fisherman be seen, niched into some recess. There may one great net be drying on poles or gibbet on the rocks, while the buoy out yonder, and the line of corks, show where the other is. Everywhere in the path of salmon may the drawing of the net on Saturdays be seen, from May Day till the 20th of August. But it is certainly only by experience, if even so, that our young salmon, or any young salmon, can learn how dangerous the path of life is, through its whole course. So, on it went, merrily, in its first cruise along that cheerful shore; past the arches of limestone through which the railway runs; past that wondrous verdant slope, from the white beach up and up for 1000 feet to the crest of rocks which crown the Coleraine heights; that slope where frost and snow and blight and tempest never come; where fairies resorted to their very latest day, as everybody remembers; where miles of trailing roses, and blue bells and periwinkles and heaths, with sweet berries enough to feed the whole fairy race, might tempt them back to their flowery tents, if the myriads of rabbits were not too formidable, and if, alas! the fairies were not dead, cold, and gone; where the few dwellings peep out from thickets of blossoms, and gardens are so many little wildernesses of sweets; where turfy paths girdle the steeps, that watchers may sit on a heather cushion, and look out for the silvery spangling of the sea where the salmon are at play;—by this cheerful shore went our young fish; and it swept by the turning of the great plain which spreads from those heights to Lough Foyle; and into Lough Foyle it went, and up and down in it—up to where old Derry sits on its hill; and where on a high pillar stands her hero-pastor, Walker, with the Bible in one hand, while the other points to the Lough where the ships are passing the boom, and bringing food to the starving citizens of 180 years ago to whose fortitude Queen Victoria owes her crown. Up to the woods near the town, and down and away among the labyrinth of stake-nets, roves our young salmon; but not to stay, for it is a salmon of the Bann, and therefore without any intention of becoming an

immigrant of Lough Foyle. As a salmon of the Bann it will live and die.

And when and how did the dying happen? As to the when, there is no saying. How should there be, while salmon are so resolute against telling their ages? Whether our fish made many voyages or few, whether years or generations passed, whether watchers, poachers, and lessees remained the same, or were superannuated and buried away, while our salmon's eye was still clear, and its flesh firm and flaky, and its scales brilliant and flexible,—its day of doom came at last. The victim came up the Bann—not on a Sunday; and it entered the wrong gap. Neither was it on a Saturday that it came; for it certainly did not pine and waste in a state of panic during a long Sabbath day. It was spared that. Its pain was short. One wild attempt to leap—one frantic rush round the place—and it was fished out, and presently flapped its last in the scale where its value was sure to be duly estimated. For its shroud, it had ample folds of the purest powdered ice, gathered in far lands, by foreign hands, for the purpose. Its burial service was the grace said by the chaplain of a great London company; and its tomb was one which was not devoid of outward ornament of some richness—since over it was hung a massive civic chain, a token of honours to be domestically remembered through an illimitable future.

This is, as far as we know, all that can be told, with veracity and honour, of the Life of a Salmon.

CHAPTER VII.

BUTTER.

Before our great chemists had told us that an infusion of oil into the human frame was necessary to life, and why, there must have been something puzzling to thinkers, as well as amusing to travellers, in the inclination of all nations for some kind of butter, which must be had, it seems, through all obstacles of climate and productions. We should say, at the first glance, that nobody can get butter of any sort in the Polar regions, nor

keep butter for five minutes at the Equator; and there are many regions of the earth besides, which are either burning or frozen, parched or wet, to a degree which excludes the English idea of a dairy altogether. What can the Greenlander do, for instance —living in a country where July is the only month without snow (and not always that); where turnips reach the size of pigeons' eggs, for a great wonder; and where, in the cold months, the rocks split with the sound of a cannon-shot, and the sea reeks as if it was boiling? What does the Greenlander do? Why, he finds oil, thickened by the frost, a delicious butter. He lives in a room where even spirit freezes; and he would freeze too, but for his beloved whale oil, which feeds in him the interior combustion that is always going on in all of us, and that keeps the temperature of the human frame nearly equable in all climates and positions. Then there is the African under the line: what does he do for butter? If we gave him cattle, they would presently hang out their tongues, and conduct themselves very like mad dogs, till, stung into fury by hosts of insects, and panting for breath in an atmosphere like a furnace, they would rave, lie down bellowing, and die. We can hardly suppose that he can milk the lioness or the tigress, which are almost his only animal neighbours. He milks something rather less dreadful—his herd of trees! The next wood is his dairy, and the shea tree is his cow. When he was clearing a space for his hut, he left the shea tree standing. Its spreading shade is welcome for itself; but the fruit (the African olive) is the most precious merchandise, and the most delicious food to be found in those interior provinces. The white kernel is boiled, beaten, and pressed; and the oil oozes out and flakes into a firm white butter, which Mungo Park liked better than our finest dairy butter. The making, and eating, and selling this substance fills up a great part of the life of the Bambarra peasant, who thus is in strong sympathy, if he did but know it, with our clever neighbour—Paddy on the Kerry Hills.

There is no drier country than the Arabian desert; and no shea tree grows there, nor any other fruit-bearing tree; nor are there oily fish, nor cattle. How then do the Bedoueens get on for butter? Why, there is the goat; and the goat's milk is uncommonly rich and creamy; and the Bedoueens steal along all day—in the shade of rocks, where possible—following their goats, which spring from rock to rock, and clamber into all sorts

of inaccessible places, to get at every aromatic shoot and every tender spray and green blade that grows in virtue of the night-dews. The owner is busy with goats'-hair all the while, not making wigs, which is the use we put that hair to, but twisting it into threads and cords, or preparing it for weaving into tent-covers. When the shadows lengthen, telling him the hour, he collects the flock, and the kids come bounding to him, and the dams follow more slowly, and munch sprouts from his hand while wife or daughter milks them. Some of the milk is drunk fresh; but more is kept. It becomes sour at once, of course; and then there is the oily part to be eaten with lentils, and the curd for a sort of cheese, and the whey for a very favourite drink. Very different are the measures taken in the wettest country—Holland—and none in the world are so successful. Holland supplies more butter to the rest of the world than any country whatever; while, certainly, the Dutch keep up their interior combustion, in the midst of external damp, admirably, by the quantity of butter they swallow. We make the best butter in the world—at least we are pleased to say so—we modest English. We eat all we make, and then look round for more—for the best we can get; and out of every hundred and thirty-four thousand cwts. that we import, one hundred and seven thousand cwts. are Dutch.

Certainly, if one condition of good butter is that the dairies should be moist and cool, the Dutch have the advantage of most nations. Their dairies, which a breach in the dykes would place at once at the bottom of the sea, are moist and cool as a sea cave. They have other advantages. Their water-meadows—level cavities between green dykes—are as soft as a Turkey carpet, with thick, juicy grass; and their milch cows show their fine feeding by being at once, unlike others, fat and good milkers. And then, they are not driven about to be milked, so that the cream at the top of their udders is not half-churned before it can be got at, as is the case in places where the cows are driven home to a farm-yard, and milked immediately, and, moreover, in the midst of dung-heaps and puddles and bad smells. Far otherwise is it with the Dutch kine. As soon as they begin to wish for the relief of being milked, and raise their patient heads to see whether anybody is coming, they may be sure that somebody is on the way. There they come—the milkmaid and the boy. The boy is towing a little boat along the canal, and the

maid, with her full blue petticoat and her pink jacket or bed-gown, walks beside him. Now they stop : she brings from the boat her copper milk-pails, as bright as gold, and, with a cooing greeting to her dear cows, sets down her little stool on the grass, and begins to milk. The boy, having moored his boat, stands beside her with the special pail, which is to hold the last pint from each cow; the creamy pint which comes last because it has risen to the top in the udder. Not a drop is left to turn sour and fret the cow. The boy fetches and carries the pails, and moves as if he trod on eggs when conveying the full pails to the boat. When afloat, there is no shaking at all. Smoothly glides the cargo of pails up to the very entrance of the dairy, where the deep jars appropriate to this "meal" of milk are ready—cooled with cold water, if it is summer, and warmed with hot water if the weather requires it. When the time for churning comes, the Dutch woman takes matters as quietly as hitherto. She softly tastes the milk in the jars till she finds therein the due degree of acidity ; and then she leisurely pours the whole —cream and milk together—into a prodigiously stout and tall upright churn. She must exert herself, however, if she is to work that plunger. She work it !—not she ! She would as soon think of working the mills on the dykes with her own plump hands. No—she has a servant under her to do it. She puts her dog into a wheel which is connected with the plunger ; and, as the animal runs round, what a splashing, wolloping, and fizzing is heard from the closed churn ! The quiet dairymaid knows by the changes of the sound how the formation of the butter proceeds : when she is quite sure that there are multitudes of flakes floating within, she stops the wheel, releases the dog, turns down the churn upon a large sieve, which is laid over a tub, and obtains a sieveful of butter, in the shape of yellow kernels, while the buttermilk runs off, for the benefit of the pigs, or of the household cookery.

In the precisely opposite country—Switzerland, which rises to the clouds, while Holland squats below the sea level—the dairy people go after the cows, like the Dutch, instead of bringing them home. They have much further to go, however. Most of us who have travelled in Switzerland have missed one characteristic beauty of the Alps by going too late. We are wont to say that the awful stillness and steadfastness of the Alps are broken by no motion but that of the torrents, leaping

or lapsing from the steeps. In spring there is quite another kind of motion visible to those who have good sight—the passage of the wind, shown by the waving of the grass on the upland slopes. The mower may be invisible at such a height, unless he be attended by a wife or daughter in a red petticoat, making a speck of colour which may fix the eye : but the silvery stoop of the tall grass as the breeze passes over it is a beautiful thing to see, and a charming alternation with the leap of the waterfall. When these patches of pasture are mown, the cows are sent up for the summer to graze and live under the open sky : and the dairy people, who go up too, and live in sheds and huts, follow the kine, morning and evening, and milk them wherever they may happen to be, whether in a grassy hollow, or on a fearful shelf of rock, or by some pool in a ravine. The cows would come if called ; they always do when the Alp-horn is blown to collect them ; but the Alp-horn is blown after they are milked, and not before, lest they should make more haste than good speed, and leap down rocky places, and prance homewards, shaking the milk in their udders. If there is the slightest conceivable curdling in the milk before the cream is separated, the butter is spoiled, though the fresh cream may taste very well. The way in which the butter is brought down to the valleys, when the party return for the winter, is curious. All the butter of the season is melted over the fire in large pans, which are shifted the moment before their contents would boil up. They are kept simmering till the watery particles have all gone off in steam, and the curdy particles, which are mixed more or less with all butter, have fallen to the bottom. The butter is then poured out, like clear virgin honey, into earthen jars, which are filled to the brim and thoroughly closed as soon as the butter is cold. This is one way of preserving butter, and salting it, as the Dutch and Irish do, is another. The choice is between too little flavour and too much salt ; and most people who want the butter for culinary purposes prefer the more insipid to the over salted.

In India, the people can no more do without butter than elsewhere ; indeed they want more than most other people, from the evaporation of the liquids of the human frame by the heat. They are a thin race. The sun of India makes war against fat. How, then, can there be butter ? There is no butter to eat ; but there is plenty to drink, and the people drink it by the

coffee-cup full at a time. Are you grimacing, reader? Are you saying, like the child who was reading to mamma about a land flowing with milk and honey—"La! how nasty!" Just hear what this butter is, which the natives call ghee, and then judge whether you could drink it. If not, there is an alternative which may save your manners; if anybody should offer you a cup full of ghee, you can anoint your body with it, and pour it over your hair, to preserve you from a *coup-de-soleil*, or prevent your being shrivelled up like an autumn leaf thrown with the log on one's Christmas fire. The ghee is not purified from curd; quite the contrary. After the milk has been boiled it is artificially curdled. It is the curd that is churned, and the churning is done simply by turning a split bamboo in both hands, as if it were a chocolate mill. The cry is not for coolness, but for more heat. Hot water is added, and on goes the milling till the butter comes. The hope is next that the butter will become rancid; a hope which is justified in a day or two. Then it is boiled again to get rid of the water, and a little more sour curd is shut up with it, and also a little salt, in jars which go all over India, spreading a horrid smell wherever they are opened, but commanding a constant sale, and a good one, from all who can indulge in the luxury of reclining in shed or verandah, quaffing ghee.

And how is it with the other great continent—America? Why, in South America there are those vast plains, the Llanas and Pampas, stretching from the base of the Andes to the sea, and from the Orinoco to the Straits of Magellan, on which uncountable millions of cattle are for ever grazing. There can be no want of butter there, surely? So thought people in England till thirty years ago, when it became known, on inquiry, that there was no butter in Buenos Ayres. In the season of universal mad speculation which followed, it was resolved to supply the destitution of the Spanish Americans. Science had not then taught us that if any people had not butter like ours, they must have some other sort of their own. So a company was formed, and a ship-load of Scotch dairymaids was sent out to manage those fine cows that grazed in that noble pasture. But the poor women were sadly puzzled when they wanted to go to work, as were their employers. Those fine cows were wild. They were caught by violence, and tied neck and legs, in which process the milk must have become considerably curdled. The

perplexed damsels churned very diligently, but the butter disgraced them sadly, and would not keep ; and if it had been as good as at home, it would not have sold, for alas ! the natives like oil better. They take olive oil almost as profusely as the Hindoos take ghee. As for our brethren in the United States and the West India Islands, they have the true Anglo-Saxon liking for butter. But it has not yet suited their convenience to graze much, or to set up dairies to any extent, even where the climate is favourable. They import largely from Europe, especially from Holland and from Ireland. The West Indies rank third among the customers of Ireland for butter—Portugal being the first, and Brazil the second.

Here, then, are we brought round to so near home as the Kerry Hills and the pastures of Cork and Limerick. Let us take a run over those hills, and see what is doing.

We suppose we shall find the cows tenderly cared for, judging by the solicitude shown for yonder pig. His owner's dwelling is a mud cabin, dark except where the decayed thatch lets in the light, and all going to melt into a slough, apparently, with the first rain : whereas, the pig's house is a truly comfortable affair. It is built against the cabin—in the very middle—for show. Its stone walls are whitewashed : its roof is slated ; its entrance is arched. Piggie himself is allowed great liberty. He may roam where he will, with the one condition that he will wear a man's hat—not on his head, but over his face—the crown being out to allow him to feed. Thus veiled below the eyes, he may wander where he will, unable as he is to root up the potatoes or poke his snout in where he has no business. If such is the care taken of the pig, what may we not look for in regard to the cows ? On we go to see. Who is this that wants us to stop ? Why does he leave his flock of sheep, and hang upon our car, and rain a shower of brogue upon us passing travellers ?—for he is no beggar. He entreats us, and will not take a refusal, to buy, then and there, on our car and on the instant, thirty-four lambs, which he declares we shall have cheap. We have refused, in our time, to purchase and carry away, in the High Street of a town, a barrel of red herrings ; also, a mattrass. It seems to us even more inconvenient to carry away thirty-four sheep on an Irish car, especially as we want no sheep, and live across the Channel; but the farmer does not agree with us. He presses his bargain on us till compelled by want of breath to drop

behind. As we advance, we see a cow here and there stepping into a cabin, as if taking refuge from the evening air in good time while the sun is yet declining. The family receive her affectionately, milk her tenderly by the fireside, and let her retire into the corner to sleep when she likes. How good must the butter be, from a cow so treated! Further on, however, we perceive that all cows—most cows—are not pampered in this way. Early in the mornings, we see them getting up from their beds on the hill-sides, the dry space where they have lain being darker and greener than the dewy grass around. They have certainly been out all night. And why not? our driver wonders: the Kerry breed is hardy; and where would they go, if there were not the hills for them to roam over? In which question we join, when we see how many there are.

Here we come to spruce roads, well fenced and arched over with trees; and we meet cars full of gay gentry; and we see the gleam of waters through the woods. Those waters are the lower lake of Killarney; and we are going to cross the lake, and take our time before visiting the dairy-farm on the opposite side. Landing to see O'Sullivan's Cascade, we find a man, scantily clothed, and so thin and pale as to appear only half fed, and so eager in showing off the waterfall, as to make us fancy that the pence he expects are of the greatest importance to him. He presents us with ferns and mosses with a trembling hand; he flings his stick into the fall, and scrambles down to catch it in a strange place; he gives a painful impression of going through an antic task for his day's bread; and he looks delighted at his fee. As soon as we have pushed off, and are out of his hearing, we find that he is the owner of a herd of cows on the mountain; that he drives a good trade in cattle; and has many a firkin of butter to sell to the agent from Cork, when he comes this way. Well! we have seen no one less like a butter manufacturer than the pale showman of O'Sullivan's Cascade. What next!

The next thing is very strange. Two sober, quiet, sensible men are rowing us, and are ready to talk. Finding that one of us has been in Africa, they ask if we saw any enchantment there, as enchantment is said to come from Africa. Luckily, we did; and our story is received with eager interest. The men told us, in the most straightforward way, that they did not believe a word of the stories of the enchantment of the lake

we are upon till they saw O'Donoghue himself, in a way which could not be mistaken. Seeing is believing, they said repeatedly; and there is no doubt that they believed what they told us. The well-known legend of Killarney is that O'Donoghue and his people, and the city in which they lived, were overwhelmed by the waters of an enchanted fountain, some hundreds of years ago; and that the chieftain appears, once in seven years at least, in the first week of May, traversing the lake as if it were solid glass. Our boatmen had been rowing some workmen over to an island, where they were repairing a cottage of Mrs. Herbert's, and were returning, at a quarter past six in the morning of the second of May—a fine, bright morning—when they saw O'Donoghue come out from the shore of the mainland. He passed close by them, looked at them well as he passed, with his very bright eyes, walked on to the opposite shore, and disappeared in the rock. He wore a scarlet coat, breeches, and a "three-cocked" (three-cornered) hat, with a white feather. The men were so awe-struck that they could not speak to him, though they had abundant opportunity. One would like to know what scarlet thing these men could have seen in broad daylight on a fine May morning—Ireland not being a land of flamingoes, or other red water-birds. But there are other marvellous things seen on the shores of Killarney, having more relation to Butter than this apparition of O'Donoghue. When a hare is found among the cows on May-day, it is a very melancholy enchantment; for, if she be not killed, there will be no butter all summer. The hare is a witch. You may prove that by letting your dogs bite her, and then looking about the neighbourhood, when you will find some old woman ill in bed with wounds in the same places. If you do not kill the hare she will milk your cows in the night, or at least carry off all the cream that is in the milk. The same may be said of the hedgehog. There is another bit of trouble that must be taken to save the butter. The well must be watched till the sun is high on May morning, or some witch will come with a wooden dish in her hand, and skim the surface, mumbling, "Come, butter, come." If she is allowed to do this, you will lose your labour in churning all that season. If the farmer has not sheds in which to house all his cattle on May eve, he must see that they are carefully fastened into a paddock, and that the four corners of the paddock, and all the beasts, are sprinkled with holy water

blessed on Easter Sunday, that nothing evil may be able to get at them. They will be the safer if you give them each a necklace of straw for the night, and also slightly singe each beast with lighted straw, or pass a live coal completely round their bodies. To clear the ground perfectly for a favourable season, there must be a churning, with closed doors, before sunrise on May morning, with an old ass's shoe nailed to the bottom of the plunger. A branch of mountain ash, gathered the night before, must be bound round the churn before the milk is poured in; and when the milk begins to break, it is well to put a live coal and a little salt under the churn. If the owner wishes to save his best cow from the thefts of witches, he must follow her in the first walk she takes from the paddock or shed, and gather up the soft earth marked by her four feet. If he does she is safe for the season. If he leaves it for the witch to do, the creature will be a dead loss to him, for this season at least. These things are troublesome to attend to, it is true; but if a man wishes to conduct business with a Cork butter-merchant, he had better clear the ground thoroughly for the operations of the summer. And here we are at the farm, to see how he does it.

The farm consists of forty acres. One acre is occupied by the house, dairy, yard, and garden; twenty acres are under tillage, and nineteen remain for grazing ground, including bog to the extent of about half an acre. There are ten cows, several pigs, and ducks, chickens, and geese in plenty. Of the twenty acres, a considerable portion is devoted to the growth of green crops—swedes, mangold wurzel, &c.—for the winter food of the cows. The rest is grain—wheat, barley, and oats—which all go to market, the family being fed on the cheaper diet of Indian meal. The bog is not the least useful part of the ground. It yields all the fuel wanted—not only in the shape of peat, but in abundance of fire-wood of the finest quality. Heaps of blackened, scraggy wood may be seen drying in the sun; and when dry, they burn like cannel coal. Moreover, of the logs of oak found in the bog, the dairy utensils are all made; and the people on the spot ascribe the best qualities of their butter to the use of this bog oak—a persuasion which is regarded as a mistake by the butter-merchants of the ports. The keelers, or shallow tubs, various in size, in which the milk stands, are made of inch-thick bog oak; and so is the churn. It certainly appears

to be completely secure from warping, and from the attacks of insects. Its seasoning has been rather long—some thousands of years, probably; so that the taste of the wood must have gone out of it some time ago. The question is whether that of the seasoning has not succeeded to it?

The dairy is a large shed, with a flagged floor. Along two sides stand the keelers, with their "meals" of milk in order. They stand strangely long before they are skimmed—till the milk is sour and thick; and then the cream stands from two days to a week before it is churned. The people insist that the sourness of the milk does not in the least affect the butter, and that it is great waste to use the milk before all the cream is got out of it; on which point, as on every other in the whole business, the people of Kerry are flatly contradicted by the people of Waterford; both being famous exporters of butter. The milk is not sour enough for the popular taste in winter. With the first hot weather comes the delicacy; and then the dairymaids clap their hands for joy, and exclaim "Now we shall have thick milk." In the market-place is the same jubilation; for the milk is sent there for sale, after enough has been reserved for the pigs; and the people relish it with their potatoes far more than sweet—in like manner as they prefer salt fish to fresh. Possibly it might be the same with us, if either article were the only animal food we ever tasted.

As soon as a keeler is emptied, it is scalded with hot water, well laid on with a broom of heather; and then with cold water, in the open air. The churning seems an easy affair enough—the butter coming in half-an-hour, and never keeping the people waiting more than an hour. Little does that dairymaid know her own bliss, unless she has known what it is to stand churning three, four, five hours, obtaining nothing but froth, fancying she feels the thickening of the milk, and finding, like Dr. Johnson, "nothing ensue," till she hopes that nobody will speak to her because, hot, tired, worried as she is, she does not think she could speak without crying. Happy is the Kerry maiden, who, having no dog-menial, like her Dutch sister, plays the part of machine for no more than an hour at furthest. The butter never fails to be good, she says: a marvel full as great as the gliding of a scarlet coat and a "three-cocked hat" over the lake. It is washed three times. Others say that it takes five washings to leave the water perfectly clear. It is salted in the

proportion of half a stone (seven pounds) of salt to fifty pounds of butter. The Dutch exceed the Irish, and everybody else, in the care they take to have good salt. They use only that which is obtained by slow evaporation, and perfectly crystallised. Other people are not so particular. They use salt which may have some mixture of inferior qualities—bitter, or apt to melt; and they must not wonder if their butter is inferior to the Dutch. Our housewives say that the Irish butter is not nearly so good as it used to be. Whether the Kerry women of a former generation were more despotic about their requirements than now, we cannot say; but it struck us that the doors of certain dairies stood too wide open for the entrance of whatever chose to come in, and that the pig's home was somewhat too near at hand. Some were secluded enough, and as fresh as running water; and we should have liked to be able to compare the produce of the two. When "made," the butter is pressed down into a firkin (still of bog-oak) salted over the top, and covered close with a cloth. When more is ready to be put into the firkin the salted surface is scraped off, and the butter below so broken up as that the new portion may mix well with it. The ten cows yield a firkin of butter—that is, half a hundredweight—per week. We were told that the merchant pays five guineas per hundredweight (the hundredweight being about one hundred and twelve pounds). We did not believe this at the moment, as the price of Irish butter does not admit of such a payment as nearly a shilling per pound to the maker; and we found afterwards that the payment is rarely higher than three guineas and a half per hundredweight. The closed firkins are conveyed by carts to some neighbouring port or railway, or, failing both, are carted all the way to Cork. Every traveller in Kerry and the neighbouring counties is familiar with the sight of the barrel-laden carts which frequent all the roads; and in every market-place may be seen, during the summer, an expanse of firkins, filling up more or less of the area. The largest sales are effected in another manner than by bringing the produce to market or to port, to fetch the market price. The needy among the dairy farmers sell their butter beforehand, by contract, to the travelling agent of the butter-merchant, who visits them twice a year. They take the price he offers, and are too often glad of the money in advance, and thus subject themselves to bondage. Poor people like these

are aground in the winter, when their cows are dry. Less needy farmers manage their stock so as to have milk all the year round, though not enough for the making of butter for sale. The season for that is only five or six months from May-day. We inquired, at this Killarney farm, whether, in rearing calves, the milk of the best cows is spent upon their calves, or whether the more saving plan is ever resorted to of "buying a nurse"—providing the calf with an inferior nurse, to save the mother's better milk. This is a pitch of economy which has not been reached in these parts; and we were amused at the way in which our question was received by one of those Killarney guides, who think it a disgrace not to have an answer ready for every possible question. He was kind enough to inform us that, in Kerry, there is always a person to milk the cows—the cows never milking each other. The cost of a calf, for the three years before she produces, is said to be twopence a day. The food of the whole stock in winter is partly hay, and partly boiled vegetables and bran. A great deal of the profit of the dairy farms of Kerry is derived from the pigs—the exportation of bacon being almost as valuable as that of butter, and the dairies yielding plenty of the best food that can enter a piggery. About one hundred thousand firkins—that is fifty thousand hundredweight—of butter go to the ports annually from Kerry; and in Cork alone there are now twenty-six butter merchants. In Waterford and Wexford there are many; and these give a different recipe for making the article; different with regard to the length of time the milk and cream should stand, and to the methods of washing and salting. But it does not appear that one county excels another in the quality of its butter.

The firkins are emptied on their arrival at the warehouse in the port. Turned upside down after the head is removed, and well slapped, the cask yields up its contents. The butter, as it stands, is then scraped with a wooden knife, its soiled corners and seams removed, and put away to make ointment for sheeps' backs, and its hollows filled up with fresh butter. It is then powdered with salt of the purest kind, the firkin is replaced over it, it is raised on its right end, and the other is scraped and salted, and when the hoops are put on and the firkin ready for closing, covered with a piece of muslin, which is made to fit accurately, and finally salted. When the head is knocked in, and the weight is proved, there remains nothing but the brand-

ing. This is done by stencilling. A metal plate is perforated with the trade marks, and with the name and address of the exporter. Then the number of the firkin is affixed. The metal plate is smeared over with an ink made of lamp-black, turpentine, and wax, and the brand stands clear and ineffaceable.

All this is interesting; but there is one thing more left to see. In the office, where the importer has taken us to ascertain some figures, and see the form of entry in the hieroglyphic-filled books in which his purchases are recorded, we were shown the largest bundles of bank-notes we ever saw. There were two, containing the corresponding halves of severed one pound notes, to the amount of five hundred pounds. One of these bundles was to go by post, and the other by public car, to the agent, to pay the country makers, at the latter end of the season.

Where does all this butter go? Much of it to London; much to Liverpool; much to the Continent. The greater part will find its way to Portugal, unless there should be a quarrel about the Portuguese tariff, which would be a sad thing for the Kerry dairymen. They have sold, this season,* thirty-eight thousand three hundred and eighty-nine firkins more than in the season of last year; and it is curious that the Dutch have sold about as much less to us. The reason of the increased production in Ireland—which is felt in all the other ports, besides Cork—is no mystery. The farmer now cannot pay for labour as he used to do, by letting potato grounds to the labourers. Many of the labourers have emigrated, and the rest must have better wages, paid in cash; and they eat meal, instead of potatoes, now that grain is cheap. The farmer finds it safer and cheaper to produce butter than grain for the market. If this goes on long, one may hope that some cheese will be made, somewhere or other among the rich pastures of Ireland. At present, the innkeepers in the remotest districts complain that they have to get every ounce of cheese from London. It seems as if this must be mended soon; and we should not wonder if we have to report, after our next visit to Ireland, as its latest bull, its offer to the stranger of a native Welsh rabbit.

* 1852.

CHAPTER VIII.

CHESHIRE CHEESE.

THE scene of the Cheshire Cheese making which I have just been witnessing * is in Flintshire. This is something like a bull to begin with ; but it is not my bull. I relate what I find ; and what I find is a manufacture of Cheshire cheese, on a farm celebrated for that article, just within the borders of Flintshire. I remember being much amused, when a child, at a little bit of little Flintshire being separated from the rest, and packed in between Cheshire, Shropshire, and Denbighshire. It is just within that little bit, and near the winding Dee, that this celebrated cheese farm lies. Very different is its Flint cheese from the flint cheese of a more northernly county. In Cumberland the common cheese made in the moorland has been literally used as flint. I have been gravely assured on the spot that a soldier, being out of the way of a flint for his musket, actually used a bit of cheese-rind for the purpose. Moreover, when the clogs worn by the peasants lose their iron (just like a donkey's shoe), it is no uncommon thing to tip the clog with a cheese-paring. Marvellous are the local tales about this cheese. Travellers are told that the farmer cuts his cheese for the table with an axe ; and, in the dusk, a succession of sparks is seen to fly, if the cheese be in proper economical condition. Again, the people say that the strangest thing that ever happened through a cheese was in Cumberland, when one rolled off a cart that was ascending a steep road. The cheese bounded down into the valley, striking the crags, and sending out sparks as it went, so that at last it set the heather on fire so effectually that it burned for two days. As for how such a delicacy is relished in farm-houses, that is a matter in which testimony differs according to taste. So much for Cumberland cheese. Meanwhile, here I am on the banks of the Dee.

Among its other windings, the Dee winds round a stretch of

* 1854.

pasture land so green after the haymaking as really to dazzle the eye. The river sweeps round, under a very high bank, forming a horse-shoe; and when the waters seem disposed to meet again at the narrow part, they change their minds and wander off on either hand, to form new circuits and enclose more green meadows. The semicircular ridges in the pasture show how much smaller and shallower the curve once was; and there are people living whose parents remembered the planting of an oak by the water-side, which grew some way inland when it was cut down. The bank above the river tells the same tale. Its red soil is riven, and so heaped and tumbled as to show that it was brought down roughly by the action of water below. Some of these heaps and promontories are old enough, however, to be covered with well-grown trees. The gazer above observes that the whole valley, of which this is a nook, is formed precisely in the same manner. It is walled in semicircularly with wooded banks, whence charming-looking houses peep forth, with their green clearings, or sloping gardens. As for what is seen beyond, through the open part, it is a level and richly-fertile and wooded country, as far as the Welsh mountains, which enclose the whole. At sunset, when the entire view is at its brightest, there is one spot to which the eye is attracted infallibly and at once. At one end of the horse-shoe, where the bank is subsiding towards the levels, there is a spreading farm-house, with a low, long, diversified face, and a terraced garden, sloping to the south. In the basin below there are fields which look as soft as velvet, some with a monstrous haystack in the middle, and others with large companies of cows, all at that hour tending towards the gate to go home for the night. That most tempting place is Widow S.'s cheese-farm. I proceeded to my call on her, satisfied that in point of residence she might be the envy of almost all England.

The place did not disappoint me in the least on closer examination. The farm-yard front is neat, spacious, and somewhat picturesque, from its antiquity, if not particularly beautiful. There is a little green in front, kept inviolate by a sunk fence; and the area of the yard is so large that the outhouses are no inconvenience or eyesore. There run scores of pigs, which feed on whey and butter-milk. There the large teams turn round without interfering with anybody; and there the whole dairy of seventy cows can move about without crowding.

Inside the house, the first thing that catches the eye is the Welsh carpet—not in the parlours, but the passage-rooms, pantries, and kitchen. This Welsh carpet is a pattern produced on the brick floor by staining the brick squares in figures with dockleaf juice. The prettiest pattern is perhaps produced by rubbing half of each square diagonally with dock-leaves. The diced appearance is really very pretty. The best parlour is well-furnished; but the uneven floor must wear out the carpet very soon. The lattice-windows do not open either in or out; but in a better way which keeps out rain as well as a sash-window. One compartment slides in grooves; and large, and bright as air, all those windows are, except in the cheese-making rooms, where they are bedewed as if it were brewing that was going on. The widow's own little parlour looks to the farm-yard, across the green. It looks somewhere else too. There are two old-fashioned peep-holes in the door, through which she can spy at pleasure into the industrial department; while she can, by turning the brass plates, secure herself from being watched in return. I do not know that I ever saw this device before, except in prisons, lunatic asylums, and hospitals; and it looks very odd; pleasant only as a relic of ancient days and customs, when the master's eye was supposed to be really constantly over his household. The upper rooms are spacious and airy, and as clean as the dairy itself—a thing which is especially commendable in a house which is wainscotted throughout its chambers, and all hill and dale in regard to its floors. Within the widow's room there is a most remarkable place, called Paul's closet. It is a small room, now appropriated to the shower-bath, which stands in one corner, and lighted by a high window. It is vaulted, and the only door is a double one. Over the door it may be seen, after some calculation, that there must be a cavity. Such a recess there is; and it is closed by a sliding panel. Paul, whoever he might be (and that is what nobody knows) was concealed in this room for a long time (nobody knows when), and has left curious traces of his imprisonment. In the vaulted part of the roofing there are drawings done with soot or blacking of some sort, of churches (one of which looks like a lighthouse) with the ecclesiastical doors and their elaborate hinges and locks represented faithfully, and on a grand scale, in proportion to the rest of the edifice. In the opposite angles are marks which

seem to show that Paul was a Catholic. In one is the IHS, and in the other the MRI (only with N instead of M), which tell of his catholicism. Poor Paul was, or believed himself, in danger of being caught, one day, and he crept into his cupboard over the door. Being found there dead, and mere skin and bone, he was supposed to have fastened the panel only too well, and thus to have died a horrible death. Judging by the present state of things, there could have been no want of air. It is to be feared that he died of sheer starvation, all alone, and nobody knowing. Who could Paul have been?

The gardens are delightful, and the vine-covered house on that side. Where the upper storey projects, hanging its vine tendrils above the recess below, there is a clean white bench where one might sit all day and admire the garden. There is a smooth green edged in with old-fashioned flowers. The espaliers are knobbed all over with apples and pears; and the great pear-tree beside the green shows myriads of the fruit. The high brick wall which surrounds this garden is covered—actually covered—with wall-fruit, golden apricots, and plums of all colours. The more delicate vegetables are here—asparagus beds, artichokes, peas, and beans. Passing through a door in the wall, one finds oneself in the terraced garden, seen from afar; and of course commanding the landscape before described—from the bank above the Dee to the Welsh mountains. Here are the potatoes, the cabbages, and common fruits; and, again, apricots and plums, as many as within. The pastures may hence be measured by the eye. The land held by Mrs. S. is two hundred and eighty-three acres, very nearly the whole of which is in pasture. Her seventy cows eat nothing but grass and hay. Modern methods of management have not reached this valley yet. It is the notion here that it must be extravagant work ploughing the ground for roots, because it would be necessary to employ husbandmen; so only eight acres of this farm are under the plough, while ninety-eight are mown for hay this year. Hedge-row timber is in full luxuriance here, because, as the people say, what would become of the cows without the shade? Stall-feeding is of course a thing yet unheard of; or, if heard of, dreaded as the sure and certain end of all fame founded on Cheshire cheese. In the dairy I found the old-fashioned leads, with the ancient spigot, and bung of wood and rag. The manure yet awaits its due exaltation. It lies neglected in the

open air; and in the pastures gives a sad lumpy appearance to the grass, when one comes near enough to see the blemish. The manure in the stalls is sometimes spread over the pasture. Guano has been heard of and used; and the name of bone-dust is not altogether strange. But as to bestowing serious thought on the great subject of manure, the time for that has not arrived. Whenever it does, I am rather disposed to think that the Cheshire cheese will be no worse, and the cows, the grass, the widow, and her dairy-maidens very much the better.

By this time my visit was quite long enough. I had obtained leave to come at seven in the morning to see the whole process of cheese-making. The maidens, of whom there are always three, and sometimes four, rise at five o'clock. There is the milking and the breakfast; and by seven they are ready to begin upon the cheese.

The meal of milk of the evening before was put into tubs, except what is wanted for butter, and for domestic use. The tubs which receive the milk for cheese are two; and there are two more to contain the whey of the preceding batch. When the evening's and morning's meal were poured (mixed) into the two tubs, there were about fifty gallons in each, the yield of sixty cows, ten of the seventy cows on the farm being dry, or calving at the time.

There are two things to be put into this deluge of milk; one for show, and the other for use. For show, a table-spoonful of arnotta is mixed in. The arnotta is a thick, viscid, dark red substance, thicker than treacle, and quite as dark. It is made from the lining of the seed-pod, and from the pressed seeds of a South American and West Indian plant of the Bixa kind; and it is used merely to colour the cheese. There cannot be too little of it put in, for its taste is nauseous to the last degree; and its properties are purgative. There is a constant tendency among the cheese-makers to put in more and more, to make the cheese rich as they say, which means merely highly-coloured. Mrs. S., however, allows only one spoonful to a tub of fifty gallons; and that cannot well hurt anybody.

The other substance put in is the rennet. Irish rennet is found to be the best. Some of the farmers in the cheese districts bargain with the butchers, in selling their calves, to have the stomachs back again; but they must, for the most part,

use them for their own cheese-making; for the regular cheese dairies are provided with the stomachs of Irish calves, brought by travelling agents. Mrs. S. buys enough in the spring for the whole year. She keeps it in a basket on a shelf in the cheese-house, cuts off a few small pieces of the long-dead stomach, (which looks half-way between tripe and parchment) and soaks them in a pipkin with cold water for a few minutes. Some people pour boiling water on them, and let it stand till cold; but the cold water does quite as well, and causes no delay. There is some appearance of mystery in a cup full of water, in which a bit of calf's stomach has been washed, turning fifty gallons of milk into curd in a quarter of an hour: and till lately it was a mystery what the gastric juice of all stomachs was composed of, and how it acted. Now the chemists have ascertained what are the constituents of this wonderful secretion, this juice which is in all stomachs, which has no effect on living creatures, but reduces all dead substances that are swallowed into one uniform pulp, the best part of which goes to nourish the frame. But how it acts there is no knowing, any more than how any of the changes of the living frame are produced. There it is, in the stomach of the calf when killed; and the coats of the stomach are dried; and, after many months, the juice is as good as ever for turning milk into curd, in Cheshire in the autumn, just as it did in the stomach of the living calf, down in County Kerry in spring. While the process is going on, a wooden bowl, with hot water, floats on the surface of the milk, and some people put into the tub a pint, or so, in summer, and more in winter.

The maids are not idle while the curd is setting. One stout wench draws several pailfuls of buttermilk from a copper in one corner, for the pigs: and next, she sets about skimming the whey of yesterday. A thick cream has risen, and makes that great tub look exceedingly rich. She skims it, and deposits the cream in an earthen jar, ready for the churn; and then she empties the whey by pailfuls into what seems a great copper in another corner; but, as the whey vanishes, it is clear the copper is a funnel. The whey runs off through a pipe to the piggery. She is a clever girl who does this. She wears a blue bib like a child's, up to her collar-bones, and her gown is short, to a most sensible degree, as is that of the other dairymaids. They do not go slopping and draggling

about, as ladies do in London streets; but have their dress no lower than the ankle, and shoes thick enough to keep them out of the damp of the moist brick-floor. This girl wants to tilt the tub when she gets near the bottom. She begs no help, but hoists her stout apron through one of the handles, and while she hoists it, kicks a log of wood under the tub. When emptied, the tub is well scalded, and left to hold the evening's milk.

The head dairymaid is meantime looking to the cheeses made on Thursday, Wednesday, and Tuesday, to-day being Friday. In the two rooms now under observation there are six presses, more being in other parts of the premises. These presses look like any first stone that any prince is going to lay for a public building—a square mass which ascends and descends by a screw. The two cheeses made on Tuesday are taken out and examined. They are pressed into keelers—tubs made of substantial oak, lessening in size to suit the lessening bulk of the cheese as it dries. The cheese is now turned out of its keeler, and the damp binder which bandaged it is thrown aside. It is put into the keeler again, the other end up, and the part which does not go in (for the keeler holds only about two-thirds of it yet) is bound round with a broad strip of tin pierced with holes and called a fillet. This fillet is bandaged round the cheese with a linen binder about three inches broad; then a cloth is thrown over the top, and the whole is pushed under the block of the press, which is screwed down upon it. The Wednesday's cheeses are bigger and moister, and some whey is still oozing from the holes of the fillet. The Thursday's cheeses are very soft and yellow, and only beginning to have a rind. The whey runs out with a touch of your thumb. The maid reaches for a handful of long skewers from the shelf. She stabs the cheese through and through in all directions, and throws aside the cloth in which it was wrapped, and which is wringing wet. It is now wrapped in a dry cloth, put, the other end up, into its keeler, bound with a fillet like the others, but with the difference that half-a-dozen of the long skewers are stuck into the holes of the fillet. Then the binder goes on, the cloth is closed over the whole, and it is set aside—not under the press to-day, but with a weight upon it, a slate cover, which has a wooden handle to lift it by. These newer cheeses are more or less wet with whey: they are seamed and marked with the creases of the binders and cloths, and knobbed in a rather pretty way with buttons answering to the

holes of the fillet. These marks are all to be ironed out before the cheeses get quite dry, with a tailor's goose. The goose stands on the stove in the middle of the room, beside the flat-irons used to smooth the cloths and binders. The ironing of cheeses strikes one as a curious sort of laundry business.

Now for to-day's cheeses. In a trice everything else is put away, the dressers wiped down, and the coast made clear for the great operation. I stand between fifty gallons of thick custard (to all appearance) on the one hand, and fifty gallons on the other. A very long, blunt knife is handed to the widow, who this morning does the honours with her own hands. She scores the curd in all directions, calls for a spoon, and invites me to taste the curd. It is very good indeed—to one who has as yet had no breakfast, though kindly invited to the widow's well-spread table an hour ago. The breaker is next handed. The breaker is like a round gridiron, delicately made of thick wire, and fastened to the end of a slender broomstick. With a graceful and slow motion, Mrs. S. plunges in the breaker, and works it gently up and down, and hither and thither, searching every part of the great tub, that no lump of curd may remain unbroken. When she turns—in ten minutes or so—to the second tub, the curd of the first all sinks to the bottom. Then comes the dairymaid, and fishes and rakes among the whey with a bowl till she brings the greater part of the curd to her side of the tub. Then she throws aside the bowl; and, while she retains the mass with one arm, she sweeps the whey with the other for all the curd that is yet abroad. There seems to be such a quantity that one can hardly believe that it all goes to make one cheese. Some of the cheeses, however, weigh one hundredweight, or even more, while those made in winter dwindle to sixty pounds or less.

Two clean white baskets, like round washing baskets, only slighter, are ready on the dresser. A cloth being put into one of these as a lining, the curd is heaped into it when the last morsel that can be caught is fished out. The basket is put into a tub to drain, and the whey is left where it is to send up cream for to-morrow's skimming and churning. In two or three hours the curd will be dry enough for the final making into cheese. It is broken up by hand as fine as possible and salted. The salt is worked in very thoroughly. Mrs. S. can only say she salts it to her taste. The head dairymaid thinks

that she puts about two pounds of salt to the largest of their cheeses. The salting done, the cheese is fit for the treatment described in the case of the Thursday's production; and it will come out to-morrow morning oozing whey through the holes of the fillet and wherever pressed; and it will be stabbed and impaled with those long skewers like its predecessor of yesterday. Meantime, the main business of the day is done. If the girls are skilful and diligent, they can get everything out of the way before dinner, at half-past twelve. There is plenty of hot water in the kitchen copper, which holds one hundred gallons. The keelers are scoured, the utensils all scalded, the cloths and binders washed, and every place wiped and swept and made tidy before dinner. There is no reason why the girls should not sit down to their sewing, or their own employments of any sort till the cows come home for the evening milking. Some awkward ones do not get through their work till four in the afternoon; but if they get tired it is nobody's fault but their own. At nine everybody is off to bed.

The worst thing about the employment is that it cannot stop on Sundays, except in establishments large enough to have a double set of apparatus, and great command of labour. A landowner in the district I am writing of, offered, some time since, a prize for the best cheese, deferred on account of Sunday; and it is found that the milk may be set on Saturday night, and treated on Monday morning, without injury; and the servants do not complain of the Monday's hard work, as the price of the free Sunday. But it is a serious matter that there must be duplicates of those huge tubs, and of everything else that is used, including double space to move about in. Remembering that the work may always be over soon after twelve at noon, I inquired whether the girls could not set to it two hours earlier on Sundays, so as to be in time for church—taking rest in the afternoon. But there is a strange obstacle to that plan. In Wales, and on the borders, the ancient custom remains which, if I remember right, used to be called bundling. The servants receive their lovers on Saturday nights, which is the sanctioned season for courtship. The master and family go to bed, and leave the key of the house with the maids, whose lovers come to sup, and stay much too late to admit of unusual early rising on Sundays. So, cheesemaking is continued as on other days, on all but the wealthiest farms.

As for the cheeses which had been pressed enough, that is, for four days, they are stored in the cheese-room on the opposite side of the yard at the widow's. She took the largest key I ever saw. The key of the Bastille, which hangs in Washington's hall at Mount Vernon, in Virginia, is nothing to it; and the keyhole of the cheese-room is in the very middle of the door. In fact, it is not a common lock bolt that the key draws back, but a heavy bar. The apparatus is bar and lock in one. More presses appear along the wall of this great upstairs room. Cheeses stand on end as close as they can without touching. There is a stove in the middle, and a thermometer hangs opposite the presses. The cheeses, which are turned and wiped very frequently, may stand here six months, though that seldom happens; and the temperature of the room must be regulated in winter. The demand is constant; and the only difference between good and bad times is that prices and profits are higher or lower. Every cheese is always sold. Factors come round and buy, chiefly to supply the Manchester and London markets. It is a capital business. From May to October, two cheeses per day, of near one hundredweight each, is a great creation of commodity. After October, the size of the cheeses begins to dwindle; then the number; until the spring calving of the cows, and springing of the grass, bring round the season of plenty again.

Much more cheese must and will be made yet. In Ireland there is next to none, though the Kerry hills are covered with herds of singularly productive milch cows. Now* that the trade in cheese is made entirely free, it will doubtless be otherwise; for in this case, as in others, what is called protection has been mere impediment to native industry. There is an indomitable taste for cheese in our people; and the demand will henceforth increase, according to the usual principle and practice of free trade. The widow need not dread such an event, either for herself or for her young son after her. She occupies a vantage ground by reason of the goodness and high reputation of her cheese. It will not be superseded by any that can come in from abroad, or is made at home. It is pleasant to see so much prosperity surrounding the widow, and in the shape, not of brick warehouses, or of iron safes at the bank—but of green

* 1860.

pastures, mighty haystacks, sleek herds breathing fragrance, a little paradise of blushing fruits, and vats of yellow cream. May her shadow never be less!

CHAPTER IX.

FLOOD AND ITS LESSONS.

Some circumstances of weather in this year 1859 have called up an incident of my childhood which I had entirely forgotten for at least half a century. I cannot say how old I was, but it may have been five or six, when I perceived one morning that the household was under some remarkable excitement. When I was led down from the nursery, nobody was at the breakfast-table; some were at the windows, and others were at the top of the cellar stairs. I remember being placed there, and seeing the cook rowing herself about on a piece of wood, and trying to get to the pantry for butter for breakfast. This seems to have been the first time that the cellar had been known to be flooded, judging by the innocence of the family proceedings on the occasion: but it was far from being the last; according to the certain rule, that when water has once trespassed, it will come again, till means are taken to divert it. On this first occasion, nobody seemed to doubt about the thing to be done. Men were set to bail out the water—four or five being placed near enough to pass the pails out to the yard. Nasty, muddy water it was, and very hard they worked. I remember how hot they looked.

The next thing I recall is being in a gig, sitting bodkin between my father and a friend of his, who had offered to show us the city as it looked on that strange day. The feeling of awe and discomfort comes over me again now when the images of what we saw pass before me: the obliteration of all land-marks and boundaries near the two small rivers which flowed through the city; and the wretched appearance of whole rows of houses where the doors and lower windows were half under water, and the women and children were looking out of the upper windows, and taking in food from boats. Some men and boys were noisy and frolicsome as they pushed themselves, and

one another, about on rafts or planks, or rowed hither and thither in tubs: but there were some who seemed grave enough —owners of spoiled property, no doubt. The most striking scene was from the middle of a low bridge where, as I remember, the gig stopped, and I was bidden to look up the mill-race, and down the river. The bridge, with both ends under water, stood like a useless bit of building in the midst of a lake. The brown waves threw up a yellow froth, and were as rough as the sea. It was very ugly. The horse did not like walking through the water; so, though we met a great many acquaintances in all sorts of carriages, come out to see the sight, and everybody stopped to talk with everybody else, in a sort of holiday way, I was glad to get home. There were the men still at work in a row from the yard to the cellar, and hotter than ever; and they said the water was higher than when they began; so they were sent away. Thus has that morning risen up again in my memory, after an interval of fifty years, during which I am not aware of having ever been reminded of it.

Throughout that region of the kingdom, the inundation of the low-lying parts of towns, as well as of the country, has ceased to be anything remarkable. The most careless observer, the most thoughtless skimmer of newspapers, now occasionally wonders how it is that floods are so much more frequent than they used to be. There is seldom a year now in which we do not read of disastrous inundations, by which cattle and sheep are drowned, and crops destroyed, and embankments burst, and, in newspaper language, 'a wide-spread ruin has devastated a scene of the fairest prosperity.' Then comes the raising of subscriptions for the sufferers, and estimates of the damage, and exhortations to patience under the visitations of Providence. Something ensues that we hear less about. The doctors could tell us of disease spreading from house to house, and especially of fevers cutting off the strongest men and women in the vigour of their years; and the clergy could tell of the increase of burials from every district, and from every alley where the waters had stood among the foundations of the houses. Perhaps some few sensible people might be found asking whether an evil so manifestly increased by the acts of men, can be properly, or with any reverence, called a visitation of Providence. The rain comes from the clouds, they are told in reply, and the streams take the course they have held since the world began—or at least

for more centuries than man can account for; what, then, can we do but bear our misfortunes as patiently as we can? We shall have something to say to this presently; but first, we must look for a moment to the circumstances of the present year, 1859.

The inequality of the supply of water in various parts of the United Kingdom seems to have been almost or quite unprecedented. The untimely frost of November, 1858, was pretty general; and so was the absence of rain during that and the succeeding month, when rain is supremely desirable for the replenishment of the springs for the next year's use. From Christmas onwards, however, different parts of the kingdom had opposite fortunes. In some southern and eastern counties, the farmers were still obliged to exert themselves to obtain water enough for their stock; while, in the northern and north-western counties, it seemed as if all the clouds in the atmosphere came up in interminable succession, to put the fortitude of men to the proof. Immediately after Christmas-day, it began to rain violently in the hill-country of the north; and it never stopped, for more than a few hours at a time, till April.

In hilly districts, where there are always ponds or lakes in the levels, and usually on the heights also, the winter is usually a varied and cheerful season. If it is a clear, frosty season, the still waters are frozen, and the skating and sliding are superb sport. Among the hills and in the corners of the valleys, the boggy places become hard, and many a height is scaled, many a fine point of view frequented, and many a range of woodland traversed, which can hardly be attempted at any other season. It is the time for the woodmen to make their gains; and the stroke of the axe, and the crash and shock of the falling tree, are echoed from the heights above or opposite. It is the season for timber-sales and contracts for the bobbin-mills' supply, so that groups of men of business go from copse to copse in the hardest weather, marking the trees, and setting labourers to work in their rear wherever they go. While this is going on, nature is doing the work needful for the soil. The frost penetrates and pulverises the soil, and prepares it for being worked for tillage. If, instead of hard frost, with its peculiar benefits, there is snow, with a milder temperature, all may go on no less well. Vegetation thrives under its soft and air-conveying covering, and the time is favourable for many farming operations—

preparing the ground, restoring the fences, and clearing the drains and ditches, unless the snow lies very deep. So January passes away; and in February there is the ploughing to be done in the arable parts, and bush-harrowing and manuring the pastures, while idle pleasure-seekers are discovering the swelling of the buds and the sprouting of the early weeds and flowers, and the softening of the hues and forms of the woodlands as the frosts depart, after having done their office. In March come the drying winds, which soon call for the seed to be put into the ground. Teams and men are in the fields, so that every hillside has moving figures upon it, and the jingle of the harrow is heard all along the roadside below.

Very different from this ordinary course were the opening months of the present year in the northern counties. A strong west wind set in before New-year's Day: and it scarcely intermitted for three months—scarcely ceased bringing up such masses of cloud, that the wonder was how they could be supplied, seeing that none of them went over eastwards, but all apparently came down within the circuit of the mountains. The streaming of the rain against western windows became truly a weary and dreary sound; the plash from the spouts about the house was unceasing, too. When the tarns in the uplands were once filled, floods were the order of the day till the rains should stop. When the channels of the torrents were overfull, every slope became a bog, unless the soil was shallow; and then it was washed down, leaving the rock bare. In the valleys, the rising of the rivers and brooks was hourly watched by all who knew what to expect. While the current ran fast towards its outfall, and kept its channel, the rains were merely inconvenient and depressing; but they did not stop; and when the lakes rose beyond a certain mark, incalculable mischief was sure to ensue. The river could not empty out its waters, and "backed up" the tributary brooks; the brooks "backed up" the ditches and drains; and then, of course, came the floods. In each valley, probably, there is some stream or pond which is the exponent of the state of the waters. When its waves are seen in twilight or at dawn, or from afar, creaming and curling above its banks, the observers know their fate. Gleaming waters will soon show through the grass of the pastures, increasing so fast, perhaps, as to cause the horses or cattle to crowd together on any hillock where they may save

themselves from being cramped in the cold water. There they stand dripping, turning their sterns to the west, and drooping their heads, or trampling the ground by their restless movements till they are knee-deep in mud. Drains in the home-field burst after a time, the high-road is scoured to its foundations, and the soil lodged in the ditches. In gardens, the gravel is carried from the walks, and deposited on all the beds which are at a lower level; water stands in among the foundations of dwellings, and rises in the cellars; funerals are more dreary than ever: not only because the pastor and the mourners must stand under streaming rain, but because the water rises high in the grave. The low-lying lands are under water for days and weeks together: and now and then a wall gives way, or a well-known tree slopes from its loosened root, ready to fall before the first gust of wind. After seven or eight weeks of such weather, people's hearts may well sink; and they did sink in many a district last winter. For weeks they had not seen sun, moon, or star. By the beginning of March, the hills, for miles together, looked shiny and slimy, like the mud-banks of an unwholesome river, so that one almost expected to see the whole surface come sliding down in one great landslip, leaving the skeletons of the hills quite bare. Yellow moss would be sure to spread where the pastures should be greenest. In the poultry-yard, the draggled hens could have little hope of broods; and no chicks could live if such weather went on. Still, however, the west wind blew strong, and the floods streamed against the pane. All this while, nothing had been done to the soil; no delving and trenching in January, no ploughing and clod-crushing in February, no sowing and harrowing in March! No frost had pulverised the soil, and there was no ventilating it by labour. It could not be worked, for it was a mere mass of mud when not overflowed.

Such was last winter in the north of England. In some of the level counties more to the south, the phenomena were as like as the difference of the scene permitted. The main difference is in the character of the streams; and the painful spectacle there is of the slow swelling of the sullen waters, as if they were replenished with mud from beneath, till the soft banks give way here and there, and a few tons of earth fall into the tide. As the flood rises, the tributary streams become swollen canals, and overflow, and join their waters, till the trees,

and hedges, and houses, standing above the surface, are the only sign that one is not looking abroad over a lake. These are the districts where fever lurks constantly, occasionally making a great sweep in the population of village or town. These are the districts where the clergy, the educators of children, the employers of labour, are in despair, because ineradicable vice blights all their labours. Drink and profligacy abound wherever fever, ague, and rheumatism are fixtures. It is an old and sad story, that of the use and abuse of stimulants in damp and unwholesome settlements—everywhere, from the Irrawadi to the Mississippi—and it is as true and as dismal in the heart of England as anywhere in Asia or America. Where men cannot have a sound body, they are sure to have an unsound *morale;* and if it is desired to find out the most certain home of drink, laziness, listless restlessness, and consequent profligacy, it may at once be found in a district subject to inundation. Let the surgeon and the clergyman bear witness.

"Yes," it may be said, "where inundation is a habitual evil, these things are no doubt true; but the present subject is the winter of 1859; and it appears that the floods were very partial last winter, and most mischievous in some places where the evil had not before been known to anything like such an extent."

This is true. The inequality of the rain-fall in the United Kingdom last winter was very remarkable: and it is this inequality which suggests the most important lesson of the occasion. The inequality between one region and another, and between one season and another, taken in connection with the growth of the mischief on the whole, should incite us to the most careful study of the case, and inquiry what can be done.

If the main glory of science is that it enlarges and strengthens the faculties of men, its secondary glory is that it gives man power over the forces and transactions of nature. When, therefore, man finds himself injured or embarrassed by any of nature's movements, his best wisdom is to inquire of science whether she can furnish him with a remedy. "What is the use of such an inquiry in this case?" the objector may say, recurring to the fact that man cannot command the clouds. There is use in the inquiry, for science has actually supplied man with a remedy against the excesses of the weather. It is quite true that we know less about meteorology than about any other department of science in which we are equally interested. It is true that of

all the great agencies of nature—the winds and the clouds they bring—the heat and the rain—may seem to be the most unmanageable. It is true that mankind have been trying all the expedients they could think of for thousands of years to bring rain or keep it off; and always in vain ; and that the heathen priests in Central Asia succeed no better in their prayers and charms for or against rain than the British sailors in whistling for a wind ; but still man may, to a considerable extent, secure himself from the damage caused both by excess and deficiency of water.

Some of my readers will here be transported in imagination to the fen counties of England in their ancient state ; and it is true that they illustrate, to a certain degree, what I am saying. There was a time when large tracts, which are now among the most fertile parts of England, were as dreary as the Dismal Swamp in America is now. The inhabitants built their houses on rising grounds which were islands when the waters rose ; and they scarcely knew what health was. Ague was in every house ; and almost the only produce of the district was waterfowl, with a good many eels, and as many leeches as were wanted for all Great Britain. The scientific drainage of millions of acres of such a country was a great triumph of knowledge and skill ; but long after it had been accomplished, water was still mischievous elsewhere. It had been seen that intrusive water from the sea, or from barred rivers, might be controlled and got rid of ; but it did not for some time occur to the minds of agriculturists that water from the other place—from the sky—could also be managed for man's convenience. The chemists set about the business before the cultivators of the soil ; and the engineers followed the chemists. Inquiries were made into the effect of stagnant waters upon vegetation ; and then ensued a great series of disclosures, by which it appeared that land has no chance of showing what it can do in the way of production while it is left at the mercy of all the rain that falls. The temperature of the soil is mischievously lowered by the presence of water ; and when the roots of plants lodge in stagnant water, they become diseased, and can give no vigour to the stem above ground. The structure of the soil is injured by wet, which causes it to cake and exclude the air ; and the roots of plants require air as much as supplies of fresh water. From such discoveries grew up the practice of agricultural drainage, which the

engineers have carried into effect, after the chemists had proved its necessity. Man can now render his land pretty much what he chooses it to be. He cannot forbid the clouds to come, nor make them pass over without shedding their rain; but he can provide for the rain passing quickly through the soil of his fields, and running off, leaving it porous and friable; and he can provide for the roots of his corn and grass being fed by the rain, without being soaked and rotted by sour and stagnant moisture. This much man has done, and done well. But he has stopped in his work, and thus made it almost as mischievous in one direction as it is useful in another.

In providing for the clearance of the soil from superfluous water, it did not occur to our improvers that provision ought to be made at the same time for carrying off the increased quantity from the ditches, brooks, and rivers. The consequence has been that we hear complaints from all parts of the kingdom of the increase of inundations. In level districts, where the natural channels were before hardly adequate to their purpose, the new surplus of water after a rainy day cannot be dealt with. A sluggish river, full to the brim at the end of December, used to do very well through an ordinary winter, because January has some dry weather, and the rains of February would take some weeks to dribble through the soil, and would fall into the channel when the dry winds of March were prevalent. But the state of things is very different now. All along its banks, and far inland, the farms have a network of drains underground, by which as much water is brought down in three hours as used to take three weeks to reach the river. Under the bank, all along both sides till they are hidden, the outfalls may be seen pouring out their little streams; and every tributary brook and ditch discharges its contents vehemently, because it is itself overfull. The grass-lands along the banks of them, which used to give such fine hay, are now spoiled. The grass is blue in summer and white in winter, and makes the cattle ill like the produce of the marsh. It is overflowed when it is already too wet, and left parched when the streams shrink. The banks are sapped, and much soil is buried in the water, diminishing the area of the land, and obstructing the channel of the river. Dwellings which used to be healthy, are now the abode of rheumatism and ague, and damp is found to be creeping among the foundations and into the cellars, where not a speck of mould was

ever seen while the river kept its channel. The effect is almost as disastrous in hilly districts, where the streams have more the character of torrents, and there are greater facilities for the waters running off. The difference between the old times and the present is this: formerly, the farms had scarcely anything to do with the matter, and nature managed matters in her own way. The tarns or upland ponds were getting filled during a rainy day, while the lower tributaries were carrying their waters to the rivers, and the rivers to the lakes: and by the time the tarns overflowed, the surplus below was disposed of; and thus there was a full stream for a longer time, instead of a sudden flood; but now that tillage and pasture have spread up into the hills and over them, every farm contributes its group of streams, and the floods come rushing down into the valleys all at once, and lay them under water, long before the tarns overflow. Generally speaking, no provision is made, in highland or lowland, for enlarging our main water-courses. *Arterial drainage* should have been regarded as a necessary consequence of agricultural drainage; but it has not been so, and the effect of this negligence is, that we are more troubled with floods than our forefathers ever were.

It is not only that we have neglected to improve our arterial drainage—we have allowed it to deteriorate. Where do we see due care taken of the channel of any river in England? Do we remove shoals in the stream, and clear away encroaching roots of trees, and cut off corners that grow into promontories, and mend banks that are likely to fall, and root out spreading weeds, and keep the outfall clear! Before men concerned themselves with the rivers, the rivers took good care of themselves. They scoured their own channels, and deepened their own beds at need, and kept their outfalls clear; but when men made use of them, and obstructed their waters, and tampered with their course, without, at the same time, providing for their conservancy, they began to deteriorate; and now that we require them to convey away more than they can carry, they necessarily fail us, and return the surplus waters upon our hands.

This reminds me that men have done worse than neglect these natural water-courses; they have damaged them to an incalculable extent. Two centuries ago, there was a complaint that some water-mills, worth 10*l.* or 12*l.* a year, spoiled land worth 20*l.*, or 30*l.*, or 40*l.*; and during these two centuries,

there has been a vast increase of water-mills. A more intolerable nuisance hardly exists; and nobody would dispute this who would walk along the whole course of any one of the sluggish rivers of the midland and southern counties of England. Every few miles there is a dam; the natural uses of the river are destroyed; it cannot convey away the drainage of the intermediate farms; it eats into the land; it poisons the villages along its banks; it fills the public-house and the churchyard: and all for what? To turn mills which would be far better worked by steam. What should be done in such a case? Our chief authorities in agricultural matters have for years been insisting that the corn-mills along our rivers must be abolished, and replaced by steam mills, in order that the natural drainage of the country should be restored; to which we may now add, that the arterial drainage of the country must be systematically extended if we are to get the mastery of the waters, and be spared the ruinous inundations which kill our citizens by thousands, and destroy property to the amount of millions. But how? Who is to begin? Beginnings have been made in various places; and great is the encouragement they yield. In 1852, the Earls of Carlisle and Fitzwilliam, and some other proprietors in their neighbourhood who had united to rectify the Rye and Derwent drainage, effected a most beneficent work. The two streams which should have drained an extensive valley, were obstructed by some locks and six mills—of only seventy horse-power collectively—the chief stoppage being at the point where the united rivers once discharged themselves through a ravine which seemed placed for the purpose. After long consultation, the lapse of years, and the conquest of many difficulties, an Act of Parliament was obtained, the mills were bought up and destroyed, and steam mills substituted; the moorland waters were carried off as they came down; the wide valley was duly drained, and the broad areas of pasture which stood under water all winter were laid dry; ague and fever ceased; tillage gave more and more ample returns; and what is more to my present purpose, floods were almost abolished. The farmers of the valley declared that they had known one single flood cost more than the entire expense of the improvements: and if the Act had not limited the assessment to 30,000*l.*, the proportion of gain would have been higher, because better arrangements could have been made for the under-drainage of the district, and the im-

provement of the streams within it. It is worthy of notice, however, that the proprietors along the banks, animated by the benefits they had at once received, presently contributed towards scouring and amending the channels and keeping the banks, and again towards making a cut of some miles in length, which largely increased the power and capacity of the stream, and raised the value of all the land in its neighbourhood.

Thus floods may be reduced or abolished, it is clear. Almost every winter now repeats the lesson, that we must reduce or abolish the floods, which have become one of the gravest evils of our national lot. The improvement of our *arterial drainage* in a systematic way must be a national work, demanded from government through parliament. But while creating and urging this demand, we need not wait for a grand general scheme and apparatus. The Yorkshire proprietors did not wait. Wherever the evil exists, let the inhabitants unite to do what they can in their own case. Every valley saved, every river restored, every hamlet or farmhouse made healthy, is so much good; and as for the cost, it is invariably and speedily repaid by the increased value of land and houses, and the improved security of produce. Such seasons as those of 1859 ought to stand on record as the last in which we were patient to endure evils which it was in man's power to remedy.

CHAPTER X.

DROUGHT AND ITS LESSONS.

In writing of the floods in the early part of 1859, it was easy to be cheerful and philosophical, because the evil was over for the time, the losses had been accepted as irremediable, and the picturesque aspect began to appear, under which we come to regard past trials. It is otherwise at this moment in treating of the drought which has ensued. I am sitting in the midst of the devastation caused by it; and all around me are feeling the heaviness of a life which is largely occupied in struggles to provide from day to day so essential an article as water. If we do not derive some good lessons from such an experience as we are

undergoing during this summer of 1859, we must be thoroughly unteachable, and pain and anxiety will be the unmixed evils which they never need be.

In many parts of the kingdom, the drought of this year is more severe than any on record; but elderly people remember things which should have taught our fathers to prepare us better for the present visitation. The summer of 1820 is associated in the minds of those who remember it at all with the excitement of Queen Caroline's trial. The heat struck down dead several labourers in the fields, and many horses on the roads; and the night seemed to be turned into day. In London, the Parks were thronged to the last minute allowed, and the streets were full all night; and so it was in the country towns, where the neighbours lent one another newspapers, and went about gossiping over the great trial throughout the cool hours. Not the less, however, did multitudes all day line the roads by which news was to travel; and all who had horses rode out to meet the mails, and gallop home with the news. It was too hot for sleep or rest: the gardens yielded no pleasure, for they were as brown as thatch, or as white as the roads; and there was discomfort in almost every household, from the scarcity of the first necessary of life. In the grazing districts, the grass was dry before it was mown, and sapless as saw-dust. The cattle were restless in the meadows, their tongues hanging out, and their tails whisking incessantly among the swarms of flies which never paused for a moment in their persecution. It was a piteous sight to see cows and horses perpetually returning to the hollows or ditches where they were accustomed to find ponds and brooks, but where now there was only mud or dust. The hot summer passed away; and it does not appear that anybody learned anything by it.

The summer of 1826 was worse—at least in the midland counties. There the work-people sat up all night to watch the springs. They were even more tired than usual with their day's work; but they could not sleep, and must take the only chance of getting water. Their fretful children would not lie still; they were themselves too feverish to sleep; and groups of neighbours, therefore, took their pitchers and their infants and sat, in hope deferred, beside the springs till the sun was up again. The most welcome present that the citizens of any rank could send to each other was a pitcher of fresh, cool water; and it was

offered and accepted as a bottle of Tokay would be in ordinary times. In Lord Dudley's beautiful park at Himley, the lake, ponds, and streams were so entirely dried up that the deer could not be preserved. They were drooping and dying, when Lord Dudley, whose brain was giving way under the disease which soon became hopeless insanity, resolved to turn the incident to account, to gratify his crazy avarice. He ordered the deer to be killed, and cut up and sold as venison. The whole country round was unsuspecting and delighted. Ordinary folk could now send a haunch of venison to their friends; and all who contemplated giving a dinner at any future time would give it now, since they could set their guests down to venison. The case turned out even worse than the venison-suppers in backwoods' travelling, which "keep the word of promise to the ear, and break it to the hope." In America, the venison is unmanageably tough; in Worcestershire, it was flabby. It was worse. Suffice it that the sellers presently asked twopence per pound for it, and immediately after could not get a farthing. Throughout the higher *terrain* of the midland counties the wells stood idle and empty, their buckets cracked, and the ropes dangling. Brewers' stocks were rapidly exhausted. Food would not keep. Dogs were suspected. When the memorable thunder-storms of August burst over the land, the most panic-stricken enjoyed hearing the rain come down.

That was a long time ago; and now, after thirty-three years, we find ourselves no better prepared to encounter a drought than we were then. Yet we might have been. Other people are. There are whole provinces in continental countries where the people and their fields are as nearly independent of the season in regard to water-supply as we should be of inundation, if we had carried agricultural and arterial drainage to their highest perfection throughout the kingdom. What they have done, we might do. What might our condition have been, then, and what is it, in this summer of 1859? It will be happy for us, and more than we deserve, if the question is not even more serious in the autumn than it is now.

Scientific men give us, with one accord, the following account of how we are supplied with water. Taking the average of the surface of England, 1300 tons of water per acre is the amount of rain-fall. Of this quantity, about ninety tons reach the subsoil, and replenish the underground reservoirs from which the

springs are derived. The rest goes away in evaporation, and vegetation, and drainage. From April to October, very little water sinks down to the reservoirs, as vegetation uses up more, and evaporation goes on at its most rapid rate. The smallest evaporation takes place in the four months which follow October; and they are usually our most rainy months; so that our main reliance for plenty of water is on a rainy November, December, January, and February. More than 83 per cent. of the replenishment of the springs is ordinarily supplied during that third-part of the year. If November and December are duly wet, we may be easy about the water-supply of the next year, except in the places which have few or no springs, and depend on the immediate rain-fall. If rain falls in January too, all is safe. It is not asserted that people feel thus easy or uneasy, or look into the grounds of expectation for the next year. Most of us would as soon think of consulting a fortune-teller as to the weather at next haymaking or harvest. Few of us know enough about the matter to occupy ourselves with it so long beforehand. It would be well if we did; for it is inconceivable that we should not attempt to store up a water-supply, if we were rationally convinced that the spontaneous one would fall short.

Meantime, those who do understand the case have been for some time warning us that the rain-fall during the non-evaporating months has been deficient ever since 1852. The farmers have not needed to be told that the springs have, during that time, been shrinking, year by year. It appears that for six years before the potato-rot, the winter rain-fall had considerably exceeded the average, that it was very irregular for the next six, being for two of the six rather below, and for the other four considerably above, the average. Then came the very wet winter of 1852-53, when nearly eleven inches of rain fell, instead of six and one-third inches. Every one of the six years since that date has been far below the average; and the last winter the lowest of all, being scarcely more than half the average. In fact, the rain-fall of the last two winters has barely exceeded the average supply of one. This may appear strange in connection with our recent complaints of floods; but a little consideration will show how the two facts may be reconciled. After an actively evaporating month of October, we had a very dry November. We have not forgotten the bitter winds, and the early, intense, and protracted frost which surprised and

troubled us. December was dry till near its close; and the rains of January were very partial. We must remember, too, that inundations are caused more frequently by the sudden rush than by the total quantity of water.

Long before the rainy months arrived, the farmers in the eastern counties were last autumn paying for water for their cattle. In February, the springs were not flowing as they ought to be; and they did not give forth a fuller stream as spring advanced. On the contrary, they did not answer to the draught from them; and in May, when they usually reach their greatest height, all were low, and many were actually dry. Meantime, April had been dry, and very unfavourable to vegetation. The beginning of the month was like the middle of May; and then came a sudden frost—more disastrous than that of November; the snow fell thick, and drifted among the hills of the northern counties and of Scotland. Since that snow, no serviceable rain has fallen throughout large portions of England, Scotland, and Ireland. The inequality of weather has been remarkable. We have heard of floods here and there; and the thunder-storms, attended by heavy rain, have been numerous and severe in many places, including London. But while the water stood a foot deep in London streets, and filled cellars, and covered wharfs along the Thames, the inhabitants of the south-eastern counties were seeing all things turning to dust before their eyes. Lawns and grass-plots were mere cakes of brown fibres; gardens went to ruin altogether; and the cows and carriage-horses of the gentry were kept alive by water which paid ninepence toll, twice a day, in its course from the distant river. Matters were worse in June in those counties than they were in September of last year. What, then, is the prospect for the coming autumn, it being absolutely known that the springs were never filled?

We hear most about the eastern counties, because the inquiries made have been illustrated chiefly by their condition; but the phenomena of drought have been even more conspicuously manifested in other regions. In Scotland, we heard from many parts that there was no hay; that everything was burned up; and that the young grouse were perishing of thirst. From Ireland we had news of a fine potato-crop, but of little else, till some genial rains fell at midsummer. In another week or two the supply of water in Dublin became insufficient for household and industrial purposes; and all luxurious use of it was stopped

by the authorities—the citizens being choked with dust from the discontinuance of the practice of watering the streets. While writing, we read that, except in a part of Galway, all Ireland is parched with drought, so that the spring crops in many parts are not enough to employ the sickle, and all hope of green crops is so completely over, that the farmers are sowing rape in their "vacant fields."

While the French emperor was buying up our stocks of hay, the prospect of an average supply became daily more hopeless; and it is certain that owners of cattle and horses will be heavily taxed as the winter comes on for our general ignorance of the right method of guarding ourselves against an insufficient water-supply.

The smaller details which come under one's personal observation give, however, a more accurate and lively impression of the seriousness of such a calamity as that of the present season; and I will, therefore, describe the state of things in the district in which I live.

In April, it became clear throughout the great fruit-counties, that the year must be a disastrous one to the owners of cherry, and all plum and pear, orchards. A cherry-crop worth 200*l.* in ordinary seasons was destroyed by frost in one night; and this was only a specimen of what was happening throughout half the kingdom. In our northern county, Westmoreland, this disappointment about fruit was the first of a dreary series. So little rain followed the frost, that the sowing of root-crops was difficult, from the caked and unprepared character of the soil. No rain followed to encourage the seed to sprout. Shoots appeared at intervals, leaving long bare spaces. How anything came up, was the wonder; for all that was previously growing stopped. After the 26th of April, no rain fell. The grass shut up for hay, could not overtop the butter-cups. The gardens could not be watered, for the wells were getting dry, one after another, and the streams were becoming a mere chain of stagnant pools, warm and disagreeable for household purposes.

Such pump-water as could be had was muddy, or had fresh-water shrimps wriggling in it. Owners of carts began fixing a barrel in the vehicle, and selling water from the lake at sixpence the barrel. Owners of cattle spent freely, to water their stock; and private families collected water patiently for many days, to meet the needs of washing day. Children who had pet flowers,

and boys or men who held prize plants, grew more anxious every day about keeping them alive. Every drop from the wash-basins—baths were by this time a too selfish luxury—and from the wash-tub was given to the most necessary vegetables, with daily diminishing hope of keeping anything alive. The character of travelling in the lake district was quite altered. A new and dreary silence prevailed in valleys always hitherto resounding with the voice of many waters. Scale Force and Lodore contained each a mere runnel of water; and Ara Force was actually abolished. Throughout its entire ravine, all was dry, silent, and desolate. The tarns on the uplands were basins of caked earth, or of slime: and instead of floating blossoms of water-lilies, there were only their dirty, contorted, shrunken roots sticking up in the slime. The mountain slopes grew yellower every day, and the fields in the levels browner. The great oaks and other deep-rooted forest-trees began to droop and show the wrong side of their foliage, like shrubs that have stood in a strong wind for a whole day. It became a matter of grave daily toil to provide water for ducks and fowls; and the restless cows were perpetually going to their usual watering place, and turning away disappointed. Thus matters went on till the 20th of June, when a little rain fell in the night. On the 22d, 23d, and 26th, there were some heavy showers. We hoped our troubles were over now. What their pressure was, may be judged by the remark of a visitor, that it would frighten her to think of going through such an experience a second time; but that, as it *was* to happen, she was glad to have been in the midst of it, as it would be a thing to talk of to her latest day. When she said this, our trial was recommencing, and while I write, our condition is truly calamitous. After the 28th, there was no further relief. There had not been rain enough to fill the springs, nor even to penetrate the soil. At present the soil is mere hot dust to any depth reached by the spade. Throughout whole valleys, where the farms form a chain from end to end, and the hills are usually peopled with grazing herds, the cattle are all sold off. The yards and sheds are empty, and the farmer has little diversion from gloomy thoughts — his stock being gone at much less than their value, and his crops dried to powder. The grass is still standing, sapless, and in the seed—bad hay, but left for the chance of St. Swithin's mercies. The gentry are going away to places where there is

water. Families are sending their linen to distant towns to be washed. The night does not bring rest, as usual. The servants are sent to bed at sunset, because they choose, with the generosity which they show in seasons of trouble, to get up in the middle of the night, and collect water enough to carry us through the day. We look out every hour to windward, in lingering hope of seeing clouds coming; and by the time we are settling to sleep, the servants are rising and stealing out in the dawn, with cans and garden-engine, to fish up, at its coolest, such water as may have collected since night fell. But, other people pursuing the same plan, the neighbourhood is all alive, and collected at the brooks. All day long, everything is perishing. The young broods in the poultry-yards, which seemed to do well for the first month of their lives, pine and die off. There is no end of burying young turkeys, ducks, and chickens, even though they are kept supplied with enough to drink. The most striking object under the phase of drought is perhaps the mountains. They turn before one's eyes to red rocks, like those in the Arabian deserts. Hour by hour the green covering shrinks, and the red spaces expand, till we hardly know our own hills. The lakes contract, and are deformed by broad new margins of mud, or of decaying vegetation. We are astonished at the severity of the experience, never having conceived the anxiety of watching in vain for weeks, during which the precious summer is slipping away, nor been aware of the number of points at which the nuisance would touch us in our daily lives. St. Swithin has made no difference, except in deepening our disappointment; an indescribable apprehension creeps over us, an idea that "it *cannot* rain;" and the question haunts us, whether we have not shot an albatross. One pleasant relief comes from London — dozens of bottles of Malvern water and blocks of American ice, packed in salt and sawdust—sent by thoughtful friends. Such is now our situation, and while I describe it, the glass is high, the sun glares; there is not a cloud in the sky: and the news flies through the neighbourhood that there is not a drop of water up at the great Hall, where such a phenomenon was never known before. Could anything have been done to avert all or any of this distress and loss? Yes; the evil might have been deferred and mitigated; though, perhaps, not, in such an exceptional season as this, altogether avoided.

What do people do in countries where drought is an annual

incident, as in India and China, and as we might add, Lombardy and Piedmont? They store up the water when they can get it, and let it out, with art and nice economy, when it is wanted by the vegetation. It would require several pages to give an idea of what is done in India, where areas of many square miles are reclaimed from a desert state to one of the richest fertility by husbanding water in its season. The future prosperity of India depends more on irrigation than upon any one other art or process within human means. Scarcely less striking is the fertility secured throughout the great plains which stretch southwards from the spurs of the Alps. We have lately been reading a great deal about what the French army found there—the interminable verdure of the mulberry trees—"trees planted by rivers of water" for hundreds of miles, and always ready to yield large crops of juicy leaves, in the hottest weather, to the breeders of silk-worms. If they were as helpless in a drought as we are, the people of Lombardy and of Piedmont would soon be starved, in such a climate as theirs. The levels of all the great streams are therefore ascertained, and reservoirs are formed where they are wanted; and sluices are placed, and channels carried down, so that water can be administered to the soil with regularity and in abundance.

This irrigation is one of the gravest interests of society in those provinces beyond the Alps. The quarrels of neighbours, and the controversies between districts, relate more to water-supply than to any other topic. Lawsuits spring up along the course of rivers, and jealous and spiteful men can make themselves extremely well hated by turning a cock, or closing a sluice in an injurious way. Count Cavour has taken this to heart, both as a statesman and a country gentleman. We have recently heard a good deal about the occupation of his lands in the province of Vercelli by the Austrians, and have learned how extensively they are irrigated, for the growth of rice and other products. As the proprietor of these lands, Count Cavour has used his influence in the province to get a "water-parliament" established; that is, a council elected by proprietors of water-rights. By this council, the whole apparatus of irrigation is guarded, kept up, and improved; all operations are watched and reported on; and all complaints are heard and adjusted; so that, except when the Austrians are there, the territory produces in abundance all sorts of crops except jealousy and strife. Does

not such an arrangement reproach us with ignorance, indolence, and wanton waste? Where is all the water gone which overflowed us so mischievously last winter? We let it run to waste; and what is our condition now for want of it?

For the common people of our country, however, perhaps the most impressive example is that of the German peasantry. Some ancestor of each peasant who has a patch of patrimony once did for that patch what the owner of to-day will do with every yard of ground he adds to it. The turf, or the soil, as far as the subsoil, is removed—cautiously shifted to one side; the level is carefully ascertained; and then, whichever way there is an incline, it is made regular and continuous, and as gradual as possible. This done, the soil is replaced—the incline being preserved—and little channels, a couple of inches wide, are made at regular distances, intersecting larger ones at right angles. Water is turned into these, as often as wanted, from the store at the top, whether it be the river or an artificial reservoir. If strangers, at first delighted to see the shining runnels in the grass or among the furrows, stand aghast at hearing at what a cost of labour the blessing is obtained, they are immediately consoled by finding that the expense is usually repaid by the crops of the first year, and in the most difficult cases, by those of the second. In grass-lands, four crops a year is the rule, both with the Germans and the Italians.

Now, how many of our landlords, tenants, or small proprietors have any accurate idea whatever of the levels and inclines on their lands, or have ever thought of gathering the rain-fall, and letting it out at pleasure in dry weather, over the length and breadth of their fields and meadows? No part of Mr. Mechi's farm is ever drowned or parched; and Lord Hatherton has achieved a great fame by his water-meadows at Teddesley, near Penkridge, in Staffordshire. He has turned a worthless and unsightly waste into an Eden, by united drainage and irrigation. He tapped the swollen swamps and spongy bogs, and drew off the water into a great reservoir, whence it descends to the farm-buildings, for use and the drink of the stock, and as the moving-power of the machinery set up there: and thence it is led down, by methods resembling those of Lombardy and Germany, to fertilise above 100 acres of meadow-land, which produce twice as much hay as formerly, at the cost of 4*s.* 6*d.* per acre for laying the water off and on. Mr. Bickford's method of irriga-

tion has become increasingly known and acted upon for several years past; and we must hope that, under the great impulse which now carries agricultural science and art to a height never conceived of by our fathers, our countrymen will take in hand the great work of compensating for the irregularities of the seasons by the devices of human forethought. The losses in this single year by flood and drought must be as great as those of a year of war, probably much greater; and yet they might have been avoided. In a region where lakes lie in a chain or a group, divided by the levels of valleys, it is a shame that those levels should ever be parched by drought; and, indeed, wherever there is any inequality of surface, either superfluity or deficiency of water ought hereafter to be considered a disgrace. Under the sore suffering of the existing drought, we cannot help thinking that this new mastery of the irregularities of seasons will date from 1859.

This description of our experience in the summer of last year reads strangely at the close of 1860. I present it unaltered, for the sake of the light thrown on it by the misfortunes of this year. We all see plainly enough now how much discomfort, perplexity, and loss would have been spared if we could have overruled the floods and the partial drought which deprived us of food for stock during the early part of this year. Our springs are now filled again, and our next danger will probably be from inundation. We have done nothing to obviate it. If it is true that an effectual General Outfall Bill is to be brought in early in the session of 1861, it will be the business of all members, and all their constituencies, to set in earnest about getting it passed.

HANDICRAFT.

CHAPTER I.

FLOWER SHOWS IN A BIRMINGHAM HOT-HOUSE.

HALF-A-CENTURY ago, one of the things we were most sure to see on entering the parlour of the farm-house, lodging-house, or shop-keeper's back-room, or the kitchen of the best sort of cottage, was a gaudy tea-tray, set up against the wall on the top of the bureau, or the side-table, or the dresser. On the tray might be painted a yellow tiger, or a scarlet lion, or a pink shepherdess with a green shepherd; or a very yellow sheep beside a very red cow; or flowers and fruit, not particularly like anything that ever was really seen. Those were the war days; when the English taste had no opportunity of being improved by intercourse with foreign countries. Those were the days when brown and white cats, and green and scarlet parrots, in frail plaster, stood on the mantel-piece, where we now see busts of great men and casts of the Graces and the Muses, and of Cherubs and Gladiators, and of Joan of Arc, and William Tell. Those were the days when we knew nothing of the most graceful and brilliant flowers that the great were importing from foreign lands. The China-rose was only just beginning to grow beside the cottage window. Lady Holland was bringing the dahlia from Spain; but it had not yet superseded the sunflower in common gardens. The fuchsia had still the small red blossom that we now see less often than the variegated and highly-magnified kinds which are the pride of the window-sill in town and country. There might be no harm in this; for there are many who prefer the original fuchsia to this day. But it was not common, and we do not remember that it ever grew to half the size that may now be seen all over England. If there were verbenas in those days, they must have been rare;

for we saw no parterres of brilliant lilac and scarlet and rose-coloured verbenas, such as now catch the eye of the traveller, as he is whirled along the railway. Again, all the Californian annuals are new ;—but there would be no end, if we were to make a list of the beautiful things that have become common since the Peace ; things, beautiful in themselves, and elements of beauty in the arts of common life. To see what the advance has been, we need but look at the papers on the walls of humble parlours ; at the mantel-piece, and at the grate and fender beneath, and (to come back to our first thought) at the tea-tray on the top of the bureau.

Fifty years ago, the tray was heavy—being of iron. It was gay when new, but the colours soon flaked off in the middle group, and rusty spots broke out in the black ground. It warped, and stood uneven, and clattered with every jog of the table. The rim was apt to crack, and show jagged edges, which tore whatever they caught. When this rim became rusty, any drop which fell upon it from the kettle was sure to leave an iron-mould on the sleeve, or apron, or cloth, which touched it. In finer houses, there were better trays ; lighter to carry, less ugly to the eye, and less mischievous when they began to wear out. But nobody looked for much beauty in trays, and there was little variety. They were either of an oblong square, or round. They were plain black, polished in the middle, and there were lines, and sometimes vine or oak-leaves in gilding round the rims : but the gilding did not wear well. Those who chose to have their trays kept bright and clean, must make up their minds to see the gilding rub off in patches, leaving a dull surface which no "elbow grease" could polish. The advantages of lightness and steadiness remained, however, when the first beauty was gone. This was because the trays of the gentry were made of a good material. They were made of paper. It had then been known for half a century that paper would wear better than iron, in this particular article. Not only is paper, under certain management, harder than wood—turning the edges of tools sooner than any common wood—but it was found to stand the wear and tear of daily use better than iron.

What could this paper be ? and what could be the management of it ? The paper is a kind of blotting-paper, soft and porous. It is when changed by treatment to *papier mâché* (which is French for "chewed paper") that it becomes hard

enough to turn the edge of the plane and the chisel. I went, one day, to see the process, and found that I was viewing the works of the very men, Jennens and Bettridge, who, fifty years ago, set to work to improve the national tea-tray, and who have since carried their improvements into every sort of dwelling—from the cottage kitchen to the state-rooms of Buckingham Palace. There are other palaces, too, in which this mashed or chewed paper is found, in the shape of inkstands inlaid with pearl; brilliant chess and work tables; folding screens adorned with trailing flowers, with burnished humming-birds glittering on the sprays; chairs and couches, framed in a series of classic groups; miniature frames, and paper-knives; and even rosaries, for Catholic or Mahomedan use; the beads of which are black and polished, and light as jet, while less liable to fracture. In Egypt, the Pasha may be found dining from a vast tray made at these works—a tray made to receive the filligree saucers on which great Oriental dinners are served. And at the Persian court there will soon be seen tables, and screens, and flower-stands, all glowing with our common fuchsia, and rose, and convolvulus. But amidst all I saw in that wonderful show-room, there was nothing which charmed the eye and mind so much as a tray, of a simple form—circular, with a scalloped rim—with a handful of glowing verbenas in the middle; so natural, as to deserve to take a good place in any school of flower-painting.

From this room, full of landscape and flower-painting, of arabesques and mosaic, of pearl, and gilding, and burnish; of couches and tables, screens, allumettes, card-cases, paper-knives, pen-dishes, rosaries, hearth-brush cases, desks, jewel-boxes, and a host of other beauties, I went at once among the primary elements of the manufacture. The first thing I saw was the model of the great tray for the Pasha of Egypt. The rim hung against the wall, giving no idea of the beauty which was to grow out of it. Next, I passed a pile of the paper, as it came from the mill—simple grey blotting-paper which tears with a touch. Some women were pasting sheets of this paper, one upon another, on a model—the paste being made of flour, glue, and boiling-water. A man who was covering the model of a tray, where the stress would fall between the level part and the rim, was pasting slips of paper from the one to the other. The advantage of thus uniting a great number of sheets, over every

other method of producing the same thickness, is that the faulty spot of one sheet comes between a sound portion of two others; and thus an equality of substance is produced. An ordinary tea-tray, which is about a quarter of an inch thick, is made of ten layers, or about thirty sheets of paper. The greatest thickness attained (without a hollow) is that of six inches; a wonderful solidity to be obtained from paper.

And here I found—what I was far from thinking of—a new illustration of the mischief of the paper-duty. The duty paid on this paper is three-halfpence per pound; and the price is sixpence halfpenny. For a cheaper and coarser manufacture, the fragments of this paper, together with rags, are reduced to a pulp at the paper-mill; and this pulp (which may be called the "devil's dust" of the *papier mâché* manufacture) is pressed into form, and used for the cheapest trays. A set of three trays, of this material, can be sold for ten shillings. In the raw state, the sheets look like thick oat-cake. The material does not admit of good finish; and, what is of far more importance, it has little wear in it. It may be torn by the hand; it easily bursts asunder when burdened with any heavy weight. But the duty is only three-farthings per pound on this mashed paper; and the cheapness thus occasioned causes a preference for the bad article over the good, which would be accessible but for this duty. Messrs. Jennens and Bettridge do not affix their names to the articles they make of this material, because they cannot warrant the wear, and cannot be proud of the workmanship. They have represented to the Excise the mischief that is done by this duty, in depraving the manufacture; and they have even asked that, if the duty cannot be removed from the real paper, it may be laid equally upon the paper-pulp; that the manufacturer and the buyer may have a fair chance of producing and enjoying a good article. Official men should know, that while authors and publishers are straitened in their best enterprises by this duty, and the upholsterer cannot fully display his art in paper-hanging, the humble housewife is mourning over the wrecks of her best china, smashed by the tea-tray having burst across the middle. One would like, too, that—as it is quite possible to put such a luxury within common use—the cottage tray should have the smoothness and polish of a mirror, instead of being rough and dull, even when new.

Articles which are flat, or merely curved, are removed from

the mould simply by cutting off the overlapping edges. Round articles, such as vases, allumette stands, and hearth-brush cases, are split, and joined together by glue. Every article is subjected to strong pressure, in various presses, to prevent warping. After that, the processes are the same as in cabinet-making, allowance being made for the material being harder to work than wood. When thin, it is lighter than wood; or, rather, its texture admits of its being used thinner; for, in the mass, it is heavier than wood. The reason why screen-stands, the legs of work tables, and feet of pillars, are so light, is, that the material admits of their being made hollow. They are formed on a mould, and paper is afterwards pasted over the bottom, leaving a hollow space within.

The rough articles are now brought under the saw, the plane, the chisel, the file, and the lathe, as if they were wood. The sharp edges and round mouldings, which come out from the rough surface in the lathe, are curious to see, when one considers what the material really is. A final smoothing is given by sand-paper, before the varnish is applied. The varnish (shellac) is obtained from the same manufactory which supplies the coachmakers. The articles are "stoved,"—put into ovens where the varnish turns black under a heat of two hundred and thirty degrees. Fresh coats of varnish are laid on—from twelve to eighteen, according to circumstances; and the articles, after each coating, remain in the stoves from twelve to twenty-four hours. This must be unwholesome work to the superintendents of the process. The heat of the stove rooms is very great, and the smell of baked varnish almost intolerable to novices.

In the midst of the series of varnishings occur the decorative processes. A large quantity of goods, partly varnished, and smoothed by being rubbed with pumice-stone, sand, and rag, are ranged on shelves and in racks, in a gloomy apartment, where everything is black. These are the "plain goods;"—goods which are hereafter to be decorated to order. When the order comes, and a tray, for instance, is to be inlaid with pearl, with certain initials on a medallion in the centre, a neat-handed woman may be seen to undertake the task: or, more probably, a skilful man; for the nicest parts of the work are usually done by men. I was rather surprised at this, till we heard the reason. The decorative parts of this manufacture seem to suit women's

faculties of head and hand; and it looks strange, at first sight, that only about a fourth of the three hundred people employed in this establishment are women; and that the women do the coarser parts of the work—having, necessarily, lower wages than the men. The reason is, that women do not learn the business and stick to it, as men do. A boy serves an apprenticeship of seven years; and then regards the business as the main employment of his life. Girls come for months, or years, as it may happen: and it never does happen that they look upon it as the one settled business of their lives. They marry, or they think of marrying. They are, sooner or later, more or less unsettled; and it commonly happens that a home and a baby call them from the manufactory as soon as they have become thoroughly trained to their work. It is, therefore, most probably a man who has to inlay this tray with pearl.

The pretty flakes of pearl which lie about in little heaps, and in saucers and cups, are, for the most part, from New Zealand. Some come also from Guernsey. For the best and most expensive kind of work, the flakes are carefully selected, that the grain (so to speak) may lie all one way, that there may be no cross lights in the figures. In a chess-table, worth sixteen guineas, which we saw in the show-room, the squares are formed of these pearl flakes, disposed in different patterns, with all the grain lying one way. The pattern is disposed on the varnish, to which it is fastened by an adhesive substance. Coat after coat of varnish is then laid on, and the pearl is covered with asphalt, till it first glimmers red, then brown, and then disappears completely buried from sight. When the last coat is fairly baked on, the surface is rubbed with pumice-stone, as before; then with sand and rag; then with rotten-stone; and the pattern is revealed. It now only remains to give the final polish with the hand, under which the surface becomes bright as a mirror. A peculiar quality of hand is requisite for this; a quality attained only by practice. The finest of aristocratic ladies, whose hand is seldom out of her glove, could not polish a pen-dish, or door-plate. She might possibly find that she had scratched it; while she might see a hard-working, poorly dressed woman, with long, bony, turned up fingers, skinny and yellow, producing an unrivalled polish, though she finishes her job by daubing the work with little touches of oil, which she carries smeared upon her left wrist. This is to remove any dust or dimness which

may have lodged in any corner or crease. One final stroke, removing the oil, turns out the work complete.

If the tray, or other article, is to have the initials of the purchaser, or any other figure, embossed in the centre, it is done by imbedding a plate of pearl; painting the letters or figures on it, in a substance which cannot be corroded; and then rubbing over the whole with rotten-stone, and an acid which corrodes the pearl. More varnish is then laid on; and the raised letters are disincumbered of their covering.

There is a great fancy at present for a style of ornament which we do not at all admire. The pearl is used for flowers and fruit, coloured after nature, but looking as unlike nature as anything can well do. Flowers and fruit do not shine and glitter; but tinfoil does: and there is too much of a tinfoil look about this method of ornament. The genuine flower-painting will be far more permanent, no doubt, for it is very beautiful.

In the colouring-room, one of the prettiest processes seen is the gilding of borders and other designs. The artist paints his border with a steady hand and graceful strokes, with a camel-hair pencil, dipped in isinglass and water. He then lays on leaf-gold; and presently rubs off the superfluous gold, leaving the pattern gilt. Near him may be seen another man varnishing a set of maroon-coloured pen-dishes. These had been coloured brown, and then painted over with lake, to produce the maroon colour: then gilded in graceful patterns with isinglass and gold leaf; and now the last transparent varnish is laid on with a brush. Not far off sits another artist, with a convolvulus in water before him. He is painting flowers on a work-box. On some of the screens in the show-room, the flowers were finished with a most mysterious softness. I could not conceive how such a melting away of colours could be managed. I now saw how it is done. An artist has laid on various flowers in white or cream-colour; he throws on some colouring powder, depositing it in the darkest centre, and wiping it thinner and thinner towards the lighter edges. A flower thus tinted, with the dark folds of the centre indicated by the black under surface being more slightly covered, gives real enjoyment to the eye that rests upon it.

A patent was taken out, some years ago, by this firm, for inlaying gems under glass. I saw some panels—such as might

form the doors of small cabinets, or the top of jewel-boxes—splendidly inlaid with pearls, rubies, amethysts, emeralds, and turquoises. Two of these were designed from the Queen of Spain's jewels; the quick eye of the artist having seized their character, while on view in the Exhibition. I am not learned in jewels; but it appeared to me that these panels are quite as pretty as the Queen of Spain's jewels; and that neither the one nor the other is half so pretty as the convolvulus in the wine-glass, or the half-open lily, or drooping fuchsia, on many a screen or paper-knife in the colouring room.

There is something to be said about the forms, as well as the colouring of these beautiful productions. Those who have seen the contributions of this firm to the Exhibition of 1851 will not be surprised to hear that such men as Bell the sculptor, and Redgrave the painter, are employed in its service. The Oriental chair at the Exhibition is a marvel for beauty of form, ease to the lounger, splendour of decoration, and—as I learned while viewing the model—difficulty of production. It is said to be unique: but it will probably not be so for long; for orders from Eastern potentates are flowing in fast. Mr. Redgrave has transferred to trays the convenience of horse-shoe tables. Instead of the painful sight of waiters holding trays of wine and cake at a long stretch, supporting the inner edge against their bodies, we shall now see them in a state of ease, if not an attitude of grace. The inner rim of the wine and fruit tray is now cut out, so that the whole tray presents the arc of a circle projecting towards the guest, and relieving the waiter from the strained attitude. At each corner is a little pit, sunk to contain the decanter.

From end to end of the show-room of this manufacture, there is a refinement of convenience, as well as of beauty, which would make one ashamed, but for the evidence presented throughout, that the luxury is not confined to the rich, even now, and that it is likely to descend more and more abundantly into humble homes. The truest beauty—that which is natural—ought to cost nothing: beauty of form ought to be had as cheap as ugliness. The humblest cottage may as easily be well-proportioned as not; and the cheapest tea-tray will soon be of as convenient and graceful a form as the most cumbrous. It may be of plain black, with a simple coloured or gilt border, instead of being painted with flowers; or inlaid with gems;

but it will be ornamental from its form, and will drive out for ever the yellow tiger, and pink and green shepherdesses of a grosser time. At a more removed, but already-promised period, we, or the next generation, may see the inkstand or writing-desk in the cottage-window, or on the bureau, where the pen has scarcely yet found its way, If we can but see this, we shall willingly let unique Oriental chairs go to Persia, and sixteen-guinea chess-tables to India, satisfied with our humbler share in the improvements of the arts of life. We may even look without envy on our Norwegian neighbours, if we see them line their churches with papier-mâché. There is a church actually existing, near Bergen, which can contain nearly a thousand persons. It is circular within, octagonal without. The relievos outside, and the statues within, the roof, the ceiling, the Corinthian capitals, are all of papier-mâché, rendered waterproof by saturation in vitriol, lime-water, whey, and white of egg. We have not yet reached this pitch of audacity in our use of paper; but it should hardly surprise us, inasmuch as we employ the same material in private houses, in steamboats, and in some public buildings, instead of carved decorations and plaster cornices. When Frederick the Second of Prussia set up a limited papier-mâché manufactory at Berlin, in 1765, he little thought that paper cathedrals might, within a century, spring out of his snuff-boxes, by the sleight-of-hand of advancing art. At present, we old-fashioned English, who haunt cathedrals, and build churches, like stone better. But there is no saying what we may come to. It is not very long since it would have seemed as impossible to cover eighteen acres of ground with glass, as to erect a pagoda of soap bubbles ; yet the thing is done. When we think of a psalm sung by a thousand voices pealing through an edifice made of old rags, and the universal element bound down to carry our messages with the speed of light, it would be presumptuous to say what can and what can not be achieved by Science and Art, under the training of steady old Time.

CHAPTER II.

KENDAL WEAVERS AND WEAVING IN 1851.

In Domesday Boke, there is mention of a church at Kirkby Candale; whereby we know that Kendal, as we call it now, was a centre to which the Saxon inhabitants of the Westmoreland Moors came for worship and religious comforts. And perhaps for other comforts too; for, by the church, dwelt monks, who, in those days, fed the helpless, and gave out the little knowledge that was free to the many. According to tradition, there lived the hermit, in a hut shaped like a beehive, and almost hidden by a double fence; and here and there, among the heathery hills which slope up from the river Kent on either side, were scattered the cottages of that time—thatched with reeds, and fit to yield only the rudest shelter to the shepherds, whose flocks were all abroad over the fells, and on the green margins of the nearer lakes. This church was to serve the whole population, from the foot of Helvellyn to the borders of Lancashire; and it probably served well enough; for though there were a good many sheep, there were very few people. That there were so many sheep, and that they fed on hills covered with broom and heather, were the circumstances out of which arose afterwards the existence of a multitude of people, and the importance to which Kendal attained a few hundred years later. How came it that from these sheep being on these particular hills, we have seen, in our own time, upwards of half-a-million of people employed on the woollen manufactures of our island?

It happened thus. For two or three hundred years after the church of Candale was entered in Domesday Boke, the Flemings were the greatest woollen manufacturers in the world, and indeed almost the only considerable manufacturers. History states (we may please ourselves about believing it or not) that in the city of Louvain there were, in the times of the insurrection against Spain, one hundred and fifty thousand weavers, and

four thousand woollen drapers; and that when the operatives were going home from work, a great bell was rung, to warn mothers to gather their little children within doors, lest they should be trodden down by the crowd in the streets. When political troubles broke up this mass of people, our English kings invited some of them over—or, at least, permitted them to come. Henry the First settled some of them in Wales; but the first who settled in England opened his manufacture in the reign of Edward the Third. His name was John Kempe. Of all places in the island, he chose that little valley in Westmoreland, and that bend of the river, on which stood Kirkby Candale, for his abiding place. Of course, he had reasons; and it is pretty clear what they were. The sheep were one reason; and another was, no doubt, the abundance of the broom, called by the country people "woodas," which grew on the neighbouring wilds. At this time, and for long after, wool made thirteen-fourteenths of our exports; and foreigners sent us in return woollen cloth, dyed and dressed, and a material wherewith to dye the small quantity of woollen woven at home. This dye was woad. Indigo was not then known as a dye, and woad was the only blue. Now, blue is one half of green; and in the broom which grew near Kendal, Mr. John Kempe and his successors had the other half—the yellow; hence arose the famous Kendal green, which was renowned for centuries, even to within a hundred years, when it was driven out by the Saxon green. This Kendal green was the first celebrated English colour. The cloth, of the colour of the wool, was first boiled in alum water, and then in a decoction from this broom: which made it a bright yellow. Then, there was only to dip it in the blue liquor from the woad, and it was Kendal green. This was all! And now, in a shed which overhangs the same bend of the river, there is dyeing going on, for one establishment alone, which requires between forty and fifty elementary dyes; the compounds from which would be almost innumerable—woods, gums, acids, insects, earths; a vast apparatus for giving colour, compared with the simple broom and woad of John Kempe's time! The time and the man were held in vivid remembrance for several centuries. They were celebrated at the last Kendal Guild, in 1759, together with some times and persons which were a good deal older. After Jason, with his golden fleece, supported by a shepherd and shepherdess, and Bishop Blaise,

attended by wool-combers, came Edward III., with a company of Shearmen dyers; and the English King, in armour, was followed by Minerva and Arachne, in honour of the weaving and spinning arts; and it is said that some of John Kempe's descendants were present. A feast, given within this week, seems at once a curious linking with, and a curious contrast to, that ancient celebration of the Guild. The rejoicing this week was on account of the honour borne by Kendal at the Great Exhibition, where prizes were gained by carpets of Messrs. Whitwell's manufacture. When John Kempe was setting up the Kendal manufacture, he dreamed not of carpets. In the royal palace, the floors were strewn with rushes, in which were only half hidden all manner of abominations; spillings of wine, lumps of fat, mire from unpaved streets, and whatever it was convenient to throw away, that was not too offensive for the interior of a dwelling. It was a grand feature of the luxury of Becket that his dining-room floor was daily strewn with straw or hay in winter, and with green branches in summer, that the guests for whom there was not room at the board might sit on the floor, without soiling their clothes. The office of rush-strewer to the royal household was retained in name until lately; and every year we see rush-bearing processions in the small towns of the district, in memory of the time when the churches were dressed annually with fresh rushes. Probably many a child who is employed in filling spools for the modern carpet-weaving, carries a garland on the rush-bearing day, in honour of the ancient makeshift.

Whether John Kempe detained any of the best wool at home, there is no saying; but it seems clear that, in general, the coarser sorts locally produced were kept at home, and the finer sent to foreign markets. Yet, we know, by Acts of Parliament, passed during successive reigns, that Kendal cloths—soon called Kendal cottons—were an article of commerce of considerable importance. The length and breadth of these "cottons" (supposed to mean "coatings") were settled by legislative acts; and corn, then forbidden to be imported, was permitted to be brought to Kendal from Ireland. Within a century of John Kempe's settlement, his fabrics were originating at least one fair in the interior of the island. His woollens clothed a multitude of London people; and the Kendal men had no other idea than of carrying their ware to London. Now, a fair in London

was no joke to the traders in those days. The journey was a dreary one, to begin with. The toll levied for the king in the market was heavy; but that, of course, was laid upon the price of the goods. The kings would not allow fairs to be held within a great distance, except at the places appointed by themselves; and no care was taken to shelter the trader from the weather; so that some dismal accounts of London fairs have come down to us. On one occasion, a Kendal clothier got wet—both he and his goods got wet—on his journey to London; and he stopped on the spot where since, as Stourbridge fair, more woollen goods have been sold than at any other place in Europe. His cloth being sadly wetted, he thought he had better sell it for what it would fetch, and go home. It fetched more than his London journey would have left him. He and some of his townsmen naturally came again, next year, with cloth in good condition. "So that," says Fuller, "within a few years hither came a confluence of buyers, sellers, and lookers-on, which are the three principles of a fair."

Perhaps this is not the only occasion of Kendal goods being intercepted in their passage to London. The pack-horses which carried the "cottons" had to pass through districts where gentlemen of the road helped themselves to what they wanted from the stock of travellers. We are not referring to Robin Hood and his merry men, for they were cold in their graves before John Kempe set foot in England. The true date of Robin's adventures is now found to be the reign of Edward the First. Whether he and his band would have been dressed in Kendal green, if there had been such an article in his day, we may have our own conjectures. As it was, the old ballad tells us that King Edward borrowed garments of "Lyncolne Grene," from the outlaw's wardrobe. But Falstaff's enemies—the three who set upon him behind—were "in Kendal green;" a fact which that accurate narrator vouched for, though it was so dark that he could not see his hand. Kendal green was worn by knights of the road, it is clear; and they probably got it, as they got whatever else they wanted—by helping themselves with it *on* the road. Midway between the times of Prince Harry and his poet, the manufacture had reached its highest fame. The chroniclers tell us how the goods were spread over all the land; a local tradition relates how country weavers multiplied in every hamlet among the hills, and how fulling-

mills might be found on every favourable stream. But the time had arrived when the woollen yarn was to be used for something else than Kendal cottons. We have mentioned the church at Candale. There is also a castle—(that is, the mere ruins of one). No one knows when it was built; but a young lady was born there, and brought up there, who was courted by a King sadly given to fall in love. His wives had not been the happiest in the world; but the young lady married him—becoming the last queen of Henry the Eighth. This King had been accustomed, like other gentlemen, to wear cloth stockings; but during his reign silk stockings were heard of from abroad, and Henry much preferred knitted hose to the ordinary awkward cloth. It appears that the Kendal folk were quick in taking a hint: for soon after this there was a knitting of woollen hose proceeding in thousands of dwellings. This may seem like exaggeration; but if the local records be true, the quantity of stockings sold weekly at the Kendal market, a hundred years ago, was about three thousand pairs. The hosiers used to set out on their rounds at stated times; going to the principal markets to give out worsted, and to receive the finished goods. This amount of knitting may be more easily believed when we find that the number of pack-horses employed to carry out Kendal goods, before wagons were established, was above three hundred per week. One would like to know who, of all the people about the King when he came to Kendal Castle, examined his new silk stockings from Spain, and gave out the idea from which sprang all this industry, and all the comfort that it spread through the northern dales.

Meantime, the Kendal cottons were going beyond sea. They had lost favour at home before they were sent to clothe the negroes in Virginia. Raleigh's tobacco was a fine thing for Kendal. The more tobacco, the more slaves; the more slaves the more Kendal cloth wanted for their wear. It was the American war which stopped the manufacture at last. Before the war was over, Yorkshire had got the start in regard to quality, owing to the introduction of improved machinery. The "cottons" descended in dignity—being used at last for horse-cloths, floor-cloths, scouring cloths (sometimes called "dwiles"). At last, the manufacture was admitted on all hands to have sunk below that of the linsey-woolsey (mixed linen and woollen), which had been rising for some years. Cotton fabrics were as yet scarcely

heard of; almost all the Welsh, and multitudes of the Scotch and English working-classes, were dressed in linsey-woolsey—as indeed they are still. Between three and four hundred weavers are at this day employed in Kendal, in the manufacture of linsey-woolseys—all of the old patterns that were preferred hundreds of years ago. The patterns and colours are various; more than could be supposed possible without inspecting the manufacturer's pattern-book; more than would be supposed possible in a material which is simply striped, and of which one pattern alone is required in any one locality. This local prevalence is the most curious feature of the case. The farmers' wives who wear the blue and black stripe would not look at a pattern of blue and red, which is exclusively worn a dozen miles off; and the neighbours who wear red and white, have a new red and white petticoat every three years or so, and will not hear of the red and black, which are the boast of the next county. The Glasgow sale is large; but it would stop at once if the good wives could have only the pattern which is worn on the shores of the Solway; and on the two banks of the Mersey, the linsey-woolseys are as distinct in their colours as the plaids of the Highland clans—without the same reasons—with no other reason than antique custom. There is something bewitching in this fragment of permanency, in the midst of the changes which are going on in everything but costume. The manufacturers, however, are shaking their heads, fearing that the Exhibition has "done them harm," by giving people the idea of new patterns. So the world marches on!

Change in abundance may be found side by side with this steady adherence to old custom. Railway rugs—a new article—are in great request, and the manufacture is increasing prodigiously. So is that of "trousering." The checked, and striped, and mottled trousers, that we see everywhere, come chiefly from Kendal; and so does a large proportion of the horse-cloths, and serge, and the checked and mottled woollen of which miners' shirts are made. Mr. Tremenheere's Reports tell us sad stories of the colliers putting on clean Sunday shirts for six months together, without ever washing the skin beneath; and those who have acquaintance with Staffordshire colliers, know too well the spectacle of the throat plastered and ingrained with coal-dust, which shows itself above the shirt collar: but, however it may be with the wearer, the shirt washes well; and there is so much comfort in

it, that one cannot wonder that miners' custom remains steady to Kendal fabrics, instead of wandering to Manchester.

The great manufacture of Kendal, however, is carpets; and this, though the wages of linsey-weavers are said to be a good deal higher. For the weaving of linseys, the wages rise from ten to twenty-five shillings per week; whereas for carpet-weaving, they vary from twelve shillings to twenty. A carpet-weaver can earn, by such excessive labour as no man ought to undergo, as much as three pounds in a week, at piece-work; but the fair average may be stated at sixteen shillings, while the average of linsey-weaving is seventeen shillings and sixpence. But the linsey-weavers are employed for only eight months out of the twelve; whereas the carpet manufacture is steady. The collective woollen manufacture employs about a third of the population of Kendal. Happily, their wages are not their only resource. In this old-fashioned place, the land is not all appropriated; and almost every cottage has a garden,—and a good-sized one. Men who have not gardens at home, look out for and obtain them, in order to grow all the vegetables that they want. Some hire land of the farmers, who are glad to let them have it for potato grounds, for the sake of the capital manuring and breaking up by the spade which is thus obtained. The farmers lend the manure and the produce, and the tenants supply the seed, the manure (which they purchase from the town), and the cultivation: and the bargain answers well to both parties. The weavers have done something better still;—they have clubbed their money to buy a field, and have divided it into allotments, which they cultivate with zeal and profit. It is scarcely necessary to say, after this, that the Kendal weavers are not the pallid, dwarfed, sharp-visaged order of men that one sees in Spitalfields and at Norwich,—trained to one bodily action only, and moody and captious from ill-health, and from the want of general bodily exercise. Not satisfied with exercise of their limbs in the loom, and at the spade, some of them work their lungs as well,—under prodigious difficulties. Amidst the clack and shock of twenty Jacquard looms in one apartment, they talk to each other from bench to bench. Those who can keep up conversation under such circumstances, certainly yield a strong testimony to the sociability of human nature, and may consider themselves qualified to address the noisiest mob that

could be mustered,—as far, at least as concerns the power of the human lungs. It is pleasant to hear that these men have formed a cricket club,—and pleasanter still to know that the morality of their class is far above that of the average manufacturing population. The morals and manners of the mill-workers are superior to those of the weavers who do their work at home; but the homes may contrast advantageously with those of most other towns: and they might present a better aspect still, if the dwellings were better. They are sadly small and unwholesome.

Various reasons are assigned for the creditable social condition of the Kendal weavers: but it may be said, in a general way, that the clergy have been diligent; that two or three generations have had the benefit of Sunday schools; and that these influences have been aided by the superior means of health and comfort enjoyed by the labouring class. It may be added that there is here no apparent danger of the suffering from poverty, and from angry passions, which arises from strikes for wages. The Kendal weavers allow no interlopers, and permit no mischief-making between themselves and their employers. They formerly experienced just enough of the misery to guard themselves against a recurrence of it. Delegates from the south came among them, some years ago, and stirred up some discontent: but the Kendal men were intelligent enough, and few enough, to be able to study and manage their own case. They formed themselves into a sort of guild (without the name). They permit no one to enter it who has not served a due apprenticeship to the business; and, of course, the employers prefer those who have so qualified themselves. No straggler from north or south finds employment here, merely because he will work for low wages,—or for any other reason than that he is really wanted. And, in consequence of some threat of trouble when agitators came from the south, the employers and their men arrived at an understanding, which has made all smooth for the last seven years. An average was struck between the highest wages known to be asked, and the lowest wages known to be given; and this has been, through all changes, the rate of wages ever since. A compensating fund is formed, by subscription of the men; and out of this a maintenance is provided for any surplus labour in seasons of slack demand. Such is the state of things in Kendal. Some may

say that the steadiness of the demand, and the restriction of the numbers, and the intelligence of the people, make this an exceptional case: others may object that it cannot last. However that may be, such is the state of things in Kendal now. Those who can't believe it had better go and see; and we can promise them that they shall see a very pleasant sight.

On entering Kendal from the north, one naturally looks upon the river from the first bridge. There, in the green meadows, some little way down the stream, stands a large grey-stone mill, —built over the water. It is the Messrs. Whitwell's mill. Let us go and see what we can find there. We shall find there all the preparations for the carpet-weaving, which is going on in their factory, in another part of the town. Let us see what those preparations are.

In a shed, there are heaps and stacks of wool as it comes in, rough and dirty. We shall see it better up-stairs, where it is carried in heavy sacks, by means of a crane. Before we follow it there, we will look into the shed where the dyes are prepared. In the yard there are piles, and stacks, and logs of the oddest-looking woods; some yellow and splintering; some red and scraggy; some purple and solid. There are barrels of salts, and carboys of acids and oils, and bundles of bark. Entering the sloppy shed, where red and yellow and purple puddles have to be avoided, we are stunned by the noise of wheels. There goes the great water-wheel, which tells us that the river is flowing under our feet; and creaking, rushing, and crushing, go several more wheels, set in motion by it. The rasping is the noisiest process. The wood to be rasped is brought endwise to a wheel which is set with blades like those of a plane, and which, revolving, mince off the wood, which falls as it is cut into an inclined trough, and finds its way to its receptacle below. A more awful-looking machine is the granulating-mill. In a prodigious basin, a stout shaft is set upright, which revolves, carrying with it two vast millstones. These, being round, and set on edge, must, in being carried round, thoroughly stir and crush against the sides whatever the basin holds. We see, accordingly, the rasped wood becoming a scarlet paste. These reds, however, are rather a sore point with the manufacturer; for, in our climate, no pains and care, and no science that we yet possess, can enable us to compete with certain foreigners in our red dyes. The same materials, used in precisely the same

manner, which produce a glorious depth of red in Turkey and at Nismes, and a dazzling carmine at Tunis, here come out flat and dull in comparison. It cannot be helped. We cannot "have our cake and eat it." If we rejoice in our insular position, which keeps us out of many mischiefs, we must accept its fogs. We must be thankful for a stout national character and a lasting political freedom; though we must do without carmine and Turkey-red dyes.

The dyeing process is not done in this shed, but in another, which needs no particular description, as it consists simply in boiling the yarns in various decoctions. We may mention here, however, the method by which "tapestry carpets" are woven in a pattern, as it belongs to the dyeing department, rather than the weaving. We all know the streaked, and clouded, and shaded work that comes out in purses, comforters, and the like, from under the hands of knitting young ladies, or crochet-workers. We see that the silk or the worsted is party-coloured, and that it forms clouds or shades in the working. Just so is it with the tapestry carpets which have been in use for seven years past. The yarn is party-coloured; and it is dyed carefully, so that the red of the weft may return upon the red, to make a rose; and a green upon a former patch of green, to make a leaf—and so on. This is done by encrusting the portions of the yarn with their respective dyes, and cooking them in this crust. As might be anticipated these dyes cannot be made so permanent as in the case of a batch of yarn boiled in one dye; consequently the tapestry carpets do not wear well.

Now let us mount, and see the wool at the top of the mill. What an immense room it is!—airy, though low. Here are women employed, and boys, and a tall young man in a pinafore. He is wise to wear a pinafore; for the wool is, of course, oily and dusty. Two or three fleeces are brought; and we ask again whether they can be fleeces of ordinary sheep—they are so very large. Yes; they are from Westmoreland sheep. The greater part of the wool used here is of home growth. If it be true that an ingenious man has discovered a method of waterproofing the fleeces of sheep without injuring the animal's skin, and without interfering with its transpiration, it is a great discovery. We heard of it some time since, and we hope it is true. The great object was to obviate the rot in sheep, by preserving them

from damp; but it is an important object, though secondary, to keep the wool from the plaster of tar which the shepherds smear all over it, to save the lungs of their bleating charge. The native wool is certainly horribly dirty; and after fingering the long staple and the short staple, and the more silky and the more woolly wool (so to speak), we are glad to wash our hands. This black handful is from the Punjaub; and so is that shiny, curly, white specimen. They have come down the Indus to Bombay, and thence to this nook among the hills. The dwellers in this nook are ready to take a great deal more of this Punjaub wool, whenever we can agree with the inhabitants that they shall change their spears into shepherds' crooks. The long staple that is required for the warp of certain fabrics, comes from Russia. It used to come over in a very rough state; but it is growing cleaner, with time and experience. The wool from Buenos Ayres is highly valued, and if there could be an assured supply, the demand would be an important one; but that assurance of supply is exactly what is wanting. Sometimes the trade has been locked up for eighteen months together; and an inferior article is a less evil than such uncertainty.

Women and boys are sorting the wool here, pulling out the long staple and the short; throwing the finer fibre here, and the coarser there, ready for the operations below. The women earn about five shillings a week here, and the boys about three shillings.

The next destiny of the wool is to be "teased" by "the devil." This "devil" is a tremendous affair to be teased by. It has cylinders set with crooked teeth, among which the wool is pulled this way and that, and torn with the most persevering malignity, until there is nothing left but shreds and patches. The wool is next "fanned" in a revolving machine, which sends the dust down through a grating, to a receptacle below. The carding, and combing, and the "scribbling," which brings the wool out in a gauzy state, ready for spinning, and the spinning process, are so like the preparation of flax and cotton, as it may be seen in every mill, that there is no need to describe them here. There is, however, a "piecing" process, ingeniously managed by machinery, which was new to us, and very interesting, from its dispensing with the labour of children. As the proprietor observed to us, the little things can be at school while this machine is doing their work. By the revolution of a cylinder, lengths

of wool are turned out horizontally, each falling into a tin channel; and being carried on, till there are about a dozen, when the dozen channels turn completely over, and spill the lengths upon a cloth beneath, so as that one end joins upon the other end of a length below. The join is then pressed, so as to unite by a cylinder beneath; and an interminable length is made. It seems to me that I have seldom seen anything more ingenious—more original in its ingenuity—than this process. It has been in use about three years.

After the spinning and reeling (women's work chiefly), comes the washing and drying. Here again we find machinery doing what was, until lately, slow and toilsome human work. The hanks, in bundles, are carried, wet and hot, round wheels, and pressed under rollers in their passage, by which the dirt is squeezed out. They are thrown into vats, where boiling water is violently soused upon them: and the same process is gone through in another vat with cold water. Here we have the yarn clean, but wet. Formerly, it took two men with staves to twist the hanks in opposite directions, to wring out the moisture, which still left the yarn very wet. Now, there is a new machine, by which centrifugal force is made use of to send the water flying off, in proportion to the rapidity of the revolutions. By peeping into this wonderful box, we see the yarn carried madly round, faster than the eye can follow, and the moisture raining off in streams from the top and down the sides. When the rain ceases, the yarn is taken out,—now merely damp.

While we are among the hot water, we inspect the fulling process. The coarse, inferior cloths, which serve for saddle linings, &c., are cleansed in the fulling-mill; thrust into a box, open on one side, to be beaten by the "fulling-stocks,"—heavy hammers, which are raised by strong pegs fixed in a revolving wheel, and let fall, and raised again. It is a rough method of scouring, but most effectual for a fabric strong enough to bear it.

The yarn being dried and dyed, and dried again, must next be warped. The warping mill is an enormous reel; and the warper has to reel off from the bobbins whatever colours are wanted for the warp of a carpet. Suspended before his eyes is a bit of the carpet to be imitated. He picks out his greens, and his reds, and his yellows, and winds them all off together on his great reel, in readiness for the loom. If it be a new pattern of

carpet that he is preparing for, he has a pretty picture before him, instead of a strip of carpet.

Who paints this pretty picture? The designer to the firm. Great is the intellectual exercise, severe the toil, keen the eyesight, required to make that pattern. The artist has been trained at the Government School of Design; and he has so much taste and invention that his employers declare that they can nowhere find, within the range of the carpet manufacture, patterns which can be compared with those furnished by this young man. He sits in his office, surrounded by portfolios of drawings,—containing not only his educational exercises, but sheetsful of results of later observation. There are impressions from the various ferns of the neighbourhood, from the plane leaf and the ivy, and many another familiar growth. We see them reproduced in the carpets unrolled for us in the warehouse; and those who adjudged the Exhibition prizes had others before their eyes. The designer sketches his fancies; and, if he likes them on paper, draws them carefully in little;—on paper diced with little squares, where they look so pretty in black and white, that we should be in raptures with them if they had been ours. If still approved, they are next to be drawn in colours on paper diced with larger squares, containing little ones equivalent to stitches;—the same that patterns are produced on for ladies' Berlin wool work. It is this which must be so severely trying to the eyes; for every stitch has to be attended to. As he works, the artist now and then tries his pattern by the mirror,—two pieces of glass fixed at right angles, which, placed along two sides of his pattern, present him with an expanse—a repetition of his work—and enable him to judge of its effect.

The choicest designs have to be wrought in the highest kinds of carpets—Wilton and Brussels; and, for these, Jacquard looms are chiefly employed. The Jacquard looms are so familiar to all who know the Spitalfields or other silk manufacture, that there can be no need to describe them here: but we may mention, that at Messrs. Whitwell's mill may be seen a curious and recent invention—an invention of their own—called a "repeating machine," for taking copies of the Jacquard pattern-cards.

In carpets, as in other things, society is subject to "rages;" and when there is a pressing demand for a fresh pattern, cards are wanted for many looms. The machine before us multiplies the needed cards. Moveable pegs, of the size of the round

holes in the cards, are selected, as it were, by the pattern-card on one side of the machine, and deposited in order in a perforated frame. This frame is then transferred to the other side, and pressed down under a roller upon slips of card underneath, several of which can be thus perforated at a stroke. The piecing machine and this repeating machine were to us the most novel and interesting particulars of the whole manufacture.

And now everything is ready for the weaving. It is noon, and the people are ready for their dinners. We, who have travelled many miles to see this mill since breakfast, and have used our eyes diligently, and our ears more than is agreeable, are ready for luncheon, though it is hardly past noon. We agree to suspend operations for an hour or two, and go to the factory when the workers have returned from dinner.

We had no idea that we should find anything picturesque in a carpet factory: but, on entering any one of the long rooms, we certainly felt a wish that an artist had been with us to represent things just as we saw them. All along both sides of a long room are looms, placed as close as liberty of weaving will allow;—so close, that a weaver has to stop his work while a party of three steps in to observe the feats of his neighbour. The tricks of the light, falling from the high windows upon the posts and beams of the looms, are striking; and so are the gay colours of the webs, shining out here and there—and so are the characteristic outlines of the men themselves; but, much more so, are the figures of the children, one of whom sits lowly at the end of each loom, winding the spools for the shuttle. Each child has its little reel, and works beside its father, or other employer. The youngest-looking boy we spoke to was nine, and few of the girls could have been much older. All looked neat and healthy; and the work is light enough. They earn about three shillings per week, each.

The most responsible work done by children here, and that which requires the most diligent attention, is that of the boy who attends the Jacquard loom in which a Brussels or Wilton carpet is woven. The weaver has enough to do to mind his weft, without being charged with the other management of the loom. So an intelligent boy does three or four things in succession (with a moment's rest between), which seemed to us to make up a great day's work, and for which he is paid three shillings and sixpence per week. He pulls the cord by which,

in Jacquard looms, the threads of the warp are raised or depressed as they are wanted. The weaver having passed his fingers between the raised and depressed threads, to make sure that they are clear of each other, the boy slides in a polished piece of wood, thin and broad (called the "sword"), by which, when turned on its side, the upper and under series of threads are kept well apart, and the weaver inserts his "wire"—a steel skewer, as long (from the head) as the carpet is wide. The shuttle is now thrown, and the yarn which encloses the wires of course forms loops when the wires are withdrawn. There is something almost painful in seeing by how gradual and laborious a process every hair's-breadth of the carpets we tread upon so carelessly, is made. We buy a good Brussels carpet at four shillings and sixpence a yard, or a Wilton (called Velvet) at five shillings and sixpence, and we do not think of the wool coming down the Indus to Bombay; nor of the dyes from the Pacific; nor of the linen thread, sown, grown, and prepared near Belfast; nor of the mill processes; nor of this weaver, who has to give his mind to every cast of the shuttle; nor of this boy, who is now heaving at the cord—now thrusting in his "sword," and turning, and withdrawing it—for every new loop of the whole fabric. But, what an amount of human diligence it is, to purchase at the rate of four or five shillings a yard!

The Velvet or Wilton carpets are woven much in the same way. The difference is, that the "wires," instead of being of steel, and round, are of brass, and angular, with a groove along one of the sides. This groove is indicated to the touch of the weaver by the handle of the wire being open in a line with the groove. The wire is inserted with the grooved edge uppermost; and when the weaver has covered a few wires, he runs his knife along the groove of the hindmost, cutting the loops; and, of course, giving the pile which causes the fabric to be called Velvet.

One man in this establishment wove the rug, with a dog from Landseer for the pattern, which won a prize at the Exhibition. It is of the fabric called "finger-rugs," from the yarn being dexterously inserted by the fingers; and, when well fastened in by a weft of linen thread, snipped off with shears, and left soft and velvety. Very soft are the eyes and muzzle of this prize dog, and very tufty are his black spots. To be sure, we do not think him a very good subject for a rug, as we do not habitually

tread upon dogs ; but then the same might be said of a large proportion of the carpets bought by people who do not suppose themselves deficient in taste.

Of a hundred and twenty looms, one-sixth may be employed in weaving Brussels carpets, and about eighty in weaving Kidderminster or Scotch carpets. A good deal of Dutch carpeting is also made for landings and passages, and for some bed-rooms. It is the simplest sort of all, with small variety of patterns, but excellent for wear, and agreeable from its look of homely neatness and comfort. There is a "barrel loom," invented by a workman of Messrs. Whitwell's, which is worth notice from its ingenuity, though it cannot compete with the Jacquard loom. It looks, in its place aloft, much like the apparatus of a shower-bath. Its barrel is set with wires, like those of a barrel-organ, by which certain threads of the warp are lifted up and held apart from others, while the shuttle is thrown. Of other kinds of loom, it would be merely puzzling to speak ; or we could tell of more.

Four engineers are retained by this establishment ; and it takes about the half of the time of one of them to keep the looms in order.

When the fabric comes from the looms, it has still to pass under the eye and hand of a woman, whose business it is to see that no knots or other blemishes remain visible. Having been thus revised and "picked," the carpet is wound on a roller, in a machine, which indicates its precise length at the same time : and then it is tacked with pack-thread, ticketed, and (unless made to order from a distance) deposited on the shelves of the warehouse. If it have to travel, it is packed in a hydraulic press, which reduces it to the smallest compass.

Such is a history of the trouble Kendal takes to give us an easy and pleasant footing in our homes. All honour to the art, and prosperity to the artists !

CHAPTER III.

THE MAGIC TROUGHS AT BIRMINGHAM.

On the 7th of next May, it will be twenty-nine years since the largest meeting ever held in our island was assembled at Newhall Hill, Birmingham. At the bottom of the hill were the hustings, whence it was declared that the Reform Bill should become the law of the land; and from every part of the slope, from tens of thousands of voices, came the solemn chant of the Union Hymn, and the words of the oath, singly spoken, by every man present, to devote himself and his children to the great cause. There is no room now for such a meeting on Newhall Hill. Within these twenty-nine years, buildings have sprung up, over nearly the whole surface; and the roaring of the furnace and the din of the hammer are heard where the hymn and the solemn oath resounded in a less peaceful time.

Among those buildings, at the bottom of the hill, are the large premises of Messrs. Elkington, Mason, and Co.—the firm celebrated for their electro-gilding and plating. They have actually enclosed the canal within their premises—built over it—and their workshops are still extending. There may be seen nearly four hundred men and boys employed, diligently and constantly, upon work of so high an order, that the wonder is how, in the imperfect state of our popular education, so many can be found to manage such processes. As for the diligence—arts of so high an order as these cannot be served by halves. Here must be no Monday laziness after Sunday's rest; no caprice as to going to work or staying away. Like time and tide—like brewing and dyeing—the work at Messrs. Elkington's cannot wait for men's humours. Any one who engages himself here must go through with what he undertakes. He is told, on being engaged, "We find you six days' work, and you are to find six days' labour." And the wages given are such as to justify this compact being made stringent. They rise from

twenty-five shillings to three pounds a week, according to the nature and quality of the work.

Any one who saw the contributions to the Exhibition of 1851 from this house, will understand that a special education is required for almost every department of this manufacture. The fruit baskets, twined with the convolvulus and the vine, are graceful enough; but the inkstands, with their groups—Rebecca at the Well; the Milkmaid and her Goats; and the race-cups and the statuettes—are productions which require artistic heads and hands at almost every stage. And, as yet, this order of art is new in England, and so is the process of manufacture. Formerly, we bought our plated candlesticks, and table-forks, and mustard-pots, and inkstands from Sheffield. There was a small choice of patterns; very rarely anything new—seldom anything remarkably beautiful. The few who could spend money largely—princes and peers, and half-a-dozen wealthy commoners—might go to Rundell and Bridge, and indulge their taste for works of art in gold and silver; but in plated goods there was little beauty, little variety, and very poor wear. Preparation was making, sixty years ago, for the day which has arrived. Mr. Rundell was bringing over works of art—seizing every interval of continental truce to import pictures, statues, and gems, and paying Flaxman six hundred and twenty pounds for his model and drawing of the Shield of Achilles—of which four casts only were made—for two royal princes and two peers: but meantime, the middle classes were served with patterns almost as hackneyed as the willow pattern in our dinner-plates. Preparation was making, unawares, for the other grand improvement, by Mr. Spencer, of Liverpool, and Mr. Smee, of the Bank of England, having applied the process of electro-plating to taking copies of embossed surfaces. Where the discovery originated, is not yet settled. Russia claims it. Italy claims it. But while it was used only for taking copies of gems and coins, we of the middle classes, who cannot afford to buy silver plate, were annoyed by seeing the copper peeping through the edges and prominences of our plated candlesticks, forks, and sugar-basins; and too often, a bend or a dent here and there, showing that there was as little wear in the metal and its solder in one way, as in its silver covering in another.

Mr. Elkington was one of those who first saw how the process

of electro-plating might be extended to the supply of our needs. He saw that by the agency of electricity, the gold or silver plating might become one substance with the material on which it is deposited, instead of being a mere covering, liable to be rubbed off by use. He saw that a whiter and harder metal than copper might be used as a base; and he employed German silver for the purpose. He saw that the most various and elaborate designs and ornaments could be produced by this method, in place of the few old forms; and that it would be an inestimable advantage to do the plating last, after all the repairs and finishings, instead of the clumsy old method of smoothing, and finishing and burnishing, after the frail coating of silver had been laid on. Seeing all this, he took out a patent for his process in 1840. About thirty other manufacturers in England are licensed by him to use his process; and there were ten years ago not more than two houses which maintained the old Sheffield method of laying silver on copper, and using the old soft tin solder. That any such houses remained, might be very well, because they turned out their work cheap, and kept down the price of the superior article. By the time the patent shall have expired, competition will keep prices reasonable. The process has also spread widely over the Continent; so that society may consider that it has the discovery safe for general use. What remains to be wished is, that our Schools of Design should be extended and improved; and that a Museum of practical work, in various departments of manufacture, should be attached to them. We have not enough of fresh and beautiful designs actually offered; but, few as they are, they are more than can be used, from the designers' want of knowledge of the practical business of the manufacture. While we are complaining of the dearth of employment for educated women, here is one, remarkably suited to the female faculties, much needed, and therefore very profitable; but from which young women are at present almost excluded, for want of the practical part of the study. One, here and there, may design a pattern, unexceptionable in taste, and in every sort of fitness but one: but if it cannot be wrought, her labour and her hopes are lost.

Let us send a glance over what I once saw at Messrs. Elkington and Mason's, where a friend, connected with the establishment, showed me whatever I wished to see. From the showroom—the Art-chamber—which I shall not describe, because

every one may go there, I was conducted to the room where the modellers were at work. There, on a shelf, stood some tall volumes—books on Art, and choice engravings. Engravings and patterns of beautiful forms were hung up ; and at their respective tables sat several artists, modelling in wax. One should come here to understand what pains are spent on the common articles which we use every day. Here is one side of a stand for castors. This one side consists of three pieces ; the straight centre, and the two oblique sides, on which the pattern must be reversed, every hair's-breadth of each of which must be modelled with the nicest care,—a smooth stroke here, a gentle touch there. And then there is the stem, with the handle at the top, and two sides again. These common articles surprise one more by the detail than the more luxurious productions—the nautilus shell, for instance, in pink wax, which is the pattern of a flower-stand ; or the group of palm-tree and oak, overshadowing the sick Hindoo, and the soldier-surgeon stooping over him, lancet in hand ; the piece of testimonial plate presented to the surgeon of a regiment.

It seems as if as much precision and care were necessary in the coarse interior parts of the work as in the outside finish : for instance, in raising the foundation of a sugar-basin, which must have no join in its circumference, because it is to be gilt inside. It is one of the nicest arts in cookery to make a raised pie a true circle or oval ; and, in the hair-dresser's business, to make one side of a wig match the other. In forming the foundation of a sugar-basin, the flat sheet of metal has to be raised in a bulge first, and then contracted ; and then it must bulge again : and this form must be truly given by turning the metal with one hand, on the vibrating steel bar, which serves for the anvil, while the other hand uses the hammer, with equal and steady strokes. A similar process is used for raising an embossed pattern on the metal, when the form renders casting out of the question. Under the process of *snarling*, as this is called, it is curious to see the bumps rising under the hammer —bumps caused by the round head of the steel bar beneath, and destined to group themselves into clusters of leaves or fruit as the work advances. When a hard mixed metal is used for these foundations, and the copper scales at the surface, the work must go into *pickle* before it can be further dealt with. In a yard, therefore, stand little vats of this pickle, in which

sulphuric or nitric acid predominates, causing the copper to scale away.

But the foundations must be annealed before hammering, that the pores of the metal may be opened. In the annealing room is a furnace, such as was formerly blown by bellows, like that of a blacksmith's forge. Now the engine saves that labour. A cock is turned, and there is an instant commotion among the lazy embers. Blue, yellow, red, and white flames dance and leap, and want something to devour. A sugar basin or tea-pot is held over them on a metal slice; and, in a few seconds, the black metal becomes a deep red; and then, in a few more seconds, scarlet, pink, white; and then it is laid down on the ground, to grow black again at its leisure.

Meantime, the ornamental rims, and little panels, and all the decorations which are to be afterwards attached to the article, are in preparation elsewhere. A man stands at a pair of shears fastened to his counter, and cuts out pieces of German silver, as marked roughly from a pattern. These are the little plates which are to receive the embossed patterns, now in course of being struck off from steel dies in another room, or the slips which are to become rims themselves. In that other room are three or four men, who seem to be seized with a frantic convulsion, at intervals of a minute or so. They are the stampers. Having fixed the concave part of the die under the stamper, and attached the punch to the stamper, they lay on a slip of German silver, throw themselves by one foot and hand into a sling of rope, raising the stamper by their weight, and then let it fall, punching the slip of metal, which then gives place to another. There are no less than thirty tons of steel dies on the premises, each die being a costly and precious article of property. They are the most expensive part of the apparatus; as the castings are the most expensive process of the manufacture, from the time and minute pains required. Of the castings, nothing need be said here, as the process is the same as in every iron-foundry,—the work being only on a smaller scale, and more delicately finished. The sand, employed in the castings, is from the neighbouring Cemetery. As fast as the red sandstone is hewn away there, to make room for new chambers of the dead, and fresh nooks for flowering shrubs and green graves, the rubbish is bought by the manufacturers for their castings, to an amount which materially supports the funds of the Cemetery.

The chasing of the cast articles is one of the most astonishing processes to an observer. It seems as if every man so employed must be an artist. One sits with a salver before him. With the left hand, he turns it this way and that, while with the graving tool which he holds in his right, he runs graceful patterns, without hesitation and without fault. Parallel curves, and curves that meet, are marked off with a roundness and steadiness that no mechanism could surpass. The folded leaf, the pendulous flower, the wandering tendril, grow under his touch; and no one of them wanders out of its place. Near him sits another artist, at work upon a statuette, fixed in the position he wants by being stuck in pitch. A row of little chasing tools is arranged at his side, each pointed with a different pattern. Here he, by gentle taps of the hammer on the tool in hand, makes a rim round the head or arm; there, by using another tool, he produces a diced pattern, where shadow is to be represented. Then, the folds of the drapery are more finely streaked, and a finish is given to the bands of hair. Close by is another man, so intent on his work, that he twists a wire round his head to keep his hair from falling over his eyes. He is engaged on a vase filled with pitch, to preserve the smallest indentations of the pattern from injury, while he hammers away, daintily, at the minutest finishings of the bark of a tree, or the fleece of a sheep.

Next, we see how the stamped rims, or other loose parts, are soldered on to the main body of the work. It is not now as in the old days, when the spout of a teapot was liable to come off, or the top of the nozzle of a candlestick to part company with the cylinder. Those were the days when the soft tin solder was used: and the soft solder was used because the work had to be carried to the fire; whereas now, the fire is brought to the work. On stands in the middle of the room are huge iron pans, like saucers, containing cinders. At each of these pans or saucers stands a man, with pincers in one hand, wherewith he applies the solder, and turns over the article to be soldered; and, in the other hand, a flexible tube, by which he administers air and oxygen gas to the fire among the cinders. This tube consists of two compartments, one of which conveys air, and the other gas; and it is in the power of the holder to increase the flame to any intensity, and apply it in any direction, to this side or that, above, below, and around the most delicate ornament

that has to be united with any other piece. The white powder that is thrown on, where the solder has been applied, is borax, which fuses the solder. One sees the metal bubbling and running like a liquid; and when it has diffused itself, and shown by a white streak that it is done enough, and then become cool, the join is evidently as lasting as any other part of the work. Nothing comes to pieces that is soldered under this blowpipe.

There is, of course, some roughness at these joins. Formerly, under the old method of plating, the silver had to be laid on before such blemishes were removed. A finishing process was gone through after the plating. The advantage of electro-plating, in this respect, is great. The gilding and silvering are done the last thing. Now, therefore, the goods are carried from the soldering to receive such touches from the file, and smoothing apparatus, as may make all sharp, and polished, and fit for the final process. When the file has removed all roughness at the joins, the whole surface of the article is smoothed and polished, under the hands of sooty workmen in paper caps, who apply the surface to swift revolving cylinders, which administer a polishing with oil and sand. After being cleansed in vats containing a ley of caustic potash, the goods are ready for the final process. The fumes from a little congregation of vats direct the observer to the place where this cleansing goes on; and he finds them suspended in the liquor, where they part with the oil, and every other kind of soil that they may have brought from the workman's hands.

The visitor may next find himself introduced to what looks like a dinner-party of nearly fifty people. A second glance, however, shows him that the guests are all women, and that their dress, however neat, is not precisely suitable to the decorations of the table. The long table is set out, from end to end, with epergnes, candelabra, fruit baskets, cruet frames, bottle stands, and silver dishes; and between forty and fifty women are employed in burnishing and finishing, giving the last polish with the hand, and clearing out the last speck of dust or dimness which may lurk in any crease or corner.

As for the gilding and silvering chambers, they are like seats of magic. One might look on for a year, and have no idea of the process, but that it must be done by magic. There is a machine, containing a great wheel, and large bands of a horse-shoe shape, which we are told are magnets. From this machine,

loose wires extend to the troughs, and dangle over the sides. In the troughs are plates of silver, standing in a brownish liquor; and in this liquor hang the articles to be silvered, suspended by copper wires from thicker copper wires laid across the top of the troughs. There hang the tea-pots, and spoons, and trays; and nothing ensues till the magician, in the shape of a man in a dark-blue blouse, takes hold of one of the dangling wires, and unites it with the wires on which the goods are hung. Then, in an instant, they become overspread with silver. The coating is a mere film at first, and it requires some hours (from five to ten, according to the quality of the article) to obtain a sufficient silvering. The brownish liquor in the troughs is a solution of oxide of silver in cyanide of potassium. At the magnetic touch of the loose wire from the machine, the silver is deposited upon the surface of the article communicated with; and not only laid upon it, but intimately united with it. Gilding is done more rapidly than silvering; and the gilding process is therefore that which is usually exhibited to strangers. In this case, a man holds a bent copper wire, from which is suspended the bunch of spoons, plate, scissors, watch-keys, or vinaigrettes to be gilt; he holds, at the same time, the loose wire in connection with the other, and washes his charge for a few seconds to and fro, and, lo! it comes out golden. Having heard something of a cobweb having been gilded at this trough, in the service of Prince Albert, I made inquiry, and found that it was really so—that a cobweb had been gilt—but it was by accident. A rosebud was gilded in the Prince's presence, and when it came out of the trough, it was found to have been crossed by a delicate thread of cobweb.

I asked, what could be done in the case of articles *parcel-gilt?*—where, for instance, bunches of silver flowers or fruit appear on a gold ground, or a gold net-work covers a silver ground,—and I found that the matter was very simple. The parts which are not to be gilt are varnished over, and the varnish is easily removed afterwards. The minutest atoms of the gold and silver are saved, by the goods being dipped in four or five troughs in succession, till every loose particle is washed off. The superintendence of these troughs is a situation of great trust. The value of a pint of the solution may be about fifteen shillings, and, of course, it would not be difficult to carry off small quantities of it. The whole work of the

establishment, however, requires a somewhat superior order of men—men who might be supposed superior to the temptation of theft.

But here, alas! comes in the regret which cannot but be felt by the observer of the working-classes in Birmingham—regret for their extreme and unaccountable improvidence. Without doubting that there may be exceptions, we are obliged to see that, as a general rule, the best wages, and the most constant work, are no security against poverty and dependence. It is too common a thing to find that a man who has, for years together, earned from thirty shillings to sixty shillings a week (twice or three times the income of a multitude of clergymen, retired military and naval officers, poor gentlemen, and widow ladies), has not a shilling beforehand when he falls sick, and must be sustained by a subscription—by private charity—as the only alternative from public relief. It is too common a case that women, employed in the manufactures of the town, buy expensive shawls or gowns, paying for them by weekly instalments (extending over years for a single shawl), and pawning them every Monday morning, to redeem them on Saturday night for the Sunday's wear. It is too common to hear employers speak coolly, if not with satisfaction, of this state of things, because it keeps the workmen dependent and humble, and lessens the danger of those strifes about wages, which are the plague of the manufacturer's life. "Well; never mind!" says the employer, significantly. "Let things be. It may be all very well."

To me, however, it seems not well that men, with incomes exceeding a hundred pounds a-year, should fail to secure their own independence; should fail to educate their children; should fail to provide a soft pillow for a time of sickness; while indulging in pleasure and luxury during their best days. To me it seems not well that, in times when the necessaries of life have been one-third cheaper than they were when the men were receiving the same wages before, no attempt at saving should have been made by so many as, in Birmingham, exhibit their improvidence to all the world. Here and there, however, something better is seen. In the manufactory I have been describing, every workman above twenty-one years of age was a member of a relief-club, paying three-pence a-week to secure support under sickness or accident. Many of the people on the

premises, also, were members of the Freehold Land Association, and were acquiring property in that excellent manner. One pleasant change in their mode of life appears in their love of reading. At the tea hour, those who do not go home, and who used to gossip over a pot of beer, have turned readers; and under their counters several popular periodicals may be seen stowed away. We must hope that the improvement will proceed, and that, while dismissing from under their hands, to the houses of the great, the articles of luxury and beauty which Birmingham supplies, the men of Birmingham will aspire to have their own humble homes furnished with every needful comfort, and brightened by that intellectual enlightenment, and that peace of mind about their families and their future, without which neither luxuries nor comforts can yield any true and lasting pleasure.

CHAPTER IV.

RAINBOW MAKING.

This account of the Coventry Ribbon manufacture was written in 1851. I leave it unaltered, because some may be glad hereafter to possess a record of what the aspect of the manufacture was ten years before the French treaty came into operation; and also of the way in which the notions and conduct of the Coventry people were then regarded by the friends of free trade and free industry. No one could have the heart to reproach the sufferers now, in their hour of misery, with their former mistakes; but it may be well that a statement of the aspect of their affairs ten years ago should be preserved as a study, for the chance of some instruction to us all.

It is a great idea—too large to be arrived at but by degrees—that the fleeces of sheep can clothe nations of men. The fleece of a sheep, when pulled and spread out, looks much larger than while covering the mutton; but still it is with a sort of despair that we think of the quantity required, and of the dressing and preparation necessary, for clothing fifteen

millions of men in one country, and double the number in another (to say nothing of the women), and of the number of countries, each containing its millions, which are incessantly demanding the fleeces of sheep to clothe their inhabitants. We remember the hill-sides of our own mountainous districts; and the wide grassy plains of Saxony; and the boundless table lands of Thibet, and the valleys of Cashmere, all speckled over with flocks: we think of the Australian sheep-walks, where there are flocks of such unmanageable size, that the whole sheep has been boiled down for tallow: we think of Prince Esterhazy's reply to the question of an English nobleman, when shown vast flocks, and asked how his sheep in Hungary would compare in number with these,—that his shepherds out-numbered the Englishman's sheep; we think of these things, and by degrees begin to understand how wool enough may be produced to furnish the broadcloths and flannels of the world. But the most strong and agile imagination is confounded when the material of silk is considered in the same way. Compare a caterpillar with a sheep; compare the cocoon of a silkworm (the achievement of its life) with the annual fleece of a sheep; and the supply of silk for the looms of Europe, Asia, and America, seems a mere miracle. The marvel is the greater, not the less, when one is in a silk-growing region, attending to the facts and appearances, than when trying to conceive of them at home. In Lombardy, we travel, from day to day, during the whole month of May, between rows of mulberry-trees, where the peasants are busy providing food for the worms; a man in the tree stripping off the leaves, and two women below with sacks, to carry home the foliage. We see what tons of leaves per mile must be thus gathered daily for weeks together; we go into houses in every village to inspect the worms; we mount to the flat roofs of the dwellings, and find in each countless multitudes of the worms; we pass on, from country to country, till we mount to the hamlets, perched on the rocky shelves of the Lebanon; and we find everywhere the insect secreting its gum, or spinning it forth as silk; we remember that the same process is going forward in the heart of our Indian Peninsula, and throughout China: we look at the broad belt round the globe where the little worm is forming its cocoons; and still we find it impossible to imagine how enough silk is produced to supply the wants of the world, from the brocade of the Asiatic potentate to the wedding-ribbon

of the English dairy-maid. Nowhere is the speculation more difficult than in a dye-house at Coventry.

Probably there was as much wonder excited by the same thought when King Henry VIII. wore the first pair of silk stockings brought to England from Spain; and when Francis I. looked after the mulberry trees in France, and fixed some silk weavers at Lyons; and when our Queen Mary passed a law forbidding servant-maids to wear ribbon on bonnets; and when monarch after monarch passed Acts to teach how silk should be boiled, and whence it should be brought, and who should, and who should not, wear it when wrought; but the perplexity and amazement of king, lords, and commons could hardly, at any time, have exceeded that of the humblest visitor of to-day in any dye-house at Coventry. We know something of the fact of this astonishment; for we have been noting the wonders that are to be found on the premises of Messrs. Leavesley and Hands at Coventry.

On entering, we see, ranged along the counters, half round the room, bundles of glossy silk, of the most brilliant colours. Blues, rose-colours, greens, lilacs, make a rainbow of the place. It is only two days since this silk was brought in in a very different condition. The throwster (to throw, means to twist or twine), after spinning the raw silk, imported from Italy, Turkey, Bengal, and China, into thread fit for the loom, sent it here in bundles, gummy, harsh, dingy; except, indeed, the Italian, which looks, till washed, like fragments of Jason's fleece. If bundles, and regiments of bundles, like these, come into one dye-house every few days, to be prepared for the weaving of ribbons alone, and for the ribbon-weaving of a single town, it is overwhelming to think of the amount of production required for the broad silk-weaving of England, of Europe, of the world. Of the silk dyed at Coventry, about eighty per cent. is used for the ribbon-weaving of the city and neighbourhood; and the quantity averages six tons and a half weekly. Of the remaining twenty per cent., half is used for the manufacture of fringes; and the other half goes to Macclesfield, Congleton, and Derby.

The harsh gummy silk that comes in from the throwing mills is boiled, wrung out, and boiled again. If it wants bleaching, there is a sort of open oven of a house; a vault in the yard, where it is "sulphured." The heat, and the sensation in the throat, inform us in a moment where we have got to. When

the hanks come forth from this process, every thread is separated from its neighbour, and the whole bundle is soft, dry, and glossy. Then follows the dyeing. To make the silk receive the colours, it is dipped in a mordant, in some diluted acid or solution of metal, which enables the colour to bite into the fibre. To make pinks of all shades, the silk is dipped in diluted tartaric acid for the mordant, and then in a decoction of safflower for the hue. To make plum-colour or puce, indigo is the dye, with a cochineal. To make black, nitrate of iron first; then a washing follows; and then a dipping in logwood dye, mixed with soap and water. For a white, pure enough for ribbons, the silk has to pass through the three primary colours, yellow red, and blue. The dipping, wringing, splashing, stirring, boiling, drying, go on vigorously, from end to end of the large premises, as may be supposed, when the fact is mentioned that the daily consumption of water amounts to one hundred thousand gallons. A reservoir, in the middle of the yard, formerly supplied the water; but it proved insufficient, or uncertain; and now it is about to be filled up, and an Artesian well is opened to the depth of one hundred and ninety-five feet. The dyeing sheds are paved with pebbles or bricks, crossed with gutters, and variegated with gay puddles. Stout brick-built coppers are stationed round the place. Above each copper are cocks, which let in hot and cold water from the pipes that travel round the walls of the sheds. There are wooden troughs for the dye; and to these troughs the water is conveyed by spouts. The silk hangs down into the dye from poles, smoothly turned and uniform, which are laid across the troughs by the dozen or more at once. These staves are procured from Derby. They cost from six shillings to twenty-four shillings per dozen, and constitute an independent subsidiary manufacture. The silk hanks being suspended from these poles, two men, standing on either side the trough, take up two poles, souse, and shake, and plunge the silk, and turn that which had been uppermost under the surface of the liquor, and pass on to the next two. When done enough, the silk is wrung out and pressed, and taken to the drying-house. The heat in that large chamber is about one hundred degrees. On entering it, everybody begins to cough. The place is lofty and large. The staves, which are laid across beams, to contain the suspended silk, make little moveable ceilings here and there. This chamber contains five or six

hundred-weights of silk at once. One's mind glances once more towards the spinning insects on hearing this; and I ask again, how much of their produce may be woven into fabrics in Coventry alone? I fancy I must have made a mistake in setting down the weekly average at six tons and a half. But there was no mistake. It is really so.

While speaking of weight, I heard something which reminded me of King Charles I.'s opinions about some practices which were going forward before my eyes. It appears, that the silk which comes to the dye-house is heavy with gum, to the amount of one-fourth of its weight. This gum must be boiled out before the silk can be dyed. But the manufacturers of cheap goods require that the material shall not be so light as this process would leave it. It is dipped in well-sugared water, which adds about eight per cent. to its weight. Many tons of sugar per year are used as (what the proprietor called) "the silk-dyer's devil's dust." It was this very practice which excited the wrath of our pious King Charles, in all his horror of double-dealing. A proclamation of his, of the date of 1630, declares his fears of the consequences of "a deceitful handling" of the material, by adding to its weight in dyeing, and ordains that the whole shall be done as soft as possible; that no black shall be used but Spanish black, "and that the gum shall be fair boiled off before dyeing." He found, in time, that he had meddled with a matter that he did not understand, and had gone too far. Some of the fabrics of his day required to be made of "hard silk;" and he took back his orders in 1638, having become, as he said, "better informed."

From trough to trough we go, breathing steam, and stepping into puddles, or reeking rivulets rippling over the stones of the pavement; but we are tempted on, like children, by the charm of the brilliant colours that flash upon the sight whichever way we turn. What a lilac this is! Is it possible that such a hue can stand? It could not stand even the drying, but for the alkali into which it is dipped. It is dyed in orchil first, and then made bluer, and somewhat more secure, by being soused in a well-soaped alkaline mixture.—That is, a good red brown. It is from Brazil wood, with alum for its mordant.—This is a brilliant blue;—indigo, of course? Yes, sulphate of indigo, with tartaric acid.—Here are two yellows: how is that? One is much better than the other; moreover, it makes a better

green ; moreover, it wears immeasurably better.—But what is it ? The inferior one is the old-fashioned turmeric, with tartaric acid. And the improved yellow ?—O ! I perceive. It is a secret of the establishment, and I am not to ask questions about it. But among all these men employed here, are there none accessible to a bribe, from a rival in the art ? There is no saying ; for the men cannot be tempted. They do not know, any more than ourselves, what this mysterious yellow is. But why does it not supersede the old-fashioned turmeric ?—It will, no doubt ; and it is gaining rapidly upon it ; but it takes time to establish improvements. The improvement in greens, however, is fast recommending the new yellow.—This deep amber is a fine colour. I find it is called California, which has a modern sound in it.—This Napoleon blue (not Louis Napoleon's) is a rich colour. It gives a good deal of trouble. There is actually a precipitation of metal, of tin, upon every fibre, to make it receive the dye ; and then it has to be washed ; and then dipped again, before it can take a darker shade ; and afterwards washed again, over and over, till it is dark enough ; when it is finally soused in water which has fuller's earth in it, to make it soft enough for working and wear.—What is doing with that dirty-white bundle ? It is silk of a thoroughly bad colour. Whether it is the fault of the worm, or of the worm's food, or what, there is no saying—that is the manufacturer's affair. He sent it here. It is now to be sulphured, and dipped in a very faint shade of indigo, curdled over with soap. This will improve it, but not make it equal to a purer white silk. Next, the wet hanks have to be squeezed in the Archimedean press, and then hung up in that large, hot drying-room.

One serious matter remains unintelligible to me. Plaid ribbons—that is, all sorts of checked ribbons—have been in fashion so long now, that we have had time to speculate (which I have often done) on how they can possibly be made. About the colours of the warp (the long way of the ribbon) we are clear enough. But how, in the weft, do the colours duly return, so as to make the stripes, and therefore the checks, recur at equal distances ? I am now shown how this was done formerly, and how it is done now. Formerly, the hanks were tied very tightly, at equal distances, and the alternate spaces closely wrapped round with paper, or wound round with packthread. This took up a great deal of time. I was shown a much better

plan. A shallow box is made, so as to hold within it the halves of several skeins of silk; these halves being curiously twisted, so as to alternate with the other halves when the hanks are shaken back into their right position for winding. One half being within the box, and the other hanging out, the lid is bolted down so tight that the dye cannot creep into the box; and the out-hanging silk is dipped. So much can be done at once, that the saving of time is very great; and judging by the prodigious array of plaid ribbons that I saw in the looms afterwards, the value of the invention is no trifle. The name of this novelty is the Clouding Box.

I see a bundle of cotton. What has cotton to do here? It is from Nottingham—very fine and well twisted. It is a pretty pink, and it costs one shilling and sixpence per pound to dye. But what is it for?—Ah! that is the question! It is to mix in with silk, to make a cheap ribbon. Another pinch of devil's dust!

There is a calendering process employed in the final preparation of the dried silk, by which I believe, its gloss is improved; but it was not in operation at the time of my visit. I saw, and watched with great curiosity, a still later process—more pretty to witness than easy to achieve—the making up of the hanks. This is actually the most difficult thing the men have to learn in the whole business. Of course, therefore, it is no matter for description. The twist, the insertion of the arm, the jerk, the drawing of the mysterious knot, may be looked at for hours and days without the spectator having the least idea how the thing is done. I went from workman to workman—from him who was making up the blue, to him who was making up the red—I saw one of the proprietors make up several hanks at the speed of twenty in four minutes and a half, and I am no more likely to be able to do it than if I had never entered a dye-house. Peeping Tom might spy for very long before he would be much the wiser. When done, the effect is beautiful. The snaky coils of the polished silk throw off the light like fragments of mirrors.

Another mysterious process is the marking of the silk which belongs to each manufacturer. The hanks and bundles are tied with cotton string; and this string is knotted with knots at this end, at that end, in the middle, in ties at the sides, with knots numbering from one to fifteen, twenty, or whatever

number may be necessary; and the manufacturer's particular system of knots is posted in the books with his name, the quantity of silk sent in, the dye required, and all other particulars.

I was amused to find that there is a particular twist and a particular dye for the fringe of brown parasols. It is desired that there should be a claret tint on this fringe, when seen against the light; and here, accordingly, we find the claret tint. The silk is somewhat dull, from being hard twisted; it is to be made more lustrous by stretching, and we accompany it to the stretching machine. There it is suspended on a barrel and moveable pin; by a man's weight applied to a wheel, the pin is drawn down, the hank stretches, and comes out two or more inches longer than it went in, and looking perceptibly brighter. A hank of bad silk snaps under this strain; a twist that will stand it is improved by it.

Looking into a little apartment, as we return through the yard, we find a man engaged in work which the daintiest lady might long to take out of his hands. He is making pattern-cards and books. He arranges the shades of all sorts of charming colours, named after a hundred pretty flowers, fruits, and other natural productions,—his lemons, lavenders, corn flowers, jonquils, cherries, fawns, pearls, and so forth; takes a pinch of each floss, knots it in the middle, spreads it at the ends, pastes down these ends, and, when he has a row complete, covers the pasted part with slips of paper, so numbered as that each number stands opposite its own shade of colour. A pattern-book is as good as a rainbow for the pocket. This looks like woman's work; but there are no women here. The men will not allow it. Women cannot be kept out of the ribbon-weaving; but in the dye-house they must not set foot, though the work, or the chief part of it, is far from laborious, and requires a good eye and tact, more than qualities less feminine. I found many apprentices in the works, receiving nearly half the amount of wages of their qualified elders. The men earn from ten shillings to thirty shillings a-week, according to their qualifications. Nearly half of the whole number earn about fifteen shillings a-week at the present time.

And, now, we are impatient to follow these pretty silk bundles to the factory, and see the weaving. It is strange to meet, on our way to so thoroughly modern an establishment, such tokens of

antiquity, or reminders of antiquity, as we have to pass. We pass under St. Michael's Church, and look up, amazed, to the beauty and loftiness of its tower and spire,—the spire tapering off at a height of three hundred and twenty feet. The crumbling nature of the stone gives a richness and beauty to the edifice, which we would hardly part with for such clear outlines as those of the restored Trinity Church, close at hand. And then, at an angle of the market-place, there is Tom, peeping past the corner, —looking out of his window, through his spectacles, with a stealthy air, which, however ridiculous, makes one thrill, as with a whiff of the breeze which stirred the Lady Godiva's hair, on that memorable day, so long ago. It is strange, after this, to see the factory chimney, straight, tall, and handsome, in its way, with its inlaying of coloured bricks, towering before us to about the height of a hundred and thirty feet. No place has proved itself more unwilling than Coventry to admit such innovations. No place has made a more desperate resistance to the introduction of steam power. No place has more perseveringly struggled for protection, with groans, menaces, and supplications. Up to a late period, the Coventry weavers believed themselves safe from the inroads of steam power. A Macclesfield manufacturer said, only twenty years ago, before a Committee of the House of Commons, that he despaired of ever applying power-looms to silk. This was because so much time was employed in handling and trimming the silk that the steam power must be largely wasted. So thought the weavers in the days when the silk was given out in hanks or bobbins, and woven at home, or, when the work was done by handloom weavers, in the factory—called the loom-shop. The day was at hand, however, when that should be done of which the Macclesfield gentleman despaired. A small factory was set up in Coventry, by way of experiment in the use of steam power, in 1831. It was burned down during a quarrel about wages,—nobody knows how or by whom. The weavers declared it was not their doing; but their enmity to steam power was strong enough to restrain the employers from the use of it. It was not till everybody saw that Coventry was losing its manufacture,—parting with it to places which made ribbons by steam,—that the manufacturers felt themselves able to do what must be done, if they were to save their trade. The state of things now is very significant. About seventy houses in Coventry make ribbons

and trimmings (fringes and the like). Of these, four make fringes and trimmings, and no ribbons; and six or eight make both. Say that fifty-eight houses make ribbons alone. It is believed that three-fourths of the ribbons are made by no more than twenty houses out of these fifty-eight. There are now thirty steam power-loom factories in Coventry, producing about seven thousand pieces of ribbons in the week, and employing about three thousand persons. It seems not to be ascertained how large a proportion of the population are employed in the ribbon manufacture: but the increase is great since the year 1838, when the number was about eight thousand, without reckoning the outlying places, which would add about three thousand to the number. The total population of the city was found, last March, to amount to nearly thirty-seven thousand. So, if we reckon the numbers employed in connection with the throwing-mills and dye-houses, we shall see what an ascendency the ribbon manufacture has in Coventry.

At the factory we are entering, the preparatory processes are going forward at the top and the bottom of the building. In the yard is the boiler fire, which sets the engine to work; and, from the same yard we enter workshops, where the machinery is made and repaired. The ponderous work of the men at the forge and anvils contrasts curiously with the delicacy of the fabric which is to be produced by the agency of these masses of iron and steel. Passing up a step-ladder, I find myself in a long room, where turners are at work, making the wooden apparatus required, piercing the "compass boards," for the threads to pass through, and displaying to us many ingenious forms of polished wood. While the apparatus is thus preparing below, the material of the manufacture is getting arranged, four stories over-head. There, under a skylight, women and girls are winding the silk from the hanks, upon the spools, for the shuttles. Here, I see again the clouded silk which is to make plaid ribbons, and the bright hues which delighted my eyes at the dyeing-house. This is easy work,—many of the women sitting at their reels; and the air is pure and cool. The great shaft from the engine, passing through the midst of the building, carries off the dust, and affords excellent ventilation. Besides this, the whole edifice is crowned by an observatory, with windows all round; and no complete ceilings shut off the air between this chamber and the rooms of two stories below. In

clear weather, there is a fine view from this pinnacle, extending from the house, gardens, and orchard of the Messrs. Hamerton below, over the spires of Coventry, to a wide range of country beyond.

Descending from the long room, where the winding is going on, I find myself in an apartment which it does one good to be in. It is furnished with long narrow tables, and benches, put there for the sake of the workpeople, who may like to have their tea at the factory, in peace and quiet. They can have hot water, and make themselves comfortable here. Against the door hangs a list of books, read, or to be read, by the people: and a very good list it is. Prints from Raffaelle's Bible, plainly framed, are on the walls. In the middle of the room, on, and beside, a table, are four men and boys, preparing the "strapping" of a Jacquard loom for work. The cords, so called, are woven at Shrewsbury. We next enter a room where a young man is engaged in the magical work of "reading in from the draught." The draught is the pattern of the intended ribbon, drawn and painted upon diced paper,—like the patterns for carpets that we saw at Kendal, but a good deal larger, though the article to be produced here is so much smaller. The young man sits, as at a loom. Before him hangs the mass of cords he is to tie into pattern, close before his face, like the curtain of a cabinet piano. Upreared before his eyes is his pattern, supported by a slip of wood. He brings the line he has to "read in" to the edge of this wood, and then, with nimble fingers, separates the cords, by threes, by sevens, by fives, by twelves, according to the pattern, and threads through them the string which is to tie them apart. The skill and speed with which he feels out his cords, while his eyes are fixed on his pattern, appear very remarkable: but when we come to consider, it is not so complicated a process as playing at sight on the piano. The reader has to deal thus with one chapter, or series, or movement, of his pattern. A *da capo* ensues: in other words, the Jacquard cards are tied together, to begin again; and there is a revolution of the cards, and a repetition of the pattern, till the piece of ribbon is finished. In the same apartment is the press in which the Jacquard cards are prepared;—just in the way which may be seen wherever silk or carpet weaving, with Jacquard looms, goes forward.

All the preparations having been seen,—the making of the

machinery, the filling of the spools, the drawing and "reading in" of the pattern, and the tying of the cords or strapping, I have to see the great process of all,—the actual weaving. I certainly had no idea how fine a spectacle it might be. Floor above floor is occupied with a long room in each, where the looms are set as close as they can work, on either hand, leaving only a narrow passage between. It may seem an odd thing to say; but there is a kind of architectural grandeur in these long lofty rooms, where the transverse cords of the looms and their shafts and beams are so uniform as to produce the impression that symmetry, on a large scale, always gives. Looking down upon the details, there is plenty of beauty. The light glances upon the glossy coloured silks, depending, like a veil, from the backs of the looms, where women and girls are busy piecing the imperfect threads with nimble fingers. There seems to be plenty for one person to do; for there are thirteen broad ribbons, or a greater number of narrow ones, woven at once, in a single loom; yet it may sometimes be seen that one person can attend the fronts, and another the backs, of two looms. In the front I see the thirteen ribbons getting made. Usually, they are of the same pattern, in different colours. The shuttles, with their gay little spools, fly to and fro, and the pattern grows, as of its own will. Below is a barrel, on which the woven ribbon is wound. Slowly revolving, it winds off the fabric as it is finished, leaving the shuttles above room to ply their work.

The variety of ribbons is very great, though in this factory we saw no gauzes, nor, at the time of our visit, any of the extremely rich ribbons which made such a show at the Exhibition. Some had an elegant and complicated pattern, and were woven with two shuttles (called the double-batten weaving) which came forward alternately, as the details of the rich flower or leaf required the one or the other. There were satin ribbons, in weaving which only one thread in eight is taken up,—the gloss being given by the silk loop which covers the other seven. On entering, we saw some narrow scarlet satin ribbons, woven for the Queen. Wondering what Her Majesty could want with ribbon of such a colour and quality, we were set at ease by finding that it was not for ladies, but horses. It was to dress the heads of the royal horses. There were bride-like, white figured ribbons, and narrow flimsy black ones,

fit for the wear of the poor widow who strives to get together some mourning for Sundays. There were checked ribbons, of all colours and all sizes in the check. There were stripes of all varieties of width and hue. There were diced ribbons, and speckled, and frosted. There were edges which may introduce a beautiful harmony of colouring;—as primrose with a lilac edge;—green with a purple edge; rose-colour and brown; puce and amber; and so on. The loops of pearl or shell edges are given by the silk being passed round horse-hairs, which are drawn out when the thing is done. There are belts,—double ribbons,—which have other material than silk in them; and there are a good many which are plain at one edge, and ornamented at the other. These are for trimming dresses. One reason why there are so few gauzes is, that the French beat us there. They grow the kind of silk that is best for that fabric: and labour is cheap with them; so that any work in which labour bears a large proportion to the material, is particularly suitable for them.

I have spent so much time among the looms, that it is growing dusk in their shadows, though still light enough in the counting-house for me to look over the pattern-book, and admire a great many patterns; most, till I see more. Young women are weighing ribbons in large scales; and a man is measuring off some pieces, by reeling. He cuts off remnants, which he casts into a basket, where they look so pretty that, lest I should be conscious of any shop-lifting propensities, I turn away. There is a glare now through the window which separates us from the noisy weaving room. The gas is lighted, and I step in again, just to see the effect. It is really very fine. The flare of the separate jets is lost behind the screens of silken threads, which veil the backs of the looms, while the yellow light touches the beams, and gushes up to the high ceiling in a thousand caprices. Surely the ribbon manufacture is one of the prettiest that we have to show.

If the Coventry people were asked whether their chief manufacture was in a flourishing state, the most opposite answers would probably be given by different parties equally concerned. Some exult, and some complain, at this present time. As far as I can make out, the state of things is this. From the low price of provisions, multitudes have something more to spare from their weekly wages than formerly, for the purchase of finery:

and the demand for cheap ribbons has increased wonderfully. As always happens when any manufacture is prosperous, the operatives engage their whole families in it. We may see the father weaving; his wife, on the verge of her confinement, winding in another room, or, perhaps, standing behind a loom, piecing the whole day long. The little girls fill the spools; the boys are weaving somewhere else. The consequences of this devotion of whole households to one business, are as bad here as among the Nottingham lace-makers, or the Leicester hosiers. Not only is there the misery before them of the whole family being adrift at once, when bad times come, but they are doing their utmost to bring on those bad times. Great as is the demand, the production has, thus far, much exceeded it. The soundest capitalists may be heard complaining that theirs is a losing trade. Less substantial capitalists have been obliged to get rid of some of their stock at any price they could obtain: and those ribbons, sold at a loss, intercept the sales of the fair-dealing manufacturer. This cannot go on. Prosperous as the working-classes of Coventry have been, for a considerable time, a season of adversity must be within ken, if the capitalists find the trade a bad one for them. I find the case strongly stated, and supported by facts, in a tract on the Census of Coventry, which has lately been published there. It might save a repetition of the misery which the Coventry people brought upon themselves formerly—by their tenacity about protective duties, and their opposition to steam power—if they would, before it is too late, ponder the facts of their case, and strive, every man in his way, to yield respect to the natural demand for the great commodity of his city; and to take care that the men of Coventry shall be fit for something else than weaving ribbons.

CHAPTER V.

THE WONDERS OF NAILS AND SCREWS.

EIGHTY-FIVE years ago our fathers were told, by a man of high character whose testimony could not be doubted, that he had himself seen several boys, under twenty years of age, each of whom could make two thousand three hundred nails in a day. This gentleman—Adam Smith—explained that, to produce so surprising a result, these boys must have passed their whole lives in nail-making; for that a smith, who had been pretty well accustomed to making nails, but not wholly devoted to it, could not make more than from eight hundred to one thousand in a day; while a smith who could handle his tools cleverly but was unused to making nails, could not turn out more in a day than two or three hundred. The making of nails, Adam Smith continues, is by no means a simple operation: he tells how the bellows have to be blown, and the fire mended, and the iron heated, and every part of the nail forged; and how the tools have to be changed when the head comes to be shaped. Considering all this, it seemed, in 1776 (when this account was published), a wonderful example of dexterity, that young people should be able, with due effort, to make two thousand three hundred nails in a day.

That year seems not so very long ago: 1776 was the date of the American Declaration of Independence: and we are fond of saying how extremely young a nation is that of the United States. It is the date of our compulsory permission to that young nation to take care of itself, and to see what it could do by its own faculties. It has done a great many wonderful things; and, among others, it has invented, and sent over to us, a machine by which boys can make more nails in a day than our readers would remember, if we were to set down the long row of figures. These Americans used to buy our nails, made in the way that Adam Smith describes. But in a few years, they found they had the iron and coal, and the heads and hands

necessary for making steam-engines and nail-cutting machines —all at home : and instead of taking our nails, they have shown us how to make so many, that, if the same number were made in the old way, it would take half the nation to accomplish the work.

We do not want all these nails ourselves. Of the smallest kind of nail (tacks), some are still made on the anvil ; and those are probably for home use. They must be regarded as a humble manufacture, remaining from old times, on account of the expense of the new machinery. The establishment I saw at Birmingham, makes twenty tons of nails per week, of all sizes together ; that is, about four tons of the largest size commonly made—six inches long—and sixteen tons of other sizes, descending to the little tack which measures only three-sixteenths of an inch. No one can tell precisely how many are made in the kingdom, because there are numerous small manufacturers in the inland towns, whose sales are not ascertainable. But it is supposed that Birmingham alone may supply two hundred tons a week ; and the whole kingdom, perhaps, five hundred tons. Now let the imagination follow this ;—let us think of a handful of tacks, or the household box of nails, and follow these up to the pound, and the hundred-weight, and the twenty-hundred-weights which make a ton, and think of five hundred of these tons, as a weekly supply ; and we shall be full of wonder as to what becomes of such heaps of uncountable masses of nails.

The fact is, we send them very far over the world ; even to Australia, where they are wanted in large quantities by the growing people there, who are always building more and more houses, and edifices of other kinds. We send vast quantities to the German ports, whence they spread over the interior of the continent. Canada is too near the United States to need any supply from us ; and, indeed, there is nail-making going on at Montreal, which nearly satisfies the wants of that colony.

The sheets of iron brought as material to the establishment which I saw at Birmingham are six feet in length and two in width. These have to be cut into strips. The strips must not be cut the long way of the sheet, because that would bring the grain of the iron (for even iron has a grain) the wrong way for the nail, and a bad article would be produced, as surely as the wristbands of a shirt would look ill, and soon wear out, if they

were cut the wrong way of the linen. As the nails are cut across the strip of iron, the strip must be cut across the sheet. Thus, it is clear the nails will be cut from the long way of the sheet.

As for the width of the strip, it must be somewhat more than the length of the nail, because the head must be allowed for. The longest nail that has been made in these machines is one of nine inches. A strip which is to make inch nails, must be an inch and one-eighth in width. It is a marvellous thing to see the cutting of these strips, which might seem to be thin pasteboard, but for the noise they make in falling. The hidden steam-engine turns the wheels of the shearing machine. The iron plate is held to it, the edge put into a groove, and off comes the strip, as quick as thought. It is, in fact, cut from end to end, and not struck off with one blow; but the process is too rapid for the eye to follow—the machine making fifty revolutions in a minute. Thus, these iron-ribbons are rained down at the rate of nearly one in every second of time.

Now we have the strips. How many nails will each yield? The number that must be got is two hundred and forty small tacks, or, if of the six-inch size, one hundred and twenty; the other sizes ranging between. It would be impossible to get this number, if one edge of the strip was to yield all the heads, and the other edge all the points. There would be much fewer nails, and a great waste of iron. The strip must be turned for the cutting of each nail, that the slope made by cutting the narrow part of the last, may serve for the broad edge of the next. This incessant turning of the strip is the one thing which the workman has to do. His machine actually does all the rest, and without failure or pause. Before each machine stands a rest—a good deal like what soldiers used to carry in the days of matchlocks, to rest their pieces on. It is like a large two-pronged fork set on end, prongs uppermost, and moveable in its socket. Taking hold of his strip of cold iron with a pair of long pincers, very like tongs, the boy lodges it across this fork, and proceeds to feed the machine with the metal which it is rapidly to digest into nails. A most vigorous and certain process of digestion it is. There is a sharp steel tooth, at what may be called the mouth of the machine, the ledge on which the strip is laid. The tooth doubles back, like the fang of a rattlesnake, and, in doing so, it allows a sharp blade to fall, and slice off a

nail. While the boy is turning the strip, the severed bit drops into a groove, where a pair of nippers seizes it by the point, and another advances from behind to strike and hold the shank. The point and shank being thus formed and held fast, a hammer comes on, driven from the right hand, to form the head. The severe blow which forms the head, releases the point and shank, and the finished nail slides down an inclined plain into a trough below. This process of forming the nail goes on in the dark—in a space below the cutting apparatus—in the stomach to which the mouth has sent down the aliment. But never was such quick digestion known in any kind of stomach, for it is empty between the mouthfuls. While the boy is turning his strip, and the blade is cutting it, the nail is dismissed from the groove—finished, head and point; but only finished as to form. It has still to be annealed;—that is, to be roasted, baked, stoved,—call it what you will. The nails are shovelled into square iron pans, with a chemical mixture, and thoroughly baked. When they come out, they are shaken in a sieve with sawdust; when cool, they are weighed, and made up into parcels, or put into cases or sacks of "Dudley muslin;" as the coarsest and strongest of packing-fabrics is ironically called.

The premises used for this manufacture need not be large. The machinery occupies a very small space. A small Pembroke table fills more width than a single machine! and the machines may be placed as near together as will merely leave room to pass. The steam-engine must be accommodated; and there must be an apartment or two for the repair or making of the machinery. The annealing, and cooling, and weighing, and packing can be done in a shed and yard. Adam Smith's young acquaintances would have wanted the whole site of Birmingham —for their forges, to make as many nails as go forth from the premises we saw. So compact is the space required, that one man attends to four machines. He is called a "minder." He engages a boy for each machine, and sees that it is properly fed. The "minder" is paid by the hundred-weight, for all sizes of nails, except tacks, which are paid by the thousand. It is calculated that one hundred-weight contains about fifty thousand nails of all sizes. If so, the quantity of nails formed in a year, in this one apartment, is no less than a thousand and forty millions! When we see the stroke given, which makes the head, we cannot but wonder where the nail will next be struck

on the head;—whether in some shed on the banks of the Danube, or in the cabin of some peasant on the bleak plains of Russia, or in some Indian bungalow, or in a cattle-fold on the grassy levels of Australia, or in some châlet on the Alps, or on the brink of some mine high up in the Andes, or under the palm-roof of some missionary chapel in the South Sea islands. As the nails are snipped off and fashioned, much faster than the nimblest fingers can snip paper, it is wonderful to think how they will be spread over the globe, nowhere meeting, probably, with a single person who will think of where their heads were last struck; unless one of them should be floated, in some piece of wreck, to the feet of some Robinson Crusoe, who will start at this trace of a man's hand, and seem to hear once more the pant of the steam-engine, and all the sounds of busy toil, and the voices of men, for which his ear and his heart are thirsting. What would he not give to be a "minder" where that nail was made?—or the humblest helper on the premises, so that he might work among his fellow men?

The "minder" has it in his power to enjoy all the best things of life, if he so pleases. He easily earns from one hundred and twenty-five to one hundred and fifty-pounds a year. But, unfortunately, he reckons his wages by the week. If clergymen and others—who would be glad of his income—did so, they might make less of their small means than they do; the weekly surplus being a constant temptation to spend. And too truly, too sadly, it is so with the "minder," with an exception here and there. If he receives five pounds a week for months together, and pays away nearly, or quite half, to the four boys below him, keeping fifty shillings or more for himself; and if the machinery has to stop for a few days, he is sure to borrow money of his employer. After years of constant employment and good health, if he falls sick, he has not a shilling beforehand. This story has been told before—often before—and it must be told again now—and often again—till the workman learns to accept that welfare from himself which he is too apt to expect from law or society, which can effectually help only those who help themselves.

In a neighbouring manufactory, which would seem to require the strength of hard-handed men, I find women employed in the proportion of ten to one: and of that one portion, many are boys. The manufacture is that of screws; steel, brass,

copper, and a few of silver. From the smallest screws required for putting together the nicest philosophical instruments, to the heavy bolt-screws which sustain the wear and tear of mighty steam-engines, I see here specimens of all sorts and sizes. The forging must be done by men, of course: and here I find the anvil, and the glowing furnace (fed by the steam-engine), and see the great square heads of bolt-screws beaten while at a white or red heat.

The coils of wire, of different thicknesses, of which the screws are made, come from the wire-drawers. They have been made by drawing the heated iron through holes in hardened steel plates. The smaller kinds of wire are drawn, by a hard mechanical gripe, through smaller and smaller holes, till they become of the thickness required. Then the wire is brought to the screw manufactory; and there we see it lying about in shining coils. One end of a coil is presented to a machine worked by boys or women; when we see the end seized, and drawn forward, and snipped off the proper length, the snip falling, hot, into a pan of sawdust below. Women are preferred to boys for this work. Their attention is more steady, and they are more careful of their own flesh and blood. Boys are apt to make mischief; and, if they look off their work, it is too likely that they may lose their finger-ends. It is in this department of the business that most of the accidents happen. It is more satisfactory to see the lads filing the circular saws used in making the machinery, or in other processes where they have not to deal with such inexorable powers as those which cut or stamp the metal.

The heads of the bits of steel are next stamped by machinery, and delivered over to women to have the heads polished. There is nice fingering required here; and, to do it, I see rows of women, who earn from five to twelve shillings per week, each attending a machine of her own. She presents the head of the screw to a vice, which seizes it and carries it to a flying wheel, which smooths and polishes it; and it comes out in an instant, brightened with that radiating polish which we observe in the head of a finished screw. All the while, a yellowish ugly liquid is dropping upon the metal, and upon the work-woman's fingers, from a can above. It is a mixture of soapsuds and oil, which dribbles from a spout, and keeps the metal from becoming too hot for the touch.

We have now the shank of the screw, and its neat polished head : but there is no slit in the head wherein to insert the screw-driver ; and the shank is plain and blunt. The next thing is to "nick" the head. This part of the business used to be done by working the "nicking" machine with treadles. By the modern method, a barrel—somewhat like that of a barrel-organ, but pierced with holes, instead of being stuck over with upright bits of wire—revolves slowly, so that every row of holes is brought under the line of a cleaver, which descends to make the cleft across the heads of the screws in a row beneath. It is the business of the steam-engine to turn the barrel, and send down the cleaver : it is that of the women to stick the screws into the holes in the barrel,—as they would put pins in rows into a pincushion. They do this with quickness and dexterity, as the empty holes come up ; and the notched screws fall out by their own weight, on the other side, as it descends with the revolution of the barrel.

This is all very well, as far as it goes : but the shank is still plain and blunt, and perfectly useless. The grand operation of "worming" remains. This also is women's work ; and we may see a hundred and twenty women at a time busy about it. The soapsuds and oil are still dropping upon their fingers and their work ; and the job looks anything but a tidy one, while we regard the process alone. But it is different when we stand aside, and survey the room. Then we see that these six score women are neatly dressed ; hair smooth, or cap clean—handkerchief or little shawl nicely crossed over, and fastened behind ; faces healthy, and countenances cheerful. These women are paid by piecework ; and they can easily earn ten shillings per week. Their business still is to feed the machinery—to present the heads of the screws to a vice which seizes them, and carries them forward—then back again, and again forward—as often as is necessary to have the worming made deep enough. As the shank is pressed, in its passage forward, against the cutter which grooves out the steel between the "thread,"—which, in other words, "worms" it,—the filings curl away and drop off, like so much wood, or rasped cheese-rind. It is wonderful to see this rasping of steel. But I was informed that there will be something hereafter more curious still to be seen. On these premises, there was at work some machinery which was shut up from prying eyes, by which the shank is picked up, wormed, and

dropped, without being touched by human hands : and strange it must be to see the screw, not a quarter of an inch long, picked up by a metallic gripe, and the largest—massive and heavy as they are—carried onward, again, and again, and again, as the depth of their worming requires.

After this comes the cooking in sawdust ; and the drying and bolting (as a miller would say) of the finished screws in sieves ; and the counting, and the packing. They are counted by weight, of course. The packing is a pretty affair. A nimble-fingered woman throws down half-a-dozen or more screws, according to size, on a square paper, the heads lying all one way ; and then the same number, with the heads lying the other way, and the shanks falling between the first. Then the same number are laid across ; and so the pile is built up into a square, which is kept compact by the wall of round heads on all the four sides. The paper is folded over, and the square packet is passed to a neighbour, to be tied up. With a dexterous twist of the string, she fastens on a specimen screw, ties the knot, and passes on the packet—to be sent to Germany, or almost anywhere in the world where men are screwing anything together—always excepting the United States. Very few are sent there ; for, as I was again told here, America rivals us, or, as would be said across the Atlantic, "America flogs the world" in screw-making. There were eight houses in Birmingham employed in this manufacture : and this was all I could learn of the amount of production. No one seemed to know how many were made in England ; for no one could tell what proportion the produce of the little manufactories bears to these larger ones.

Seeing whole bins full of steel filings, and copper, and brass, I inquired what became of them. They are sold ; the steel being worth little, and the brass much. The brass comes in at the cost of ninepence per pound ; and the refuse goes out, as filings, at fivepence per pound. After the noise and dirt of the earlier processes—the oily wheels, the greasy candles in dark places, the smutty forge, and the yellow dropping from the cans, there is something pleasant in the aspect of the last stages ;—the barrels of shining brass filings ; the quiet light room where two or three neat women are fingering polished screws, surrounded by drab and brown paper, while behind them are compartments completely covering the wall, filled with their square drab packets.

As I turned away from the hundreds of women thus respectably earning their bread, I could but hope that they would look to it that there was no screw loose in their household ways, that the machinery of their daily life might work as truly and effectually as that dead mechanism which is revolving under their care, for so many hours of every day. It is much to see dead mechanism producing strength and convenience, in a flow as constant as that of the stream from the cavern in the rock: but it is much more to see vital comfort and beauty issuing from an intelligent daily industry, which works on behalf, not of vanity and wasteful pleasure, but of home.

CHAPTER VI.

THE BOBBIN-MILL AT AMBLESIDE.

October is the time for the late traveller in the Lake District to wonder why little parties of men are roaming at mid-day on the hill-sides, leaving their business below just as the daylight hours are becoming precious. October is the time for residents in the district to look up anxiously to these hill-sides, and to peep into the recesses of the mountains, to see what woods are to fall this year under the axe. October is the time when the gentleman checks his horse under the great sycamore in the village, or before the market-cross in the little towns, and reads, over the heads of the group on foot, the hand-bills, nailed up, or stuck on, which tell what lots of coppicewood are on view for sale during the latter days of the month. October is the time when the land agent, well-booted, makes his way through moss, bog, brambles, and underwood, into every corner of certain plantations, followed by a labourer, who carries a great pot of white or red paint, and a brush, wherewith he marks the wood that is doomed. October is the time when the cooper, and the hooper, and the field carpenter, and the bobbin-maker, come up from town and village to the mountain side, to inspect the timber and coppice that are to be sold. These are the little parties that the late tourist watches from below. They are not leaving their business in the shortening days. They come here in the course of business, to measure,

and inspect, and calculate, and make up their minds how high to go, in bidding on the auction day. It does not follow that they have no pleasure, because they come upon business. It is probable that the weather is delicious. It usually is so towards the end of October, in this region. The air is probably so still that the nut is heard to drop before the intruders reach the hazels, and the acorn to fall as they pass the larger oaks. The bulrush is as still on the brink of the tarn, as the grey rock which juts into it; and both are reflected, sharp and clear, by waters which are not disturbed by the wing of fly above, or the fin of fish from below.

In that looking-glass, too, may perhaps be seen the first party of wild swans, arriving in good time from the north, and now looking down from their lofty flight, to see where they will alight, and which of these mountain pools has the best promise of withered reeds and rushes for the nest, with seeds and roots and water-insects for food. The sandpipers, which were running about so busily a month ago, are gone; but the stonechat is flitting among the bushes, and click-clicking amidst the silence.

The season has been fine here: it must have been fine, by the quantity of foliage left in the woods. Here and there a dead branch hangs down, torn by the equinoctial winds: but the leaves hang thick: not only the red leaves of the oak, but the spotted leaves of the sycamore, and the lemon-coloured leaves of the birch. The season has been a fine one here; what has it been in Alabama and South Carolina? That is the question which most nearly concerns the bobbin-makers of this party. Their purchases of these coppices depend mainly on whether the cotton crop in America has been a good or a deficient one. It is of some importance to them whether the mulberries have flourished in Italy and India; and whether the flax has ripened well in Ireland; and whether the farmers at home are caring most about their sheep or their corn; but the grand question is, what the season has been in the cotton-growing states of America. If Manchester is in good spirits, these bobbin-makers on the mountain may make up their minds to pay as high for coppice as they ever do, even to eighteen pounds per acre. If Manchester is low-spirited, they may even refuse to go beyond four pounds per acre. They may resolve to buy, each for himself, ten thousand or twelve thousand feet; or to buy only enough to

hold on, until better news shall come to Manchester from over the Atlantic Ocean. Perhaps there may be among the bobbin-makers one as sure of a demand for his article as the coopers and hoopers. There are powder-mills at Elter Water; and, as fire-arms are not out of use yet (nor likely to be), charcoal is wanted; and there is a viewer from the powder-mills out on the hills to-day.

The explorers have examined the mountain ash, and the birch, in the more exposed situations. They now come down among the ash and beech groves: and leap from tuft to tuft in the bogs, after the alder and the willow; and look well to the hazel, and the aspiring sycamore, in the sheltered recesses. The wood is, for the most part, of from fourteen to sixteen years' growth; though some may be of twenty. Thus, the excursion is to some new place, every October, for nearly twenty years,—the distance, however, being seldom more than twenty miles from any one man's home.

The wood will need a year's seasoning in the sheds of the bobbin-mill; and by that time the prospects of trade may have changed; but it comes to the same thing as if this growing wood were to be used immediately; for there is last year's purchase stored up at home, and more or less of it may be used this year, or left over for next.

In passing from wood to wood, our party winds through streams, and round lakes of arable lands, to reach the islands and promontories of coppice which are scattered between. It is curious that the seasons in America, and the spirits of the Manchester people, should affect the scenery of the Lake District; but it is so. Hundreds of years ago the whole region was covered with wood, except where the Romans made clearings, for a camp here, and a road there. The Saxons afterwards settled on their traces. When the Normans came, and their monks established themselves at Furness, they sent out their husbandmen and herdsmen to till the ground, and to pasture their flocks, farther and farther in the dales, and higher and higher up the hill-sides, building walls as they went, until the sunshine was let in over wide tracts, and the forest-like look of the region nearly disappeared. Yet, when Wordsworth was young, some old people at Wythburn (about ten miles on the Keswick road, under Helvellyn) told him of the time when the squirrel could go from Wythburn to

Keswick on the tops of the trees, without touching the ground. In those days, the people grew their own flax or hemp, and their own wool; and the spinning and weaving were done at home; and itinerant tailors went their rounds through the district, staying at the farm-houses to make up the clothes. It did not occur to any one then (above a hundred years ago) that the woods of the district would be required to make this matter of popular clothing easier to everybody. Hence the felling went on too fast. Many patches of holly and ash were preserved within the higher enclosures, to feed the cattle and sheep with the sprouts, where no other pasturage could be obtained; but large tracts of rocky soil were laid bare which had better have remained clothed with wood. Some improvement in the process of weaving had before this taken place. The Kays, father and son, of Bury, in Lancashire, had invented the flying shuttle and the drop-box, by which much time was saved to the weaver, and a wider cloth could be produced by one pair of hands. But there was not thread enough, or yarn enough, spun to keep the shuttle going so fast as was wanted. The weaver had to go about something else, while waiting for the spinners; yet, in thousands of cottages, the wheel was whirring from morning until night, every day but Sundays.

This was a state of things which could not last; for, in regard to the arts of life, a great want is sure to be soon met with a remedy. Several ingenious men invented spinning-machines, during the latter half of the last century: and before its close, it was shown that a thousand threads could be spun by one pair of hands. Instead of the pack-horse toiling along the mountain-path, which was then the only way open from Kendal to Whitehaven, there might now be seen the carrier's wagon, winding round the hills on a broad road, bringing the new cotton fabrics to the "statesmen's" dwellings, but still carrying away the "homespun," in which the Westmoreland folks were as yet dressed. The "single thread" wheels were destined to whirr for some time longer; but a new source of profit was opening to those who held land. There was a call for an infinity of bobbins for the new spinning machines; and the proprietors of bobbin-mills came from a distance to buy up the coppices of the district. At first, the effect of this new demand was to lay the hill-sides barer than ever; but, as the wood grew again, and its owners saw that the demand was likely to be a lasting one,

they began to foster their woods, and to plant anew on soil which could not grow anything more immediately profitable. They arranged a succession of coppices, so as to render it feasible to sell to the axe one after another, as it reached the age of from fifteen to twenty-one years. Thus, with every extension of the growth of cotton abroad, and of its manufacture at home, there has been a new cherishing of coppice in the Lake District; and much is the beauty of the scenery enhanced by this, and very valuable is the shelter given to flocks, and to human habitations, and to the tilled lands which lie between the woods.

There are myriads of bobbins sent from the neighbourhood of Windermere, all over Lancashire and Yorkshire, and into Scotland and Ireland, and to the United States, and our own colonies; and many to busy Belgium, where the sound of the loom is heard in clusters of towns. The bobbin-mills round Windermere are, five mills (belonging to three establishments) at Stavely; one at Troutbeck; one at Hawkshead; one at Skelwith; and one at Ambleside; all, probably, visible at once from the top of Wansfell. That Ambleside mill was a very humble affair a quarter of a century ago. Let us see what may be found there now.

The viewers have made up their minds about some tracts of coppice on the sides of Wansfell; and we see by their looks that before the primroses and wood anemones cover the ground, in some dearly loved dells, every sheltering twig will be gone, and only stumps left. The axe will soon be calling out the echoes from the rocks above: and then we shall see piles of fagots, and stacks of bark, awaiting the wains which will come clinking and clanging and creaking along the wintry road. While the viewers go down one side of the mountains to see such portions of Bishop Watson's woods, at Calgarth, as are on sale this year, we will go down the other to Horrax's mill at Ambleside.

Down we go, among the red ferns and green mosses, and through many a boggy spot, to the road, and within hearing of the Stock—the beck (brook), which scampers down the hollow between Wansfell and the road to Patterdale. There lies Ambleside, nestling at the base of the mountain—a mile inland from the lake; and between us and Ambleside is the exquisite waterfall, called Stockghyll Force. Grander cataracts there may be—scarcely a more beautiful one. A breast of rock,

feathered with wood, divides the stream exactly in two—and each current takes two leaps; so that the symmetry of the picture is singular. The two lesser falls above, and the two greater below, answer to each other, as by the nicest art; yet the ravine is as wild as if nobody had been here since the old Briton and the wolf hid themselves together from the Romans who were making a camp at Ambleside, and a road along the ridge of the Troutbeck hills. Along the verge of the ravine and of the woods we go down, catching glimpses through the foliage of white foam, of green and brown stones, of clear gushes of water below, until we see a humble grey roof before us, and observe that the woods are opening, and that the waters are smooth as the oily flow of Niagara above Table Rock—smooth, but rapid, as we see by a red and yellow leaf here and there. Those leaves danced merrily down from the bough, and now they are sailing joyously into the midst of a prodigious hubbub. They are close upon the weir; and we are close upon the old mill, and the great brown water-wheel—a very dark brown, but shedding diamonds when touched by the sun; and now, in its wet sheen, reflecting the emerald colour of the opposite slope of the dell.

This is not much like visiting Birmingham or Manchester manufactories. For the muddy canal, we have a cataract of water "softer than rain-water," the proprietor assures us, and clear as starlight. The very sight of it, slipping over the weir, and drowning the stones below, makes one thirsty. Instead of the coiling smoke, we have the balancing gossamer above the stream. The stir from the fall shakes, but spares it. Instead of attic-windows opposite, we have the old rookery. The rooks are our spies and gossips here; and they and the babbling waters seem to be telling tales against each other, all the year round. The rooks never fail, and the noise never fails. We asked the proprietor whether he had ever to complain of want of water. "Very rarely, indeed," said he. "It is scant only in very hot and dry summers, and has not been so for some years now." * "And the noise; is it always like this?" Does he live in the sound of a cataract? O yes; and he never knows it, unless reminded of it. And perhaps his men do not know what an infernal din they are living in, with those circular saws, and the whirring of a multitude of wheels and lathes. We begin to shrink from it, though we have as yet got no further than the

* The drought of 1859 caused a change. There is a tall chimney now.

old mill. We just look into it as we pass, and find it a mere room, packed now with materials. The path which winds up into the wood was the old road to the mill; and this little yard held all the timber.

It is very different now. We pass and examine large stacks of timber and poles—beech, ash, mountain-ash, sycamore, "seal" (sallow), hazel, birch, and alder. The greater part is stacked under slated roofs; but some piles stand uncovered at present. There is timber thick enough to make posts; and much of fourteen years' growth—as large as a stout man's leg—which is split and dressed into rails. While the circular saws and the lathes are at work, it is as well to make other things, besides bobbins; so we observe a new and much-improved kind of mangle in the old mill; and besides the posts and rails for fences, we see the legs of bedsteads lying about, and other neat pieces of turnery.

The knots of the stouter wood are sliced off before the splitting; and the peeling is done on the premises, while the wood is fresh. The peel serves for fuel; the baker buys for his ovens the chips and dust which lie almost knee-deep everywhere within the mill. As for the corners, and odds and ends of the wood, they are sold for "kindling" to the neighbours round.

The circular-saws are from Sheffield. The rest of the machinery is home-made. Down in a chamber below the rest of the mill, are the cog-wheels, which are turned by the great water-wheel. There they whirl, smoothly, steadily; and between, and under them, may be seen again the clear gushing waters, and green and grey rocks; and over them the sunny wood, where the latest bees are swinging in the last blossoms of the year. Mr. Horrax's house is completely covered with ivy; and the fuchsia and China-rose blossom beside the door.

I may seem to dwell long on the natural features of the place; but there is an unspeakable charm in seeing the commonest manufacturing toil cheered and brightened by the presence of that antique and ever-young beauty, which is supposed to be mournfully displaced by the establishment of the arts of life.—I would fain convey some sense of this charm to my readers. I am thankful to be able to add, that there is here no drawback from the vice which is the curse of the district,—as of too many rural neighbourhoods. The one great pain to the inhabitants of the exquisite valley in which Ambleside

lies, is the intemperance of the people. It is not quite so bad as it was; but still, the early walker, who begins the winter day by a walk under the stars, when the last fragment of the gibbous moon hangs over Wansfell, is but too likely to meet the labourer staggering tipsy to his work. In the summer twilight, or the repose of Sunday afternoon, when the mind should be awake and enjoying the interval from bodily labour, too many two-legged brutes may be seen, who have abdicated their prerogative of reason, and are courting disease and early death from drink, amidst a scene and an air which should make men wise and long-lived. It is pretty sure that no such sinner belongs to this mill. It is known that Mr. Horrax will employ none such. From the moment that a man is found to have been drunk, he must come no more there. And this is an important discouragement of vice; for nine-and-twenty men and boys (only eight boys) are employed at the mill; and that is a number which tells upon so small a population as the people of Ambleside.

They are paid by the gross of bobbins; and they earn from fourteen shillings to twenty-three shillings a week, at an average of fourpence per gross. There must be a change soon. The "thread-men" (spinners of sewing-cotton), in manufacturing towns, have new machinery, by which bobbins can be produced at five farthings, which here cost fourpence halfpenny. There have been contentions and strikes in those towns, ending as strikes on account of machinery always do: and the change must reach this place in natural course.

And now for the process. The wood being sorted,—some sold in blocks to the turners at so much per solid foot, and poles to the hoopers by the thousand (six score to the hundred),—the tree-stem to be wrought is brought to the circular saw. It is first cut across into blocks. Then, the block is split into slices. A man and boy sit opposite each other, at each end of the saw. The man applies the block, and pushes it from him some way; and the boy finishes the severance by drawing it towards him;—their fingers being thus kept out of danger. No accidents of consequence have happened at this mill; but, elsewhere, it has been no uncommon thing for a careless workman to have all the fingers of one hand sawn off across the middle. The wood is sliced into squares, about a quarter of an inch thick, and of different sizes, according to the sort of bobbin, of

which these slices are to make the ends. The squares are baked, dry as a brown crust, in an outhouse which has an iron floor, heated by a furnace beneath. On this floor the squares are laid in rows, thick and close, and shut in until they are done enough. After they are cool, they are bored with a round hole in the middle, which is to receive the shank. Two slices are glued together,—the corners of one crossing the sides of the other, that the grain may cross, and obviate fracture. One has a smaller hole than the other, that the end of the shank may fit in more securely. When glued, the cross-pieces are strung on a round iron bar, and screwed tight upon each other, to prevent warping. While they are thus drying, the shank is preparing.

The shank is made round, in the lathe. It has next to be bored. This is done by boys, who simply drive the end against the steel borer which is turned by machinery. In an instant of time, the borer makes its way through to the inner end. The shank goes again to the lathe, to be made a little smaller at each end, in order to fit into the holes in the cross-pieces. Next, the end and the shank are to be united. A little boy, sitting at a glue-pot, holds a dabber (as we may call it), which is made of two rings, answering to the margins of the two holes in the cross-pieces. He dabs these holes with glue, and hands the pieces to a man at his elbow, who inserts the end of the shank, and puts it in the way of a sharp rap from a driven hammer, which fixes it in its place. When both ends are thus glued on, we have a bobbin; but with ends that are square, large, and rough. The bobbin goes to a lathe, where, in turning, it is met by a stout, three-sided sharp tooth or blade, which, quicker than the eye can follow, cuts off the corners, and leaves a bobbin, perfect in shape. It is still rough, however; and it must be finished in the lathe; rounded at the edges, and smoothed, and, if necessary, grooved.

Some bobbins, wanted for certain kinds of spinning, must have their bore lined with a smoother substance than the ordinary wood. When they are thus lined, they are said to be "bushed." Some are "bushed" with metal; some with box-wood. In some, the "bush" goes only part of the way through the bore; in others, the whole way. When the lining is of box, the bobbin and the "bush" are fluted, in order to fit more firmly into each other. All who have examined bobbins may

remember that a circle of lighter or darker wood appears round the bore. This is the "bush."

Now we have bobbins before us of various shapes and sizes; some for silk; some for flax; some for wool, as well as the myriads for cotton; and here are also parts of the shuttle of the Manchester weaver. Does anything remain to be done? Yes; some buyers like to have their bobbins dyed; some prefer them black; some, oak colour; some, yellow. The black dye is obtained from logwood and from copperas; the oak from catechu and fustic; and the yellow from fustic, with a little alum. The dye certainly gives a finished appearance to the bobbins; and ladies know that, when buying sewing cotton. The eye is drawn towards the neatness of black or oak-coloured bobbins, in preference to the undyed,—other things being equal. The dyeing is done by boiling the bobbins in coppers, with the chemical materials.

We were tempted to follow the fagots of poles down to the hooper's, to see what was doing there. The new-world spirit, which is found wherever machinery is whirling, has not made its way yet into the hoopers' sheds in Ambleside. Here is no head-splitting din—no cloud of wood dust, which visibly fills the nostrils of the turners at the lathe, and makes the visitor inquire about diseases of the lungs. Here, half-a-dozen men and boys are at work, with no newer machinery than "the horse," "the mare," "the dog," and the hoop. Do my readers wonder how the horse, the mare, and the dog can help in making hoops? The answer is, these are nicknames, given to the sort of bench on which the workman sits, in different stages of hoop-making. To cleave the poles, the man sits on a raised log, "the horse," and simply splits the unpeeled wood into two or four pieces, with an axe. These pieces are taken possession of by the boy on "the mare," who, by a treadle, raises or lets fall a block, to hold fast his strip of wood, which he thins and equalises with a two-handled knife, to render it smooth and pliable for the "bending" machine. This machine consists simply of a pair of rollers turned by a cog-wheel and a winch: the strip of wood being drawn out between the rollers.

Next, the strips have to be made into hoops. A man who sits in the middle of the shed, with a stout model hoop on his knees, bends the strip round within the model, takes it out, and ties it with string, and then bends within it another and another

strip (tying none but the first), until he has made a compact mass of hooping. Nothing can well be slower, or more primitive.

Still, the business is a profitable one. Hoops are sent from Ambleside over the far parts of the globe. The very largest go to Liverpool. These sell for about five pounds per thousand (six score to the hundred). In seasons when copses are scarce, or when the demand for casks is great, coopers have given as much as nine or ten pounds per thousand for hoops. This cannot, however, go on. If it be true that, by new machinery, a porter barrel can be made complete, from the tree to the heading, in five minutes, it cannot be that the slow and clumsy method of fashioning hoops by hand can remain, even in the old-fashioned Lake District.

We may soon be having some instrument which will rain hoops as a fire-work gives out sparks, or as rings of luminous vapour ascend from the chemical lecturer's magic wine-glass. Meanwhile, "the horse," "the mare," and "the dog," with their stiff backs and wooden heads, look as if they did not mean to budge, and had never heard of change.

CHAPTER VII.

AN ACCOUNT OF SOME TREATMENT OF GOLD AND GEMS.

Those who visit the metal works of Birmingham naturally desire to know where the metals come from; and especially the precious metals. Among the materials shown to the visitor, are drawers full of the brightest and cleanest gold; and ingots of silver, pure, or slightly streaked with copper. We have handled to-day an ingot which contains, to ninety-two ounces ten pennyweights of silver, seven ounces ten pennyweights of copper. We ask whether the gold comes from California; but we find that it has just arrived—from a much nearer place—from a refinery next door. We hear high praise of the Californian gold. It is so pure that some of it can be used, without refining, for second-rate articles. Some small black specks may be detected in it, certainly, though they are so few and so minute, that the native gold is wrought in large quan-

tities. But what *is* this neighbouring refinery? Whence does it obtain the metals it refines? Let us go and see.

It is a strange murky place; a dismal enclosure, with ugly sheds, and yards not more agreeable to the eye. Its beauties come out by degrees, as the understanding opens to comprehend the affairs of the establishment. In the sheds are ranges of musty-looking furnaces; some cold and gaping, others showing, through crevices, red signs of fire within. There are piles of blocks of coal, of burnt ladles and peels, and rivulets of black refuse which has flowed out from the furnaces into safe beds of red sand. In a special shed is a black moist-looking heap of what appears to be filth, battened into the shape of a large compost bed. A man is filling a barrow with this commodity, and smoothing it down with loving care. And well he may; for this despicable-looking dirt is the California of the concern! Here is their gold mine, and their silver mine, and their copper mine. In another shed is a millstone on edge, revolving with the post to which it is fixed, to crush the material which is to be calcined. In the yard we see heaps of scoriæ—the shining, heavy, glassy-looking fragments which tell tales of the prodigious heat to which they have been subjected. We see picks, and more ladles, and lanterns, and a most sordid-looking bonfire. A heap of refuse is burning on the stones; old rags, fragments of shoes, cinders, dust and nails—the veriest sweepings that can be imagined. Something precious is there; but the mass must be burned to become manageable. The ashes will be swept up for the refinery.

But what is it that yields gold, and silver, and copper, and brass? What is that heap of dirt in the special shed? It is the sweepings of the Birmingham manufactories.

What economy! In all goldsmiths' shops every effort is made to save all the filings, and the minutest dust of the metals used. The floors are swept, and everything recoverable is picked up. Yet the imperceptible loss is so valuable to the refiners, that they pay, and pay high, for the scrapings, sweepings, and pickings of the work-rooms. A cartload of dirt is taken from a fork-and-spoon manufactory to the refinery, and paid for on the instant; and the money thus received is one of the regular items in the books of the concern. Perhaps it pays the wages of one of the workmen. Another establishment receives two hundred pounds a-year for its sweepings. It is worth noting

these methods in concerns which are flourishing, and which have been raised to a prosperous condition by pains and care; less flourishing people may be put in the way of similar methods. For instance, how good it would be for farmers if, instead of thinking there is something noble in disregard of trifling economy, they could see the wisdom and beauty of an economy which hurts nobody, but benefits everybody! It would do no one any good to throw away these scattered particles of precious metal, while their preservation affords a maintenance to many families. In the same way, the waste of dead leaves, of animal manure, of odds and ends of time, of seed, of space in hedges, in a large proportion of farms, does no good, and gives no pleasure to anybody; while the same thrift on a farm that we see in a manufactory would sustain much life, bestow much comfort, narrow no hearts, and expand the enjoyments of very many.

We must take care of our eyes when the ovens are opened—judging by the scarlet rays that peep out, here and there, from any small crevice. Prodigious! What a heat it is, when, by the turn of a handle, a door of the furnace is raised! The roasting, or calcining, to get rid of the sulphur, is going on here. The whole inside—walls, roof, embers and all—are a transparent salmon-colour. As a shovel, inserted from the opposite side, stirs and turns the burning mass, the sulphur appears above—a little blue flame, and a great deal of yellow smoke. We feel some of it in our throats. We exclaim about the intensity of the heat, declaring it tremendous. But we are told that it is not so; that, in fact, "it is very cold—that furnace;" which shows us that there is something hotter to come.

The Refiner's Test is pointed out to us;—a sort of shovel, with a spout, lined throughout with a material of burnt bones, the only substance which can endure unchanged the heat necessary for testing the metals. Of this material are made the little crucibles that we see in the furnaces, which our conductor admits to be "rather warm." There they are, ranged in rows, so obscured by the mere heat, which confounds everything in one glow, that their circular rims are only seen by being looked for. Yet, one little orifice, at the back of this furnace, shows that even this heat can be exceeded. That orifice is a point of white heat, revealed from behind. We do not see the metal in the crucibles; but we know that it is simmering there.

One more oven is opened for us—the assay furnace, which is at a white heat. As the smallest quantities of metal serve for the assay, the crucibles are here on the scale of dolls' tea-things. The whole concern of that smallest furnace looks like a pretty toy: but it is a very serious matter—the work it does, and the values it determines.

The metals, which run down to the bottom, in the melting furnaces, are separated (the gold and silver by aquafortis), and cast in moulds, coming out as ingots; or, in fragments, of any shape they may have pleased to run into. Some of the gold fragments are of the cleanest and brightest yellow. Others, no less pure, are dark and brownish. They are for gilding porcelain. Lastly, we see a pretty curiosity. In the counting-house, a little glass chamber is erected upon a counter, with an apparatus of great beauty—a pair of scales, thin and small to the last degree, fastened by spider-like threads to a delicate beam, which is connected with an index, sensitive enough to show the variation of the hundredth part of a grain. The glass walls exclude atmospheric disturbance. Behind the rusty-looking doors were the white glowing crucibles; within the drawers was the yellow gold; and, hidden in its glass house, was the fairy balance.

Now, we will follow some of the gold and silver to a place where skilled hands are ready to work it curiously.

First, however, I may as well mention, in confidence, that my feelings are now and then wounded by the injustice of the world to the Birmingham manufacturers. We observe with pain that the very virtues of Birmingham manufacture are made matters of reproach. Because the citizens have at their command extraordinary means of cheap production, and produce cheap goods accordingly, the world jumps to the conclusion, that the work must be deceptive and bad. Fine gentlemen and ladies give, in London shops, twice the price for Birmingham jewellery that they would pay if no middlemen stood, filling their pockets uncommonly fast, between them and the manufacturer; and they admire the solid value and great beauty of the work; but, as soon as they know where the articles were wrought, they undervalue them with the term "Brummagem." In the Great Exhibition of 1851, there was a certain case of gold-work and jewellery, rich and thorough in material and workmanship. The contents of that case were

worth many hundred pounds. A gentleman and lady stopped to admire their contents. The lady was so delighted with them that she supposed they must be French. The gentleman reminded her that they were in the British department. After a while, they observed the label at the top of the case, and instantly retracted their admiration. "Oh!" said the gentleman, pointing to the label, "these are Brummagem ware—shams!" Whatever may have been Brummagem gold-beating in ancient times, and in days of imperfect art, when long wars impeded the education of English taste, it is mere ignorance to keep up the censure in these times. It is merely accepting and retailing vulgar phrases without any inquiry, which is the stupidest form of ignorance. Perhaps some of the prejudice may be removed by a brief account of what a Birmingham manufacture of gold chains is at this day.

In 1830, the making of gold chains occupied a dozen or twenty people in Birmingham. Now* the establishment we are entering, alone, employs probably eight times that number. Formerly, a small master undertook the business in a little back shop: drew out his wire with his own hands; cut the devices himself; soldered the pieces himself; in short, worked under the disadvantage of great waste of time, of effort, and of gold. Into the same shop more and more machinery has been since introduced as it was gradually devised by clever heads. This machinery is made on the spot, and the whole is set to work by steam. Few things in the arts can be more striking than the contrast between the murky chambers where the forging and grinding—the Plutonic processes of machine-making—are going on, and the upper chambers, light and quiet, where the delicate fingers of women and girls are arranging and fastening the cobweb links of the most delicate chain-work. The whole establishment is most picturesque. While in some speculative towns in our island great warehouses and other edifices have sprung up too quickly, and are standing untenanted, a rising manufacture like this cannot find room. In the case before us, more room is preparing. A large steam-engine will soon be at work, and the processes will be more conveniently connected. Meantime, house after house has been absorbed into the concern. There are steps up here, and steps down there; and galleries across courts; and long ranges of low-roofed chambers;

* 1852.

and wooden staircases, in yards;—care being taken, however, to preserve in the midst an isolated, well-lighted chamber, where part of the stock is kept, where some high officials abide, and where there are four counters or hatches, at which the people present themselves to receive their work. All this has grown out of the original little back-shop.

Below, there is a refinery. It is for the establishment alone; but, just like that we have already described—only on a smaller scale. First, the rolling-mill shows us its powers by a speedy experiment;—it flattens a halfpenny, making it oblong at the first turn, and, by degrees, with the help of some annealing in the furnace, drawing it out into a long ribbon of shining copper, which is rolled up, tied with a wire, and presented to us as a curiosity. Next, we see coils of thick round wire, of a dirty white, which we can hardly believe to be gold. It *is* gold, however, and is speedily drawn out into wire. Then, there are cutting, and piercing, and snipping machines—all bright and diligent; and the women and girls who work them are bright and diligent too. Here, in this long room, lighted with lattices along the whole range, the machines stand, and the women sit, in a row—quiet, warm, and comfortable. Here we see sheets of soft metal (for solder) cut into strips or squares; here, again, a woman is holding such a strip to a machine, and snipping the metal very fine, into minute shreds, all alike. These are to be laid or stuck on little joins in the chain-work, or clasps, or swivel hinges, where soldering is required. Next, we find a dozen workwomen, each at her machine, pushing snips of gold into grooves, where they are pierced with a pattern, or one or two holes of a pattern, and made to fall into a receiver below. Each may take about a second of time. Farther on, slender gold wire is twisted into links by myriads. At every seat the counter is cut out in a semicircle, whereby room is saved, and the worker has a free use of her arms. Under every such semicircle hangs a leathern pouch, to catch every particle that falls, and to hold the tools. On shelves everywhere are ranges of steel dies; and larger pieces of the metal, for massive links or for clasps, or for watch-keys and other ornaments, are stamped from these. On the whole, we may say, that in these lower rooms the separate pieces are prepared for being put together elsewhere.

That putting together appears to novices very blinding work;

but, we are assured that it becomes so easy, by practice, that the girls could almost do it with their eyes shut. In such a case we should certainly shut ours; for they ache with the mere sight of such poking and picking, and ranging of the white rings—all exactly like one another. They are ranged in a groove of a plate of metal, or on a block of pumice-stone. When pricked into a precise row, they are anointed, at their points of junction, with borax. Each worker has a little saucer of borax, wet, and stirred with a camel-hair pencil. With this pencil she transfers a little of the borax to the flattened point of a sort of bodkin, and then anoints the links where they join. When the whole row is thus treated, she turns on the gas, and with a small blow-pipe, directs the flame upon the solder. It bubbles and spreads in the heat, and makes the row of links into a chain. There would be no end of describing the loops and hoops, and joints and embossings, which are soldered at these gas-pipes, after being taken up by tiny tweezers, and delicately treated by all manner of little tools. Suffice it, that here everything is put together, and made ready for the finishing. In the middle of one room is a counter, where is fixed the machine for twisting the chains—with its cog-wheels, and its nippers, whereby it holds one end of a portion of chain, while another is twisted, as the door-handle fixes the schoolboy's twine, while he knots or loops his pattern, or twists his cord. Here, a little girl stands, and winds a plain gold chain into this or that pattern, which depends upon the twisting.

These ornaments of precious metal do not look very ornamental at present; being of the colour of dirty soap-suds, and tossed together in heaps on the counters. We are now to see the hue and brightness of the gold brought out. We take up a chain, rather massive, and reminding us of some ornament we have somewhere seen; but it is so rough! and its flakes do not appear to fit upon each other. A man lays it along the length of his left hand, and files it briskly; as he works, the soapy white disappears, the polish comes out, the parts fit together, and it is, presently, one of those flexible, scaly, smooth, glittering chains that we have seen all our lives. Of course, the filings are dropped carefully into a box, to go to the refinery. There is, here, a home-invented and home-made apparatus for polishing and cutting topazes, amethysts, blood-stones and the like, into shield shapes, for seals, watch-keys, and ornaments of various

kinds. The strongest man's arm must tire; but steam and steel need no consideration—so there go the wheels and the emery, smoothing and polishing infallibly; with a workman to apply the article, and a boy to drop oil when screw or socket begins to scream. This polishing and filing was such severe work, in the lapidary department, in former days, that the nervous energy of a man's arm was destroyed—a serious grief to both worker and employer. At this day, it is understood that the lapidary is past work at forty, from the contraction of the sinews of the wrist, consequent on the nature of his labour. The period of disablement depends much on the habits of the men; but, sooner or later, it is looked for as a matter of course. Here, the wear and tear is deputed to that which has no nerve. As the proprietor observes, it requires no sympathy.

It may be asked how there comes to be any lapidary department here?—Do we never see gold chains the links whereof are studded with turquoises, or garnets, or little specks of emerald? Are there no ruby drops to ladies' necklaces?—no jewelled toys hanging from gentlemen's watch-guards? We see many of these pretty things here; besides cameos for setting.

After the delicate little filings (which must be done by hand) are all finished, the articles must be well washed, dried in box-wood saw-dust, and finally hand-polished with rouge. The people in one apartment look grotesque enough—two women powdered over with rouge, and men of various dirty hues, all dressed alike, in an over-all garment of brown holland. A washerwoman is maintained on the establishment expressly to wash these dresses on the spot—her soap-suds being preserved, like all the other washes, for the sake of the gold-dust contained in them. Her wash-tubs are emptied, like everything else, into the refinery.

In the final burnishing room, we observe a row of chemists' globes—glass vases filled with water, ranged on a shelf. A stranger might guess long before he would find out what these are for. They are to reflect a concentrated blaze from the gas-lights in the evening, to point out specks and dimnesses, to the eyes and fingers of the burnishers. What curious finger-ends they have—those women who chafe the precious metals into their last degree of polish! They are broad—the joint so flexible that it is bent considerably backwards when in use; and the skin has a peculiar smoothness: more mechanical, we

fancy, than vital. However that may be, the burnish they produce is strikingly superior to any hitherto achieved by friction with any other substance.

In departing, the sense of contrast comes over us once more. We have just seen all manner of elegancies in ornament, from the classical and dignified to the minute, fanciful, and grotesque; in going out, we give a look to the unfinished engine-house, and the smiths' shop. All this hard work; all these many dwellings thrown into one establishment; all these scores of men, and women, and children, busy from year's end to year's end; all those diggers far away in California; all those lapidaries in Germany; all those engineers in their studies; all those ironmasters in their markets; all those miners in the bowels of the earth—all are enlisted in making gold chains; and some of us have no more knowledge and no more thought than to call the product "Brummagem shams!" Well! the price charged for them in London shops, where they are as good as French, is something real; and it is a real comfort to think how magnificently some fine folks pay, though the bulk of the profit comes, not to the manufacturer, but to the middlemen. Of these middlemen there are always two;—the factor and the shopkeeper—often more. Their intervention is very useful, of course, or they would not exist; but somebody or other makes a prodigious profit of Birmingham jewellery, after it has left the manufacturer's hands. It was only yesterday that I saw, among a rich heap of wonderful things, a pair of elegant bracelets—foreign pebbles, beautifully set. I was told the wholesale price they were to be sold for; which was half the shop price. The transference to the London shop was to cost as much as the whole of the previous processes: from the digging of the silver and the collecting of the pebbles, through all the needful voyages and travels, to the burnishing and packing at Birmingham.

I have seen, however, something which may throw a little light on the prejudice against Birmingham jewellery. It is not conceivable that any one should despise such an establishment as I have been describing. But I found myself, the other day, passing through a little dwelling, where the housewife, with a baby on her arm, and more than half-a-dozen children were housed; and then crossing a little yard, and mounting a flight of substantial brick steps with a stout hand-rail, and

entering the most curious little work-room I ever was in. It would just hold four or five people, without allowing them room to turn round more than one at a time. In one corner was a very small stove. A lattice window ran along the whole front, and made it pleasant, light, and airy. A work-bench or counter was scalloped out, in the same way as in larger establishments, so as to accommodate three workers in the smallest possible space. The three workers had each his stool, his leathern pouch on his knees, and his gas-pipe. A row of tools bristled along the whole length of the lattice; and there was another row on a shelf behind. The principal workman was the father of those many children below. One son was at work at his elbow, and the remaining workman was an apprentice. This working jeweller was as thorough a gentleman, according to our notions, as anybody we have seen for a long time past. Tall, stout, and handsome; collar white and stiff; apron white and sound; his whole dress in good repair; his voice cheerful as his face; his manner open and courteous; his information exactly what I wanted. I could not help wishing that some rural grandee, who avows that he hates all manufacturers, could see this fair specimen of an English handicraftsman. As for his work, he told us that he supplies the factors to order. It would not answer to him to keep a stock. The factors would not buy what he should offer, but dictate to him what he shall make. Fashions change incessantly, and he has only to keep up with them as well as he can. It is not for him to invent new patterns and get steel dies made for them; but to get the same steel dies that other makers are procuring. These dies are, of course, for the metallic part of his work. The boxes of lockets and hair brooches (now vehemently in fashion), and devices, and coloured stones, he procures at "the French shops" in the town; and he showed us some variety of these, ready for setting. Then came out the "Brummagem" feature of the case; showing us how the gold setting that he was preparing—perforating and filing—was to be backed by a blue stone. He observed that it was not thought worth while to get costly stones for a purpose like that; for blue glass would do as well. I certainly thought so, considering that the stone was to be only the back-ground of his work. Of the specimens I saw in that airy little workshop, some were in excellent taste, and all, I believe, of good workmanship. These small masters are as punctilious about employ-

ing only regularly qualified workmen, as any members of any guild in the country. Their journeymen must all have served an apprenticeship; not only because they are thus best fitted for their business, but because the value of apprenticeship is thus kept up; and these small capitalists will not part with the advantage of having journeymen, under the name of apprentices, completely under their command during the last two or three years of their term.

One of the most remarkable sights, to those who knew Birmingham a quarter of a century ago, is such a manufacture as that of Messrs. Parker and Acott's ever-pointed pencils. Those of us whose fathers were in business in the days of the war, when the arts were not flourishing, may remember the bulky pocket-book, with its leather strap (always shabby after the first month), and its thick cedar pencil, which always wanted cutting; always blackening whatever came near it; always getting used up; the lead turning to dust at the most critical point of a memorandum. There was a fine trade in cedar pencils at Keswick in those days. It seemed a tale too romantic to be true, when we were told of ever-pointed pencils. First, we, of course, refused to believe in their existence;—what improvement have we not refused to believe in? Then, when we found there was a screw in the case, and that the pencil was not ever-pointed by a vital action of its own, we were sure we should not like it. We grew humble, and were certain we could never learn to manage it. And now, what have we not arrived at? We are so saucy as to look beyond our improved pencils; beyond pen and ink; beyond our present need of a cumbrous apparatus to carry about with us;—ink that will spill and spot; leads that will break and use up; pens, paper, syllables, letters, pot-hooks, dots and crossings, and all the process of writing. Perhaps the Electric Telegraph has spoiled us; enabling us to imagine some process by which thoughts may record themselves; some brief and complete method of making "mems," without the complicated process of writing down hundreds of letters, and scores of syllables, to preserve one single idea. All this, however, is as romantic now as ever-pointed pencils seemed to be at first; and instead of dreaming of what is not yet achieved, let us look at the reality before our eyes.

Here is something wonderful enough, on our very entrance. Here is a silver pencil-case,—neat and serviceable, though not

of the most elegant form ;—handsome enough to have been praised for its looks, thirty years ago. This pencil-case carries two feet of lead. It is intended to be the commercial traveller's joy and treasure. It will last him his life, unless he take an unconscionable amount of orders. Unscrewing the top, we see that the upper end of the tube is divided into compartments,—which look like the mouth of a revolver ; and here, protected from each other, the leads are bestowed, safe—despite their great length,—through their owner's roughest travelling.

Some drawers in a counter are pulled out. One is divided into compartments, each of which holds a handful of something different from all the rest. This drawer contains one hundred gross of pencil-cases in parts ;—the tube, the rack and barrel, the propelling wire, the slide, the top, the various chambers, and screws, and niceties. In another drawer, there is a dazzling and beautiful heap of pure amethysts and topazes from far countries, of vast aggregate value : and, farther on, we see the elegant onyx and white cornelian from South America (a very recent importation), and the sardonyx, now in high favour for seals and the tops of pencil-cases. Its delicate layer of white upon red, (or the reverse,) the undermost colour coming out in the engraving, makes it singularly fit for the purpose. Then, there is a paperful of small turquoises, which are poured out and handled like a sample of lentils. These are from Persia ; and they have to be re-cut in England, the Persian tools being of the roughest. Then, there are blood-stones, and pebbles out of number, and pints of glittering fragments of Californian gold ;—rich materials tossed together, to be drawn out for use at the bidding of capricious fashion ; for, fashion seems to be as capricious here, among these stones and ores that have required cycles of ages to compose, as in the milliner's shop, where the materials are drawn from the pods of a season and the insects of a summer. On shelves against the walls are ranged rows and piles of steel dies,—that pretty and costly piece of apparatus, which we find in almost all these manufactories—together with the inexhaustible stamping and cutting machines, the blow-pipe, the borax, and soft metal for solder, the pumice-stone and wire-bed, the turning wheel, the circular saw, and the bath of diluted aquafortis, and the pan of boxwood sawdust, in which the pretty things are dried when they come out of "pickle." From buttons to epergnes, we find this apparatus everywhere.

The steel dies are an everlasting study :—the block, like the conical weight of a pair of warehouse scales, seeming very large for the little figure indented in the upper surface. Here, in this manufactory, the figures are of the bugle, a favourite form of watch-key,—the deer's foot, (a pretty study for the same purpose,) and a large variety of patterns,—the tulip, the acanthus, and other foliage, flowers or fruit, climbing up the summit of the pencil-case, as if it were a little Corinthian capital.

And now for the process. The silver or gold comes from the rolling-mill, and is passed in slips through a series of draw-plates, each smaller than the last, and finally through the one which is to give it its fluted or other pattern. Soldering at the join, filing away the roughness left by the solder, washing in an aquafortis bath, come next. A slit for the slide is then made ; the rims and screws and slides are added, and you have a pencil-case complete. I observed that a large proportion of the tops are hexagonal, or of some angular form, to prevent their rolling off the table.

Some of the pencil-cases are so small, and some of the watch-keys are so elaborate, that it requires a moment's consideration to decide which is which ; and again, ladies' crochet-needles, of gold, diversely ornamented, are very like pencil-cases. Some of each kind are specked over with turquoise or garnets ; and all appear to be designed for ornament, rather than for use. It is quite a relief to turn the eye upon a shovelful of the yellow sawdust, where substantial pencil-cases, fit for manly fingers, are drying. On the whole, perhaps, the most striking feature is the prodigious extent of the production. We ask where all these can possibly go ; for a pencil-case is a thing which lasts half a century, as the manufacturer himself observes. These do not go to America ; for, in such things, the Americans are our chief rivals. They supply their own wants, and a good deal more. We send our pencil-cases and trinkets over a good part of the world, however ; and the caprice of fashion causes a great adventitious demand at home. In reply to our remark about this vast production, the manufacturer observes, "Yes, we cut up gold and silver as the year comes in and as the year goes out." Something of a change, this, since the old days of cedar pencils !

Here is a steel die with an elegant pyramidal pattern ; the half of a watch-key. We see the inch of metal stamped ; and

then another inch, for the other half: and then the filing and snipping of the edges; and then the laying in of the solder inside; and the binding together of the two halves with wire; and the repose on the bed of wire on the pumice-stone, to be broiled red hot; and the neat cleaning when cool; the polishing, and the leaving certain parts of the pattern dead, while others are burnished; and the fixing of the steel cylinder at the point, and the turning of the rims. All this for a watch-key! But, we are shown another, which does not look like anything very studied; and we are told, and are at once convinced, that it consists of no less than thirteen parts. Other keys, which look more fanciful, consist of ten, eight, or seven. None are the simple affair that a novice would suppose, now that we require the convenience of being able to wind up our watches without twisting the chain or ribbon with every turn of the key.

But we must leave these niceties; the little pistols, the deer's feet, the bugle-horns, and all the dainty fancies embodied in watch-keys and knick-knacks. Here, as elsewhere, every atom is saved, of sweeping and wash; and we now find ourselves, writer and readers, like the materials of which we have been speaking, brought back, after all these various processes, to the refinery from which we set out.

CHAPTER VIII.

HOUSEHOLD SCENERY.

Most people amuse themselves, at one time or other of their lives, by fancying what sort of house they would like to live in; what sort of house they would build for themselves, if they had opportunity for that very charming amusement. But the last thing that people seem to have any thought about is the walls of their rooms. Yet, what is there that we see so much of as the walls of the rooms we live in? Even those who have the blessing of a country residence—those even who dwell in one of the very few remaining parsonages in the North of England, where a spacious porch shelters the house-door from draughts and driving rains, and who resort to that porch, looking out upon a meadow or a flower-garden,—even these have to sit between

four walls for at least three-fourths of the year; and certainly always to sleep within them. It is all very well to revel in fine views from terrace or window; but it is well, also, to consider what our eyes shall rest upon in all times of sickness, of bad weather, and when the sun is below the horizon. It is a charming speculation to a man about to build a house for his own residence, to plan what it shall look like externally—how many rooms it shall have, and how they shall be most conveniently arranged; but the aspect of the four walls of each room is worth mature consideration too. In old times, people thought more of this matter than we do, if we may judge by the pains taken to decorate the interior of ancient buildings; and those who attend to the signs of civilisation assure us that there will be a revival of such thought and pains—and very soon. Let us hope that this is true.

There could scarcely, at any former time, have been a greater variety in the walls of human abodes than there is now. High up in the north there are the Esquimaux, huddled together within a circular wall made of snow, built up in slabs, inclining inwards, so as to form a dome—a house of bee-hive shape. Our English feelings would be put to a severe trial in such a place. If the walls remain solid, it is only because the temperature is below freezing point. If we should begin to flatter ourselves with any notion of warm feet—of ceasing to ache and shiver with cold—at once the walls begin to steam and run down, and the wretched chill of thaw brings back despair. Much the same may be said of such palaces of ice as we read of in Russia. Translucent, glittering with a bluish star-like light, there is still the terrible alternative of frost or thaw within doors; each alike excluding all hope of wholesome warmth. Much pleasanter to our feelings is the South Sea Island dwelling, where the walls are nothing more than poles of bamboo; through which the morning and evening breeze may blow freely. To be sure, if privacy is desired, something more is requisite; for such an edifice seems to be designed for a community of that kind of stupid people, of whom the Americans say that they "cannot see through a ladder." However broad may be the eaves, however prolonged the thatch of palm-leaves, the sun must peep into the abode when he is low in the sky; and there is no hour of the day in that climate when the sun is a welcome visitor within doors. To meet these cases, there are mattings

made of grass, which may be hung up where wanted. These simple hangings have a grace and charm about them which no others, however gay and costly, can boast: they are deliciously fragrant, especially when moistened. As the night dews descend, and when the breeze from the sea comes to shake these primitive curtains, a sweet scent charms the watcher, and spreads luxuriously through the dreams of the sleeper.

There are houses even now in civilised countries, which let the stars be seen through their walls. I have myself been entertained in a dwelling where the drawing-room was full of couches, easy chairs, books, and musical instruments; where the dining-room was set out with an array of plate; but where, being wakeful in the night, I enjoyed the singular amusement of observing the stars passing over chinks in the walls, shining full into my eyes in the transit. How could this be? Why, the house was a log-house, on a plantation in a hot region. Perhaps from want of leisure, perhaps for the sake of coolness, the logs had been left rough, and the spaces between were not filled up with clay and moss, as is the practice further north. So the mosquitoes swarmed in and out, and hummed all night long; not to my annoyance, for I was safe within a "mosquito-bar," or muslin curtain, completely enveloping the bed; not to my annoyance, therefore, and we may hope to their own satisfaction, unless they were hungry, and tantalised by my inaccessible presence. Poets compare human eyes to stars. It struck me that I preferred those real stars, shining through the wall, to certain glittering human eyes which a lady once saw shining from her wall. As the story goes, this poor lady—destined to a terrible fright—was sitting alone before the fire, opposite a mirror which rested on the mantelpiece, and taking off her jewelled necklace and bracelets before retiring to rest, when she looked up accidentally and saw in the mirror—what must have made a tapestried room terrible to her as long as she lived—for it was in a room hung with tapestry that she was sitting. She saw shining eyes rolling in the head of one of the woven figures, a sight which we, safe from all ambush of the kind, can never think of without a quiver of sympathetic dread. She knew that a thief was watching her, and that there must be some accomplice in the house who had cut out the eyes of the figure to enable him to do so. She did not go into hysterics, nor do anything else that was not to the purpose. She took no notice,

sat awhile longer without looking into the mirror;—no doubt with a deadly horror of being approached from behind. She unfastened some part of her dress, yawned, put on a natural appearance of sleepiness, lighted her chamber candle, locked her jewel case, and—the only suspicious proceeding—left it on the table, walked steadily towards the eyes, the door being in that direction, quickly took the key from the lock, left the room, locked the door on the outside, and quietly went to seek help which she could better trust than that of her own servants. Such is one of the horrible stories which belong to the days of tapestry hangings, those curtain-coverings for walls which are perhaps the most objectionable of all modes of decorating apartments.

This is downright heresy, no doubt, in the eyes of those who make the pursuit of tapestry an idolatry. Nobody doubts the vast amount of pains and care spent on tapestry as an art. Nobody doubts the skill which so directed the shuttle or the needle as that they rivalled the pencil and the brush in their delineations. In fact, no art could be despised which employed the talents of the greatest painters; and while the cartoons of Raffaelle are associated in our minds with tapestry hangings, it is impossible to speak with disrespect of such a representative of the art of a past century. But we may be glad that it belonged to a past century, and that the present has done with tapestry. It might be necessary, in the days of imperfect building, to keep out draughts. King Alfred might have been glad of it before he invented his lantern, and when his candles were flaring and wasting so as to baffle him in his measurement of time by their burning; but we, in our tight houses, whose walls have no chinks and cracks, may better hang our apartments with clean, and light, and wholesome paper, which harbours no vermin, screens no thieves, and scares no fever patient with night-visions of perplexity and horror.

It does not appear, however, that tapestry was invented to cover defects in the building of walls. From the little we know, it may rather be inferred that it was first used as a convenient imitation of the more ancient decoration of painted walls. The first tapestries which are seen fluttering amidst the shadows of remote history, were in the East, and of the same monstrous order of delineation with the Egyptian decorations, which so many travellers have described for a thousand years

past. The Egyptians used to paint the scenes of their lives and deaths,—their occupations, amusements, their funerals, and their mythology, upon the massive walls of their temples and tombs. There seems to be no doubt that the convenience of making these pictures moveable gave rise to the manufacture of woven hangings. One striking instance of this is on record, in the case of the hangings of the Tabernacle which Moses caused to be made in the desert. The description of the animals wrought on that tapestry answers exactly to that of the walls of an Egyptian temple; and it is the opinion of learned men that the Greeks, as well as the Hebrews, thence derived their notions of fantastic composite creatures—griffins, centaurs, and the like, which certainly were wrought in tapestries for the Greeks by Oriental workmen. After a time, the Greeks substituted prettier objects in the centres of their hangings and drew off all the monstrosities into the borders. In like manner, during the Middle Ages, when tapestries were gifts for kings to bestow and to receive, there was great beauty of design and infinite delicacy of execution in the finer tapestries, on which artists bestowed their best pains, and kings spent a vast amount of money.

We must not suppose that all hangings were like those that our Henry the Eighth fostered, or the French Henry the Fourth and Louis the Fourteenth. While the royal and the rich hung their palaces and their mansions with such fabrics as the Gobelin tapestry, the less wealthy were content with plain velvet, with worsted stuff, with anything that would hide their unsightly walls, and keep them warm in their ill-built houses. The best and the worst were alike a nuisance in a dwelling-house. They imbibed the smoke; they grew mouldy with damp; and, in hot weather, they gave out a worse plague (if there be a worse) than the mosquitoes of tropical countries. It appears to us, in our cleanly times, that our grandfathers knew nothing about this kind of delicacy. After the rushes on the floor (which were offensive with filth), came the tapestries, which were almost as bad; and, while this was the condition of men's abodes, their persons were worthy of their dwellings—powder, pomatum, wigs, and other unnatural devices, rendering a pure state of skin impossible.

It was a great day when a Frenchman bethought himself that, instead of hangings of wrought carpeting, or of velvet-

flock, or stuff, a covering for walls might be made of figured paper—cheaper, lighter, cleaner—preferable in every way. It is said that this invention was made known in 1632, and that the first blocks used in making paper-hangings are preserved in Paris. England followed so soon that there was some dispute as to which ought to have the credit of the invention: but it was doubtless due to France. James the First had lately given two thousand pounds—a large sum in those days—to encourage a manufacture of fine tapestry at Mortlake; but it was in a drawing-room of the Royal Palace at Kensington that the first specimen of English paper-hanging was seen. If anybody is curious to know whether that paper was like any that we see now, we can tell nothing more than that it was an imitation of the "velvet-flock" then in common use.

The "flock" order of paper seems to be coming into fashion, more and more, after a long interval. Perhaps the truth is, that the reduction of the duty on paper-hangings puts a higher class of papers within reach of a greater number of householders. Sir Robert Peel took off tenpence out of the shilling a yard duty on French paper-hangings, which, before 1842, kept good decorations out of the reach of all but the wealthy. I remember the time—somewhere about 1818—when stencilling came into fashion, and was thought a great popular boon. Stencilling was done by splashing walls with colour through the interstices of tin patterns. The result was, a very coarse and untidy decoration of white-washed walls; the colours being bad, and the pattern never accurately made out for many consecutive feet of wall. But the work was so much cheaper than paper-hangings, that people of small means were very glad of it; and, even in gentlemen's houses, the attics and servants' rooms were often thus coloured. Now, we seldom hear of stencilling; for papers of a tolerable quality and really good pattern may be had for less than a penny a yard, so that the abodes of the humble present a very different appearance now from anything that could be seen even ten years ago. As for the taking off the duty, the story is the same that Free-traders are almost tired of telling about other articles. There were dismal prophecies that the French, who much excel us in the designs and preparations of paper-hangings, would destroy the manufacture in England: and the wealthy did supply themselves—and perhaps do so still—almost exclusively from Paris; but, so much

more extensively are paper hangings used, and so great is the improvement continually taking place through the emulation of the French by our manufacturers, that the manufacture is largely and steadily increasing. It only remains now to get the duty removed from the raw material, the paper, to give everybody a fair chance of a neat set of walls to his dwelling-rooms, decorated according to his means.

Perhaps there are no gayer walls to be seen anywhere—in our country at least—than those I saw yesterday* on the premises of Her Majesty's paper-stainer for Scotland, Mr. Wm. McCrie. This gentleman's walls—even the rough walls in the yards and passages—are as good as a rainbow for colours. The boys empty their brushes on the space next at hand, to save the trouble of washing them ; and the result is a show which would make a little child—with its love of brilliant colours—scream for joy. There are things to be seen at Mr. McCrie's which may please elderly people as much as rainbow hues can gratify a child. By means of studying there the process of paper-staining from beginning to end, glimpses are obtained into all classes of homes, from the Queen's palace, and the student's library, and aristocratic club-houses, down to the humble abode of two or three rooms in town or country.

The paper used in this manufacture is made in Scotland, whence it is sent to England and Ireland, where more of the staining goes on than in Scotland. Mr. McCrie's establishment near Edinburgh, and one in Glasgow, are the only ones north of the Tweed. For ordinary patterns, the Scotch paper is about two feet wide. The French are narrower—a circumstance which should be remembered, when the cost of hangings is reckoned by the piece. Some of the granite papers for halls and staircases, and panel papers are of greater and various width. The pieces, of twelve yards, are tied up in bundles of ten ; so that a bundle contains one hundred and twenty yards. The first thing that is done with the contents of a bundle, when it is untied, is to fit it for receiving a pattern by covering it smoothly and evenly with a coat of Paris white, or tint, for the ground, made of sulphate of lime and water, with size, which forms in fact a cement, and sets the pattern. This Paris white arrives from Hull and Leith : the size is made on the premises, as the observer's nose informs him ; and in the yard, he sees the

* 1852.

bundles of buffalo skins from which it is made, and the cauldron in which they are boiled. No part of the business is more serious than that of the preparation of the size—both for making the pattern on the paper, and for attaching the hanging to the wall. The size made in hot weather is never good ; it runs, and the pattern is blotchy in places ; and for this mischief there is no remedy. If the production must go on, without waiting for cooler weather, the patterns must suffer, and the sellers must have patience. A much more serious consideration for householders and decorators is, that none but the best size should be used for attaching the paper to the walls. Many a fever has been caused by the horrible nuisance of corrupt size used in paper-hanging in bed-rooms. The nausea which the sleeper is aware of on waking in the morning, in such a case, should be a warning needing no repetition. Down should come the whole paper at any cost or inconvenience ; for it is an evil which allows of no tampering. The careless decorator will say that time will set all right—that the smell will go off—that airing the room well in the day, and burning some pungent thing or other at night, in the meantime, will do very well. It will not do very well ; for health, and even life may be lost in the interval. It is not worth while to have one's stomach impaired for life, or one's nerves shattered, for the sake of the cost and trouble of papering a room, or a whole house, if necessary. The smell is not the grievance, but the token of the grievance. The grievance is animal putridity, with which we are shut up, when this smell is perceptible in our chambers. Down should come the paper ; and the wall behind should be scraped clear of every particle of its last covering. It is astonishing that so lazy a practice as that of putting a new paper over an old one should exist to the extent it does. Now and then an incident occurs which shows the effect of such absurd carelessness.

Not long ago, a handsome house in London became intolerable to a succession of residents, who could not endure a mysterious bad smell which pervaded it when shut up from the outer air. Consultations were held about drains, and all the particulars that could be thought of, and all in vain. At last, a clever young man, who examined the house from top to bottom, fixed his suspicions on a certain room, where he inserted a small slip of glass in the wall. It was presently

covered, and that repeatedly, with a sort of putrid dew. The paper was torn down; and behind it was found a mass of old papers, an inch thick—stuck together with their layers of size, and exhibiting a spectacle which we will not sicken our readers by describing. A lesser evil, but still a vexatious one, may be mentioned here: that when there is not alum enough in the size, it will not hold. A family, sitting around a table, at dinner or at work, does not relish the incident of the entire papering of the room coming down at once, with a tearing, crashing sound, and a cloud of dust. Worse still is the trouble, when it is the pattern of the paper that is affected. A room was very prettily hung, not long ago, with a paper where a bright green trail of foliage was the most conspicuous part of the pattern. Day after day everything in the room was found covered with a green dust; and the pattern on the wall faded in proportion. The size had, in fact, been insufficient to fix the green powder, one ingredient of which, by the way, was arsenic. The decorator, being sent for, saw at once what was the matter, and, with expressions of shame and concern, pulled down the pretty paper, and put up another without charge.—While on the subject of the mistakes that may be made in paper-hanging, we may mention one for which the householder is answerable, and not the manufacturer or decorator. While we are well, we ought to remember that we, and those belonging to us, shall some time or other be ill: and it is just as well to arrange the sleeping-rooms of our houses so as to give every advantage to invalids, when the day of sickness comes. It is of no consequence to the healthful, perhaps, how their beds stand; but it may make the difference to a sick person, of fever or tranquillity, of sleep or no sleep, whether his bed stands, as it should do, north and south, or east and west; and whether the window is opposite the foot of the bed, or in some less annoying direction. In the same way we may never think of the pattern on the wall of our room, while we go to bed only to sleep and rise the moment we awake; but it is certain that delirium in fever cases has been precipitated, and that frightful visions, or teasing images, have been excited by fantastic patterns on chintz bed-curtains, or on the hangings of the walls. The paper for bed-rooms should be of a rather light colour, and of a pattern as indefinite as can be had. For my part, I like nothing so well as a blank paper of some pleasant hue, with a

dark border for a relief; but there are many papers now which do not present any of the everlasting forms and varieties of the square, the circle, and the diamond. A watered paper, or any trailing pattern is objectionable, because the eye of the invalid will trace human profiles in them. There are patterns in abundance which are pretty enough in a humble way—consisting of an aggregate of various small figures—so small and so various as to create nothing to the eye but a pleasantly-broken colour.

Having delivered my conscience of this admonition, out of the doctoring and sick-nursing part of my experience, I may return to our paper-staining.

The laying on the Paris white is done by a machine. The wet whiting is thrown into a trough, where it is licked up by a cylinder, which daubs it on a cylindrical brush, which transfers it to another cylinder, under which the paper is drawn, receiving the plaster as it goes. A wide brush, like a fringe of soft bristles, is fixed before the last cylinder, and sweeps the paper as the long sheet passes on, distributing the coating evenly, and smoothing the surface. The paper, in lengths of twelve yards, is drawn out by little boys, who carry it over little heaps of sticks, lifting up a stick, and the wet paper with it, and hoisting both on a pole, so that the paper can be carried to the drying place without being touched by human hands. Two boys thus carry away a piece in four folds, which of course do not touch each other. The lads, with their poles, lay the sticks across horizontal poles at some height from the ground; and there, still untouched, hangs the paper to dry.

If a polished ground is wanted, the paper—duly prepared by a chemical process in the open air—is rubbed with a lump of French chalk; then with a surface of felt or flannel, and finally with a polishing brush; and from this treatment it comes out with a burnish like satin. The paper, with a polished or a dead ground, is now ready to receive the pattern.

There are three ways of giving it a pattern—by a printing machine, by block printing, and by marbling by hand. It appears that one machine does the work of about four block printers; that two persons may prepare the paper for fifteen printing tables; and that fifty workmen can, by great diligence, turn out three thousand pieces (of twelve yards each) per week. They are paid by the piece—from twenty-pence to

two shillings per score, and a workman can easily earn from thirty to thirty-five shillings per week. The business is carried on in large airy rooms, and although much activity and strength of eye, foot, and hand are required for joining the pattern, lifting the heavy block, and stamping it, there is no pernicious fatigue, or perilous liability of any kind. It is altogether a favourable and fortunate kind of employment for a good workman.

In one part of the premises abides the designer, educated now, generally speaking, at one of our Schools of Design. He watches the French; he watches the English; he watches nature; and draws ideas from all for his patterns. Star patterns are eternal in popular favour; and so are lobby patterns —granites and marbles; but beyond these all is uncertainty. A new set of designs must be made every year; and if a pattern does not pay its cost the first year, it never will. It may not be utterly lost, but it will never be remunerative. In one of the lower rooms at Mr. McCrie's, we trod upon wealth in a truly magnanimous manner. The floor was laid with obsolete blocks; and thus we trampled on many hundred pounds' worth of property.

The blocks are a pretty sight, from the beginning, when the block-cutter traces his pattern from oiled paper upon the wood, and taps his chisel, sending it down to a certain depth in the wood (pine), and then clears out the spaces, up to the funeral ceremony of laying these memorials of departed fashions in the ground; that is, in the floor. Where little bits of wood are broken away, they are supplied with brass or copper. The blocks for granite papers are stuck all over "with everything that will make a mark," as we were told; with odds and ends of copper and brass, and with common nail heads. For the printing machine, the block is cylindrical, the process being just that of cylinder-printing of any kind. For the printing tables the blocks are furnished with a strap at the back to receive the workman's hand, and they are pressed down on the paper by a mallet driven by the workman's foot. Every time that he applies the block, he dips it on the surface of a stiff liquid in a trough by his side—the liquid being either the colour he wants to impress, or the oil which is to catch and retain the colour to be afterwards shed over it. For the best sort of gilding, gold leaf is applied: for the commoner

gilding, bronze powder; for flock papers, the flock which is brought from the wool districts. The flock is wool, dyed of various colours, and reduced to powder. If the size or oil on which it is deposited be good, the flock cannot be rubbed off, or removed by any means short of scratching. The array of crimson flock papers is really superb in our day. One never tires of gazing at them in an establishment like this, and fancying how each would look in one's own study or dining-room. Of all charming rooms in a middle class house, the most bewitching, perhaps, is a library lined almost throughout with books, with the spaces between papered with a rich crimson flock paper, and affording room, between the book-cases, for a pedestal here and there, with a bust or a good cast upon it, surmounted by a very few choice prints. The crimson makes a glorious ground for prints.

The workman has not always dismissed his piece when he has printed it from end to end. It may be a pattern of two colours, or of six, or even of twelve; and for each colour a fresh block and a fresh process are required, each repetition of course reckoning as a new piece in regard to his wages. The workman who does his work wholly by hand, he who marbles papers for lobbies and stair-walls, has also to go over it several times. The yellow polished ground is supplied to him ready for his brush. He veins it with a camel hair brush, dipped in a dark colour. One cannot but admire the decision with which he makes his strokes, and groups his veinings. We should stand hesitating which way to make our pencil wander, doubting whether we were making anything like marble; but the accustomed stainer wields his brush with as much purpose and decision as we do the pen, knowing as well where to go and wherefore. When he has thus veined a certain portion, he sprinkles, by jerking a brush, little drops of soap and turpentine, which make blotches, and give a marbled appearance to the whole surface. The coloured streaks, being diluted, spread into a perfect resemblance of the veins of marble; and nothing remains but to daub some white blotches into the centres of the groups of streaks. Of all the imitation papers, this appeared to us the most perfect. The granite was good, with its glittering "frosting," which frosting is done by scattering, very sparingly, particles of the thinnest possible glass from the glass-houses. The graining of oak papers is done by putting an iron comb in the

place of the smoothing brush, when the paper receives its first coat.

Among the papers shown in the warehouse, where the completed goods are deposited, the most beautiful in our eyes was a broad panelled paper of white, watered, with a panel border of roses. We looked in vain for the sort of hanging which I must think will be in demand ere long; a hanging which, being dark near the floor, becomes gradually lighter towards the ceiling. At present, decorators depend on a dark carpet and a light ceiling to give the effect indicated by decorative principle and required by a trained eye, some aid being given by a dark skirting board, and a cornice of light and bright colours; but there seems to be no reason why the hangings on the walls should not do their part: and there can be no doubt that a wide new range of design would be opened by following out this principle.

What we owe to the designers of good paper-hangings can hardly be estimated by those who have not travelled in countries which assume to be highly civilised, but have no time to get things done in the best manner. Even at home, and in good houses, one meets occasionally with a mistake in the choice of a pattern: a mistake which causes irritation and annoyance to the visitor, from hour to hour; as when a pattern, which is everything that could be wished in the single breadth, gives birth to an imperfect form when joined with the next breadth; a diamond, for instance, which turns out a little smaller on one side than the other, or a curve which is not freely carried out: but in some parts of the United States, among other places, where money is not spared in decorating dwellings, but workmen are scarce and ill-qualified, one sees extraordinary spectacles on the walls of good houses. I was once standing in perplexed contemplation of my chamber wall, when my hostess entered, and told me how vexed she had been about it. She had employed an emigrant paper-hanger, who had passed himself off as a first-rate workman. She gave him the papers, and left him to his work. In a wonderfully short time, he came to her, exulting: he had done the job—capitally—he would say that for himself; he had "made every crease show." And so he had—with the most perverse ingenuity—by now spoiling the pattern, and now leaving a white thread of space between the breadths. There was no upholsterer's store within many miles,

and therefore no remedy. My hostess was English, and annoyed accordingly. The Americans care less for such things, or do not even discover them, unless the blemish is very flagrant. I remember a curious instance of this difference between the American and the English eye, which met my notice as far off as Lexington in Kentucky. We were taken, of course, to the Senate Chamber at Lexington—merely our own party—to see the room. A picture over the President's chair hanging awry, I naturally stepped upon a bench which stood below, and set it right with a touch ; after which, the party went home, to one of the best houses in the neighbourhood, where a young Englishman of rank and Mr. Clay were to join us at dinner. Our hostess and her guests fell into conversation about furnishing drawing-rooms, and attention was drawn to the paper of the handsome room we were sitting in. All admired it, but I observed on the oddity of the workman having put up two breadths, in different parts of the room, upside down. The hostess laughingly doubted it, had never heard of it, could not see it now : would ask the young Englishman, and see if anybody thought so but myself. Presently came the Englishman with Mr. Clay. He was asked to look round the room, and say if he saw any blemish anywhere. He glanced round, and pointed to the two breadths that were topsy-turvy, to the amusement of the good-humoured hostess, who said the English eye was something past her comprehension. Upon this, Mr. Clay related that he had just been taking my countryman to see the Senate Chamber, and that he had mounted a bench to set straight a map which he declared to be hung awry, though nobody else could see it. The laugh was now louder than ever ; and then followed a discussion whether it was a privilege or a misfortune to be so particular as we English had proved ourselves. Perhaps we should suffer more from our particularity in a new country than the thing is worth ; but we should be sorry to lay it aside at home.

The omnipresent gutta-percha is among the paper-hangings already. It presents itself in the form of consolation to the owners of houses which are cursed with a damp wall or corner. As for a generally damp house, one has only to quit it, if one has ever been foolish enough to go into it. But there are many excellent houses with some faulty bit—some corner or projection which got wet in the building, and could never be got

dry ; and here comes in the gutta-percha paper most consolingly. The housewife may have rubbed, and warmed, and dried, with toil and pains, every summer ; but in winter, the stains come again, and, towards spring, the green mould. She may have battened that end or corner ; but then, there was the uneasy thought that the damp and the mould were growing behind the screen. In case of damp from driving rains, in exposed situations, it may be true that there is nothing like a mantle of ivy, under whose leaves dry dust may be found at the end of the wettest winter. But, if the damp be incurred in the process of building, the ivy is not the appropriate cure ; and besides, it takes some years to cover the end of a house. The gutta-percha paper confines the damp within the wall, at least, and compels it to evaporate externally, if at all. It thoroughly intercepts, if it cannot cure, a very great evil ; and it will, no doubt, be in extensive use till all men are too sensible to have any damp corners in their houses at all.

CHAPTER IX.

NEEDLES.

We have been, a friend and I, to Redditch, that remarkable little Worcestershire town, to see needles made. While on that perch—for Redditch crowns a high hill—while looking abroad, in all directions, over a true English country scene of hill and dale, orchard and sloping fallow, humble church-tower, and comfortable farmstead, I was compelled by our errand to contrast this with some very different places in which I had studied needles. People who invent and use such articles of convenience as needles must have a good deal in common, however widely different they must appear on the whole. How many wants and wishes, designs and plans, efforts and achievements, must be common to the minds of all sorts of persons who sew things together to make garments, and do it by means of the same invention,—of an instrument which shall pierce the material, and draw a thread after it, to tie two edges together ! I could not but think, while on the table-land of Redditch, of the odd places in which, at intervals of years, I had observed this process, or the records of it.

In the Lebanon, high up among the defiles and rocky platforms, which succeed each other till the celebrated cedars are reached, there is a village, nestling among mulberry groves and orchards, called Eden, and believed by many people in the East to be the real first home of Adam and Eve. I did not, when I was there, see anybody sewing fig-leaves together; but I mention that place, not only because it is a wide-spread belief that the first sewing ever done was done there, but because I had, a little while before going there, seen a piece of sewing, of extremely old date. The work that I saw was a piece of darning, with the threaded needle still sticking in it, after the lapse of several thousand years. The old Egyptians had a custom of burying in their handsome, roomy rock tombs, specimens of the works and possessions of the deceased; and the cotton fabric that I saw, with the pretty unfinished darn (more like herring-bone stitch than our ordinary darning), and the needle sticking in it, was, no doubt, the property and the handiwork of the lady in whose tomb it was found. It may be seen in Dr. Abbott's collection of curiosities at Cairo. Those old Egyptians seem to have known the use of steel. They used it for armour; but not, it is supposed, for needles; for this needle—the one remaining needle from the world of above five thousand years ago, is of wood. The wood is hard, and the needle is made as small, probably, as it can be, but it is sadly clumsy;—harder to use, no doubt, than the sail-makers' needles we saw under the file at Redditch. It is a curious thing, however, to glance back, through all those thousands of years, to the Egyptian lady, sitting in her elegant chair, mending her muslin garment (whatever it might be), while surrounded by her children,—one of whom was playing with her doll (still in mummified existence), with a face and hair uncommonly like the Sphinx—and another, a baby, handling—not a woolly bow-wow dog like those that yelp in our nurseries—but a little snapping crocodile, of wood, with a loose under-jaw. And then—what a long step it is over space and time!—to the place where I have seen another sort of needle, with its thread—no more to be compared with the Redditch needles than the Egyptian one;—the green shores of Mackinaw, in Lake Michigan, where, in some of the long row of wigwams, there are, at this day, Indian women, sewing with a needle of stout porcupine quill, and thread of the sinews of the deer. Again,

among those that I have not seen, there are the fish-bones that the Greenlanders and the South Sea Islanders use ; the women of the one race sitting in their snow-burrow, stitching by the light of their oil-lamps ; and the women of the other race wearing, while at work, a great palm-leaf on their heads for shade ; and cooling themselves occasionally by a swim in the calm water within the coral reefs. Again,—but I must not stop to tell of all the different kinds of needles used in the world—though the list would now be a short one. It would be a short list, because our English needles of to-day are spreading all over the known world, wherever exchange of commodities is going on.

Some of us may feel uncomfortable at this thought ;—uncomfortable at the recollection of a sad story about that. Do we not know of certain purchases, made of certain simple Africans—the purchase-money on our side being needles—"Whitechapel sharps," duly gilded at the head,—which were found, after the departure of the traders, to be without eyes ? It is a sad story. The Redditch makers, who used to prepare gilt "Whitechapel sharps" for the African market, say that they don't believe it ; that the needles were of a coarse and ill-finished kind ; but that they were never "blind." Yet the testimony is so strong, and the effects of the cheat were so serious in damaging our commercial character among the savages, that we fear there can have been no mistake. It was, no doubt, a parallel case with that of the Anglo-Saxons, who sold a handful of gunpowder for a bale of furs, to the Red Indians, instructing their customers to sow the gunpowder in furrows, to get valuable crops next summer ; and with that of the Dutch traders, who used their own hands and feet for weight,—the hand for half a pound, and the foot for a pound, and eternally astonished the Indians at the quantity of furs they had to heap up, and squeeze into the scale, to weigh down the Dutchman's pound. If we laugh at such stories, it is with a weeping heart ; for tricks like these, done in any corner where new races are found, are a grave misfortune to the whole human race.

How is it that "Whitechapel sharps" are, or were, made at Redditch ? It is supposed to be because Elias Krause lived in Whitechapel ; giving a good name to needles, which they long preserved. And who was Elias Krause ? He was a German,

who came over in 1565, and was the first maker of needles in this country ;—that is, of course, of the modern kind of needle. And who taught the Germans ? The Spaniards,—if we may judge by the importation of "Spanish needles" into England and other countries before the Germans made them. And who taught the Spaniards ? Nobody seems to know ; so it is reported that they invented the true needle,—made of steel, with a point at one end, and an eye at the other.

What pains Elias Krause took with his work, we may judge by what some living persons could tell us of needle-making in their young days. Cyclopædias of the present century—within the last thirty years, even—give such an account of the formation of a needle, as appears quite piteous to one who was at Redditch yesterday. We read of such hammering, and rolling, such heating and cooling, such filing and punching, of each separate needle, that we wonder how any sempstress ever dared to break an eye, or turn the point, of a thing which had cost so much pains. And the needles of thirty, twenty, ten, five years ago, cost something much more serious than pains and toil. They cost human life, too, at a terrible rate. It never was true, as it is often said to have been, that needle-makers rarely lived beyond thirty years of age ; but it was, for a long time, true that every needle that was pointed helped to shorten some man's life.

The facts were these. Needle-pointers lived, while at their work, in an atmosphere thick with stone-dust and steel-dust, generated by the dry grinding of the needles upon the wheel just under their noses. Instead of windows, there were many little doors in the places where they worked, in order to carry off as much dust as possible ; and one consequence of this was, that the men sat in a thorough draught. Their only precaution was to go out about once in an hour, and rinse their mouths ; a poor device enough, while their noses, throats and windpipes were infested, like their dress and their skin, with myriads of sharp points of cruel steel. They died of consumption in a few years. If boys tried the work, they were gone before twenty. If men, with a consolidated frame, and good appetites (for the largest eaters lived longest), set to this work, they might possibly hold on to forty,—a case here and there occurring of a needle-pointer who reached forty-five. Bad morals always attend a permanent state of insecurity of life and bad health ;

and so it was in this case. Very high wages were given. Some men earned a guinea a day; none less than two guineas a week. It became an established fact, that the needle-pointers (then about forty men, in a population of one thousand five hundred, in Redditch; and in a similar proportion, as the population increased) were a set of debauched young men, who, tempted by the high wages, braved their doom, and entered upon the business at twenty, or soon after,—counting the years they supposed they might live, and declaring their desire for "a short life and a merry one." They married, and always left their widows and children to the parish. Following their notion of a merry life, they would at times drink ale, day and night, for two or three weeks together. Then they would go back to their benches, raise a prodigious dust, and choke over it, almost without pause, for three weeks or a month, to clear off scores; then, they would have another drinking bout. This was a sight which no humane employer could endure; and many were the consultations and attempts entered upon by the masters to save or prolong life. All such attempts exasperated the victims themselves. They insisted upon their right to die early, if they chose; and they were sure their employers were in reality wanting to lower their wages. A good man invented a wire-gauze mask; which, being magnetised, must prevent the steel-dust from entering the mouth. The men would not wear it. This mask could be little or no protection against the dust from the grindstone. Another device was therefore joined with that of the mask;—a canvas cylinder, brought down close over the grindstone, up which, it was hoped, the dust would make its way, and be carried off. In one night, the canvas cylinders, throughout Redditch, were cut into strips, and the needle-pointers declared themselves under intimidation from their fellow-workers, about wearing the mask. It was pretty clear at the time, that the men agreed among themselves to cut one another's cylinders, and to threaten each other; that it was a matter of collusion from end to end.

Other inventions were devised from time to time; but were never got into use. The new generation of needle-pointers (and an employer of fifty years old has seen four generations of them) were less ignorant, and somewhat less vicious than their predecessors; but still the sacrifice of life went on. It had become a point of honour, or of self-will, with the men, besides

their dread of a lowering of wages, not to use any means of self-preservation; and on they went to their early graves, as fast as ever, until four years ago. Then there was a strike among the Redditch needle-makers. It lasted three months; at the end of which time the men became very hungry, very sad, and very humble. They made no objection to the terms offered by the employers: and the employers saw that now was the time to save the needle-pointers from their own folly; and they made it a prime condition of renewed connection between masters and men, that a certain sanitary apparatus should be faithfully used. The promise was given; the trial was made; the men soon found the comfort and advantage of it; they appear, now, likely to live as long as other people; and the stranger observes that they seem to show off the arrangement with a certain complacency and pride, which prove that it works in excellent accordance with their will. What this arrangement is, I shall tell hereafter, when we have carried our commodity up to the need of being pointed. The number of needle-pointers in Redditch, now,* is about one hundred and ten; a large company to be saved from an early and painful death!

It is not so very long since every needle of every size was made separately, from beginning to end, as sail-makers' needles and packing needles are made still. It is hard to say which is most perplexing to the imagination: the old method, by which nails, hooks and eyes, and needles, were separately fashioned by hand: or the present amount of production by machinery. I saw, the other day, hooks and eyes made by a machine, which gave me a strong impression of its being alive (some one said it could do everything but speak), by which one manufactory sends out a ton per week of hooks and eyes. No comment can add to the marvel of the thought—a ton of hooks and eyes per week! In needle-making there is no such marvellous machinery: the marvel consisting chiefly of the dexterity attainable by human fingers; but the monstrous numbers made are simply overwhelming. We saw, on a counter of a warehouse yesterday, a set of little parcels, such as a lady might carry home all at once in a hand-basket, and found that they contained a quarter of a million of needles! Comparing that set of parcels with what else the room contained, we gave up the attempt to

* 1852.

comprehend what we saw. The room was surrounded by compartments, each of which was filled with similar packets. The effort to imagine their contents, when in use, was like undertaking to count the grains of a square yard of sea-beach. Yet this was only one room of one manufactory of one little town!

Needle-making is now, however, almost gone out everywhere else. There was, once, a famous manufacture at Long Crendon, in Oxfordshire; but it has languished so long that it has nearly expired. The people intermarried with remarkable exclusiveness; exchanged ideas with nobody else; heard, or would hear, of no improvement; chose to remain as they were; therefore, of course, they sank. The population of Redditch has, meantime, increased from fifteen hundred to nearly five thousand; of whom almost every man, woman, and child lives by needles. The neighbouring villages contain a population of from four thousand to five thousand more: a large proportion of whom are employed by the Redditch manufacturers. The lawyers' and doctors' fees were once needles; and the shopkeepers' profits, and the maid-servants' wages, and the houses, and the schools, and the land allotments, and the flower-show prizes, and all the good things that may be found there now, were once needles too. Finding such things come of needles, let us see now how the needles come into being.

We are allowed to go over the Victoria Works, the manufactory of Mr. John James; and, moreover, into any of the houses of his work-people who carry on their business at home: which is the case with about three-fourths of them. Those who work on Mr. James's premises are well off for air, light, and cheerfulness. Some of the rooms overlook his pretty garden, and all have plenty of windows. When once we have left the furnaces and boilers, all the rest is clean; and there is no sign of ill health in any of the intelligent faces. Intelligent they are; for these people have had a good school education. Mr. James admits no children under ten years of age to his employment. He cannot prevent some of his people from hiring the help of children under that age; but his rule is enforced to the utmost of his power. Of the work-people, thirty-eight can read and write; fourteen read, but do not write; and only three can do neither. Those three are—a boy, just arrived from elsewhere; a man, of great natural intelligence, who earns two guineas

a-week ; and a half-wit, who can turn a wheel, but cannot learn his letters.

In going over the premises, we must pass hither and thither, and walk into the next street and back again, and even take a drive to a certain country mill and return, in order to present in their natural order the processes of needle-making.

The best wire comes from Yorkshire ; the inferior from Birmingham. There is a small chamber, really pretty in its way, from being hung round with coils of bright wire, suspended from hooks. This wire is of all thicknesses, from the stout kind required for fish-hooks for Newfoundland cod, and for packing and sail-making needles, to the finest for cambric-needles. In the dark and dingy rooms below, bits of wire, each the length of two needles, are cut by a pair of vast shears, well fixed to the wall. The "measure" is a steel instrument, furnished with a screw, which determines the length of the bundle of wires cut at once. Two iron rings, about five inches in diameter, are placed on edge, and nearly filled with the cut wires, of which there is thus a pretty large faggot before us. These wires, having come off coils, are curved, and they must be straightened. A sort of hooked poker is thrust into the rings, and transports the faggot to the furnace, where it is presently heated red-hot. It is taken out ; a curved iron bar is laid between the rings, and the bundle is rolled backwards and forwards on a table until the wires are straight. This is called "rubbing straight."

We now find ourselves in a mill in the country—a pretty place, with its pond, its unceasing gush of water, its little ravine, its cheerful farmstead, its fields with cows grazing, even at this season. There is a miller peeping out at us. What does *he* do here ? One end of the mill is let for grinding flour ; the other for grinding needles. We go down some steps to a basement-room, where straps are revolving with all possible zeal. The water-wheel is under our feet ; and round us are placed four grindstones. Each grindstone is furnished with a cap or cover, like a collapsing Dutch oven. It does not fit closely, but leaves a space, through which the deadly dust is blown. Here is the secret of the salvation of the dry-grinders. A comfortable-looking needle-pointer is seated on his bench. He takes up two dozen or so of wires, and applies the ends to the grindstone. While doing this, he has to roll every wire between his finger and thumb. Backwards and forwards he makes them revolve,

in contact with the wheel; and off flies a shower of sparks. One end being done, he presents the other; for it must be remembered that these wires are of the length of two needles. As he works, we see the dust rushing under the cover, quite away from the workman's face; and we are invited to go and see what becomes of it. There is a covered fan-wheel in the middle of the chamber, turned by water-power; and this it is which sucks away the dust from all the four grindstones at once. We pass outside to the end of the building, and go down some more steps, to the brink of the stream which is flowing away down the little ravine. We observe that a patch of the opposite bank, some way down, is whitened—crusted over with dust; and, looking carefully, we see puffs, as of a thin smoke, coming from behind a grey stone on our side of the bank. Behind that stone is the outlet from the fan-wheel, and the whitening on the grass and brambles is the dust which would have hung about the men and within the men, if they had not consented to this saving measure.

It is a plan which costs a little money in the first instance; although it saves a vast deal in the end. That fan-wheel uses up a third of the water power appropriated to this chamber. The men have, nominally, the same wages as of old; but they pay their share of this loss, at the rate of about a shilling a-week. This is their toll for life and health. The masters bear a much larger share, and with extreme content. It may be mentioned here, that from the nominally high—extremely high—wages of this class of men, must be deducted the mill-rents they pay, and the cost of their tools—amounting altogether to ten or twelve shillings a-week.

We now have the wires straight, and pointed at both ends. We next find ourselves in a workshop, in the next street to Mr. James's. Here, we see a stamping machine and die, which flattens and prints a space precisely in the middle of each bit of wire. The print shows where the eye is to be, and at the same time the "guttering" is done—the forming the little channel seen in the heads of all needles. The workman strikes off five thousand of these in an hour; that is, he flattens and "gutters" the heads of ten thousand needles per hour—rather an advance upon the old method of doing each one by hand! Then comes the punching of the eyes. The punch is double, of course; and the boy who works it, perforates four thousand

wires, or eight thousand needles per hour. This is dexterous work, the wires being laid and removed almost faster than the eye can follow.

The next boy we noticed was seven years old; a little fellow hired by the woman under whom he worked. "This boy," we were told, "earns his living by spitting. He is not an American; yet he passes his days in spitting." Before him lay bits of wire almost as fine as hairs: and these wires he was running through the eyes of the twin needles which had come from the punch. He ran a wire through each line of eyes, "spitting" two dozen or so on his two wires. A woman, whose wrists and arms were obviously of unusual strength, received these spitted needles, laid them on a prepared steel plate, and filed off all roughness on both sides. The twin needles had yet to be separated, and the fragments of flattened steel surrounding the heads to be removed. This was done by a woman close at hand, who sat before her little anvil, filing with precision between the rows of heads, so that they separated easily; and then, by another movement, clearing away all extraneous bits and sharp edges, delivering her spitsful of needles complete in form.

They are still rough and rusty-looking; and, what is worse, they are soft;—so soft as to bend with a touch. The hardening comes next. They are heated, in batches, in the furnace, and, when red hot, are soused into a pan of cold water.—Next, they must be tempered; and this is done by heaping them (all lying the same way) on a very hot metal plate, where a man with a metal slice, called "a knife," in each hand, shifts them incessantly backwards and forwards, upon each other, taking care that all get, as nearly as possible, an equal quantity of heat. If any get too little, they bend in the using; if too much they break. As they turn blue upon this plate, they are removed, the shade of blueness showing when they are tempered enough.

The polishing remains to be done. The best needles are polished no less than six times; and there are three stages of polishing for all. The final scouring is the most emphatic affair. To see it, we must find ourselves at the mill again. The water power there appears to be moving half-a-dozen mangles: and very like mangling the process is. On a very coarse cloth, which lies upon another coarse cloth, needles are spread, to the number of forty or fifty thousand. Emery dust is strewn over

them : oil is sprinkled upon them, and soft soap is daubed by spoonfuls on the cloth. The whole precious mess is then rolled up compactly, and tied at both ends, and round and round, as tight as pack-thread can bind it ; and we have before us a disgusting black "roly-poly" dumpling. Several of these are put into one of the mangles, where they roll to and fro for eight hours. By that time, the emery is worn smooth, the packets are taken out, and the needles are dressed with fresh emery, oil, and soap ; and another eight hours' mangling succeeds. From this, the needles come out dirty enough, and smelling horribly ; but they are capable now of showing their brightness. They are washed with hot water and cleansing materials in iron pans, by boys, who seem to enjoy the shaking and boulting of the needles with real zest. When clean, the needles are tossed into sawdust, and tossed about in it, until they are dry, and then the sawdust is tossed out from them ; they are tossed into bundles, and sent to the manufactory, to be sorted and put up for sale.

We shall not come back to the unsavoury mill any more ; so I will ask what that boy is doing ; and how any stone-breaking can be necessary to the making of needles? He is breaking into smaller pieces those not large white stones, from which emery powder comes. We follow his barrowful of pieces into a little shed, and find that the water power is working, up and down, the pestle of a great mortar, where the boy's fragments are broken into dust. A man is sifting what comes out of the mortar, and returning whatever will not go through his sieve.

Once more in the manufactory, we find the faulty needles separated from the perfect. Among so many, some must be broken, some bent, some with bad eyes or dull points. We inquire what becomes of the refuse, which is called "scrap;" and the answer appears to me so curious that we are glad we did not miss the information. The bright needles, which happen only to have lost their heads, are eagerly bought by picture-frame makers, and cabinet-makers. They are invaluable for delicate fastenings, for veneering, and where a nail is wanted of extreme fineness and without a head. The rest of the "scrap" is equally prized for another object,—for making gun-barrels. It is sold by cart-loads, as the finest-tempered steel that gun-barrels can be made of. What an idea this gives,—or

would give, if we could receive it,—of the extent of the manufacture!

The manufacture is now complete: but the making ready for sale exhibits a miracle of dexterity; at least, to unpractised eyes.

A handful of needles, lying all manner of ways, is put into a tray, which is shaken backwards and forwards, until the needles lie all one way. Those whose points lie left, and those whose points lie right, are separated. A little girl spreads a heap on her counter into a rough row, wraps a bit of cloth round the forefinger of her right hand, shakes the needles a little, and brings out a batch, with their points sticking lightly in the cloth, and their heads supported by her other forefinger. These she lays aside, and does the same thing again, until all are separated. A heap is thus separated more quickly than we can tell how it is done. But these needles are of different lengths. How should *we* set about sorting them? Certainly not in the actual way. The operation just described is called "heading." This is called "handling." A narrow piece of wood, like a thick flat ruler, is heaped with as many needles as will lie upon it, almost from end to end. A woman feels along both sides with the lower edge of her hands, and lifts from the rest, with her little fingers and the palms of her hands, the longest needles, which she places on one side. Then follow the next longest, which she places on the other side. It is altogether an affair of tact; and fine must be the touch, and long the experience, required to do such sorting with accuracy.

Then, we arrive at the seat of another wonderful woman, who is pronounced by her employer the most rapid worker he has ever seen. Her business is to count the needles into quarter hundreds, and paper them up. The squares of paper lie ready; the needles are before her. She separates twenty-five of them, whips them into a paper, and counts again with incredible rapidity; folding the filled papers when about half-a-dozen are ready. I am so persuaded that my readers could never believe how many packets this woman folds in a day, that I will not say how many thousands they number. That so many should go forth into the world from one house, is wonderful enough; that one woman should put them up for their journey, is more than any readers, not needle-makers, could be expected to believe on the declaration of any writer.

Next, we come among boys and girls. One little boy is cutting out the printed labels, which have had their figures neatly filled in by an older lad. A third is spreading the cut labels on a board smeared with paste. A girl is putting them on the packets of needles. Another is putting on the warranty ticket, in like manner. Another is "tucking;" slipping one end of the needle paper into the other. A lad is looking to the drying of the papers in the warm drying-closet, in the same room, where they remain about two hours; and he and another are tying up the papers into packets. Finally, we return into the warehouse, and see the piles of gay boxes, which are to be filled with an assortment of needles for presents, or for foreign sale. These boxes are a branch of industry in themselves; with their portraits of the Queen and Prince, and their copies from popular pictures, such as Raffaelle's Madonna in the Chair. As a further temptation, these pictures in the lids are so fitted as to be disengaged and hung up. They are probably to be seen on the walls of many a log cabin in America, and chalet in Switzerland, and bungalow in India, and home of exiles in Siberia. It seems as if all the world of needlewomen, of every clime, were supplied by England. One man has gone from among us to set up the business in the United States; but the Americans are not known yet to be making for themselves. In all directions, our hundredweights and tons of this delicate article are going forth.

We should have liked to know what the consumption of sail-makers' needles is at home: but this we could not learn. These formidable affairs are separately forged, as their finer companions once were. The flattening, and guttering, and filing of the heads is done on grooved anvils; and so is the hammering of the lower half into a three-sided surface. The pointing is done by one at a time being held to a revolving cylinder of a grit-stone brought from Bristol; and then there is another rubbing against a "buff,"—a cylinder covered with leather dressed with emery. The eyes are punched separately, and by repeated strokes; and pains are given to the finishing of the head, by flattening its sides, and filing all smooth. The process is nearly the same with packing-needles; but, as we know, their pointed ends are considerably flattened and bent.

I must deny myself the pleasure of describing the other manufacture which goes on in the same place,—that of fish-

hooks. The pattern-books of the concern show specimens of a sorts, from the strong cod-hook, for the Newfoundland Banks and the salmon-hook for the Norway cataracts, to the most delicate little barb that can be hidden under a streak of feather, to dance in the insidious character of a fly on the surface of an English rivulet. We find here sail-hooks, too,—like very large button-hooks. Without these the sailmaker could not hold together the edges of the uncommonly heavy fabric he has to sew.

The women and girls in this establishment are rather more numerous than the men and boys. Their employer accounts for the superiority of all in health, understanding, and morals, to the last generation, by citing the results of the Sunday schools of Redditch, and the good free-school there. He may be quite right: but there is something in the tone of the intercourse between himself and everybody on his premises, which convinces a stranger that there is also somebody else to thank for the improvement which drives out all the stranger's preconceptions of the wretchedness of needle-makers. For my own part, I must say that a load has been removed from my mind—a burden of sorrow and commiseration—by my visit to the Victoria Needle-works at Redditch.

CHAPTER X.

TIME AND THE HOUR.*

PROUD as we are apt to be of our achievements in science and art, it sometimes strikes some people that we do not reverence and admire enough the results of the sagacity, patience, and courage of men of a former generation. For instance,—what an achievement is the discovery that the earth is not flat,—the discovery of its actual form,—the discovery of its relation to other parts of the system,—discoveries clenched by the fact, that we can predict future starry occurrences, account for apparent planetary errors in our own days, and explain, by means of the history of the solar system, some dubious incidents in the ancient history of man! It seems inexpressibly astonish-

* March, 1852.

ing that men, on their little anthill, should be able to make out the facts of regions which they can never reach, and where they could not live to draw a single breath; that such imperceptible insects as they must appear, if heard of, in the sun and moon, should lay down, without mistake, and to demonstration, the laws of the sun and moon in their external relations. It is as if the aphides on a rose-bush under a window in the Isle of Wight, were to make out, by means of some wise aphis dwelling under a vein in a leaf, the mathematical facts of the Edinburgh and Perth Railway. When we think of it, our minds reel under the burden of this knowledge.

Somewhat in the same way, but less eminently, we cannot but marvel at the perfection that men have reached in recording the passage of time. There are natural helps to this which diminish the wonder: but still it is a wonder of great magnitude. When we look at the matter on one side, we see that time is given out, as it were, from the magnitudes and motions of the stars; and in that view, it seems a deed almost beyond estimate, that man should have caught this product, and made it record its own lapse from moment to moment. When we look at the other side, and see how the sun presents man with a natural clock, by simply shining where a shadow can be cast, whether of a sapling or an Egyptian pyramid, our wonder lessens to an endurable degree. We know that, in fact, the sick man measures his bitter hours by the sunshine or shadow on the wall of his chamber; and the shepherd in the wilds by the ellipse he has drawn for the hours round the solitary tree; and that the old Egyptians are said to have learned much more than the time of day by measuring the sharp line of shadow drawn on the glaring sands of the desert, by the mute and immovable Pyramid of Cheops, under compulsion from the relentless sun, which there never withdraws behind clouds but by some rare caprice. Between the setting of the sun and the rising of the moon, the great dial may rest; but only then may it refuse to show the hours. From making dials, in imitation of these natural ones, to making clocks, in which the circumstance of the shadow is dropped altogether, is, however, a long stride: and there is room for rational admiration when we consider what a true and lasting relation and accord man has established between the jog of the wheels in his pocket-watch and the spinning of the planets in space; between the

tick which amuses the baby ear leaning against his breast, and the harmonies of the stars in their courses. This appears a great thing to us when we meditate upon it in a walk, or when the tick of the watch tells upon the ear in the darkness of the night. But, to receive the full impression, we should go into the workshop where scores of men and boys are busy in making and arranging the materials,—the hard, dead mineral materials, —which are to give out something intangible, unutterable, as real as themselves, yet purely ideal in its connection with us. That men by putting together brass and steel, and a jewel or two, and some engraved marks, should present to us, as in a mirror, the simultaneous doings of the stars in the sky, seems to raise the work-room into a place of contemplation or eloquent discourse.

Thus did it appear to me yesterday, when we entered a fine range of rooms, where a great number of men and boys were occupied in the business of watch-making for the Messrs. Rotherham. There was no resisting the sense of the seriousness of their work in comparison with that (though equally delicate and intently pursued) by which baubles are produced. There is something serious about the whole business. It is a serious thing that it is science and labour which gives its high value to a watch, and not the costliness of the material. A cable was put into my hands, the steel of which was worth nothing that could be specified; whereas, in its present form, it was worth two shillings. Each link, almost too small to be seen by the naked eye, is composed of five parts, each of which is made and placed for a purpose. The mere metal of the whole interior of a watch is worth, we were told, perhaps sixpence; whereas, the labour and skill worked up in it raise its value to many pounds. All is very quiet in these large apartments, where scores of men and boys are poring over their work. The quadrangle of rooms has windows completely round both sides. Under the windows a counter extends, completely round also. Almost every workman has a small magnifying glass, which he fits to the right eye, for the finest part of his work. Of course, the right eye fails, sooner or later. One man was spoken of as having worked for this house between forty and fifty years; but this was a remarkable case. The eye is usually worn out in a much shorter time than that. Besides the long rows of poring craftsmen here, we were told that

there were two hundred more in their own homes, employed for the same firm. Having heard of their house as the largest watch manufactory in the inland counties, if not in the kingdom, it was with great interest that we received the details of the history and extent of their business.

It appears that somewhere about 1783, one Vale saw that there was an opening in Coventry for the making of watches; and he set up the business now conducted by the Messrs. Rotherham. From that day to this, great difficulty has arisen from the prejudice against country-made watches. If there ever was, as some say, good reason for this distrust of Coventry watches, there is not now; yet the difficulty exists, and occasions some curious embarrassments. Ten years ago, the annual production of watches by this firm was about six thousand; it is now nearly nine thousand. If we consider the durable character of a watch—that a single one generally serves us for a lifetime—this will be seen to be a large production. But there seems to be no doubt that the demand would be larger, but for the prejudice against Coventry watches, which is akin to that against Birmingham jewellery. The dispute lately pending between a great Coventry house and the Assay Office at Birmingham is a curious illustration of the way this prejudice works. There is an Act of Parliament, about thirty years old, which obliges manufacturers to send their gold productions to the Assay Office at Birmingham, if they reside within thirty miles of it. Messrs. Rotherham send the greater part of their watch-cases to the Birmingham office; but they feel it hard, while labouring under the disadvantage of the old prejudice, to be prevented from getting their gold assayed at any office they prefer. Their alternative is between having their watches despised on account of the local mark, and buying their cases in London. They are obliged to buy so many cases in London, that it makes the difference of thirty pounds a-week in the wages of labour that they pay in Coventry.

While I am speaking of legislative impediments which annoy the manufacturer, I may as well mention two or three more, which would be scarcely credible in our day, if they did not happen to be true. There seems to be a natural relation between the English and the Swiss, in regard to watch-making. Though the law does all it can to part them, they are perpetually at work in combination; a combination which it would be conve-

nient to make honest and easy. The tools—various and most delicate—used by watch-makers, are purchased chiefly from Warrington in Lancashire; but the best of them are fashioned in Switzerland. Iron is sent over from England, and returned by the Swiss in the shape of tools so exquisite, that we cannot rival them. Swiss watch-makers live in Clerkenwell, to make the faces of our watches: an article in which fashion is as capricious as in any department whatever. Now, it would be much easier and pleasanter for these Swiss to live at home, and work in their own beloved dwellings, as numbers of their countrymen, and many more of their countrywomen, are always doing. But, while Swiss watches are admitted entire into England at a duty of ten per cent., the importation of parts of watches is totally prohibited. Swiss watches, as a whole, are not to be compared with English; but in the making of some parts, the Swiss excel us. By this absurd prohibition, we must either buy entire watches, to help us to the parts we want, or we must try to smuggle; or skilled Swiss must come and live here. I need not say that the one thing which we never think of, is going without anything which is proved to be the best of its kind. We, on the other hand, are excluded altogether from the European trade in watches. The prohibition, as regards all Europe, is complete; while we trade with Asia, Africa, and America. In the United States, again, there is a duty which so affects the importation of watches, as to give rise to a whimsical state of things. Our watches go "in the frame," packed naked, as it were; and they are clothed with cases there. The Americans cannot compete with us in making the works; but the making of the cases is now an important business with them. What confusion, and trouble, and waste, are caused by all these legislative meddlings!

It is painful to see that further difficulties are made by the selfishness of certain persons at home concerned in the making of watches. One cause of the cheapness of Swiss watches, which preserves their popularity, in spite of their inferiority to ours, is the comparative cheapness of their production. Throughout the valleys of Switzerland, there are multitudes of women busy in their own homes, about the delicate processes of watch-making. No work can be more suitable for women. The fineness of sight and touch required seems to mark it out as a feminine employment; and it can be pursued at home, if that

is desired, just like needle-work, or any other feminine business. But the men of Coventry will not allow women to be employed. The employers desire it; the women desire it; all rational observers desire it; but the men will not allow it. The same man who sends his wife and daughter to weave at the factory, will not hear of their engraving "brass-work" at home. It is a curious thing to pass in forty minutes from Birmingham to Coventry, and to mark the difference between the two places in this matter. In the one, we see hundreds of neatly-dressed and well-behaved women, doing work suitable to their faculties and their strength, and earning the means of support for themselves, and education for their children, by making screws, gold chains, and many other things; while, in Coventry, the workmen will not allow a woman to paste bits of floss silk upon a card, or to mark the figures upon the face of a watch. With regard to the ribbon manufacture, they have had to give way. At the reels and looms we see women employed by hundreds. The rest will follow. The women will obtain whatever liberty of occupation is reasonable, because whatever is reasonable becomes practicable, sooner or later. We know of a beginning made, no matter where, or by whom. The respectable and educated wife of a superior mechanic chooses to aid her husband's earnings, by employing her leisure in a process of watch-making —that of "engraving" the "brass work" in the interior of a watch. As soon as it was discovered that she was thus employed, an outcry was raised. Every opposition was made, but she has persevered. A sort of case of apprenticeship has been made out, by witnesses having affirmed that, in their presence she had seen her father do the work she had undertaken. She would have preferred another branch of the work; but she found there was no chance of her being permitted to do the same thing that her husband wrought at. She is instructing her two daughters, however, in her own branch; and there can be no doubt that her example will be followed. At present hers is considered a singular case. The watchmakers are now supposed to be to the ribbon manufacturers, in Coventry, as one to ten. The proportion will, probably, have changed before the next census. It should be considered, however, that the ribbon weavers are distributed over neighbouring districts, while the watchmakers live within the city.

Various parts of the watch come hither from widely-distant

places. We have said that the most delicate tools are made in Switzerland, and the ornamented faces of the watches in London. The jewels come from Holland. The diamonds are cut abroad, but their framing in steel is done at home. We saw many hundreds of them in a little box. We saw some rubies, rough and some cut, round and very small; some chrysolites, also. The cutting can be done only with diamond dust. The engine-turning of the cases is done in private houses, in Coventry; and so is the making of enamelled faces. The glasses come chiefly from the neighbourhood of Dublin, where they are made more cheaply than anywhere else. No place, but Newcastle-upon-Tyne, can compete with the Irish glasses. The smallest wheels are made at Prescot, in Lancashire. All the other parts of the watch, if we remember right, are made in the establishment.

We saw the strip of stout brass out of which the "frames" were to be cut. The cutting these brass circles, piercing them with the necessary holes, joining them, inserting the jewels into the holes, fitting on the wheels and the chain, inserting the spring, engraving the brasses and the gold, making the cases, and finishing off the whole;—this is the work done here. One boy may be seen fitting the pinions into the frames; another polishing the pinion with his small fiddle-stick—for such his tool appears to be; another delicately handling the escapement; another showing to us a hair-spring, as an instance of the value given by labour to a material of low cost,—this almost imperceptible string of steel being "more valuable than gold," as he says. The careful workman covers his work from dust (such of it as is finished, or waits) with a little inverted tumbler. The apprentice lads earn about four shillings and threepence a-week; the higher order of workmen average twenty-eight shillings, or thirty shillings. We were curious to know how low and how high the price of watches goes, here in the wholesale establishment. The lowest we heard of was three pounds; the highest thirty-five pounds; but few are sold of a higher value than twenty pounds, wholesale price; which mounts up to a good deal more in London shops.

The most interesting class of watches, to us, was that of the agricultural labourers. We were glad to hear that agricultural labourers bought watches; a fact which we should hardly have suspected. The number demanded is rapidly decreasing. If 150 watches are made weekly, eight or nine of them may be

for agricultural labourers; and the proportion was formerly much larger. They are of a wondrous size; about two inches thick. There is silver to the value of two pounds in a watch which costs four pounds. The thing looks as if it could never be lost—hardly broken; and it is inconceivable that damp or soil could get in. On its broad face is painted a gay picture—Speed the Plough, or the Foresters' or the Odd Fellows' Arms. Next in bulk to these are the watches for the Scotch market. The Scotch seem to like to feel that they have a watch in their pocket. In remarkable contrast with them are the watches, scarcely bigger than one's thumb-nail, which are intended for presents to very little ladies. As little ladies' time is not supposed to be very valuable, it is not insisted that these should go well. From these the article reaches in value to the thirty-pounds watch, exquisitely chased, back and face, and of beautiful form and proportions. Of the watches for exportation, those made for the market of Alexandria are perhaps the most remarkable. They are, in form, hunting-watches; the marking of the hours is Arabic: and there is no ornament whatever. No figures of any living thing must be looked at by a Mahommedan; and it appears as if, to make all safe, the Arabs would not countenance any graven image of fruit or flower, leaf or tendril. While talking of the wide transmission of this delicate article of manufacture, we were surprised to find how many watches are sent about the kingdom by post,—not for cheapness, but for security. It is an expensive method, but a convenient one. This house sends out by post sometimes thirty in a week.

Having never seen engine-turning, and having, in truth, not the least idea how it was done, we gladly accepted an invitation to a neighbouring dwelling, where an elderly man and a boy were busy about the process. The neat apartment, the shining machine, the courteous old gentleman in his spectacles and clean apron, anxious to show us whatever we wished to see, made a very pleasant impression upon us. The principle of the process is understood at a glance; but not the less wonderful does it appear to us that any man should ever have thought of it. The invention is French, and nearly a century old; but it is only lately that it has reached its present perfection. The machine is expensive, costing about 175*l.* Fieldhouse is admitted to be the best maker. The main part of the machine, to the eye of the novice, at least, is a barrel, which is bound round

with strips of copper of various patterns, sinuous, or undulating, or other. The revolution of this barrel, with one of the strips pressing against a steel tip or bolt, causes a vibratory motion, in accordance with the copper pattern, in whatever is connected with the vibrating steel. The watch-case is so connected. It is fastened at the end of a bar; and, while it is vibrating there, a graver is brought up to it, on a sort of miniature railway; and it peels off the gold in the pretty pattern required. We saw a ribbon-like circular pattern; concentric rings, and vertical ornamentation; and we were told that by the combination of the patterns provided for by the machine before us, as endless a variety might be obtained as of changes from a peal of a dozen bells.

With all its prettiness, this process, and every other connected with the ornamenting of the watch, was less interesting to us than those which relate to its time-showing properties. We were not sorry that the last stage of our sight-seeing was the preparation of the enamel face, with its indices of hours and minutes.

We went to the little workshop of a superior artisan, who works here, but lives in the country. His intelligent daughters help him in the lettering department of his little business; and very pretty work it is for them. The affair is simple enough. Round pieces of copper are cut, with scissors, out of a strip which comes from the rolling-mill; the size being determined by a brass pattern. The edges are slightly turned up, in order to hold the enamel, when melted; and the necessary hole in the middle has its edges turned up, on the same side, for the same reason. The enamel is made of putty powder, and several other materials. In its unground state it looks just like a bit of thick earthenware;—the white very white; the cream-colour very pure. This is ground down in a mortar extremely fine, mixed with water, to about the consistence of soft clay, and spread smoothly over the copper ground. Half-a-dozen of these faces are put down before the open mouth of the little furnace, to heat gradually, in order to avoid the irremediable mischief of a crack. When they have done reeking, they are ready for further cooking. With a little pair of tongs, one at a time is carefully placed upon a stand in the furnace. Presently it begins to shine. It is turned round and round, that the whole may be equally done. When it is all one white heat, it is

brought out, and another is put in. When cool, the surface is rubbed smooth with sand; inequalities are filled up; another coating is given; it is "fired" again, and then polished to the degree we are accustomed to see.

Then comes the part which the novice must be extremely shy of undertaking, so very important as it is,—the marking the hour figures. The face is throughout placed on a little wooden platter, which revolves with a touch. On this platter it receives its polishing and all other treatment. It is now turned round, to be ruled with the utmost exactness, with as many radiations from the centre as are wanted. Thick strokes are laid on where the figures are to be, of a metallic paint, composed of copper, iron, and other ingredients, prepared in a peculiar manner. The decisive figure-strokes are then cut in with the help of an essential oil; and the surplus paint brushes off with a touch of the brush. There is a mystery in most houses of business. The secret here is how the minute-face is sunk in the hour-face. We could understand, however, how the excessively small figures were done, though hardly how human eyes could stand such a trial. Our host proved to us what the faculty of sight becomes capable of, by relating an achievement of his own. Some years ago he wrote, in enamel, "the Lord's Prayer, with every *i* dotted, and every *t* crossed, in the space of half the wing of a house-fly." He keeps it framed as a locket; and it is the wonder of all strangers who see it. He was advised to send it up to the Exhibition: but he dreaded its being lost. He paid very dear for his enterprise, as we should think; but he seems rather to glory in the result than regret it. By working in a blaze of sunlight he "aged" his sight thirty years in a single fortnight. He now requires strong magnifiers to work at all.

We observed here the glass globe of water, whereby the gas-light is concentrated for evening work, which is seen among the Birmingham burnishers. It is sad to think how the senses and faculties of some are overstrained to minister to the luxuries of others. If we could reconcile ourselves to this at all, it would not be in the case of any toys, be their beauty and the money value of them what they may; but in the production of this exquisite talisman, the watch, which can tell us, in the intervals of tides and sunsets, where the stars are, and what they are doing, behind the veil of the noonday light and the midnight cloud.

CHAPTER XI.

SHAWLS.

In that part of Asia where some of our brave countrymen have penetrated only to die—in that country where Charles Stoddart, and his friend Conolly, whose faces will never be forgotten by some of us, and whose voices still sound in our ears, consoled each other through a loathsome imprisonment, and went out together to lose their heads in the market-place of the capital; in that distant and impracticable country of Bokhara, which we are ready to say we will never have any connexion with—there are people always employed in our service. We are not now thinking of the Bokhara clover, which is such a treat to our cows and horses. We owe that, and lucerne, and others of our green crops, to the interior of Asia; but we are thinking of something more elaborate. In Bokhara, the camel is watched while the fine hair on the belly is growing: this fine hair is cut off so carefully that not a fibre is lost; it is put by until there is enough to spin into a yarn, unequalled for softness; and then it is dyed all manner of bright colours, and woven in strips eight inches wide of shawl-patterns such as—with all our pains and cost, with all our Schools of Design and study of nature and art—we are not yet able to rival. These strips are then sewn together so cunningly that no European can discover the joins. The precious merchandise is delivered to traders who receive it on credit. On their return from market they pay the price of the shawls at the Bokhara value, with 30 per cent. interest; or, if they cannot do this in consequence of having been robbed, or of any other misfortune, they stay away, and are never seen again in their native land.

Where is this market? So far away from home that the traders wear out their clothes during their journey; and their fair skins become as brown as mulattoes. On, on, on they go, day after day, month after month, on their pacing camels, or beside them, over table-lands, mounting one above another;

over grass, among rocks, over sand, through snows; now chilled to the marrow by icy winds; now scorched by sunshine, from which there is no shelter but the flat cotton caps, with which they thatch their bare crowns: on, on, for fifteen thousand miles, to the borders of Russia, to sell the shawls which are to hang on ladies' shoulders in Hyde Park, and where beauties most do congregate in Paris and Vienna.

The passion for shawls among all women everywhere is remarkable. In one country, the shawl may flow from the head, like a veil; in another, it hangs from the shoulders; in another, it is knotted round the loins as a sash; in yet another, it is swathed round the body as a petticoat. Wherever worn at all, it is the pet article of dress. From a time remote beyond computation, the sheep of Cashmere have been cherished on their hills, and the goats of Thibet on their plains, and the camels of Tartary on their steppes, to furnish material for the choicest shawls. From time immemorial, the patterns which we know so well have been handed down as a half-sacred tradition through a Hindoo ancestry, which puts even Welsh pedigrees to shame. For thousands of years have the bright dyes, which are the despair of our science and art, been glittering in Indian looms, in those primitive pits under the palm-tree where the whimsical patterns grow, like the wild flower springing from the soil. For thousands of years have Eastern potentates made presents of shawls to distinguished strangers, together with diamonds and pearls.

At this day, when an Eastern prince sends gifts to European sovereigns, there are shawls, to the value of thousands of pounds, together with jewels, perfumes, and wild beasts, and valuable horses; just as was done in the days of the Pharaohs, as the paintings on Egyptian tombs show us at this day. And the subjects of sovereigns have as much liking for shawls as any queen. At the Russian Court, the ladies judge one another by their shawls as by their diamonds. In France, the bridegroom wins favour by a judicious gift of this kind. In Cairo and Damascus, the gift of a shawl will cause almost as much heartburning in the harem as the introduction of a new wife. In England, the daughter of the house spends the whole of her first quarter's allowance in the purchase of a shawl. The Paris grisette and the London dressmaker go to their work with the little shawl pinned neatly at the waist. The lost gin-drinker

covers her rags with the remnants of the shawl of better days. The farmer's daughter buys a white cotton shawl, with a gay border, for her wedding; and it washes and dyes until, having wrapped all her babies in turn, it is finally dyed black to signalise her widowhood. The maiden-aunt, growing elderly, takes to wearing a shawl in the house in mid-winter; and the granny would no more think of going without it at any season than without her cap. When son or grandson comes home from travel, far or near, his present is a new shawl, which she puts on with deep consideration; parting with the old one with a sigh. The Manchester or Birmingham factory girl buys a gay shawl on credit, wears it on Sunday, puts it in pawn on Monday morning, and takes it out again on Saturday night, for another Sunday's wear, and so on, until she has wasted money that would have bought her a good wardrobe. Thus, from China round the world to Oregon, and from the queen down to the pauper, is the shawl the symbol of woman's taste and condition. Whence come all these shawls? For it is clear that the supply which arrives from Asia, over bleak continents and wide oceans, can be only for the rich and great. Some of the shawls from Bokhara sell, in the market on the Russian frontier, for two thousand four hundred pounds each. Whence come the hundred thousand shawls that the women of Great Britain purchase every year?

Some of the richest that our ladies wear are from Lyons; and the French taste is so highly esteemed that our principal manufacturers go to Lyons once or twice a year, for specimens and patterns. Some of our greatest ladies of all, even the Queen and certain duchesses and countesses, offer to our chief manufacturers a sight of their treasures from India, their Cashmeres, and other shawls, from a patriotic desire for the improvement of our English patterns. From these, the manufacturers of Norwich and Paisley devise such beautiful things that, but for the unaccountable and unrivalled superiority of the Orientals in the production of this particular article, we should be all satisfaction and admiration. The common cotton shawls, continually lessening in number, worn by women of the working classes, are made at Manchester, and wherever the cotton manufacture is instituted. In order to study the production of British shawls in perfection, one should visit the Norwich or Paisley manufactories.

If any article of dress could be immutable, it would be the

shawl; designed for eternity in the unchanging East; copied from patterns which are the heirloom of a caste, and woven by fatalists, to be worn by adorers of the ancient garment, who resent the idea of the smallest change. Yet has the day arrived which exhibits the manufacture of three distinct kinds of shawls in Paisley. There is the genuine woven shawl, with its Asiatic patterns; and there is that which is called a shawl for convenience, but which has nothing Asiatic about it: the tartan—which name is given not only to the checks of divers colours which signify so much to the Scottish eye, but to any kind of mixed or mottled colours and fabric—woven in squares or lengths to cover the shoulders. The third kind is quite modern; the showy, slight, and elegant printed shawl, derived from Lyons, and now daily rising in favour. The woven kind is the oldest in Paisley. The tartan kind was introduced from Stirlingshire—without injury to Stirlingshire—which makes as many as ever, but to the great benefit of Paisley. The printed kind has been made about six years; and it is by far the greatest and most expanding manufacture. The most devoted worshippers of the genuine shawl can hardly wonder at this, considering the love of change that is inherent in ladies who dress well, and the difference of cost. A genuine shawl lasts a quarter of a lifetime. Ordinary purchasers give from one pound to ten pounds for one, and can give more if they desire a very superior shawl: a process which it is not convenient to repeat every two or three years. The handsomest printed shawls, meantime, can be had for two pounds, and they will last two years; by the end of which time, probably, the wearer has a mind for something new. The time required for the production answers pretty accurately to these circumstances. It takes a week to weave a shawl of the genuine sort; in the same time ten or twelve of the tartan or plaid, and twenty or thirty of the printed can be produced.

The processes employed for these three kinds of shawls are wholly different; and we will therefore look at them separately, though I saw them, in fact, under the same roof. As for the tartan shawls, there is no need to enlarge upon them, as their production is much like that of any other kind of variegated cloth. I need mention only one fact in regard to them, which is, however, very noticeable; the recent invention of a machine by which vast time and labour are saved. As we all know, the

fringes of cloth shawls are twisted—some threads being twisted together in one direction, and then two of these twists being twisted in the opposite direction. Till a month ago* this work was done by girls, in not the pleasantest way, either to themselves or the purchaser, by their wetting their hands from their own mouths, and twisting the threads between their palms. The machine does, in a second of time, the work of fourteen pairs of hands: that is, as two girls attend it, there is a saving of twelve pairs of hands and some portion of time, and the work is done with thorough certainty and perfection: whereas, under the old method, for one girl who could do the work well, there might be several who did it indifferently or ill. The machine, invented by Mr. Hutchison, must be seen to be understood: for there is no giving an idea, by description, of the nicety with which the brass tongues rise to lift up the threads and to twist them; then throw them together, and rub them against the leather-covered shafts; which, instead of human palms, twist them in the opposite direction. In seeing this machine the old amazement recurs at the size, complication, and dignity of an instrument contrived for so simple a purpose. The dignity, however, resides not in the magnitude of the office, but in the saving of time and human labour.

Of the other two kinds of shawls, which shall we look at first? Let it be the true and venerable woven shawl.

The wool is Australian or German—chiefly Australian. It comes, in the form of yarn, from Bradford, in hanks which are anything but white, so that they have first to be washed. Of the washing, dyeing, and warping we need not speak, as they are much the same to the observer's, and therefore to the reader's, eye as the preparation of yarns for carpets in Kendal, and of silk for ribbons in Coventry. While the washing and drying, and the dyeing and drying again are proceeding, the higher labour of preparing the pattern is advancing.

But how much of the lower kind of work can be done during the slow elaboration of the higher! It really requires some patience and fortitude even to witness the mighty task of composing and preparing the pattern of an elaborate shawl. Let the reader study any three square inches of a good shawl border; let the threads be counted, and the colours, and the twists and turnings of the pattern; and then let it be remembered that

* August, 1852.

the general form has to be invented, and the subdivisions, and the details within each form, and the filling up of the spaces between, and the colours—as a whole, and in each particular; and that, before the material can be arranged for the weaving, every separate stitch (so to speak) must be painted down on paper in its right place. Is it not bewildering to think of? Much more bewildering and imposing is it to see. As for the first sketch of the design, that is all very pretty; and, the strain on the faculties not being cognisable by the stranger, is easy enough. There goes the artist-pencil—tracing waving lines and elegant forms, giving no more notion of the operations within than the hands of a clock do of the complication of the works. Formerly, the employers put two or three good foreign patterns into the artists' hands, and said, "Make a new pattern out of these." Now that we have Schools of Design, and more accessible specimens of art, the direction is given without the aids. "Make a new pattern;" and the artist sits down with nothing before him but pencil and paper—unless, indeed, he finds aids for himself in wild flowers, and other such instructors in beauty of form and colour. By degrees, the different parts of the pattern shape themselves out, and combine—the centre groups with the ends, and the ends grow out into the sides with a natural and graceful transition. Then the portions, properly outlined, are delivered to the colourers; who cover the drawing with oiled paper, and begin to paint. It would not do to colour the outlined drawing, because there are no outlines in the woven fabric. It is dazzling only to look upon. Much less minute is the transferring to the diced paper which is the real working pattern. The separate portions of the finished pattern of a single shawl, when laid on the floor, would cover the carpet of a large drawing-room. The taking down such a pattern upon paper occupies four months.

The weaving is done either by "lashing," or from Jacquard cards. The Jacquard loom answers for the eternal patterns, and the "lashing" method suffices for those which are not likely to be repeated. The man seated at the "piano-machine," playing on a sort of keys, from the coloured pattern stuck up before his eyes, is punching the Jacquard cards, which are then transferred, in their order, to the lacing-machine, where they are strung together by boys into that series which is to operate upon the warp in the weaving, lifting up the right threads for the shuttle

to pass under to form the pattern, as in other more familiar manufactures. The "lashing" is read off from the pattern, too, in the same way as with carpet patterns at Kendal; so many threads being taken up and interlaced with twine for a red stitch, and then so many more for a green, and so on. Boys then fasten each symbol of a hue to a netting of whipcord, by that tail of the netting which, by its knots, signifies that particular hue: so that, when the weaving comes to be done, the boy, pulling the symbolic cord, raises the threads of the warp,—green, blue, or other,—which are required for that throw of the shuttle. Thus the work is really all done before-hand, except the mere putting together of the threads; done, moreover, by anybody but the weaver, who is, to say the truth, a mere shuttle-throwing machine. The poor man does not even see and know what he is doing. The wrong side of the shawl is uppermost; and not even such a wrong side as we see, which gives some notion of the pattern on the other. Previous to cutting, the wrong side of a shawl is a loose surface of floating threads of all colours; of the threads, in fact, which are thrown out of the pattern, and destined to be cut away and given to the paper-makers to make coarse grey paper. One pities the weaver, who sits all day long throwing the shuttle, while the boy at the end of his loom pulls the cords which make the pattern, and throw up nothing but refuse to the eye. He has not even the relief of stopping to roll up what he has done; for a little machine is now attached to his loom, which saves the necessity of stopping for any such purpose. It is called "the up-taking motion." By it a few little cog-wheels are set to turn one another, and, finally, the roller, on which the woven fabric is wound as finished.

The bundles of weaving-strings and netting which regulate the pattern, are called "flowers." From the quantity of labour and skill wrought up in their arrangement, they are very valuable. A pile of them, on a small table, were, as we were assured, worth a thousand pounds. We may regard each as the soul or spirit of the shawl,—not creating its material, but animating it with character, personality, and beauty. I have said that it takes a man a week to weave a shawl; but this means a "long" shawl, and not a "square." The square remain my favourites; but the female world does not seem to be of my mind. It is true, the symmetry of the pattern is spoiled when the white centre hangs over one shoulder. It is true, the "longs" are

heavy and very warm, from being twice doubled. But they have one advantage which ladies hold to compensate for those difficulties; they can be folded to any size, and therefore to suit any figure,—tall or short, stout or thin. We are assured that, for one square shawl that is sold, there are a hundred "longs."

A capital machine now intervenes, with its labour-saving power; this time, of French invention. Formerly, it took two girls a whole day to cut off the refuse threads from the back of a shawl. But this machine, superintended by a man, does it in a minute and a half. A horizontal blade is traversed by spiral blades fixed on a cylinder, the revolving of which gives to the blades the action of a pair of scissors. The man's office is to put in the shawl, set the machine going, and to beat down the refuse as fast as it is cut off.

The upper surface of the shawl remains somewhat rough—rough enough to become soon a rather dirty article of dress, from the dust which it would catch up and retain. It is therefore smoothed by singeing. This very offensive process is performed by a man who must have gone through a severe discipline before he could endure his business. He heats his iron (which is like a very large, heavy knife, turned up at the end) red hot, spreads the shawl on a table rather larger than itself, and passes the red-hot iron over the surface, with an even and not very rapid movement. What would that Egyptian dragoman have said, who, being asked to iron out an English clergyman's white ducks, burned off the right leg with the first touch of his box-iron? That box-iron was not red hot, nor anything like it; yet there is no such destruction here. There is only the brown dust fizzing. Pah! that's enough! let us go somewhere else.

In a light, upper room, women and girls are at work, sitting on low stools, each with a shawl stretched tightly over her knees. Some of these are darning, with the utmost nicety, any cracks, thin places, or "faults" in the fabric; darning each in its exact colour. Some are putting silk fringes upon the printed shawls, tacking them in with a needle, measuring each length by eye and touch, and then knotting, or, as it is called, "netting" the lengths by cross-ties. One diminutive girl of nearly ten, is doing this with wonderful quickness, as she sits by her mother's knee. The girls do not come to work before this age; nor the boys before twelve. In other rooms, women are seated

at tables, or leaning over them, twisting the fringes of plaid shawls, or picking out knots and blemishes with pincers, and brushing all clean, and then folding them, with sheets of stift pasteboard between, ready for the final pressure in the hydraulic press, which makes them fit for the shop.

The fabric for the printed shawls is light and thin, in comparison with the woven. The thinness is various; from the barège to the lightest gossamer that will bear the pressure of the block. The whole importance of the production consists in the printing; for the fabric is simple and common enough. A man can weave ten yards per day of the barège; and the silk gauze, striped or plain, requires no particular remark.

The designing is done with the same pains and care as for the genuine shawl, but the range of subjects is larger. While something of the Oriental character of the shawl patterns must be preserved, much of the beauty of French figured silks and brocades and embroidery may be admitted. Thus the designing and colouring-rooms contain much that pleases the eye, though one does not see there the means and appliances which fill some apartment or another of Birmingham factories—the casts from the antique, the volumes of plates, the flower in water, and so on. The preparation of the blocks for printing, and yet more the application of them, reminded us of the paper-staining, which we had certainly never thought of before in connexion with shawls. The wood used is lime-wood. Some of the blocks are chiselled and picked out, like those of the paper-stainer. The cast-blocks are more curious. A punch is used, the point or needle of which is kept hot by a flame, from which the workman's head is defended by a shield of metal. He burns holes by puncturing with this hot needle along all the outlines of the block he holds in his hands, much as a little child pricks outlines on paper on a horse-hair chair-bottom. There is a groove along the face of each block, to allow the metal to run in. The burned blocks are screwed tight in a press, their joined tops forming a saucer, into which the molten metal (composed of tin, bismuth and lead) is poured. In it goes, and down the grooves, penetrating into all the burnt holes; and, of course, when cool, furnishing a cast of the patterns desired, in the form of upright thorns or spikes on a metallic ground or plate. These plates are filed smooth at the back, and fixed on wood, and you have the blocks ready to print

from; one representing one colour, another another, and so on, till the plates for a single shawl of many colours may mount up in value to a very large sum.

Before printing, the fabric has been well washed; the barège being passed, by machinery, over cylinders which apply and squeeze out a wash of soap, soda and glue. All roughnesses had previously been removed by a "cropping" machine. After drying, it comes to the printing-table, where it is treated much like a paper-hanging. This is all very well; but what is to be done in case of a shower of rain? a not improbable incident in the life of a shawl. A paper-hanging would not stand a driving rain. Are ladies imposed upon in this matter, when they are offered a gay-printed shawl as wearable out of doors? By no means. Nobody knows how it is, but the fact is certain, that a good steaming, at a tremendous heat, fixes the colours by some chemical action, without in the least hurting their lustre: so the shawls go into the steaming-box, and come out of it able to bear as many washings as you please, without any change of colour. After drying, in a heat of one hundred and ten degrees, they go upstairs to be surveyed, fringed, folded and pressed.

It seems a pity that the fat, easy, lazy Bokharian, and the slim, lithe, patient Hindoo, should not come to Paisley, and see how shawls are made there. To the one, shaving his camel on the plain, and the other, throwing his antique shuttle under the palm, how strange would be the noise, and the stench, and the speed, and the numbers employed, and the amount of production! To the one, it may be the work of years to furnish to the travelling merchant strips of eight inches wide, enough to make a shawl; and to the other, the production of such an article is an event in life; while here, at Paisley, if the pattern requires months, the weaving of the most genuine and venerable kind occupies only a week. We do not believe that the simple and patient Orientals will be driven out of the market by us, because there is no promise, at present, of our overtaking their excellence. We hope there will be room in the world of fashion for them and us for ever—(the "for ever" of that world). We shall not go back to their methods, and it is not very likely that they should come up to ours; so we shall probably each go on in our own way, which is what everybody likes best.

CHAPTER XII.

GUNS AND PISTOLS.

WOULD it not be a strange thing if—old as the world is, and countless as are the generations of men who have quarrelled and fought—we should now find ourselves coming round to the use of the same sort of weapons—the same in principle—as were used in the earliest warfare !

I do not mean that we are coming to fisticuffs with our enemies. It may be said, that the first arms used by fighters were the arms that grew from their own shoulders. No doubt, the first men who quarrelled about wells, or camels, or anything else, on the plains of the East, might, and probably did, knock one another down ; though the people who live in those places now are more fond of making a show of such a thing than of doing it in reality—throwing themselves about in a desperate way, and seeming dreadfully angry, but somehow producing no terrible results. Such boxing might be the first fighting ; but we are speaking now of weapons which are not bone of our bone, and flesh of our flesh. It is commonly agreed that the first weapons we know of were bows and arrows ; and the next, the sling and stone. The bow was probably used first against beasts, and turned to homicidal uses on occasion of some human quarrel. Its use in warfare, conducted in deserts or on plains, where there was room for escape, or among mountains, where archers could defend a pass below them, and where cavalry were concerned, is obvious enough ; it therefore remained in use and in favour, not only until the invention of gunpowder, but for two centuries or more after gunpowder became one of the main resources of war, even till the lighter sorts of firearms became common. The cutting and thrusting instruments of battle took their turn, when men fought hand to hand. I must think *that* the most terrible kind of fighting of any yet tried—the most terrible to human feelings (the most glorious, also, if you will), though by far less destructive of life than weapons

that kill from a distance. Men who fought in pairs, with the valour and obstinacy of a Falstaff, "a long hour by Shrewsbury clock," or with the endless devices of Homer's heroes, could not be killed off at a rate nearly approaching that which was seen at Cressy, when King Edward's archers made such a clearance of the foe in double-quick time. It was upon her archers that our Queen Elizabeth relied; though, as visitors to Dover Castle are aware, she had her own "pocket-pistols"—the sixty-pounder at Dover Castle, which carries a ball seven miles, being so called. Gunpowder had then been in use in war, on our own soil, full two centuries; yet was the bow the favourite weapon, from the sovereign to the peasant. Names of honour, or of fondness, were lavished on cannon. The Portuguese named theirs after their saints; Louis the Twelfth, of France, christened his after peers of his realm; the Emperor Charles the Fifth had a dozen choice pieces, which he called his Twelve Apostles. At Bremen, there are two named Messengers of Bad News, others are called the Thunderer, the Terrible, the Devil, and, as we have seen, the Queen's Pocket-pistol. But the yearnings of warrior hearts were still towards the bow.

These firearms were so dreadfully unwieldy!—not only the cannon, but the musket. In 1520, and onwards—when the musket was first used—the soldier who had to wield it must often have wished it had never been devised. It was all very well to rest it on the wall of a town, and fire it at leisure against the foe beneath; but when it came to such an arm being carried into the field, it might easily be found that only men of extraordinary size and strength could manage it. The gun itself was so heavy, that the soldier could not raise and point it; he must have something to rest it upon. That something was a "fork," the handle of which was shod with iron, and pointed, that it might stand firm in the ground; and, when it was found that the soldier was liable to attack while reloading, the "rest" was armed with a spike, either projecting from one prong, or thrown out from the staff by a spring—these "Swedish Feathers," as they were called, keeping the enemy from charging till the gun was ready for another explosion. This "rest" had to be carried by the musketeer, or an attendant; and the match must be looked to. The match was not heavy, but it was a rather anxious affair. It was a piece of prepared hemp, loosely twisted, and with a creeping and smouldering fire always in it. Some-

times it was carried in a tin tube, bored with holes; but oftener in the pocket, and oftenest between the head and its covering, which was the place most strongly recommended by those who had not to carry it themselves. Then there was the ammunition. A soldier was usually furnished with twelve charges of powder; and these were put into twelve little boxes, of wood, tin, or leather, which were fastened to the belt that crossed his left shoulder. There was nothing very feather-like in this load; and this is the burden that was carried by the soldiers of Charles the First and Cromwell.

There was a stronger objection to the use of these muskets than even their weight. Good aim was out of the question with them; and in this was the arrow again regretted. It was not only that firing off this musket was such slow work that an enemy—whether in siege or battle—was sure to have moved before he could be hit; it was also that it would have been difficult to hit him if he had stood stock-still to be shot. The objection belonged, and it belongs still, to muskets of every sort, however much improved in the firelock in lightness, and by the introduction of cartridge-boxes in the place of bandoleers. The difficulty is this. It is found impossible to fit any ball so precisely to any musket-barrel, as that it shall not, in passing out, rub more against one side of the barrel than the other. It thus leaves the muzzle with some inclination, however little, to the right or left, or up or down; and the impulse is sometimes in one direction, sometimes in another. Moreover, the divergence increases at a vast rate with every foot of distance. Thus, there seems to be no great use in taking aim with a musket; and the mischief done by it in war is pretty much a matter of chance. It was found that a musket properly charged, as far as the powder was concerned, but with a bullet too small for the bore, made quite noise enough, but shot nothing; light being thus thrown on the secret by which certain cunning persons successfully pretended to be invulnerable. It was also ascertained that of all rare things, the rarest was, to find a ball and a bore that so accurately fitted each other, as that the ball went where it was meant to go. It followed that the thing to be attended to was to make the bore and the ball fit each other. Out of this question arose the rifle, of which at present we are hearing so much talk. It was known that an arrow feathered in a spiral line, whirls as it flies, and goes straight and strong to its mark.

It was considered that if this quality of the arrow could be imparted to the balls of firearms, such a weapon would be the best ever devised for warfare with an enemy anywhere within sight. This has been done; not to perfection, by any means, but so far as to change essentially the character of warfare. What the method is, will appear in the course of my account of what I have just been seeing of the manufacture and proving of firearms at Birmingham;—at Birmingham, where during the long war, muskets were made at the rate of more than one in a minute, every working day. The rate of manufacture was a thousand a day of finished muskets, and two thousand a week of muskets made in parts, and sent to be finished in London and Dublin.

One day last week,* I took shelter from a shower, under the gateway of a timber-yard, which at once struck me as being unlike any other timber-yard I remembered to have seen. There were some few squared trunks of trees; but most of the wood was cut into odd-shaped blocks for seasoning. Carrying my eye down from the larger to the smaller blocks, it struck me, that these last were gun-stocks, set on end, or piled in airy heaps, to season. The value of such stocks, when brought to the gun-maker's, is from 21*s.* to 35*s.* apiece. I saw piles of them at the manufacturer's, mounting up to the value of many thousands of pounds. They are of walnut, almost exclusively; and, when possible, of English walnut. The stock of a gun must bear cutting without the slightest splintering or cracking; and walnut, grown in England, is almost the only wood which answers to this condition. It seems almost a pity that it should be so, when one thinks of the numbers of walnut-trees in the Kentucky and Canadian woods, and how the people of Damascus live upon walnuts more than on any other food; and how thousands upon thousands of the tree overshadow the Pharpar and Abana —the streams beloved by Naaman the leper. But the foreign wood is not of so good a grain as is necessary for such close fittings as those of the furniture of guns to the stocks. A little ash is used, and also maple. They are harder than the walnut, but not so tough. Perhaps more American maple might be used if the wood was not so spoiled in the felling as it is. The back-woodmen hack and hew away with their axes, without any idea of the nicety required; and thus lose a good deal of prime

* March, 1852.

custom. Beech is used only for an inferior article—for the African trade; that is, for the arms ordered by the Kaffirs, the rifles which are now picking off our soldiers. It is an inferior article from Birmingham which has slaughtered our soldiers in Kaffir wars. One wonders whether they knew the fact, and whether it aggravated the pain of their wounds and their shame. Traders on the African coast ascertain the wants of the inhabitants, in regard to firearms among other things: they send their orders to London merchants; London merchants order the article of the Birmingham manufacturers; and, after a time, if a Kaffir is disarmed, his piece is found to bear the name or mark of a Birmingham gun-maker. "We make firearms for both parties, in all wars," said a manufacturer to me yesterday. As such is and must be the fact, I like the plain avowal of it; but it is a strange-sounding truth.

The stock is brought in rough;—merely hewn into a resemblance to what it is to be. It is dressed smooth, as we see it finally; and a workman cuts in it, with anxious care, the recesses and holes where the steel "furniture" is to be inserted. Then it is "chequered" by the steady chisel of a spectacled old man, who pores over his work, dicing the wrought part of the stock into the minutest squares; at once ornamenting it, and affording a hold rougher than the varnished part. Then it is varnished and polished by the hands of girls; and then the finisher inlays it with any little plates of silver or carved steel with which it is to be adorned. So much for the stock;—a much less important affair than the barrel.

The barrel is made from stub nails, the refuse of the farriers' shops, and of "scrap,"—the refuse of the needle manufactory, where the steel is very finely tempered. A ball of "bloom" is a curious affair;—a handful of nails fused together, in preparation for being melted down for the barrel. After the steel and iron are rolled into thin plates in the rolling-mill, the plates are cut into strips; and alternate strips of iron and steel compose the bar of which the barrel is to be made. They are welded together by heat and a powerful steam-hammer; they are beaten and twisted, and melted and tortured, till they mix thoroughly; and then they are coiled in a spiral line round a "core," as closely as possible, and the edges of the coil are welded together. The outside of the barrel is afterwards carefully treated; but infinitely greater is the care required for the

inside. The outside has to be corroded by a diluted acid (after being hammered and filed as smooth as hammer and file can make it), and then polished to the brightness which attracts the eye of the youthful sportsman. The acid brings out a pattern which indicates, pretty accurately, the value of the article. The iron and steel are marbled,—veined very beautifully, when properly wrought together : and so much is this veined appearance prized, that inferior barrels are actually stained to look like the better sort. As for the inside of the barrel, it requires more care than any other part of the gun. It must be mathematically straight, and it must be of the most perfect smoothness throughout, or the ball will go in some wrong direction or other. The execution done by balls of all sorts in action is said to be only one in eighty-five ; and yet our muskets have been considered as nearly perfect as the weapon could be made. If there was any relaxation from the great conditions of the straightness and smoothness of the bore, there would be an end to all encouragement to use the gun. The price of a barrel rises from twelve shillings to six guineas ; but all will be found to be straight and smooth in the inside. What firearms could do before there was machinery to render these processes unerring, it is difficult to imagine. The finest machinery and the extremest care will not content us now. We must have rifles : and our muskets, and our cannon themselves, must be rifled.

We looked closely into this rifling. We saw a barrel grooved in the inside with two shallow grooves, running the whole length. The grooves twist round, to the extent of three-quarters of a turn in a length of three feet. On the ball is a belt, answering to the grooves, by which it fits into them. Thus, it must turn three-quarters round before it quits the barrel, and must spin in its subsequent flight, through the impulse thus received. It is the principle of the arrow, spirally feathered ; and the result is the same ;—the missile goes straight and strong to its mark. We saw a more formidable device still,—terrible as the belted ball looked under the idea of its crashing into human bones and flesh. We saw a specimen of the Minié ball, and learned how the barrel was to be fitted for it. The barrel is to have four grooves instead of two ; but shallower. The ball is hollow, and of sugar-loaf form, with three rims round its larger end. An iron capsule fits into the hollow. By the pressure of the discharge, the rims of the bullet will be forced to fit the grooves.

Half a turn in a length of three feet is enough of a twist in this case. As we are told, this ball reaches its mark at a distance of 1600 yards. On a recent occasion of trial of Birmingham rifles, on a common a few miles off, a bit of wood, seven inches in diameter, painted white, was placed against a bank, and was perforated by five balls in eight, at a distance of 800 yards. This looks like knowing what we are about; and it looks very little like the musket execution we have been satisfied with hitherto. It is no wonder that muskets are sent in large numbers to be rifled at Birmingham. We peeped into a variety of barrels, admiring the smoothness of all, and perceiving how the groove of the rifle twists round in curious perspective;—more curious in the case of two grooves, perhaps, than of many.

Then we turned to the pistols. The most ordinary pair costs six shillings; and it is probably much the same sort of harmless affair that silly lads brandish when they shoot at Queens in the streets—pistols that make novices shudder, but are not likely ever to kill anybody. From this price, we saw pistols of various dignities, mounting up to twelve guineas; or twice twelve guineas, if inlaid expensively with silver, adorned with engraving. A gentleman may contrive to spend a great deal of money on firearms, if he will order ornament enough; and we could understand the temptation, the engraving is so beautiful. Every bit of metal left visible, except the barrel, bears engravings, in the most expensive pistols and fowling-pieces. Not only graceful arabesques, but figures of game, wild beasts, hunters, &c., are beautifully executed by men who make from four to five hundred pounds a-year by their art; that is, three guineas a-week as wages, and apprentice-fees to a large amount. The lowest order of engravers earn about fifteen shillings a-week. One little landscape, engraved on a small steel plate of a fowling-piece, was admirable for spirit and finish—a tiger in a jungle, watching the approach of an elephant, bearing a howdah, with two men in it. The designer and engraver of this is one of the artists who are making a handsome income by their skill. They are so far from trying to concentrate gas-light in water-bottles, that they find gas-light too strong, and work by the light of a candle sheltered from draughts. There is a oreign gun on the premises, which might excite the emulation of the most skilful. Nobody knows where it comes from. There is a tradition of its being Persian; but this can hardly be true, the owners

think. It is inlaid with ivory wherever the wood can be made to admit the ivory ; and the arabesque patterns are beautiful. The carving, along the upper ridge of the barrel, is the wonder, however ; it could not be excelled, we were told, anywhere at this day.

Among the pistols, we saw Colt's revolver, and we compared it with the best English revolver. The advantage of Colt's over the English is, that the user can take a sight ; and the disadvantage is, that the weapon requires both hands. The American has one barrel, with a revolving chamber behind it, that does not interfere with the eye. The English consists of six (or fewer) barrels, which revolve in the act of shooting ; so that the ball issues, not from the uppermost barrel, but the next. Thus, if the user could take a sight (which he cannot), the ball would baffle his aim, by coming out on one side. But then the advantage is great—for instance, to an Irish land-agent on horseback, or to a farmer riding or driving home, and attacked by footpads—to have the left hand at liberty for bridle or rein, while the enemy is near enough to demand no very nice aim.

It was amusing to observe, in this manufactory, how small a proportion of warlike ideas was involved in the discussion of weapons. We were told that the parts made on the premises were those of the best guns :—the locks and other furniture of "the rest" were made elsewhere, and principally in villages round Birmingham. We found that "the best" meant fowling-pieces, and "the rest," weapons of war. This is natural enough. The purchaser of a gun thinks more of precision of aim in hitting a pheasant than in going out against Sikhs and Kaffirs ; or he has done so till now, when we hear on a sudden so much of rifle-practice, and skill in the use of the weapon. We were, indeed, shown some duelling pistols ; and instructed in the mild and prudent law of honour by which pistols with the hair-trigger, and on full-cock, are decreed as the only admissible weapons, because they are pretty certain to go off before the duellist can take aim ; especially if the opponents are to fire together. And, to be sure, they do pop off so easily, that my party agree that they shall certainly be our weapon when we next go out—so very little vigour is necessary for the discharge, and so strong is the probability that we shall escape hitting anything, or being hit. But now, like the manufacturer, we

turn with relish to the weapons which are not made for man-slaughter, in any form.

Here is a walking-stick. It looks heavy. Let us feel it. Heavy, indeed! What does it mean? It is a walking-stick which is in high favour with anglers, who have good opportunity for fowling. You seldom see an angler who has not a passion for remarkable birds. This stick is a disguised fowling-piece, which can lie, loaded, on the bank beside the basket, and be caught up in a moment, if water-fowl appear among the sedges, or any rare wading bird is seen carrying on a rival fishing in the stream. The piece is also curved a little, towards the stock end, so as to be convenient for carrying the basket. Then, there is a "whip-gun," the handle of which is a gun. And there is a "plantation gun," for the detection of poachers: not for their destruction, for the law no longer allows it; but just to show where they are. It is somewhat like a little steel Pan's pipe, with four holes. A spring is set: on a string being touched, the spring snaps, and up goes a blue rocket, or a detonating ball, or both. The English have lately been pointed out as well fitted for self-defence by their sporting and poaching habits; and such a spectacle as this room, with its cases of sporting weapons, makes us fancy that the English have not been untruly characterised.

Leaving this armoury, we go over the premises, on either side of the yard where the target is placed, affording an aim of forty-five yards. We see processes which we need not describe in detail, as the hardening and tempering of steel, and the grinding, polishing, and engraving of metal are much alike, in whatever manufactory they are seen. It will answer a better purpose to show what goes to the making of a gun. We saw, in the proprietor's books, that when an order for military arms arrives, twenty-four items of manufacture have to be attended to, involving thirty-two trades, at the least. A brief glance at these will give the best idea of the process.

1. The barrel, of which we have said quite enough, except that the managing of the iron and the welding are separate trades.

2. The lock. Locks, varying in cost from half-a-crown to three guineas, are made in the neighbourhood of Birmingham.

3. The stock: already discussed.

4. The furniture: the various metal parts, made by almost as many artificers.

5. The platina, and, 6. The silver, for ornamenting.

7. The rod ; and the tip, of ivory ; separate trades.

8. The ironwork.

9. The finishing : the putting the parts together.

10. The bag : to contain it.

11. The stocking : preparing the stock to receive the metal work.

12. The polishing : of the steel portions.

13. The engraving.

14. The browning : bringing out the veining of the barrel with diluted acid, and polishing with a brush of fine steel wire.

15. Ribbing : connecting the barrels of a double-barrelled gun with a rib of steel.

16. Varnishing ; the stock.

17. Percussioning ; opening the screw-holes, and connecting the barrel and lock.

18. Break-off fitting : connecting the stock with the fore part of the gun.

19. Hair-trigger.

20. Shooting : trying the weapon.

21. The bayonet.

22. The mould : for making the bullets.

23. Sights and swivels. The sight is a brass frame, about three inches by one, which lies down or stands up before the eye of the soldier, and is traversed by a slide which enables him to estimate distance in taking his aim. All our muskets are henceforth to be furnished with sights.

24. Rifling : of which enough has been said.

Add to these, the carriage of the article, and we have twenty-five items of separate charge for a gun : and the dispersion of the work among thirty-two orders of artificers, accounts for so few people having witnessed the manufacture of a gun.

We are not going home yet. There is the Government Proof House to be seen before we can feel that we have done with guns. To this place every barrel must be sent to be proved, under a penalty of ten pounds per barrel. To forge the Proof House mark is a serious offence, punishable by high fines, and imprisonment in default. At present, the proving is going on at such a rate that it requires some management to step in at an hour when the establishment is open, and escape the

explosion. Guests at a house two miles from the place are apt to announce thunder in all seasons, and all sorts of weather, till taught to distinguish the explosions of the Proof House from those of the sky. It may well be a striking sound to strangers; for no fewer than one hundred and thirty-seven gun-barrels are discharged at once. The place in which this is done is a room, partly underground, cased in iron plates, strongly bolted together. The door is iron; and towards the yard the side of the room is closed by massive iron shutters, which are fastened up before the train is fired. A great heap of black sand, a thick bank of it, faces the muzzles, and receives the balls. The barrels are laid in a row, separated by bars of lead, and all their touch-holes communicating with a train of gunpowder. The train is lighted at one end; everybody draws off from the spot, and then comes the boom and bang, which is heard, through all the iron casings, miles off. In a minute or two, when the smoke is supposed to have subsided a little, the shutters and door are opened, and the barrels are examined. Two or three in that long row may have burst, but the proportion of unsound barrels is very small. Some that have given way in the strangest manner are hung up against the walls as curiosities. One has its torn half doubled in two; one gapes with a ragged wound; one is split into ribbons; and one has its spiral strip unwound for a good part of its length. It was badly welded.

In the centre of the establishment stands the magazine, isolated and blank-looking. In one apartment, three persons are handling powder and balls—loading the barrels for proof, with a charge many times greater than they will have to carry. In another, an old man is casting bullets—with his simmering lead in the copper, and his ladle, and his bullet moulds, and the bright rows of clean balls he turns out of them. Elsewhere we see piles and faggots of musket barrels—innumerable, rusty, and ugly at present—both those that have undergone proof, and those that are waiting for it. And again, we see elsewhere the punching of the Government mark on the proved barrels. It is a strange and dismal sort of place, inhabited by civil and intelligent people, who do their best to make a stranger interested in this sidelong peep at the horrors of war.

Government thinks it right to examine bayonets too. Some military authorities say that our great reliance, in regard to self-defence at least, must be on the bayonet; and others aver

that no living soldier has seen two lines of infantry come to close quarters with bayonets, actually pushing and thrusting. Both these accounts may be true, considering how terror-striking a weapon the bayonet is, and how much of modern warfare has been vague explosion; sanguinary enough upon occasion, but not always very much so, and wholly different in character, and in its requirements from the soldier, from the hand-to-hand fighting of old times. It seems to be supposed, by some qualified judges of our case, that the increased precision of aim conferred by modern rifle operations, will necessitate a closer hand-to-hand fighting, as sharp-shooters are not good at a close combat, and are not fitted, either by training or the arms they carry, to meet a charge; while the greater their proficiency in their own style, the more eager will their adversaries be to stop their fire. However this may be, and whatever attention it behoves us to give to weapons which will be wanted in places and situations in which rifles cannot be used, it is clear that the British mind is at present animated with a desire to excel the rest of the world in the use of the rifle; and the tamest citizen cannot go through a Birmingham gun manufactory without a certain thrill of the nerves, and animation of spirits, which indicate that hearts will not be wanting to the defence of the principles of liberty, any more than a due and timely training of hand and eye, under the guidance of military discipline.

CHAPTER XIII.

BIRMINGHAM GLASS WORKS.

LITTLE children are sometimes as much puzzled as older people, about how the world got on before they and other wise moderns were born; about how men lived without the conveniences and comforts afforded by our arts of life. We are not quite so conceited now as we were a century ago, in regard to our superiority to the ancients; for, the farther we go back among ancient monuments, the more evidence we find, that some of our most recent inventions and luxuries were in common use before old Troy was founded, and before the venerable Abraham set out on his travels as a young man. About one thing, however, little children are right enough, as far as we know. They are not absurd in asking, how people, in old times, ever got on without glass windows? I knew a little child, who was fond of looking out of the window in bad weather, when there was no getting a walk: and the same child had to go a long journey in a post-chaise, day after day, before railroads were made; and how any child could have borne the being boxed up in a post-chaise so long, without a window to look out of when it was windy, and the rain-drops to watch on the pane during the showers, there is no saying. She was so far aware of this, that she asked everybody likely to answer her, what people did when there were no windows? The more she was told of wooden shutters, that were closed in bad weather, or of horn or parchment panes, which let in a dim, dirty light, but could not be seen through, the more she pitied the ancients, who knew nothing of the amusement of watching the jerking, capricious drops on a window, which seem never to be able to make up their minds which way they shall run, in their inevitable general direction from top to bottom. And what groping work, trying to read, write, or sew, behind parchment panes! and how cold, most days of the year, if the wooden shutters were opened to let in light! Something of this may be seen now, in the homes

of some people who speak our language, and otherwise live pretty much as we do—the settlers in the wilder parts of the American woods, where the glazier has not yet found his way.

When the mail drives up at night, with its load of hungry passengers, there shines the settler's dwelling—the yellow light, and the scent of broiling ham or venison, diffusing themselves at once through the square holes, which will be closed by shutters when the mail drives off. The light streams out, and strikes red upon the stems of the pines, or yellow upon those of the beeches; the fragrance streams out upon the fainting senses of travellers, and unto the nostrils of the negroes, who gather about the door, as the heavy coach jolts up to the threshold, and the chill night air rushes in upon the cooking dame and her "help," and makes the lamp flare; or, if the air be not chilly, swarms of mosquitoes invade the dwelling, and amply prove the curse of the want of glass windows. Yet this—if we leave out the mosquitoes, and aggravate the dulness and dampness of the air—was what our forefathers had to put up with, not so very long ago. Three centuries since—when Alnwick Castle was in its glory, and had all manner of conveniences that ordinary dwellings were without—the glass windows of the Duke of Northumberland were put up only when the family were at home, and taken down immediately on their departure, for fear of accident. So lately as two centuries ago, the only glazed windows in Scotch dwellings were those of the upper rooms in palaces; the lower windows being still furnished simply with wooden shutters. It is true, this was a thousand years after some of our churches and abbeys had been graced, and kept warm and dry, by the use of glass windows. At least we know that artists were brought from the Continent to glaze the windows of a church and monastery at Wearmouth, in the county of Durham, in the year 674; and the mention of the subject brings before us the beautiful painted windows that the pious put up in our cathedrals, and other churches, long before that Duke of Northumberland was born, whose "casements" were taken such care of whenever he left Alnwick.

Suppose any one had mentioned, at any of these dates, such a thing as a whole house made of glass,—what a romance the notion would have appeared! Some say, indeed, that old Chaucer did imagine such a thing; and in his "House of Fame" there is a description of a dream of a temple of glass,

with metal pillars stretching far away, and crowds of people from all regions roaming about within it: but Chaucer's readers received this as a dream. The chimera has come among us and sat down in our midst, in solid reality. Most of us can testify to it on the evidence of our own senses. But so few have visited the awful birthplace of this chimera—so few have any idea of the fire caverns, the dim vaults, the scorching air, the rush, roar, glare, and appalling handicraft from amidst which that light and graceful creation, the first Crystal Palace, came forth to lie down on the grass in Hyde Park, that I must tell a little of what I saw when I went hunting out its birthplace.

In plain words, I have been permitted to see the glass works of the Messrs. Chance, near Birmingham. In old reports of the glass-manufacture, we find Birmingham low down in the list of places in England where the process is going forward. It can never be so again. The establishment which produced the Crystal Palace must stand first in the world until something greater has been done. It is only within three centuries that the manufacture has been heard of at all in the district; and a century ago it was not known in the town of Birmingham. Messrs. Chance's works are not in the town, but at Smethwick —half-an-hour's drive from it: and, indeed, they would take up too much room in any town. The buildings occupy many acres; and the canal has to stretch out various branches among them. The number of men, women, and children employed, are twelve hundred or upwards. The schools on the estate contain from four hundred to five hundred children (not all connected with the works, however); and the consumption of coal is,—but we will excuse any reader from believing it without seeing the coal heaps,—from eight hundred to a thousand tons per week. To those of us who consider and calculate about buying ten or twenty tons of coal per year, it is a marvellous thought,—that of the coal-bill for an establishment which consumes nearly a thousand tons in a week, and in every week of the year;—say forty-seven thousand tons in a year. Visitors to the works may pass hither and thither for four or five hours together without entering the same place twice; and they may go again and again, without coming upon many traces of their former visits. The vastness of the buildings is as striking as their number; and the passage through

lofty, dim, cool, vault-like sheds, is an admirable preparation for entrance among the furnaces and kilns.

In one of these sheds we see, heaped up against the walls, masses of sulphate of soda. This portion of the material is brought from the alkali works of the same firm, not very far off. In another shed there are millstones, revolving on edge, for grinding to dust the small proportion of coal required hereafter. Elsewhere, we see heaps of chalk; and, in one shed, the greatest quantity of fine sand we ever saw in one place, except on the sea-shore. St. Helens, near Liverpool, yields very fine sand for glass-making; but this roomful is from Leighton-Buzzard, where there is a sandpit belonging to this firm. As it is sifted, wreaths of it rise, like white smoke, and curl under the rafters. Thus, we have seen the materials; and must next observe the apparatus for the cooking of them.

It is a desperately rainy day; and the roads which lead from one place to another are inches deep in black mud and puddles. Of course, the canal does not look very engaging; and the procession of boats on it, laden with coal, is about as wet as everything else. There are carts in the alleys filled with broken glass; and there are heaps of broken glass piled up against the walls. Women are at the cart's tail, or under sheds, picking the glass; that is, separating whatever is stained with iron in the process of glass-making, or otherwise coarse, to be made into coarse glass again, while the clear and fine is set apart for higher purposes. A cart-load of rubbish and sweepings is about to be shot into a canal-boat. Being drawn across our path, the cart is ordered away, but the man in charge calls out from the other side, that we must wait our turn. Shocked at such a speech, men within hearing rush to turn the horse, and spill the rubbish on the wharf, which afflicts the strange-looking carter. The poor fellow is not quite sane. One of the pleasant incidents often observable in these large establishments is the employment of poor creatures who would otherwise be sadly desolate. Where there is a will there is a way, in such large concerns, of finding something that the foolish or the partially infirm can do; and it seems as if the will was never wanting.

Up an inclined plane we go now, under heavy drops from the eaves, and take shelter in a place curiously furnished. The large floor is almost wholly occupied with great cauldrons of ash-grey clay;—very handsome cauldrons, round, smooth inside and out,

with a thick smoothly-rounded edge, and each standing on its own platform. These are the "pots" in which the "metal" is to be melted in the furnace. There are three pot makers in the establishment; each of whom makes three pots in a week. One of them is busy now, with a labourer and a girl to help him. The labourer is treading the clay. He has a watering-pot in his hand: his feet are bare, and his trousers turned up; and he tramps about on his platform with a squashing tread, which is not pleasant to us, and can hardly be more so to him. Everybody says there is no way but this of making the clay fit for pots; but we cannot help fancying that one will soon be found. The girl is at a table, with a mass of clay at her right hand. She is making it into sausage-like rolls; and her employer is building up his pot, by laying these rolls in order round the edge, and squeezing them down smooth, so as to exclude the air, and make the whole of as close a grain as possible. The bottom is no less than five inches thick, and the sides nearly as much; and five or six months are required for the drying of a pot—passing, as it does, through various degrees of heat, from that of the room in which it is built (seventy degrees when we were there) to that which is to cause its destruction. Inquiring when this catastrophe was likely to happen, we found that a pot may last any time between one day and three months. Few last so long as three months. It must be a grief to see a pot fall to pieces in one day, after having been watched in the drying for half-a-year; but there may be some little consolation in its not being wholly lost. The fragments are ground down to powder, and mixed with four times the amount of fresh clay, to make new pots. The clay is from Stourbridge. The pots hold thirty-five hundred-weights each of molten metal.

And now we must go and look at the molten metal in the pots, and see how it is treated. We find ourselves on a sort of platform, in front of six furnace mouths, which disclose such a fire within as throws us into a secret despair; despair for ourselves, lest we should lose our senses, and for the men, because it seems impossible to live through the day in such a heat. Looking into one of the openings, as well as we can from behind a screen, we see that the spectacle is one of exquisite beauty. There are the great pots, transparent with heat, and of the palest salmon colour, just distinguishable by their rims from

the fire which surrounds them. Rising on tiptoe we can see the metal—a calm surface, somewhat whiter than the pots. Turning to the men, we observe that they work over a row of troughs of water. We should like to plunge our heads in, if the water were not so dirty. It is for cooling the pipes. The workman dips one end of his pipe into the metal, taking up a portion which is of the consistence of honey. He lays his pipe across the trough, and laves it with water, while a boy blows into the end, swelling the metal into a small globe. The effect of the breath is seen in a paler central bubble, spreading itself through the red mass, and expanding it. When more metal has been taken up, enough for a sheet of glass, it is to be carried to the next shed, where there are more furnaces, and the globe is to become a cylinder. Before we follow it there, we are offered the privilege of blowing through a pipe. We empty our lungs into it, again and again, but without producing the slightest effect. Our breath goes away easily enough, but no bubble ensues; we look rather foolish, so we hasten away, to see what becomes of the globe we have seen created.

We pass a man who is hewing out, with a small hatchet, a hollow in a block of wood, large enough for the globe to be rolled about it. In the next shed each workman has one of these blocks to himself. It contains some water; and as he rolls his red-hot globe in it, a boy sprinkles more water upon it. The water seethes and bubbles, but does not reek. The heat is actually too great to permit evaporation. The globe is tossed about, and blown into again. If the pipe is raised in the air while blown into, the metal becomes cheese-shaped: if held horizontally, the form produced is a globe: if pointed downwards, the globe is elongated. This particular mass is elongated. In a moment it must be heated again. Between the range of blocks and the furnace, there are bridges across a deep chasm; a bridge to each furnace mouth. The workman runs along his particular bridge, holds his metal into the furnace, withdraws it for another toss, heats it again, with another puff through the pipe, and at last has blown a hole through the further end. The whole expands, the edges retreat, and we now see the cylinder form arranging itself. There he stands on his bridge—as half-a-dozen more men are standing on their respective bridges, swinging the cylinder at arm's length, even swinging it completely round in the maddest way; the scarlet colour at the

further end shading off beautifully into soberer reds up to the point of the pipe, where the central knot is still scarlet. When it is of the right length (that is, for the Crystal Palace panes, somewhat above forty-nine inches), the cylinder must be detached from the pipe. For this purpose it is laid upon a wooden rest; a touch of cool iron breaks off the pipe; with pincers, a strip of red-hot glass is drawn off from the end of the pipe, and laid like a ribbon round the cylinder near its closed end. After this, a gentle tap severs the closed end, and we have the cylinder complete.

While it lies cooling for a minute or two, we observe the making of a glass shade, large enough to cover a time-piece, or a statuette on its pedestal. Stopping short of blowing a hole in his *cul-de-sac*, the workman deposits his red bubble in a wooden mould which stands in the chasm below his bridge. The sides are flattened, while the top and ends remain round; and thus, amidst a little rush of sparks, the shade receives its form. The work done on these bridges is, perhaps, the most imposing to a novice of any part of the business. Some of the men have bare feet and legs; some have no clothing but drawers and a blue shirt; one or two, indeed, add the article of gold earrings, being Frenchmen. All have glistening faces; and all swing their glowing cylinders as if they were desperate or demented; a condition which we suspect we are approaching, under the pressure of the heat, and the strangeness and the hurry of incessantly getting out of the way of red-hot globes, long pipes, and whirling cylinders.

If we are to follow our own particular pane of glass, we must be off; for the cylinder is cool enough to be carried in a man's arms to the annealing, in preparation for the splitting. How this round thing is ever to grow flat, we cannot conceive. Supposing it split, the inside must have a more contracted surface than the outside. Well; we shall see. It has to be annealed, before anything more can be done to it, and for this purpose, it is carried to the kiln, where it is to be well baked, and gradually withdrawn into a lesser and lesser heat, until it will bear what else it has to undergo. As we cannot stand here for a day or two till it is done, we must transfer our attentions to another cylinder, to see how the splitting is effected.

The diamonds, for cutting, are shown to us. One is mounted as on one point of a pair of pincers, the diamond looking inwards.

The pincers are mounted upon wheels. This is for cutting off the edge of the cylinder, which is more or less jagged. The little carriage runs round under the upright cylinder, the diamond marking the glass as it travels; and a gentle tap severs the jagged end at the mark. Next, the cylinder is laid along upon a table, and another mounted diamond is run through the inside of it, from end to end, guided by a ruler. Another tap, and there is a split along the line, and the edges actually overlap. The glass is seen to be thicker than it is to remain. It will lose one fifth, or one sixth of its thickness in the grinding. A curious fact is observed here. Looking at the edge of a piece of red glass, we see that it is not red throughout —that, in fact, the glass, seen sideways, is greenish; but how this happens we cannot divine. It is done by taking up first a little of the red honey from the ruby glass-pot, and afterwards white—again and again, in proportion to the intended paleness of the hue. Thus, the red, while completely incorporated in substance with the rest, is spread over only the inner surface; and thus, when cut, the sheet can be embossed with white figures. Red or white, the cylinder is now to become a sheet of glass.

We adjourn to the mouth of a kiln, where we see that a slab of stone, moveable, forms the floor. On this slab lies a sheet of glass: and our cylinder is to be unrolled upon it, or its lower side would be made rough by contact with the stone. A little lime or chalk is sprinkled on the sheet, and then the cylinder is laid down upon it. As it heats, it begins to gape at the slit. The process is aided by the man at the kiln. He takes up a pole which has a wooden block at the end of it, thrusts in the block, and proceeds to iron out the relaxing cylinder. His block begins to smoke, and presently throws out sparks, more and more; but he perseveres until every corner is levelled; the sheet lies as flat as a pancake, and its two surfaces are equalised, in its semi-fluid condition. By observing the reflection of the fire on its surface, we see that it is rapidly melting. But it is not to melt away; so the slab is drawn away backwards, by a stout chain; and another is to take its place from one side.

We go round to see what becomes of the sheet. We find it in a somewhat cooler part of the kiln, about to be removed, that the stone slab may go back to its proper work. A boy is to effect the removal. He lifts up the sheet with a long "fork,"

as he calls it, and gently lays it on the top of a pile of predecessors, which are gradually cooling. When nearly cooled, they are to be transferred, in the iron box which now contains them, and where they are to stand on edge, separated by iron bars, to a sort of railway truck, where they stand, shut up in their box, until they have become accustomed to a natural temperature, and may be carried on to the grinding. There we must leave them, while we take a look at the treatment of two other kinds of glass—flint-glass, or crystal, and crown glass.

There is no flint now really used in the manufacture, though there was when crystal glass was called after it. Flints were, in those days, heated red-hot, and thrown into cold water, when they fell to pieces, so far as to be easily reducible to powder. It is still easier, however, to pick up the sand ready powdered at Lynn and in the Isle of Wight. Red lead is added to give density to the glass; but in what proportions we did not inquire here, having learned elsewhere that that is the one question which a stranger ought not to ask. It is the grand secret of most glasshouses. Red lead also promotes the melting of the sand; it gives a greater refracting power, and a higher lustre; and it is some protection against fracture from sudden changes of temperature. It renders the glass more ductile in the working, also; but there must not be too much of it, or the material will be too soft. In these works, the flint glass has a furnace to itself—built for it. It is melted in crucibles, or small pots, over and over again, until it is pure. It is left in the pots, and the furnace is shut up, and allowed to cool very slowly; when the pots fall away, and leave the glass in masses. A man holds each mass between his eye and the light; and, if he sees any speck, he splits the glass, and removes the offending particle. Peeping into the annealing oven, we see flat cakes of flint glass, about an inch thick; and it is with a sort of veneration that we look upon them. They have grand work to do soon. They are to bring down to us much that is too high, and up to us much that is too small, for our discovery without their help. They are to open to us the spectacle of starry systems—reach beyond reach, until our faculties can endure no more. They are to show us (what we could not believe without seeing) how every drop of water in a stagnant pond is thickly peopled with living animals, and how whole quarries and

sea-beaches are composed of the remains of dead animals. They are to separate the rays of the sun into parts for us; and to enable the aged to read and work, forgetting their years; and to repair many a mischief of imperfect sight; and to improve the beacon-lights upon our coasts, saving many a seaman from the snares of the ocean, and giving him years more of life. It is this particular glass of which all kinds of lenses are made; and when we think of what is included in this set of uses, we feel that all the wonders of windows and glass palaces are of small consequence in comparison with them.

Passing from thoughts of telescopes, microscopes, spectacles, and lighthouse lenses, we go to see some more window-glass—the very best kind—namely, Crown Glass. We cannot in the least comprehend how and why the "metal" we saw treated, becomes the great and beautiful disc that we beheld it grow into; we can only relate what the process is, as we witnessed it. It is considered the most striking and wonderful of all the spectacles of this fire-palace. The same sort of tube that we had tried to blow through, now took up the same kind of material, in the same manner as in the case of sheet glass; a globe was formed in just the same way, and rolled on a metal table. After many heatings, and much blowing, the farther side of the globe was somewhat flattened, by pressing it against an upright surface; and then a boy brought a solid rod, with a dab of the fiery honey upon it, and fixed it in the middle of the flattened side. As soon as the rod is safely fixed, the original tube is detached by a touch of cold iron, and comes away, leaving a small hole. The workman throws down his tube, takes the rod, and twirls the globe like a mop, thrusting it into the furnace very often, to prevent its cooling. It swells and spreads, and reflects the flames on its film-like surface; the hole enlarges, and the edge curls back, till the globe looks like a vast lamp-shade. As the twirling continues, the edge folds backwards, more and more, till it makes a tubular ring all round. Suddenly, this ring bursts, and its substance melts into the flattening material which it surrounds, and the whole becomes a disc, or circular plate, of from fifty to sixty inches in diameter, of the same thickness throughout, except just round the rod in the centre. The plate is carried to the annealing kiln, and there is tilted with a "fork," until it stands on its edge—the foremost of a regiment of discs, separated from each other by bars. Window-panes

are to be cut out of it, by-and-by; and the thick part, in the centre, is to glaze out-houses and the like.

The heat from these last-seen furnaces is tremendous. The men do what they can to shield themselves from it. They wear masks—gauze, fastened to the rim of an old hat. One holds a wooden screen before the face of another, and all are as quick as possible, both for their own sakes and that of the glass. Still, it is a marvel how they can bear it. We are told that it is by their working very moderately, as to time—four or five days (of seven hours) in a week. Thirty-five hours in a week are considered a fair share of work for glass-blowers; but, if a pot breaks, they must work until another is put in. Thus their time is spent between arduous toil and leisure; and this circumstance points to the expediency of furnishing them with amusement which may make their leisure harmless. The public-house used to be a terrible temptation to men so tired, heated, and thirsty; and to many it is so still. Of late, reading-rooms have been opened, which appear to be an inestimable resource. There the workman may enter at any hour during the day, and find a good fire, a table covered with newspapers and other periodicals, and some comrades reading the news. There is a good and increasing library; and the men may take the books home, and are encouraged to do so, that they may spend the evenings with their families.

We have still to see how the sheet-glass becomes smooth and polished. It has to undergo three processes more;—grinding, smoothing, and polishing. Probably the first thing every stranger does on entering the grinding-room is to burst out a-laughing,—the machinery is so grotesque;—so like being alive and full of affectations. It is patent machinery: the exclusive possession of this house. One sheet is moved about upon another with a movement like that by a human arm, scrubbing and grinding; and the repetition of this, by scores of machines in rows, produces a most ludicrous effect. The sheets have been properly squared before by being cut with a glazier's diamond. The grinding now, with sand between the sheets, takes three hours for each side; and they come out of the process opaque, but without seams or serious blemishes. They must be smoothed by hand; and this is done by women, who rub them with fine emery, and remove any remaining specks. From forty to fifty women are employed in this work

at long tables, where their action is very graceful, as they bend over their work, and use the steady and equable pressure required. The polishing is done by machinery, in a red apartment, filled with red machines, tended by red work-people. The noise here is horrible. Noise and rouge, and the tyranny of the rolling presses over the tortured sheets, bound down immovable, give an infernal aspect to the place, very unlike some things that remain to be seen.

We pass through more and more of these vast rooms, each of which would contain a house. One is full of glass shades, of all sizes, from that which would cover a life-size statue, to such as would preserve butterflies from dust. In a closet, opening out of this room, a man is plying the wheeled diamond with a weight and measure, carefully cutting the bottom of shades true and even. Here are bell-glasses for fern-houses, and some with a trough for water round the edge. Here, too, are shades made to order, for particular objects,—as a group of statuary,—where the back of the shade is wider than the front. In another room, boys are cutting little squares of glass on marked counters, with rulers and glaziers' diamonds. These are to cover miniatures and daguerreotypes; but where they can all go to—many thousands in a week—we cannot conceive. The demand from America is very great, we are told: but it seems to us, that if all American and English children were to amuse themselves with breaking the glasses of miniatures, what we now see in this room would repair the damage. If such be the quantity of glass in bits, it may be conceived what the amount must be in sheets. We pass hundreds and thousands set on edge. Handfuls of straw are thrust between the plates to keep them apart; and in rooms near there is a vast packing always going on.

The conclusion of our survey is charming. We find men, women, and boys painting and enamelling glass. A sheet is covered smooth with a white enamel, which has itself much of the character of glass. Slips of brass, with patterns cut out, are laid on the enamel, and rubbed over, so as to leave the pattern clear. It is, in fact, stencilling; only, instead of laying on paint through the holes in the pattern, the enamel beneath is rubbed off there. A woman is covering a sheet all over, except a border, with some thick black substance. This sheet is to be embossed. The border is to be corroded by an acid, and she is protecting all the rest of the surface by this covering. An

artist is painting a broad border with the blue iris—as beautiful as life—and convolvulus and poppies. The panes of lanterns are almost as astonishing for quantity as the miniature glasses; and extremely various in patterns. But we should never have done if we told what pretty things we saw; or if we entered into details about the schools; or described the life and condition of the twelve hundred work-people connected with this vast establishment.

There was a certain fountain in the centre of the Great Exhibition which need not be described, because everybody remembers it. I went to see how that fountain was made, and had the honour—a somewhat laborious one—of lifting some of its portions; a shell, a spike, an ornament or two, each of which required the whole strength of an unpractised person to raise from the ground. The weight of the fountain, before the trimming and dressing, was upwards of four tons. Mr. Osler engaged three railway carriages (passenger train) to convey it to London, he taking his own seat in a fourth. A wall was built in the centre of the transept for the foundation of this beautiful structure; and the building up was done slowly and carefully. When the Queen and Prince Albert walked round the screen which surrounded the work which Mr. Osler was superintending within, they could not have imagined—for none but the artificer could—what would be the beauty of this transparent shaft, with its streams of water falling like a veil around it, when the slanting sunlight from the roof touched it, and sent thousands of gleams and sparkles through it. It could be, and it was, removed in one night; but many were the anxious nights and weary days which passed over the making of it. If the Messrs. Osler could have devoted their works and their people wholly to the making of this fountain, it would have been pleasant enough; but it had to be done in addition to their ordinary business; and desperately hard work it was.

We saw how some of its parts were made, in seeing how ornamental glass—vases, pitchers, decanters, chandeliers, and many fancy articles, come out of the hands of the workmen. Of the earlier processes of the art I need not speak: but there is one circumstance which ought to be noted—the form of the great chimney of the glass-house. Mr. Osler knows what he is about in matters of science; and he perceived that the preju-

dice in favour of a chimney with a narrow top was a mistake. He determined to build his the same width, inside, all the way up. Perhaps, if he had to do it over again, he might even make it wider at the top, as the heated air requires plenty of room for expansion and escape. Some people thought the plan a very odd one, and said there could be no proper draught. Everything else about this carefully planned glass-house was capital; but who ever heard of such a chimney for a glass-house? There it is, however, resting upon strong pillars; and with such a draught, that at times the business is to moderate it.

Passing the mixing rooms, the pots, the melting, the blowing, we give a moment's attention to the method of forming a decanter or pitcher. The workman sits in a "chair"—a bench with two long arms to it—and rolls his iron pipe or tube, with the left hand on these arms, to keep the soft glass in shape, while with the right he applies a pair of tongs to fashioning the neck of his decanter, or claret-jug, or whatever it may be. It is a pretty sight; and so are the long vistas of glass, in the kiln first, and then in the "lear"—the milder oven, in which the annealing of the smaller articles is done. We leave the glass-house, and travel to the manufactory, where we see how the drops for chandeliers, and all manner of arms and branches, are made, and how the cuttings, and polishings, and putting together are done. Here is a deaf and dumb man casting drops and "spangles," as small square drops are called. Why not? Hearing and speech are not required for this work; and there he sits, diligent and still. One wonders what he thinks about all the while. He tosses a bit of coal into his little furnace, every minute or so. The coal is on his right hand, and on his left are the "lumps" of flint-glass he is to use. He pushes forward one at a time into the heat before the fire, that it may be warming for its work. With his left hand he holds the rod, on the end of which is the "lump" he is using; and in his right is the mould in which the drops are to be formed. He melts his lump, and lays a yellow trail into his mould, and shuts down the lid upon it. Out comes the drop, three-sided, rough, and attached to the lump. He knocks it off, pushes it on one side, and begins another. When he comes near the end of his lump, he makes smaller drops and "spangles," until only enough remains to fasten on the new

lump which has been roasting in preparation. The place is lighted only by the furnace fires. The glare is intense to the workman on his stool; and his sight would suffer if the daylight were mixed with it: so he darkens the window.

We find women at work in the next place we enter. Wheels are whirling and whizzing, and the drops are first ground smooth, and then polished. The most wonderful thing is, the skill with which the facets of a drop or spangle are ground by the eye. Ridges meet at the top; planes slope away to the side, with a regularity truly mysterious to the novice. Out come the drops, smooth in their edges, polished in their sides, and with the obtuse angles at their ends all without a fault. It is a wonderful education of eye and touch.

In the moulding of the pendants, holes were made, by wires standing up in the mould. Hooks and eyes have to be inserted in these holes, and in the plates to which they are to hang. Girls insert these, and put the parts together.

There is a long and peopled apartment, called the metal-room, where the metallic parts of chandeliers, &c. are prepared. But more interesting, because more unlike other manufactures, is the glass-cutting, which proceeds in a vast right-angled room, where whole rows of iron mills, as they are called, are at work. Above each wheel or "mill" is a funnel, which drops sand and water on the edge of the wheel. It is, in fact, the sand which cuts the pattern—the mill being the means of applying it. Down dribbles and drips the sand; whizz goes the wheel; the glass held to the edge vibrates and seethes; and, after being dipped in the tub of water at each man's elbow, it shows the desired form and pattern; the curve, or the facet; the star, or the Greek border, or the flower and leaf garland. To save some kinds of articles which are slender, or much curved, from too strong a vibration, clay is plastered into hollows or angles. Some of the work is, necessarily, "underhand," though everybody prefers the "overhand" process: that is, it is more convenient and easy, and catches more sand, to hold the article to the upper part of the wheel than to the under. In the one case, the glass is thrust against the wheel; in the other, it is lifted against it, which involves the holding the whole weight of the article, while much less sand finds its way to the right place. The work is both laborious and anxious. One article may require a succession of mills; and it may be spoiled in any one

stage of the manufacture. Here is the anxiety of the case. In metal-working, all is pretty secure when once the model is obtained, and the first casting is found to succeed. In the glass manufacture, each article must stand on its own merits, and the thousandth requires as much pains as the first. Those pains have their reward, however, as some of our readers may be aware, if they have overheard remarks on the collection of graceful and brilliant glass-ware, in the Messrs. Osler's rooms in London. Another kind of tribute arrived from a very distant place. The Messrs. Osler sent to Egypt, by order of the late Viceroy, two pairs of crystal glass candelabra, ten feet high. The Viceroy was so delighted with them, that he sent them—who would guess where?—to the tomb of the Prophet, at Medina; where, as his Highness's Secretary observed, they will be the admiration of hundreds of thousands of pilgrim worshippers. It is a singular destination of Birmingham products—to keep watch over the pair of genii, who are themselves keeping watch over the Prophet in his tomb; reminding him of his good and evil deeds, and balancing the account which his resurrection is to settle. How very far have they travelled over sea and land, to stand within those iron rails, and under the charge of the forty eunuchs who keep guard there! It is a symbolic incident, indicating the spread of British arts among the remotest regions, and the strangest races and faiths on earth.

CHAPTER XIV.

WHAT THERE IS IN A BUTTON.

It is a serious thing to attempt to learn about buttons at Birmingham. What buttons are we thinking of? we are asked, if we venture an inquiry. Do we want to see gilt, or silvered buttons? or electro-plated? or silk, or Florentine buttons? or mother-of-pearl, or steel, or wood, or bone, or horn buttons? All these are made here. Before we have made up our minds what to see first, we hear somebody say that button-dies are among the highest objects of the die-sinkers' and medallists' art. This not only suddenly raises our estimate of buttons, but decides us to follow the production of the button from the earliest stage,—if Messrs. Allen and Moore will kindly permit us to see what their artists and workmen are doing. This is not the first time that we have had a hankering after this spectacle. When we saw electro-plating—when we saw the making of pencil-cases and trinkets—we observed and handled many steel dies, and wondered how they were made. Now we are to learn.

It was not a little surprising to see, in other manufactories, ranges of shelves, or pigeon-holes, covering whole sides of rooms, filled with dies, worth from ten shillings to twenty-four shillings each. It was rather sad, too, to be told that a large proportion of these might never again be of any use—the fashion of a few weeks, or even days, having passed away. Much more surprising is the sight of the dies arranged along the shelves of the makers of this curious article. Messrs. Allen and Moore have made three thousand dies within the last three years: and upon each one, what thought has been spent—what ingenuity—what knowledge—what taste—what skill of eye and hand! A single die will occupy one man a month, with all his faculties in exercise; while another, with more natural aptitude, or courage, or experience, will do the same thing in two or three days. To think of a thousand in a year, produced with this effort and

ability, and then to remember that button-dies are among the highest productions of the art, cannot but elevate our respect for buttons very remarkably.

First, what is this steel die, which is so much heard of, and so seldom seen, except by those who go to seek it? It is a block of metal, round or square, as may happen, about four or five inches in height, and rather smaller at the top than the bottom. It consists of a piece of soft steel in the centre, surrounded by iron, to prevent its cracking by expansion, under the treatment it is to be subjected to. The bar of iron is wound round the steel when hot, and welded to it; and thus it comes from the forge, rough and dirty. The steel surface at the top is then polished; and if it is intended for a medal, it is turned in the lathe. The artist sketches his subject upon it, from the drawing before him, with a pencil. When he has satisfied himself with his drawing, he begins to engrave. He rests his graver (a sharp point of steel) across another graver, and cuts away—very gently; for it is always easy to cut away more, but impossible to restore the minutest chip when the stroke has gone too deep. He keeps beside him a lump of red clay, which he now and then lays upon his work, knocking it down smartly through a frame, which keeps it in shape: and thus he has presented to him his work in relief, and can judge of its effect so far. Little brushes in frames are also at hand, wherewith to brush away particles of steel, oil, and all dirt. When the engraving is done, the most anxious process of all succeeds. The steel must be hardened. All has been done that could be done to prevent fracture by the original surrounding of the steel with iron; but cracks will happen sometimes, and they spoil the work completely. The block is heated to a crimson heat—not to "a scaly heat," but a more moderate degree; and then a dash of cold water hardens the steel. This dash of cold water is the nervous part of the business. In medals representing heads, there is usually only a narrow line left between the top of the concave head and the edge of the steel; and this is where the fracture is to be first looked for. When the Jenny Lind medal was to be struck at this house, no less than four dies were spoiled in succession. It was vexatious; but the artists went to work again, and succeeded. The Queen's head is less mischievous than Jenny Lind's, as the shallow work about the top of the crown intervenes between the deeper concavity and the rim. If the steel

stands the hardening, the die is ready for use, except only that the plain surface must be well polished before the medal or button is struck.

Before we go to the medal press, we must look round this room a little. Ranged on shelves, and suspended from nails, are casts of limbs, of whole figures, of draperies, of foliage,—of everything that is pretty. This art comes next to that of the sculptor; and it requires much of the same training. When partially-draped figures are to be represented, the artist engraves the naked figure first, and the drapery afterwards; and to do this well, he must have the sculptor's knowledge of anatomy. He must be familiar with the best works of art, because something of a classical air is required in such an article as a medal. The personifications of virtues, arts, sciences,—of all abstract conceptions which can thus be presented,—must be of the old classical types, or in close harmony with them. And then, how much else is required! Think of the skill in perspective required to engrave the Crystal Palace in the space of two or three inches! Think of the architectural drawing that an artist must be capable of who engraves public buildings by the score;—endowed grammar-schools, old castles, noblemen's seats, market-houses, and so forth! Think of the skill in animal drawing required for the whole series of sporting buttons—from the red deer to the snipe! Think of the varieties of horses and dogs, besides the game! For crest buttons, the lions and other animals are odd and untrue enough; but, out of the range of heraldry, all must be perfect pictures. And then the word "pictures" reminds us of the exquisite copies of paintings which the die-sinker makes. Here is the "Christus Consolator" of Scheffer reproduced, with admirable spirit and fidelity, within a space so small, that no justice can be done to the work unless it is viewed through a magnifying glass.

So much for the execution. We have also not a little curiosity about the designing. The greater number of the designs are sent hither to be executed;—coats of arms; livery buttons; club buttons; service buttons;—buttons for this or that hunt; foreign buttons—the Spanish one sort, the French another. Sometimes a suggestion comes, or a rough sketch, which the artist has to work out. But much is originated on the premises. There is a venerable man living at Birmingham, who has seen four generations, and watched their progress in art; and he it

is, we are told,—Mr. Lines, who saw thirty years of the last century, who has "furnished" (that is, discovered and trained) more designers than anybody else. It must be pleasant to him to see what Birmingham has arrived at since lamps were made with a leopard's foot at the bottom, expanding into a leaf at the top, and so on, through a narrow circle of grotesque absurdities. Now, one cannot enter a manufactory, or pass along the streets of this wonderful town, without being impressed and gratified by the affluence of beauty, with good sense at the bottom of it, which everywhere abounds: and, to one who has helped on the change, as Mr. Lines has done, the gratification ought to be something enviable.

The variety of dies is amusing enough. Here is a prize medal for the Queen's College at Cork: on one side, the Queen's head, of course; on the other, Science—a kneeling figure, feeding a lamp; very pretty. Next, we see General Tom Thumb;—his mighty self on one side, and his carriage on the other. This medal he bought here at a penny a-piece; and he sold it again, with a kiss into the bargain, to an admiring female world, at the low price of a shilling. Then we have the Duke of Cambridge, and the Governesses' Institution; and Prince Albert, and the Crystal Palace; and on the same shelf, the late Archbishop of Paris, on the barricade; and, again, the medal of the Eisteddfod—the eagle among clouds, above which rises the mountain peak: on the other side, Cardiff Castle; and for the border, the leek. But we must not linger among these dies, or I shall fill pages with accounts of whom and what we saw there;—the Peels and the Louis Napoleons; the Schillers and the Tom Thumbs: the private school and public market medals; royal families, free trade, charities, public solemnities, and private vanities, out of number. I will mention only one more fact in this connexion. We saw a broken medal press—a press which was worth one hundred pounds, and which broke under the strain of striking off seventy thousand medals for the school-children who welcomed the Queen to Manchester last autumn. Yes, there is another fact that I must give. Many thousands of "national boxes" are required for exportation, especially to Germany. These boxes contain four counters, intended for the whist table. These counters are little medals, containing the portraits of the Queen, of Prince Albert, of the Prince of Wales, and of the other royal children. The Germans

decline all invitations to suggest other subjects. They prefer these, which are interesting to all, and which can cause no jealousy among the various states of Germany. So these medals are struck everlastingly.

The medal press is partly sunk in the earth, to avoid the shock and vibration which would take place above ground, and injure the impression from the die. Its weight is three tons; the screw and wheel alone weighing fifteen hundredweight. The screw is of an extraordinary size, being six inches in diameter. One die is fixed to the block, which rises from the ground; and the other is fastened to the end of the screw, which is to meet it from above. Of course the medal must lie between them. This medal, called a "blank," is (if not of gold, silver, or copper) of pure tin, cut out by one machine, cleaned and polished by another, and now brought here to be stamped by a third, and the greatest. This "blank" is laid on the lower die, and kept in its place, and preserved from expansion, when struck, by the collar, a stout circle of metal which embraces the die and blank. As the heavy horizontal wheel at the top revolves, the screw descends; so two or three men whirl the wheel round, with all their force; down goes the screw, with its die at its lower end, and stamps smartly upon the blank. A second stroke is given, and the impression is made. The edges are rough; but they are trimmed off in a lathe, and then the medal is finished. Button blanks are stamped in a smaller machine; some on these premises, but many in the manufactories of the button-makers. To those manufactories we must now pass on.

When little children are shown old portraits, they are pretty sure to notice the large buttons on the coats of our forefathers. Those buttons were, no doubt, made at Birmingham; for few were, in old days, made anywhere else in the kingdom. Those buttons were covered by women, and by the slow process of the needle. Women and girls sat round tables, in a cosy way, having no machinery to manage; and there was no clatter, or grinding, or stamping of machinery to prevent their gossipping as much as they liked. Before the workwomen lay moulds of horn or wood, of various shapes, but most commonly round, and always with a hole in the middle. These moulds were covered with gold or silver thread, or with sewing silk, by means of the needle. One would like to know how many women were required to supply, at this rate, the tailors who clothed the gentlemen of

England? At last, the tailors made quicker work, by covering the moulds with the material of the dress. So obvious a convenience and saving as this might have been expected to take its place, as a matter of course, among new arrangements; but there were plenty of people who thought they could put down such buttons by applying to Parliament. A doleful petition was sent up, showing how needle-wrought buttons had been again and again protected by Parliament, and requesting the interposition of the Legislature once more against the tailoring practice of covering moulds with the same material as the coat or other dress. What would the petitioners have said, if they had been told that, in a century or so, one establishment would use metal for the manufacture of buttons to the amount of thirty-seven tons, six hundred-weight, two quarters, and one pound weight in one year! Yet this is actually the state of things now in Birmingham. And this is exclusive of the sort of button which, a few years ago, we should have called the commonest—the familiar gilt button, flat and plain.

As for the variety of kinds, William Hutton wrote about it as being great in his day; but it was nothing to what it is now. He says, "We well remember the long coats of our grandfathers, covered with half a gross of high-tops; and the cloaks of our grandmothers, ornamented with a horn button, nearly the size of a crown-piece, a watch, or John-apple, curiously wrought, as having passed through the Birmingham press. Though the common round button keeps in with the pace of the day, yet we sometimes find the oval, the square, the pea, the pyramid, flash into existence. In some branches of traffic the wearer calls loudly for new fashions; but in this, fashions tread upon each other, and crowd upon the wearer." We do not see the square at present; but the others, with a long list of new devices, are still familiar to us.

Some grandmother, who reads this, may remember the days when she bought horn button-moulds by the string, to be covered at home. Some middle-aged ladies may remember the anxieties of the first attempts to cover such moulds—one of the most important lessons given to the infant needle-woman. How many stitches went to the business of covering one mould! what coaxing to stretch the cover smooth! what danger of ravelling out at one point or another! what ruin if the thread broke! what deep stitches were necessary to make all secure!

And now, by two turns of a handle, the covering is done to such perfection, that the button will last twice as long as of old, and dozens can be covered in a minute by one woman. The one house I have mentioned sends out two thousand gross of shirt buttons per week! the gross consisting of twelve dozens.

"But what of metal?" the reader may ask. "Have shirt buttons anything to do with metal? except, indeed, the wire rim of those shirt buttons which are covered with thread, and which wear out in no time? When you talk of thirty-seven tons of metal, do you include wire?" No, I do not. I speak of sheet iron, and copper, and brass, used to make shirt-buttons, and silk, and satin, and acorn, and sugar-loaf, and waistcoat buttons, and many more, besides those which show themselves to be metal.

Here are long rooms, large rooms, many rooms, devoted to the making an article so small as to be a very name for nothingness. "I don't care a button," we say: but, little as a button may be worth to us, one single specimen may be worth to the manufacturer long days of toil and nights of care, and the gain or loss of thousands of pounds. We can the better believe it for having gone through those rooms. There we see range beyond range of machines,—the punching, drilling, stamping machines, the polishing wheels, and all the bright and compact, and never-tiring apparatus which is so familiar a spectacle in Birmingham work-rooms. We see hundreds of women, scores of children, and a few men; and piles of the most desultory material that can be found anywhere, one would think—metal plates, coarse brown pasteboard, Irish linen, silk fringes, and figured silks of many colours and patterns.

First, rows of women sit, each at her machine, with its handle in her right hand, and a sheet of thin iron, brass, or copper in the other. Shifting the sheet, she punches out circles many times faster than the cook cuts out shapes from a sheet of pastry. The number cut out and pushed aside in a minute is beyond belief to those who have not seen it done. By the same method, the rough pasteboard is cut; and linen (double, coarse and fine) for shirt buttons; and silk and satin;—in short, all the round parts of all buttons. The remains are sold—to the foundries, and the ragman, and the paper-makers. Very young children gather up the cut circles. Little boys, "just out of the cradle," range the pasteboard circles, and pack them close, on edge, in boxes or trays; and girls, as young, arrange on a

table the linen circles, small and larger. Meantime, the machines are busily at work. Some are punching out the middle of the round bits of iron, or copper, or pasteboard, to allow the cloth or linen within to protrude, so as to be laid hold of by the needle which is to sew on the button. This makes the back or underpart of the button. Another machine wraps the metal top of the button in cloth, turns down the edges, fixes in the pasteboard mould, and the prepared back, and closes all the rims, so as to complete the putting together of the five parts that compose the common Florentine button which may be seen on any gentleman's coat. It is truly a wonderful and beautiful apparatus; but its operation cannot well be described to those who have not seen it. Black satin waistcoat buttons, and flat and conical buttons covered with figured silks, are composed of similar parts, and stuck together, with all edges turned in, by the same curious process. Shirt-buttons are nearly of the same make; but, instead of two pieces of metal, for the back and front, there is only one; and that is a rim, with both edges turned down, so as to leave a hollow for the reception of the edges of all the three pieces of linen which cover the button. A piece of fine linen, lined with a piece very stout and coarse, covers the visible part of the button, and goes over the rim. A piece of middling quality is laid on behind: and, by the machine, all the edges are shut fast into the hollow of the rim —the edges of which are, by the same movement, closed down nicely upon their contents, leaving the button so round, smooth, compact, and complete, that it is as great a mystery where the edges are all put away, as how the apple gets into the dumpling. No one would guess how neat the inside of the button is, that did not see it made. The rims are silvered as carefully as if they were for show. When struck from the brass or copper, and bent, they are carried to the yard, where an earnest elderly man, dressed in an odd suit of green baize, stands at a stone table, with a bucket of stone ware, pierced with holes in his hand, and troughs before him, containing—the first, diluted aquafortis, and the others, water. The bucket, half full of button rims, is dipped in the aquafortis bath, well shaken there, and then passed through successive waterings, finishing at the pump. The rims, now clean and bright, must be silvered. They are shaken and boulted (as a miller would say), covered with a mysterious silvering powder, the constitution of which we were

not to inquire into; and out they come, as white as so many teaspoons. Thus it is, too, with the brace-buttons, on which the machines are at work all this time. Each has to be pierced with four holes; necessary, as we all know, for sewing on buttons which have to bear such a strain as these have. This piercing with four holes can be inflicted, by one woman, on fifteen gross per hour. The forming the little cup in the middle of the button, where the holes are, in order to raise the rim of the button from the surface of the dress, is called counter-sinking; and that process has a machine to itself; one of the long row of little engines which look almost alike, but which discharge various offices in this manufacture, at once so small and so great. These buttons go down to the burnisher's department in company with some which make a prodigious show at a very small cost—the stage ornaments which are professionally called "spangles." Let no novice suppose that these are the little scales of excessively thin metal which are called spangles on doll's dresses and our grandmothers' embroidered shoes. These stage spangles are nearly an inch in diameter, cut out in the middle, and bent into a rim to reflect light the better. In the Hippodrome they cover the boddices of princesses, and stud the trappings of horses at a tournament; and in stage processions they make up a great part of the glitter. Of these, 25,000 gross in a year are sent out by this house alone; a fact which gives an overwhelming impression of the amount of stage decoration which must always be exhibiting itself in England.

In our opinion, it was prettier to see these "spangles" burnished here than glittering on the stage; and, certainly, the brace-buttons we had been tracing out would never more be so admired as when they were brightening up at the wheel. The burnisher works his lathe with a treadle. The stone he uses is a sort of blood-stone, found in Derbyshire, which lasts a lifetime in use. Each button is picked up and applied: a pleasant twanging, vibrating tune—very like a Jew's harp—comes from the flying wheel; the button is dropped—polished in half a second; and another is in its place, almost before the eye can follow. Six or eight gross can thus be burnished in an hour by one workman. If the brace-buttons are to have rims, or to be milled, or in any way ornamented, now is the time; and here are the lathes in which it is done. The workmen need to have good heads, as well as practised hands; for, even in an article

like this, society is full of fancies, and there may be a hundred fashions in a very short time ;—a new one almost every week. These harping lathes, in a row, about their clean and rapid work, are perhaps the prettiest part of the whole show. At the further end of the apartment sits a woman with heaps of buttons and spangles, and piles of square pieces of paper before ber. With nimble fingers she ranges the finished articles in rows of half-a-dozen or more, folds in each row, and makes up her packets as fast, probably, as human hands can do it. But this is a sort of work which one supposes will be done by machinery some day.

Still, all this while, the long rows of machines on the counters, above and below, and on either hand, are at work, cutting, piercing, stamping, counter-sinking. We must go and see more of their work. Here is one shaping in copper the nut of the acorn : another is shaping the cup. Disks of various degrees of concavity, sugar-loaves, and many other shapes, are dropping by thousands from the machines into the troughs below. And here is the covering or pressing machine again at work—here covering the nut of the acorn with green satin, and there casing the cup with green Florentine ; and finally fitting and fastening them together, so that no ripening and loosening touch of time shall, as in the case of the natural acorn, cause them to drop apart. This exquisite machinery was invented about eleven years ago, and is now patented by the Messrs. Elliott, in whose premises we are becoming acquainted with it.

We have fastened upon the acorn button, because it is the prettiest ; and just now, before everybody's eyes, in shop, street, or drawing-room : but the varieties of dress-button are endless. Some carry a fringe ; and the fringes come from Coventry. To ornament others, the best skill of Spitalfields is put forth. In a corner of an up-stairs room there is a pile of rich silks and other fabrics, which seem to be out of place in a button manufactory, till we observe that they are woven expressly for the covering of buttons. They have sprigs or circles, at regular distances. One woman passes the piece under a machine, which chalks out each sprig ; and the next machine stamps out the chalked bit. This, again, is women's and children's work ; and we find, on inquiry, that of the three or four hundred people employed on these premises, nearly all are women and children. We saw few men employed, except in the silvering and burnishing departments.

The most interesting and beautiful kind of button of all, however, depends upon the skill of men employed elsewhere—the die-sinkers, of whom we have already given some news. There is a series of stamped buttons, gilt or silvered, which one may go and see, as one would so many pictures ;—that sort of badge called sporting buttons. Members of a hunt, or of any sporting association, distinguish themselves by wearing these pretty miniature pictures ; here, a covey of partridges, with almost every feather indicated in the high finish ;—there, a hound clearing a hedge ;—now, a group of huntsman and pack ; —and again, a fishing-net meshing the prey ; or the listening stag or bounding fawn. In these small specimens of art, the details are as curious, the composition as skilful, the life of the living as vivid, and the aspect of the dead as faithful, as if the designer were busy on a wine-cup for a king, instead of a button for a sporting jacket. Here there must be a dead ground ; there a touch of burnish ; here a plain ground ; there a plaided or radiating one ; but everywhere the most perfect finish that talent and care can give. There is surely something charming in seeing the smallest things done so thoroughly, as if to remind the careless, that whatever is worth doing at all, is worth doing well. We no longer wonder as we did, that the button branch is one of the most advanced in the business of the die-sinker and medallist.

Pearl buttons have their style of "ornamentation" too ; but the die-sinker and professional designer have nothing to do with it. There is something more in the ornamenting of pearl buttons than the delicate work done with the turning tools ;—the circles, and stars, and dots, and exquisite milled edges, with which our common pearl buttons are graced. At the manufactory we are shown drawers full of patterns ; and among those in favour with working men are some with pearl centres, on which are carved, with curious skill, various devices ;—a dog, or a bird, or some such pretty thing. These designs are notions of the workmen's own.

The pearl button manufacture is the prettiest, after all ;—the prettiest of that family of production. Perhaps the charm is in the material,—the broad shell, which we know to have been, a while ago, at the bottom of the Indian seas. The rainbow light, which gleams from the surface, seems to show to us the picture of where this shell once was, and what was done

about it. This is not from the Gulf of Mexico—this shell. Many come from thence; but this is of too good a quality for those western seas. Nor is it from Manilla, though the Manilla shells are very fine. This comes from Singapore, and is of the best quality. To get it, what toil and pains, what hopes and fears, what enterprises and calculations have been undertaken and undergone! What boatsful of barbarians went out, amidst the muttering and chanting of charms, to the diving for the shells for our handling! How gently were they paddled over those deep clear seas, where the moon shines with a golden light, and sends her rays far down into the green depths which the diver is about to intrude upon! As the land-breeze came from stirring the forest, and breathing over the rice-grounds, to waft the boats out to sea, the divers prepared for their plunge, each slinging his foot on the heavy stone which was to carry him down, nine fathoms deep, to where his prey was reposing below. Then there was the plunge, and the wrenching of the shells from the rocks, and putting them into the pouch at the waist; and the ascent, amidst a vast pressure of water, causing the head to seethe and roar, and the ears to ache, and the imprisoned breath to convulse the frame; and then there was the fear of sharks, and the dread spectacle of wriggling and shooting fishes, and who knows what other sights! And then, the breath hastily snatched; and the fearful plunge to be made again! And then must have followed the sale to the Singapore merchant; and the packing and shipping to England; and the laying up in London, to gather an enormous price—the article being bought up by a few rich merchants—and the journey to Birmingham, where the finest part of the shell is to be kept for buttons, and the coarser part sent on to Sheffield, to make the handles of knives, paper-cutters, and the like.

Through such adventures has this broad shell gone, which we now hold in our hand. In the middle is the seamed, imperfect part, from which the fish was torn. From that centre, all round to the thin edge, is the fine part which is to be cut into buttons. From that centre back to the joint is the ridgy portion which, with its knots, will serve for knife-handles. There is, perhaps, no harder substance known; and strong must be the machine that will cut it. It is caught and held with an iron grip, while the tubular saw cuts it in circles, a quarter of an inch (or more) thick. Some of the circles

are an inch and a half in diameter; others as small as the tiny buttons seen on baby-clothes. They are, one by one, clutched by a sort of pincers, and held against a revolving cylinder, to be polished with sand and oil. Then, each is fixed on a lathe, and turned, and smoothed; adorned with concentric rings, or with stars, or leaves, or dots; and then corded or milled at the edges, with streaks almost too fine to be seen by the naked eye. The figures in the middle are to mask the holes by which the button is to be sewn on. In a small depression, in the centre of the pattern, the holes are drilled by a sharp hard point which pierces the shell. The edges of the holes are sharp, as housewives well know. But for the cutting of the thread, in course of time, by these edges, pearl buttons would wear for ever. Now and then, the thin pierced bit in the middle breaks out; but, much oftener, the button is lost by the cutting of the thread. They last so long, however, as to make us wonder how there can be any need of the vast numbers that are made. Birmingham supplies almost the whole world. A very few are made at Sheffield; and that is all. In the United States, where the merchants can get almost any quantity of the shell, from their great trade with Manilla and Singapore, the buttons are not made. The Americans buy an incredible quantity from Birmingham. Many thousands of persons in this town are employed in the business; and one house alone sends out two thousand gross per week, and very steadily; for fashion has little or nothing to do with pearl buttons. The demand is steady and increasing; and it would increase much faster but for the restriction in the quantity of the material. The profit made by the manufacturer is extremely small—so dear as the shell is. The Singapore shell was sold not many years ago at sixty-five pounds per ton; now it cannot be had under one hundred and twenty-two pounds ten shillings per ton. The manufacturer complains of monopoly. If this be the cause of the dearness, the evil will, in the nature of things, be lessened before long. Time will show whether the shells are becoming exhausted, like the furs of polar countries. We ventured to suggest while looking round at the pile of shell fragments, and the heaps of white dust that accumulate under the lathes, that it seems a pity to waste all this refuse, seeing how valuable a manure it would make, if mixed with bone-dust or guano. The reply was, that it is im-

possible to crush a substance so hard ; that there is no machine which will reduce these fragments to powder. If so, some solvent will probably be soon found, which will act like diluted sulphuric acid upon bones. While we were discussing this matter, and I was begging a pint or quart of the powder from under the lathes, to try a small agricultural experiment with, a workman mentioned that when he worked at Sheffield, a neighbouring farmer used to come, at any time, and at any inconvenience to himself, to purchase shell-powder, when allowed to fetch it, declaring it to be inestimable as a manure. In a place like Birmingham, where the sweepings and scrapings of the floors of manufactories are sold for the sake of the metal dust that may have fallen, we venture to predict that such heaps and masses of shell fragments as we saw, will not long be cast away as useless rubbish. If one house alone could sell two hundred and fifty tons of shell-refuse per year, what a quantity of wheat and roots might be produced from under the counters, as it were, of Birmingham workshops! And we were told that such a quantity would certainly be afforded. Such a sale may, in time, become some set-off against the extreme dearness of the imported shell. While the smallest pearl button goes through nine or ten pairs of hands before it is complete, the piece from which it is cut may hereafter be simmering in some dissolving acid ; and sinking into the ground, and rising again, soft and green, as the blade of wheat, or swelling into the bulb of the turnip. Will not some one try ?

While this dust was bubbling out from under the turning-tools, and flying about before it settled, we had misgivings about the lungs of the workmen. But it seems there was no need. The workman who was exhibiting his art in the dusty place, told us he had worked thus for nine-and-twenty years, and had enjoyed capital health ; and truly, he looked stout and comfortable enough ; and we saw no signs of ill-health among the whole number employed. The proprietor cares for them—for their health, their understandings, their feelings, and their fortunes ; and he seems to be repaid by the spectacle of their welfare.

The white pearl buttons are not the only ones made of shells from the Eastern seas. There is a sort called black, which to our eyes looked quite as pretty, gleaming as it did with green and lilac colours, when moved in the light. This kind of shell

comes from the islands of the Pacific. It is plentiful round Tahiti and Hawaii (as we now call Otaheite and Owhyhee). It is much worn by working men, in the larger forms of buttons. We remember to have often seen it; but never to have asked what it was.

The subsidiary concerns of these large manufactories strike us by their importance, when on the spot, though we take no heed to them in our daily life. When the housewife has taken into use the last of a strip of pearl buttons, she probably gives to the children the bit of gay foil on which they were tacked without ever thinking where it came from, or how it happened to be there. The importation of this foil is a branch of trade with France. We cannot compete with the French in the manufacture of it. When we saw it in bundles—gay with all gaudy hues—we found it was an expensive article, adding notably to the cost of the buttons, though its sole use is to set off their translucent quality, to make them more tempting to the eye.

We saw a woman, in her own home, surrounded by her children, tacking the buttons on their stiff paper, for sale. There was not foil in this case between the stiff paper and the buttons, but a brilliant blue paper, which looked almost as well. This woman sews forty gross in a day. She could formerly, by excessive diligence, sew fifty or sixty gross; but forty is her number now—and a large number it is, considering that each button has to be picked up from the heap before her, ranged in its row, and tacked with two stitches.

Here I had better stop, though I have not told half that might be related on the subject of buttons. It is wonderful,—is it not?—that on that small pivot turns the fortune of such multitudes of men, women, and children, in so many parts of the world; that such industry, and so many fine faculties, should be brought out and exercised by so small a thing as the Button.

CHAPTER XV.

TRIUMPHANT CARRIAGES.

After much consideration, some people have come to the conclusion that there is less wear of shoe-leather in Ireland than in any Christian country in the world. In Ireland, when a man ceases to go barefoot, he somehow or other rides. This is a curious and a rather serious matter, which may be looked at in more ways than one. The deficiency of a middle class in Ireland is a solemn and mournful truth, on which it is not now my business to enlarge. I do not mean, of course, that there is no middle class; nor that it is much smaller in the half-dozen chief towns of Ireland than in considerable towns elsewhere. In fact, a town is impossible without a broad middle-class stratum on which to found its institutions. What I mean is, that over the greater part of the surface of Ireland there is spread * a thin population of uncomfortable people (as we should think), with a nobleman's seat, and the mansions of a few gentry somewhere near; and very few shopkeepers, or farmers, or merchants, to transact the business of those above and below them. My lord's family and the gentry ride and drive, of course, as lords and gentry are wont to do: and the poor people walk—without shoe-leather. They are, no doubt, less uncomfortable than they look to English eyes; for in good looks, in health, strength, and merriment, they seem to beat the English and Scotch all to nothing—that is, between June and the new year, when they have their potato crops to feast on (and they do consider it feasting to eat potatoes, in comparison with all other food). How it may be with their looks and spirits during the rest of the year I cannot say from personal observation; but it is well known that they have never, under any circumstances, any desire to be plagued by the consideration of shoe-leather. They like a cast in a vehicle very well; but they excuse themselves from wearing shoes, even when there is a handful of bank-notes in the thatch, or a handsome litter of pigs under the bed,

* 1852.

or half-a-dozen sleek cows wading among the ragwort and thistles in the field. You may see the fishermen's wives walking barefoot on the sharp rocks and rough shingle, looking for bait, or bringing up the lobsters. You may see the peasant women, with stout red petticoats and blue cloaks, or gay yellow and red shawls, trotting and skipping barefoot over the bogs, finishing with a grand hop over the last ditch into the road, on the way to chapel, market, or fair. If the last, they are probably carrying stockings and shoes in their hands, to be put on when within sight of the spot : but the same pair may last a life-time, if worn only at such times, and in such a manner.

If you travel near a bog in autumn—and that is a thing sure to happen to the tourist in Ireland—you will occasionally see a dingy procession on the road before you, which looks, from a distance, like a small brown funeral. When you come nearer, you see a dozen or so of large hampers, without lids, filled and piled up with dried peat, in the shape of bricks ; each hamper being mounted on a rude sort of truck, and each truck being drawn by a small donkey. On the truck is somewhere perched a boy, man, or woman. Time seems to be of small value ; for these cars are proceeding as slowly as possible, exactly in the middle of the road, till your driver calls out that if the people do not clear the way, he will bring the police upon them. Then heads pop up from behind the hampers, and voices shout and scream, and donkeys scramble, and the way is cleared, and half-a-dozen children catch hold of your carriage, and run for half-a-dozen miles, begging for a halfpenny. This is, we believe, the lowest order of Irish carriage. Then comes the superior sort of turf-car, made of upright slips of wood, sloping outwards so as to look like a square basket of rails upon wheels. This is light and pretty, and serves well for carrying peat, hay, animals, and whatever the farmer has to convey that is solid. Our substantial country carts and waggons are rarely seen—and still more rarely the farmers' gigs which abound on English roads. Besides that there are few men in Ireland answering to our farmers, they prefer their "outside car" to our gig—and very reasonably. That "outside car" is the most delightful vehicle I know of—so light and well balanced, that a horse can draw a greater load for a longer distance than an Englishman can believe, until he sees it : so safe, that it is scarcely possible to apprehend an accident : so convenient, that it has been praised till people are

tired of hearing of it; wherefore I will say no more about it. After this come the handsome carriages made in Dublin, which are much like the handsome carriage seen in London, and Paris, and New York, and other places, where an aristocracy has to please itself about its means of conveyance.

Made in Dublin, I say. Thereby hangs a tale, which has for years interested me, whenever I have thought of Dublin and the Irish, and which may, therefore, interest others. So I will briefly tell it.

In the last century, we must remember, Ireland did not belong to England as she does now. She was yoked to England, but not incorporated with her. There was then no United Kingdom, such as we speak of now. Ireland was subject to our monarchs, and had a Viceroy living in Dublin, as representative of the Sovereign; but she had her own Parliament, managed her own affairs, and had much less claim on the aid, fellow-feeling, and co-operation of England than now, when the representatives of the whole people of our islands sit in the same legislature, and become more united in their real interests, year by year. In those days it was all-important to Ireland to have flourishing branches of industry of her own. One of the best illustrations of the wisdom and folly of that day is the coach-making business, for which the Messrs. Hutton have made Dublin famous.

In 1779, Mr. John Hutton, a worthy citizen of Dublin, set up a coach-manufactory in Great Britain Street. All that we know of his business during the first ten years is that it was successful. There was no doubt about that: but his friends believed his success to be owing in part to the central situation of his factory, while he knew it to be owing to the goodness of the work done there. When, in 1789, he removed to Summerhill, where the factory now is, he was told that he was going out of the way of the great thoroughfares, and that the citizens would desert him. His reply was, that if his carriages were good, people would come to Summerhill for them; and so they did; for the business became a very fine one, employing a large number of men. It was easier to make carriages then than now. That is, there was less variety; less science was put into the business: people did not think so much of securing lightness, of consulting speed, of economising room, and so on. We can judge of the carriages of those days by the pictures of them. We remember the heavy coaches that George the Third and his

family used to ride about in; and it strikes us with a kind of grief, even at this day, to remember how different might have been the issue of events if, at the time of Mr. John Hutton's removal to Summerhill, one of the carriages that may be seen there now, had been in waiting, with the same Count Fersen to drive it, for Louis the Sixteenth and his family, on the occasion of their attempt to escape to the frontier. When they left their own carriage, at a little distance from Paris, it was to enter a berline, which was so heavy, and went so slowly, that they were not out of sight of people who knew them when daylight came. To be sure, they blundered so dreadfully that they had but a poor chance any way: but a lighter carriage would have incalculably improved their case; and then, if they had got away, how different would have been the fate of Europe ever since, and at this day! The gallant Count Fersen drove well, and did his utmost: but what could be the speed of a coach half as big as a drawing-room, filled with a stout gentleman and ladies in hoops, and drawn by horses jog-trotting like those which, in our day, convey our old-fashioned squires to church, in all the leisure of Sunday morning? So the unhappy family were caught; and all but one lost their lives in consequence. The surrounding nations made war, and the fate of Europe and the world was changed for evermore.

Meantime, Mr. Hutton's workmen went on making carriages, without thinking much of changes, or dreaming that they should have to learn anything new; although the whole world was changing, and finding itself obliged to learn. The Irish rebellion—one of the most mournful events in history—took place; and then the flag with the united arms of Great Britain and Ireland, floated from the Tower of London and the Castle at Dublin, on the first day of the century; and Mr. John Hutton went on growing rich, and his men went on making coaches in the old way, never imagining that anything could be better. The coaches were eminently good, certainly; and Mr. Hutton chose that they should continue to be so. More Irish gentry now went to London, and they saw and valued all recent improvements in carriages. In 1806, one young son came into the business, and in 1811, another; and it may fairly be supposed that these young men might introduce some new ideas, and infuse fresh spirit into the business. However this may be, it is clear that the men—some few of them—at this time made

up their minds to manage the business in their own way, and allow none but friends of their own to be employed.

One April afternoon in that year (1811), they waylaid and cruelly beat a fellow-workman, named Davis, on the ground that he had been a saddler originally, whereas he was now foreman of the harness-makers in the factory. The folly of this act presently appeared. Owing to Davis's ability, the firm had been able to make some harness at home which had before been imported from England. When Davis was disabled, the importation was renewed, and several men lost their employment,—none of them being qualified to fill the place of the injured man. On the twenty-seventh of the same month, some of the malcontents concealed themselves in the factory, instead of going home from work ; and in the course of the night they destroyed the linings of several new carriages, and cut and defaced the panels, carving on them the names of obnoxious persons, and threats to their employers.

It was now time for Government to interfere. A reward of two hundred pounds was offered for the apprehension of each of the first three persons who should be convicted of either of the offences which signalised that unhappy month. As for the Messrs. Hutton, they were fully aware of the importance to their country of sustaining such a manufacture as theirs ; and they knew that it could be done only by their conducting their own business in their own way. They reasoned kindly with their men, even affectionately, showing them the true state of the case, while they declared that they would submit to no dictation, but conduct their manufacture in their own way, or retire from business. By this time, the manufacture was so large, that the whole city was interested in its continuance.

In 1812, it was found to be desirable to bring over an accomplished coach-painter from London. No man was removed to make way for this Richard Couchman. The benevolent employers hoped to provide work for new men by every improvement they introduced ; but some few of their people were rather muddle-headed—confounding the employment of an Englishman in Ireland with sending over Irish work to be done in England ; which last was exactly the misfortune which the Messrs. Hutton were striving to avert. They knew that the Irish gentry would buy carriages in London (now that every body was frequently going to London), unless they could have them at least as good

for the same money in Dublin. Richard Couchman gave a supper to his fellow-workmen on his arrival, according to custom. On that night (in December, 1812), one of his guests, Arthur Conolly, told him that the Irishmen did not want any Englishmen among them, and that he, for one, would not have his work found fault with. This man had been originally a labourer in the yard, at eight shillings a week. He had been taught a branch of the business by Mr. Hutton; and was now receiving excellent wages as a painter. After this supper, he became so morose and sullen, that his employers, at the suggestion of Couchman himself, raised his wages to twenty-eight shillings per week, to remove from his mind any notion that he was supplanted, or out of favour. Nothing would do, however; and he so conducted himself, that it was necessary to discharge him the next June.

On the twenty-seventh of August, as Couchman and another workman were going home in the evening, and just as they had parted, Couchman was felled by a blow on the head. He was not at once perfectly insensible. He felt many more blows, "as a sort of jar," saw many legs, the glittering of weapons, and the ends of bludgeons. He saw also the face of Conolly and of one Kelly; and so did the comrade he had just parted with, who was also struck, and had a narrow escape. It seems to carry us back to a very old time, to read that these two men—Conolly and Kelly—were pilloried. They were imprisoned for two years, and pilloried three times.

And now came out the civic heroism of the benevolent employers. They were very rich, and they might have withdrawn from business. But they knew the worth, both of the principle for which they were contending, and of the maintenance of such a manufacture as theirs. They knew themselves to be in peril of their lives. They went out to their country houses every evening well armed. But they issued addresses to their men, brave as benevolent,—in which they avowed that they knew the guilty ones among their people, and had their eye upon them; that they would not yield a single point on any compulsion whatever; and that they preserved their sincere attachment to the faithful among their workpeople, to whom they would be faithful in return. They escaped attack. The two sons are living now. If it had been otherwise, all Ireland would have rung with the shame; for

their munificence was too great to be kept secret by their modesty.

In 1824 there was another conflict; but it was much less serious. The coach smiths of the city of Dublin complained of the importation, by the firm, of certain articles of wrought iron, different from what they were accustomed to make; which was, of course, the reason of the importation. The firm declined corresponding with any but their own men; but pointed out to them that not a forge or a man in Ireland was thrown out of work by their importation, while there was increased employment for everybody else engaged in coach-making. The business had grown prodigiously within forty years, and this was owing to the liberty the firm had so carefully guarded, of improving their manufacture to the utmost; a liberty which they meant to keep. Their men, however, had not yet grown wise. Some of them refused to touch the iron work imported from England. This stopped the manufacture, of course, as far as the new material was meant to be applied. The firm issued an admirable address to the rest of their people, promising to employ them as long as it was possible to do so; but showing that this could be but for a short time, if the carriages could not be finished. They had already offered to set up in business two of their own smiths, to copy the English patterns, supplying them with capital, material, and apparatus, and paying the same price as in England: but the refusal of the offer showed that the aim of the men was to preclude recent improvements, and compel their employers to make coaches in the old way, and in no other. On this occasion, there appeared to be very great danger that the firm would be obliged to close their manufactory. This, though it would have thrown several hundreds of persons out of bread, would have been a smaller evil than allowing the business to perish under the ignorant dictation of a small proportion of the workpeople; but it would have been a wide-spreading misfortune —*how* serious can hardly be fully understood but by those who have seen that factory as it is at this day, when there is but one mind among all who are busy within its walls.

It will have been observed that none of the conflicts, during all this long course of years, had been about wages, or hours of working. There had been no possible ground for it; for the firm had never been in combination with other employers against the men; although the men had been in combination with others

against the introduction of English improvements. The practice of the firm had always been to pay liberal wages, in order to secure the best work. They hired the labour which suited them,—which was always of the highest order that could be obtained. If the men were satisfied, they supported them against all encroachment and injury. If the men were not satisfied, they let them go in all good will, and, if it was possible, helped them to settle themselves more to their minds. There was little of this parting, however; for the best men knew when they were well off. They were maintained in sickness, pensioned after long service, watched over with vigilant good-will; and wise men were in no hurry to throw away friends who would do this.

The time came when the advantage of such an understanding was put to the proof. In times of distress, the carriage is the first luxury laid down by those who must economise, and it is the last thing to be purchased by those who can do without it. We all remember the years of distress from 1836 to 1843. At that time the younger of the two brothers was alone in the business,—the father having died long before, and the elder brother being at that time the member for Dublin, with O'Connell for his colleague. It had long been foreseen that there must be some decline in the business from the increase of railroads. To this was added the seven years' distress. Mr. Hutton stood between his men and utter ruin as long as possible. His large capital enabled him to allow his stock to accumulate: but the time came, towards the close of 1842, when he was compelled, in order to keep on his men, to reduce their work and wages slightly. There were persons who endeavoured to make mischief between him and his people on this occasion; but he easily made himself understood by giving his reasons, and the facts of the case. After that came the famine, and with it, of course, a prodigious falling off of business. The Irish gentry could not buy carriages while the people were starving, and the rates were heavier than many could pay. And when affairs began to come round, and there seemed to be a prospect of better days, a terrible accident happened. His family being absent, Mr. Hutton was sleeping in town, when a servant rushed into his room in the middle of the night, crying out, "O, sir! the factory is on fire!" He was on the spot instantly, in time to save the Lord Mayor's grand carriages, which were wanted the next day, and which were worth many

hundred pounds. The timber-yard was safe, happily; a circumstance of great importance, as it takes some years to season the wood properly. But the loss was very great—many thousands of pounds over and above the insurance. It was a melancholy sight to the gazing crowd, to see the carriages brought out—some of them on fire inside, and others cracking and warping, and to know how many more were destroyed. And there was the fear that Mr. Hutton would now retire. He was rich; his brother had retired; and he might be supposed to have had enough of it, considering what the last few years must have been. Happily, he has not retired. He has rebuilt his factory, and brought everything round to its former state of order; and, as there are sons in the business, it may be hoped that the establishment may continue to be the blessing to Dublin that it has been for above three-quarters of a century.

The timber-yard is a picturesque spectacle, of itself. It is a sort of field, attached to the property when Summerhill was "out of town." The wood is of various kinds. Every wheel is made of three sorts—the spokes of oak, the nave of elm, and the rim of ash. Beech is used for some purposes, but it does not wear so well as ash. The panels are made of mahogany; and some of the upper parts, which are least subject to strain, are of pine, accurately covered with leather. Some of the bent and finely-curved pieces, which have to bear a great strain, and on which the beauty of the carriage much depends, are of witch hazel elm. The wood is bent by steam—the stocks actually boiled, to make them flexible. For all this, the wood can hardly be too old: and a great capital is always locked up in that timber-yard.

The great show-place of the establishment is, of course, the department where the finished carriages are kept. The variety is quite marvellous to a spectator who, not being worth a carriage of any sort, has never given any particular attention to the diversity out of which a purchaser may choose. But, after all, one may see finished carriages abundantly in the streets, while it is a novelty to see their skeletons and their separate parts. So we rushed gladly into the upper rooms, which look like an hospital for carriages.

Bodies lay on the ground, bare of covering and of lining, without door or window; every stock and frame and panel staring one in the face, and all the iron strips and bolts open to

examination; and the curious little wooden bolts—square morsels studding the inside of the roof and sides, to divide and equalise the strain, and prevent "springing." To have caught a family of carriages thus *en déshabille* was quite an event. Then we saw them dressed. There was lining upon lining before the last silk and lace were put in. We felt the curly, elastic hair with which the cushions are stuffed. We noted the windows: how the inner edge of the frame is made higher than the outer, to prevent the rain oozing in, as it used to do in the days of our grandmothers for want of this simple precaution.

Other changes there are since the days of our grandmothers —one of which we think very striking. Formerly, the keeping a carriage signified the keeping a certain number of servants; and the servants were considered the most important part of the equipage and exhibition. Now, it is plain that carriages are kept, much more than of old, for their mere convenience: and some of the most valued improvements in a coach-manufactory are those which enable the occupant of the carriage to dispense with all service but that of the driver. There are newly-invented handles, to open the door from within with a touch; and the opening of the door lets down the step, which is folded under the carriage when the door is shut. There are various screens of recent invention, for keeping the entire doorway and window clear of mud. The medical man in moderate practice, the elderly lady of moderate income—various people of moderate means—may now have a carriage who could not formerly dream of such a thing. Carriages cost much less than of old; they wear longer; and they can be used without the attendance of a footman. This increased use of carriages may set against their increased durability and lessened cost. Such has been the faith of this firm, while paying high for the best work, and exercising all possible ingenuity in strengthening the structure, and bringing down the cost of its carriages. In its show-rooms may be seen from forty to fifty different kinds of carriages, at prices rising from thirty pounds (if we remember right) to one hundred and thirty pounds. There were no Lord Mayor's equipages, nor great lumbering vehicles, such as old prints show us, with room for several grand footmen behind; but there were some as handsome as any carriages of our own time; and a gradual descent from these to the useful, humble, neat family car,—the genuine Irish car, which may, according

to tradition, carry the parson and his wife and thirteen children. Against the walls of these work-rooms hang large black boards, whereon are chalked ideal carriages, as new notions enter any brain on the premises. Some suggestions obtained in this way have been honoured by the testimony of successive Lord Lieutenants, as may be seen by the diplomas which adorn the walls of the room appropriated to them. From the Exhibition there could be no testimonial, as Mr. Hutton was one of the jurors.

We saw here, applied to carriage-windows, the curved and bent plate-glass, which is oftener seen used for lamps. This comes from London. The plated work is chiefly purchased; as are the laces and fringes. One room is gay with the colours used by the painters; and many were the polishers whom we saw at work. The diversity of employments is indeed very great, though Mr. Hutton declines making railway carriages; and the public cars, now so numerous in Ireland and so great a blessing to her population, are made by the successors of the inventor, the late Mr. Bianconi. There are, on Mr. Hutton's premises, about one hundred and eighty men employed, besides the women who make the carriage linings: and their wages are high for Ireland. The labourers in the yards have eight shillings per week; and the highest wages paid are three pounds per week. These are the two extremities of the scale.

There is no heart-burning there now;—no dispute—no mistrust. The principle of the firm is, at length, understood, so as never to be mistaken again. To make the best possible carriages, in order to secure this fine business to Dublin, is the aim; and to use their own judgment as to how this is to be done, is the determination of these gentlemen. Their fellow-townsmen now see what a blessing it is that they have been so resolute in holding to their determination. Any stranger in Dublin who mentions their names is sure to hear what is now thought of them and their kindly victory.

CHAPTER XVI.

TUBAL-CAIN.

THAT is a curious old question—puzzling to others than children—"Where did the first brewer get the first yeast?" We should like to know how some other useful things were first made, without any pattern or precedent;—brass for instance. We may easily fancy how the wandering men of the East might light upon lumps of copper, as some Australian shepherds have lately struck their feet against masses of gold, or found that a great stone, on which they had often sat down to rest, was composed of the precious metal. There is more copper in the world than any other metal—than even iron, we are told; or, at any rate, it appears so to men now. It peeps up, and lies about, and draws attention by its colours when mixed with other matters, in all quarters of the globe; and there is no reason why the roving tribes of old Asia should not have found it, and observed how easily it can be hammered, as naturally as the Red Indians in North America have done. But it is less easy to imagine how it came into their heads to melt and mix it with other metal, to make brass. One would like to know where the first fire was that made the first brass; and also what was the metal mixed with copper by Tubal-cain, when he taught artificers to make utensils of brass. It is mentioned that he worked in iron, too; but it is so difficult to make iron and copper unite, that no extensive manufacture of brass could have gone on in that way in any age or part of the world. The old Greeks used to make their brass with tin. Perhaps the Patriarchs did the same. Or they might light upon some ores of zinc, though they had not the zinc itself, which is a very modern affair. One might just fancy how the ancient men might make a huge fire in some of the limestone caverns which abound in their part of Asia; those caverns, where all operations were carried on which required a better shelter than a goat's-hair tent; and how the metal-workers might be heating some copper to work it more easily;

and how a bit of calamine, or other ore of zinc, might be accidentally thrown on among the copper; and how a wonderful and beautiful light—one of the most beautiful lights in the world—might bubble up, and blaze, and suddenly reveal every crevice and projection of the cavern; and alarm the people yet more by its horrid smell; and how they might find, when the fire was out, some pieces or streaks of brass among their copper. They would naturally examine these, and find out that this mixture was harder than mere copper, and would bear a better edge. Such a discovery made, they would easily get on in the preparation and use of it, till they had master-workmen like Tubal-cain. In old Egypt, the artificers were the lowest order in society but that of the shepherds, poulterers, and fishermen; but that they were skilful in brass-working, among other arts, we know by Moses having so much brass about the Tabernacle in the Wilderness, which, no doubt, the Egyptians who went with him helped to make, after having taught their art to the Hebrew bondsmen. The fastenings of the curtains were of brass; and so were the sockets of the pillars,—as we read in the thirty-sixth and thirty-eighth chapters of Exodus; and the great laver or reservoir was also of brass. Considering all this, and the use the Greeks made of brass, and after them the Romans, who actually got the tin for the mixture from our own island, it does appear strange that no brass should have been made in England till two hundred years ago. In Germany, it had been made for centuries; and we must suppose that we got from thence what we wanted; for there was none made here till 1649, when a German came over, and settled at Esher in Surrey, and there began to show us how to melt copper and zinc (or spelter, as the merchants call it) together, to produce that beautiful, yellow, glittering metal, with which we make our chandeliers and door-plates, and bed-castors, and statues, and cast our bells, and mount our telescopes. Ah! none but those who have seen it wrought can tell how beautiful it is, before it is spoiled with the varnish we are obliged to put on, to prevent its tarnishing! If its virgin tint could be preserved, it would be the most beautiful, perhaps, of all metals.

From the time of that German, who settled at Esher, to our own, our artificers have been prevented from making our brass work so good, or so cheap, as it might naturally have been. The good man and his successors got from abroad most of the

copper they wanted ; this led to our searching out what we had at home. It was found that we had plenty ; so much, that we could send a great deal abroad. Heavy duties were laid on foreign copper, and we were thus compelled to use our own. It is very good ; but it is made very much better by being mixed with other kinds from abroad. By free trade, we now have this advantage. We get copper from Australia and from South America ; and zinc, or spelter, from Siberia ; and mix in our own copper, and make an article so good as to command a great foreign sale. The cost of producing it is, as far as the metal is concerned, equalised with that of foreign countries ; and thus we have at once a better and a cheaper article, and an extending trade abroad.

There are few of our manufactures prettier to the eye of a visitor than brass-founding. The name does not promise much ; and the greater, therefore, is the pleasure. There is so much variety in it, that little notion of it can be given in the space of half-a-dozen pages ; but what I can tell in that space I will. As we like having the best of everything, when it can be fairly had, a friend and I were thankful to be permitted to go over the establishment of the then* Mayor of Birmingham, with the honour of having the Mayor himself for our guide—the hardest-worked man in Birmingham just then, probably, but as patient in explaining and informing as if he had nothing else to do.

The mixing of the metals tells itself, for the most part. The mould for the ingots stands at our feet, in a shed where the copper is melted in the furnace, in pots of Stourbridge clay. As there is no night-work here, no keeping up the heat continuously, as is done in glass-houses, these pots do not last as their larger and more important brethren do. They are creatures of a day ; to-morrow but a heap of sherds, to help to make a new generation. The spelter does not need to be melted in pots : it melts, like sugar in tea, by being merely stirred in the hot liquid. This is because a lower degree of heat will melt zinc than is required by copper. Here comes the flaming hot jar of copper, carried by a man well armed with the necessary tongs ; another man stands ready with the piece of spelter. He puts it in, stirs it round to mix it thoroughly, and is not, as we are surprised to see, suffocated on the spot by the fumes. There is the beautiful flame ! and we have more of it, flickering

* 1852.

and sparkling as the mixture flows, red hot, into the moulds, whence it will come out as ingots. Those light grey flakes in the air are the sublimated zinc. After a whirl or two towards the rafters, out they go at window and door! We ask, what are the proportions of the two metals? and we find that the mixture is varied, according to its destination. The particular ingots at our feet are two parts of copper to one of zinc, because the brass is intended for common articles. If for finer purposes, there would be more copper. If particular hardness or toughness is required, or if the metal must be sonorous, or of a specified colour, tin, lead, iron, or other metals, must be mixed with the copper. For hinges, drawer-handles, brass-nails, and I suppose, warming-pans, and kitchen-candlesticks, this mixture of two to one is the right thing. We must remember that the brass we see made here is only for castings. The tubing for chandeliers, &c., and the plates for stamping and pressing, are prepared elsewhere, by those who make metal-tubing, and have an establishment of rolling-mills. We see here plenty of sheets of brass, and abundance of tubing; and there are stamping, and punching, and drilling machines, and very pretty work turned out by them; but these things have been described before, and we now, therefore, apply ourselves to the study of the castings.

For ornamental works, the process begins in a very different place from a raftered shed, among furnaces and clay pots. It may be in a country churchyard, under an ivied porch; or in the church itself; or under a tree in a park, where deer are browsing within sight; or on a mossy and fern-clad wall; or lying on the grass, or even in bed; or in the British Museum; or in a quiet study, where the light is taken great care of. The design is the first step; and the designer may have derived ideas from altar railings, or from great men's tombs, or from beasts, birds, and flowers; or from antique sculpture; or from his own memory and imagination. Young artists seek money, and give a chance to their ambition, by offering designs to eminent brass-founders; designs for chandeliers, and other articles of ornamental furniture; and for railings, gates, &c. Specific pieces of work, such as monumental railings, statuettes, and brass-plates for particular purposes, are done from designs forwarded with the order.

Next to the design comes the model. An account has been given elsewhere of modelling in wax, in preparation for stamp-

ing, pressing, and chasing. Therefore I will not tell what pretty things of that kind may be seen here, but mention only the wooden model made from the drawing, for instance, of a tomb. The wood is pear. It is carved after the design, and in the same separate pieces, fitting into each other, that will be required by the casting process. Here we have in wood the knobs, sockets, fluting, angles, that are to be reproduced in brass. From this wooden model a cast is taken in lead, which must be of course its reverse, as the cast is to produce a brass copy of the wooden model. The leaden cast is chased a little; then it is cast in brass, and well finished by chasing. Here is the pattern complete, ready to take its place with—how many others, does the reader think? In this establishment there are ten tons of patterns. They are numbered, and the number reaches one hundred thousand. Those whose business it is are so familiar with this multitude of details, that they can almost instantly lay their hand on the one wanted, or direct their eyes to the pigeon-hole in the warehouse where it is deposited. At a counter in that warehouse stands a woman, whose life is passed in sorting the patterns as they come in from the casting. Hinges, screws, knobs, bolts, buttons, nails, hooks, in vast variety, lie before her in trays, and she puts them by in their proper places. The walls are studded with them; drawers are filled with them; shelves are piled with them; pigeon-holes are stuffed with them. In short, one hundred thousand of them have to be stowed away in such a manner, as that they may be immediately found when wanted.

With these models is laid by a great wealth of steel dies. These are a large investment, and a very uncertain property. An ordinary-looking die may prove to be worth its weight in gold; while a pair which has cost fifty guineas may not be required to give out as many copies. And while there may be a dead loss on such an article, a batch of the commonest brass-headed nails, requiring the labour of thirteen pairs of hands, may sell at Calcutta with a profit of eighteen-pence to each person.

Next comes the casting. For the material required, we must look to the cemetery. It is a beautiful cemetery, with dark ivy spreading over the face of red sandstone rock, in which below are vaults hewn out, dry, dim, and solemn, with niches in which ranges of coffins are deposited, while the outer face presents

Egyptian forms and symbols. Below, where there was once this rock, there are green nooks and platforms, where shrubs and flowers enclose flat gravestones, and monuments of many forms and devices. On either side there is undulating ground, with pleasant walks, well kept, and adorned with more shrubs and flowers, which again enclose green spaces, set apart by families for their dead. Amidst all the clearance required for the interment of such a population as is brought here for its rest, there are no unsightly *débris*, no heaps of rubbish. As the red rock retires, there is no difficulty in disposing of the fragments scooped out or hewn down. They go to help the convenience and luxury of the living: to help to make the chandeliers under which the young and gay will dance, and the fire-grates at which the aged will warm their old blood, and the household articles which will spread the conveniences of home through cities and mountain retreats in another hemisphere. The cost of this cemetery is largely defrayed by the sale of its red sand to the metal founders of the town. It is a very fine sand, remarkably free from impurities. When wetted and flattened, it looks as smooth as can well be; but for facings, and when a very fine surface is required, it is mixed with coal-dust and flour, and its bed is smoked with a torch.

The mould consists of two boxes, which, when filled, are bolted together, the sand on their faces meeting, except in the hollow made by the pattern, and the channel through which the metal is to flow. The moist sand is firmly rammed down in each, round the pattern. Wherever there are recesses in the pattern, they are filled in with sand. If the article is to be hollow, it is "cored" by the pattern being filled with sand. There are, in fact, four methods of casting. Common articles, like drawer-handles, bolts, knobs, and hinges, are cast solid. In such a case, we see the face of the mould stuck all over with patterns, as close as they will properly lie, which are to leave their hollow impression to be filled up by the molten metal. This is "common casting." The next is called "common-face casting;" and that is when flat ornamental pieces are required, as for door-plates. The third is "cored" casting, as for gas-fittings, or other articles required to be hollow. In these a mould is taken from the inside of the pattern, as well as the outside, and carefully inserted in the great mould, so as to leave a hollow of the right thickness, to be filled up with the metal. The fourth is the

"false-cored" casting. This is used for irregular figures which must be cast in one piece. If, for instance, a wreath of leaves is to be cast, the ins and outs are carefully taken off the pattern in masses of pressed sand, which are cautiously transferred to the mould, and pinned down in their right places. "False coring" is practised also in the casting of figures of men and animals, as it is on a larger scale in the case of bronze statues. Of course, much metal is saved by this, and the inconvenience of excessive weight is avoided. It may be added, that duty is charged by weight on such articles as these, in foreign countries; and the utmost reduction of their weight is therefore desirable. The cores of sand are built up, like bricks, before the casting, and are removed afterwards by pushing out the sand through holes left for the purpose.

When the pattern has made its complete impression, and is removed, a channel is scooped in the sand, from the impression to the marginal hole in the mould; and the one box, containing one side of the impression, is screwed down upon the other, containing the other half. When eight moulds are thus prepared,—one containing, perhaps, a single figure, and another as many as a hundred,—there is enough for "a heat." Men bring the molten metal from the furnace in ladles, and pour it into the holes in the mould, till there is a brimming over of the red stream at the mouth of each channel. Before we turn our backs on the casting process, we must observe how the brass hook of a screw is fastened on; for this is an article in such extensive use that any saving of time and labour in the production of it is of importance. Formerly, the joining was done by hand,—each screw being heated and hammered, and attended to individually, as nails once were. Now, the only thing necessary is to lay the screw, prepared with a "nick," to dovetail, as it were, the brass to itself, in a running stream of molten brass. The figure of the hook is impressed in the sand, and the screw is laid so as to join it: then, when the metal enters, the article makes itself, to the great saving of time, and convenience of the manufacturer.

When the articles are cool, there is easy work for the boys; breaking off the cast articles from the metal in the channels, and then poking out the sand from the "cored" articles. They poke away, as if they liked the business. The sand requires more removing than this, however. There is a churn in the

yard, in which the articles are whirled round, till all the sand is shaken out of them.

Here we have articles, and parts of articles, rough, dull, and so dark that one would hardly know them to be brass. The ornamental brasses have their edges smoothed by the file; and the commoner articles are delivered over altogether to the file and the turning-lathe, to be smoothed and made neat and clean. The higher order of productions are to be more respectfully treated; they are to be pickled and dipped. This is one of the prettiest processes of all. Heads of animals, wreaths of flowers, statuettes, figured plates of various sorts and sizes, may be beautiful in form and device; but all are dark, with oxidation, as well as oil and dirt. They are put into a bath of acids and water. The acids are nitric and sulphuric, which, mixed, are aquafortis. In this diluted aquafortis they lie, till the outer surface, with all impurities, is eaten off. Then they are dipped in a succession of tubs, till, coming at last out of pure aquafortis, they are of the prettiest colour that can be seen. It is a sad pity that they cannot so remain; for, to change their hue is really to half-spoil them. But it cannot be helped. They would tarnish immediately, if not secured against it by a process which we shall see presently.

I must not tell all we witnessed of the turning, and soldering, and polishing, because I have described the same things before: and though one sees the processes with fresh pleasure, when applied to new kinds of articles, that pleasure cannot be communicated in print. For instance, it was like something new to us to see holes drilled in a gas-burner,—and understand how the flame of the jet is made twenty per cent. better by these holes being drilled in the burner; but, to the reader, the process is just the same as the drilling of the four holes in a brace-button. Again, if we were to describe the magnum candlesticks which stood about like pillars, it would merely put people in mind of the Electro-plating establishment; as the cutting the links of brass chains would of the gold chain manufactory. But, oh! the beauty of those candlesticks, and of the ornamented parts of the gas-fittings, and of the most massive of the chains! And the ingenuity too!—the cleverness with which the tubing is concealed in gas-furniture, and with which the swinging of chandeliers is provided for, by the rolling of the ball to which the chain is fastened within another ball, so as

to allow perfect freedom without permitting the least escape! And again, the endless variety of lamps, and especially of solar lamps, which are in great demand from foreign countries, where oil of various qualities abounds! On these things I must not enlarge, but rather observe the finishing of the articles.

The technical term "finishing" means putting together the parts to make the article complete; but as the word slips from my pen, it means putting the last finish of beauty. The technical "finishing" is done by the soldering, with which we are familiar. As for the present meaning of the word, it leads us to the counters of the burnishers. The burnishers here are not women, as at some establishments near. This work, of burnishing brass, is too hard for women. The strongest men look as if it was enough for them. They rub away with their hard steel burnishers, or with bloodstones; they rub away at a veining of a leaf here, at the swelling of an acorn or a grape there, at the niceties of a pattern, of which a part is to be left "dead." Such common things as hinges and door-handles are polished by a brush and rottenstone. While seeing these things, we have been passing from room to room, from counter to counter; moving among scores of machines, till the place appears a labyrinth of unknown extent. The gas-fitting stock, and the preparation of it, seems like a great establishment in itself. But we are coming to the end of the business. We are to see the final process of lacquering.

This is the process which I alluded to as being such a pity, spoiling as it does the beauty of the hue of the metal. But this lacquering is essential to its preservation. If it could be dispensed with, it certainly would, for out of this process come the greatest annoyance and expense of the manufacturer. The coating consists of seed-lac and spirit of wine. Now, the duty on spirit of wine is so high that the cost of the lacquer amounts, in an establishment employing three hundred people, to no less than two-thirds of the rent. In many large establishments, the cost of this raw material, essential to the manufacture, is not less than from ten shillings to twenty shillings per day; while foreigners obtain for four shillings and sixpence articles which we have to pay eighteen or nineteen shillings for. In order to compete with the French and Germans under such a disadvantage as this, the manufacturer has to lower his own profits, and his people's wages; so that the operation of this

pernicious duty is truly disastrous on a large working-class. Here, again, we meet, as everywhere, complaints of the paper-duty; and it is proved, to our conviction, that the wrapping-up of some of the commoner articles in this manufacture costs more than the finished article itself. This is very ridiculous and very sad; hard upon the maker at home, and the purchaser abroad. Another thing ridiculous enough, but tending to lessen sadness when discovered, is a mistake made by the statistical calculators, who have been alarming us all about the deadly amount of spirit-drinking in England. Gentlemen sitting at desks, to calculate from Excise and Customs returns, without being familiar with the processes of our manufactures, may easily fall into such mistakes; but it is a great comfort to have them cleared up. Such an enormous error, for instance, as the negligent supposition that all the spirit of wine used in lacquering here, and everywhere else, is the sort of spirit that may go down somebody's throat! If three hundred or four hundred pounds a-year is charged against this establishment, and as much to a dozen or two of other brassfounders in the town, as spirituous liquors, what a libel it is upon the place! and how comforting it is to discover that, instead of our people spending seventy millions per year in intoxicating drinks, some gentlemen in London have something to learn about the application of distilled spirits in the arts of life! We, as a nation, tax ourselves dismally enough for strong drinks; but we are not yet such a nation of sots as to drink all the spirits of wine on which duty is paid.

After talking this over, we almost fear to enter the rooms where the lacquering is going on, lest we should be drunk with the fumes, and so have to take our place among the sots who lie under this spirituous censure. But, though the air is sufficiently loaded, it is not in an intoxicating way. There sit companies of women, looking sober enough. One wonders that they can be healthy, sitting in such a heat, and in such a smell. They earn good wages. The demand for female handiwork, in Birmingham, has so increased, that women's wages have risen lately about twenty per cent. Here, some are earning eleven shillings per week, under the disadvantage, we must remember, of the duty on lacquer. The lacquer is laid on with a brush, while the article is hot; so that the spirit evaporates, leaving a coating of the gum. Sometimes the lacquer is coloured. We

saw some green; an imitation of bronze, not very successful, but in some demand, or it would not be there. We need not say that the commonest lacquer gives simply a deeper yellow to the brass.

Next, and lastly (as the farthest way about is the nearest way home), we step into Bohemia. We have only to say we are there, and there is evidence, all about us, of the fact. Rows and layers of exquisite glass fill the chamber, and everybody who enters it is subject to a fever about lamp-stands. We must not go into any raving about them, as our subject is brass; but we must just mention one solid fact; that the dark-red lamp-stands, so splendidly produced in Bohemia, are to be eschewed, as they absorb the light.

Now, said we—as we came away, with some of the beautiful designs we had seen, lodged in certain of the best chambers of our brains—what are we about, that we do not offer our reverence to the spirit of Art in Birmingham, as we do in old Italy, or any other place, that is only far enough off in space or time? Why do we dare to talk of Benvenuto Cellini, and other divine craftsmen, with reverence, while giving no heed to the extraordinary progress of popular Art in our own towns, and our own day? It must be from ignorance, for it is impossible to despise some things that are done among us now; but that ignorance makes our talk about ancient Art, and foreign Art, look very like affectation. We should like to know how many British travellers—who rush into enthusiasm about fountains in Germany and Italy—will trouble themselves to go and look at the fountain just opened in the Market House, at Birmingham? And, if they go, what will they say? How will they bring in the word "Brummagem?" Will they venture to apply it to the four bronze boys who represent Birmingham? There they are: the one shouldering his musket; and another blowing his bubble of glass—boy-fashion; and the third—thoughtful one—with his sextant in his hand, and a cog-wheel by his side; and the fourth, proud and careful of his charge of an elegant vase! Will no charm be found here, because these symbols are of native conception? Will the bronzes below be slighted, while sure of admiration if fancied to be ancient? the four groups and garlands—the fish, the poultry, the vegetables, and the flowers and fruit? These things will not, at least, be despised by those who see most of them. The Birmingham

people seem to enjoy their vocation, more than any townful of people I ever remember to have seen. Their taste, and their scientific faculties, find a constant gratification in the pursuit of their ordinary business. It is on behalf of persons who know little of the place, that one forms the wish that we could all relish beauty, wherever it is to be found, and honour Art, whatever may be the name of its dwelling-place. Tubal-cain has always been an interesting person, from his having begun his hard work so extremely early in human life. It is absurd to despise his later and prettier doings, because the roar of his furnace and the whiz of his tools are among not only the imagery of books, but the common sounds of every day.

CHAPTER XVII.

HOPE WITH A SLATE ANCHOR.

Almost everybody knows Killarney—knows about it, at all events, by book or newspaper, if not by the actual sight of it—but scarcely anybody has either seen or heard of Valencia. "Valencia! why, I thought that was in Spain," some one will cry out. "What can Valencia and Killarney have to do with each other?" Why, simply that they are about forty miles apart, and that everybody who sees Killarney should go on to Valencia. It is true, there is a Valencia in Spain; and it is probable that this island is named after that city; for there were Spaniards here, once upon a time, when there was a great trade between Galway and Spain. There were, probably, Spaniards living on the island when the Grand Armada sailed by—fated to lose the great ship, Our Lady of the Rosary, close by, and two more presently after near Kilkee, on the coast of Clare; and more still near the Giant's Causeway in the north. All Ireland was supplied with wine from Spain between two and three centuries ago; and it is natural to suppose that merchants or agents from the Spanish Valencia might give its name to the Irish island and port—the most westerly port in Europe.

It is a glorious place for scenery; and it might be a glorious one for trade. Perhaps it was once; I am confident it will be,

some time or other. There it lies, just within a great bay, spreading out its arms, as if to guard the lake-like sea within; and rearing up mountains, as if to prevent the winds of heaven from visiting its face too roughly. The winds do find their way in at times, however; and they are so very rough within that smooth sound as to prevent the ferryboat passing: and then the people on the island cannot get their letters and newspapers, though they are near enough to the mainland to see the post-bags arrive at the ferry-house. The English residents say this is a hardship in winter, for they depend so much more than English people can suppose on their letters and newspapers, in a situation so wild as their island. Last winter,* however, there was not a day in which the sound was impassable.

If those waters could tell what has happened on them, and if those mountains on the mainland could echo to our ears the things that have been said in their recesses, we should hear some curious stories. There is one inlet of the sea which can be overlooked from the island, flowing in among the mountains, turning and winding round many a promontory, and past many an old dwelling now in ruins; and among the rest, the ivy-grown gable, and roofless front of the house where O'Connell was born. It was up that inlet that smugglers used to steal by night—as the pirates of the olden time had done before them. They used to slip in on one side of the island, while the Government cruiser was watching the other; and up they came, in the shadow of the mountains, and behind the screen of the promontories, lying hid in some chasm of the rocks if the enemy came by; and always winning their way up, sooner or later, to the still dark cove, on whose brink stands that ivied ruin. We must remember that smuggling was then and there considered rather an act of patriotism than an offence. The inhabitants of these coasts were some of the most disaffected of the Irish; and they amazingly enjoyed depriving England, and the English part of their own Government, of the produce of the Customs, while carrying on a good trade with their dear friends, the French and Spaniards, and making their own fortunes at the same time. Not small, therefore, was the amount of smuggling that went forward—if the local histories are true—at that ivied house, and, in a somewhat more genteel and disguised manner, at Derrynane Abbey, the residence formerly of an uncle of O'Connell,

* 1852.

and then his own. And the rocks of Valencia itself afford great facilities for the same practice, which used to go on almost unchecked by the coast-guard who were, and still are, stationed on the island. I saw their flag, the other day, floating half-mast high, in mourning for Wellington. The men have little to do now but to learn and tell the news, when their routine duty is done; for France, Spain, and Ireland are no longer the foes of England, and the reduction of Customs duties has made smuggling no longer worth while; so that the coast-guard have but a dull life of it. And so have the constabulary. Poor fellows! there is scarcely anything for them to do, now that industry, bringing regular good wages, has succeeded to the gambling of an illicit trade, with its occasional frays and drunken bouts.

I saw them making the most of a small incident, last Sunday, for want of any more serious employment. In general, they look out, yawning, from the barred windows of their barrack; or rub away at their brass plates and buckles, which are already as bright as the Queen's dinner service; or lean over a wall peeling an apple, or rush out to see a traveller pass by. On Sunday last, a dozen or so of half drunk young men came over, in a high wind, from the mainland to Valencia, raced to the little inn in a staggering sort of way, took possession of a parlour, where all smoked and talked together; peeped into another parlour where two ladies were sitting—invaded the kitchen and lent a hand to the cooking, shutting up the oven, so as to spoil the apple pie that was baking for the ladies' dinner—and presently burst away again, declaring that they would have a sail in the sound. The wind was now in a roaring state, and the waves were curling with foam, while Neptune's sheep jumped up most pertinaciously against the black rocks. Out went everybody to see how the silly fellows would manage: the old landlady, with her shawl over her head, in her little front garden; the neighbours on points which overlooked the sound; and the gallant soldierly constabulary showing themselves on the road and the little pier. Boats were in readiness, and everybody on the watch, with all their clothes fluttering in the wind. There it was presently—that crowded boat—flying along with all its sails out, desperately awry, as if it must fill the next moment. It did not, however. The fellows had better luck than they deserved. They struck the ferry pier at the right

place, tumbled out, toppled over each other upon a car, and dashed off upon the Cahirciveen road. The adventure was over; and the constabulary had only to go home again.

Despairing of any higher order of romance than this, I was disposed to see what the industry of Valencia now is. So a comrade and I begged the favour of a resident to let his car to us, on Monday morning, that we might see something that we had heard of—something better than smuggling—up among the hills. We saw that, and a good deal more, in the course of our remarkable drive.

There are two main roads in Valencia—the upper and lower—running nearly its whole length, which is about five Irish miles; that is, nearly seven English. We went by the lower, and returned by the upper road. Besides the familiar spectacle of the Irish cabin—that sad spectacle, too well known to need to be described again—we saw some curious indications of the ways of the inhabitants. To save the trouble of putting up gates to the fields, each man who had a cart had put it in the gateway. This kept out the cow, but it let in the pigs and fowls; and it did not matter much to the cow after all. She had only the additional trouble of getting over the low earthen fence—which every cow did, to get out of the way of our car. One woman had taken her two cows into the potato plot with her—to help her to dig potatoes, no doubt. At a distance, the thatched roofs (weedy and without eaves) and the walls by the roadside appeared to be vandyked with some pattern of a dirty white colour. On coming near, we found this to be a row of split fish, drying. Fresh fish may be had every day, for the catching; but the people prefer their fish salt. We looked abroad over the sound, but there was not one single fishing-boat nor any sort of vessel; but on some high land lay a boat on the grass, the only one we saw. Its being there seemed rather like an Irish bull, while the water below looked so blank for want of it. Next, we were stopped for some minutes. A young farmer had thought proper to choose the middle of the high road for winnowing his crop of oats. There was plenty of high and dry ground at hand; but he preferred the middle of the road: so he had to bundle up his cloth, and shove away his oats, spilling the grain at every move, and turning in despair from us to a cartful of people who came up at the moment on the other side. To complete his embarrassment, the horse in the cart was blind,

and could not be made aware of the concessions required of him. After a loss of much time and oats, we were all at our proper business again—the farmer actually dragging back his apparatus to the middle of the road, as soon as it was clear.

Besides the cabins and cottages, we saw, near this road, one solitary, dreary-looking white house. It was tall and rather large, with no garden or field belonging to it. Its windows looked as if they had never been opened; its wood-work as if it had not been painted for a century; and its whitewash was grey with weather-stains. It was the Cholera Hospital. Not a token of a dwelling was near, but the remains of a mud-hut, melted down by the rains. The sight of the place is enough to give the cholera to a nervous person. Before the famine there were three thousand inhabitants on the island. Now, though the intervening years have settled many new residents there, there are only two thousand five hundred. I wonder how many died in that house, whether scores or hundreds! As the country people say, "The cholera found them weak from the hunger," and carried them off with wonderful rapidity. Of the three thousand residents of Valencia, at the time of the famine, two thousand two hundred received relief in food, as their only chance for life. But no more of this now. I am speaking of a scene of health, and industry, and plenty, for all who choose to seek it.

All the way from the port, our eyes have been fixed on a tower, high up and afar, with a vast green upland between us and it. We want to reach that tower, for the sake of a gaze over the Atlantic. Arriving at a hamlet of cabins, set down one right before another, with a manure heap and puddle between each, we are told that we must walk the rest of the way; and very tempting looks the long green ascent, with a broad green road just distinguishable in the midst. My comrade asks an old woman how far it is to the tower. No answer. She understands nothing but Irish. We try a funny-looking boy; but to every sort of question he answers only—"I know;" and this is evidently the only English he can speak. There is a girl, pelting the cows with peat, to send them out of our way: she speaks English. My comrade asks, "Is there anybody up at the tower?" "Yes, miss." "Who is there?" "Only the cows, miss." We go to see. There is, indeed, a green road, and it must once have been a fine one, judging by the strength

of the little bridges over the water-courses, which look as good as ever. Up we go, up and up, amidst the wondering cattle, some of which lie in our path till the last moment, while others flee, and others again stick out their fore legs, and stand fast, as if they thought we wanted to knock them down. One calm-looking munching cow looks benignly at us, as if wishing us a pleasant walk; another, a nervous heifer, seems to prick up her horns as a horse pricks up his ears, and looks disposed to run at us in sheer fright. She scampers off when we look at her, and turns, and approaches as we proceed; and then scampers off again. We find none at the tower. It is too high. For some time we have seen nothing alive but a black caterpillar in the grass, and a wagtail see-sawing its body on a warm stone. Up at the tower, on the topmost stone of its ruined walls, sits a jackdaw, immensely solemn and important, believing himself no doubt the lord of the scene. But we cannot attend to him now. We can see daws elsewhere; but nowhere else is there anything like this scene.

We sit down on the stones which were once the wall, and look below—not, if the truth were told, without some of the aching of the bones which is the miserable pain of those who peep over a precipice, or dream that they are thrown down one. At the same instant, by an odd coincidence, we ask each other whether there is anything whiter than snow, because the foam, rushing and weltering about that rock in the sunshine beneath, looks to our eyes whiter than any snow we ever saw. I will tell no more of this view from Bray Head, in Valencia. There is no describing the Skellig Rocks, or the black nearer crags, or the dreamy beauty of the inland view of receding mountains, with glittering sounds and bays running in among them. Far out at sea, there are smoke-like showers; but, turning the other way, or looking below, the water is, where not a true Mediterranean blue, a deep green or bright lilac. This ruined tower was erected when invasion was expected; and the green track was the military road, up which went the soldiers and the cannon. There were once two forts below—north and south of Bray Head. They were built by Cromwell. If anything remains of them, they are, with this tower, the property of this melancholy daw, which now is on the move to show us the way down. We must go, for we have not yet seen what we came out for.

We return by the upper road; and my comrade points out that, while there is a well-marked foot-track on the hard road there is no trace of wheels. It seems as if our car were the first wheeled carriage that had ever been here.

We observe a stranger thing than this. While the dwellings are so wretchedly thatched as to look like the huts of savages, the fences are patched with slates—the roads are mended with slates—the broken windows of houses that have windows are blocked up with slates. There are slates everywhere but where they ought to be. These slate symptoms show that we are approaching the object of our drive.

After a steep descent, we turn up a left hand road, which shows abundant marks of wheels—of wheels broad enough for an ancient Pickford's waggon. This is the road which ascends to the slate-quarries, and down which come those enormous blocks of slate—some of them weighing fifteen tons—of which the world is beginning to hear, and, in fact, has heard a good deal since the Great Exhibition.

A few years ago, people who knew nothing of slate but as a material to roof houses with and do sums upon, were charmed to find it could be made to serve for so large a thing as a billiard-table. For billiard-tables there is nothing like slate, so perfectly level and smooth as it is. Then, fishmongers found there was nothing like slate for their slabs (till they are rich enough to afford marble); and farmers' wives discovered the same thing in regard to their dairies. Plumbers then began to declare that there was nothing like slate for cisterns and sinks: and builders, noticing this, tried slate for the pavement of wash-houses, pantries, and kitchens, and for cottage floors; and they have long declared that there is nothing like it; it is so clean, and dries so quickly. If so, thought the ornamental gardener, it must be the very thing for garden chairs, summer-houses, sun-dials, and tables in arbours; and it *is* the very thing. The stonemason was equally pleased with it for gravestones. "Then," said the builder again, when perplexed with complaints of a damp wall in an exposed situation, "why should not a wall be slated as well as a roof, if it wants it as much?" So *he* tried; and in mountain districts, where one end of a house is exposed to beating rains, we see that end as scaly as a fish—slated like its own roof. Thus it is with the small houses erected for business at the quarry in Valencia; and the steps leading up

to them are of slate ; and the paths before the doors are paved with slate. We look in upon the steam-engine ; and we observe that the fittings of the engine-house are all of slate, so that no dust can lodge, and no damp can enter.

It is the quarry that we care most to see ; and up to it we go, under the guidance of the overlooker, as soon as he has measured a block of slate with the marked rod he carries in his hand. He is a Welshman—from Bangor—the only person among the hundred and twenty about the works who is not Irish. Is it really so? we ask, when we are in the quarry. There is nobody there—not one man or boy among all those groups—who can properly be called ragged. Many have holes in their clothes ; but all have clothes—real garments, instead of flapping tatters, hung on, nobody knows how. Another thing. These people are working steadily and gravely. If spoken to, they answer calmly, and with an air of independence—without vociferation, cant, flattery, or any kind of passion. Yet these people are all Irish ; and they speak as they do because they *are* independent. They have good work ; and they do their work well. They earn good wages ; and they feel independent. These are the people who, in famine time, formed a middle class between the few proprietors in the island and the many paupers. The receivers of relief, we have said, were two thousand two hundred. The proprietors and their families were two hundred. These work-people and their families were the remaining six hundred. They look like people who could hold their ground in a season of stress. This quarry was their anchorage.

What a noble place it is ! We climb till we find ourselves standing on the upper tramway, or the verge of a precipice of slate, with a rough wall of slate behind us—of all shades of grey, from white to black, contrasting well with the orange line of the iron mould caused by the drip from the roof upon the tramway ; but the ceiling is the most prodigious thing about the place. It is, in sober truth, in its massiveness, greyness, smoothness, and vastness, somewhat like the granite roof in the great chamber of the Great Pyramid. It takes away one's breath with something of the same crushing feeling. And then, look at the groups clustered or half hidden in this enormous cavern. How small every one looks—the men with the borers and mallets, making holes for the blasting ; the men with the

wedges and mallets, splitting off great blocks: some on shelves high up over head; some in cupboards far within; some in dark crevices in the mighty walls! Knock, knock, knock go the mallets, with an echo following each knock,—far, near, incessant; and the echo of the drip heard through all—an echo for every plash.

What are they doing below—those two men with the chain and hooks, that they can scarcely shift? They are fixing the hooks in crevices under the horizontal mass of slate. It rises; and as it rises they shift the hooks further into the cracks, till the block breaks off. When the hooks are in the middle of its weight it rises steadily—why and how? Look at that waggon on that tramway in the air overhead, the waggon way supported on those enormous beams, which are themselves upheld by clamps fixed in the slate walls of the cavern. On each side of that airy truck there is a stage, and in each stage is a man working a windlass, which turns a cog wheel, by which the truck is moved forward or backward. The chains and hooks which are raising the block hang down from this machinery; and as the men in the air work their cog wheel, the men on the ground stand away from under the block, and see it moved and deposited on the truck which is to convey it to the saw mill. That truck is on the tramway below, and a horse draws it to the saw mill, where the block will be raised again by more airy machinery, and placed in the right position for the saws. It weighs only about three tons. A single horse can draw a weight of five tons. The largest size is, as has been said, fifteen tons.

We go down to the saw-mills—down, among, and round, hillocks of refuse. The noise in the mill is so horrid—in kind as well as degree—that we cannot stay: but a glance is enough. The engine works the great saws, which here do not split the blocks, but square them, and smooth their sides and ends. The rest is done at the works below—at the port. The grating and rasping can be better conceived than described or endured. Above the blocks are suspended a sort of funnels, from which sand and water drip, in aid of the sawing process. We see this, glance at the curious picture of grey blocks—perpendicular saws, apparently moving up and down by their own will—and superintending men—and, thinking how good a spectacle it would be, but for the tremendous noise, hasten away.

On the road down hill is one of the broad-wheeled trucks, laden with an enormous block. We wonder how we shall pass it. We do so, by favour of a recess in the road, and jog on. On the left, opens a charming narrow lane, overhung with ash and birch, gay with gorse, and bristling with brambles. We jump off our car, dismiss it, plunge down the lane, waste a vast deal of time in feasting on blackberries—the dessert to our biscuit-lunch—and at last sit down on some stones to say how good Valencia blackberries are, and how gaudy a Valencia lane is with gorse and heather; and then we talk over and fix in our memories what we have seen; and finally emerge from the bottom of the lane, explore the dairy and old house of the Knight of Kerry, and proceed on our way to the works at the port, heedless of how the time slips away while we gaze at the lighthouse, and the opposite shore, and far away over Dingle Bay, to the faint blue Dingle mountains. We do, however, at length reach the gate of the works.

We miss the terrible noise of which we had been warned, and which had made itself heard in our inn. The works are, in fact, stopped for the repair of the machinery; and as they will not be going again while we are in Valencia, we can only look round and see what we can. We see on every hand noble slabs of slate, many feet long and broad, and from half-an-inch to three inches in thickness. Scores of them are standing on edge, leaning against each other, as if they could be lifted up, and carried away like sheets of pasteboard. By picking up a bit that has been cut off, one finds the difference. It is very heavy; and this, I suppose, is the impediment to its adoption for many domestic purposes for which it is otherwise remarkably fit. One boy was at work on a great piece that we could make nothing of without explanation. It had large round holes cut out, as if with a monstrous cheese-taster, the slab being an inch thick; and the boy was cutting out pieces of what was left between the circles. It was for the ridge of a house; and in a moment we saw that the pattern was like that of many barge-boards of ornamented cottages. We found that the carving, turning, and ornamental manufacture of slate articles do not proceed far in Valencia, as the London houses do not like rivalship in that part of the business; but in the abode of the proprietor we saw, in an amusing way, what might be done by one who has a mind to furnish his house with slate.

On entering the garden door we found, as might be expected, a pavement of slate, smooth and close-fitted, leading up to the house. The borders of the parterres were of upright slates; and there was a little gravestone in the grass—in memory, doubtless, of some domestic pet—of the same material. The narrow paths between the vegetable beds were paved with slate: and reasonably, considering how wet the climate is, and how quickly slate dries. The sun-dial and garden seats followed of course. Entering the house, we found not only the pavement of the hall, but its lower panels of slate; and this reminded us of the excellence of granaries and barns which are flagged instead of boarded, and have a skirting-board of slate, which keeps out rats and mice altogether, supposing the door to be in good order. The saving in grain soon pays the difference between such a material and wood, which rats always can and do gnaw through, sooner or later.

In the hall were an umbrella and hat-stand, a slab, and a standard-lamp, all of slate. The weight is a favourable quality in the first and last of these articles; but, great as is the advantage of the lamp not being liable to be upset, the colour of slate is too dark. Dark lamp-stands absorb too much light. In the dining-room was a very handsome round table of slate—variegated somewhat like marble, and delightfully clean-looking, smooth, and level. Its weight makes it all but immoveable; and this may be an objection: but there is no doubt of its beauty—with its moulded rim, its well-turned stem, and finished pedestal. At the Knight of Kerry's house we had seen a carved mantel-piece, with fluted pillars of slate; and here we saw other mantel-pieces, variously carved. The fenders were delightful; —smoothly turned slopes which invited the feet to rest and be warmed;—simple, effectual, and so neat as to be really pretty. There was nothing that we liked so well as the fenders—unless it was the paper-weights, simply ornamented: or the book-shelves—perfectly plain, with their rounded edges, and their evident capacity to bear any weight. No folios, however ancient —no atlases, however magnificent, can bend a shelf of slate; and I very much doubt whether the spider can fasten her thread to its surface. No insect can penetrate it; and this indicates the value of slate furniture in India, and in our tropical colonies, where ants hollow out everything wooden, from the foundation of a house to its roof-tree. Hearth-stones of slate were a matter

of course in this house; and we wished they had been so in some others, where there has been repeated danger of fire from sparks or hot ashes falling between the joints of the stones composing the hearth. Then, there were a music-stand, a what-not, a sofa-table—and probably many more articles in the bed-rooms, kitchen, and offices, which we did not see.

It seems to me that we have heard so much of new applications of slate, within two or three years, as to show that the world is awakening to a sense of its uses; but such a display as this was a curious novelty. I believe it is only recently that it has been discovered how well this material bears turning and carving, and how fit it therefore is to be used in masses where solidity is required, together with a capacity for ornament. If its use should become as extensive as there is reason to suppose, the effect upon many a secluded mountain population will be great. The slate-quarrymen of our islands are, for the most part, a primitive, and even semi-barbarous set of people—Valencia being one of the excepted cases. In Cumberland, Westmoreland, and Wales, very important social changes must take place, in whole districts, through an increased demand for slate—better wrought out of the mountain than at present. As for Valencia, not only is its slate far finer, and more skilfully obtained than any we have seen elsewhere; but the workmen are a body of light to the region they inhabit. They marry, when they can, English girls, or girls who have had English training in household ways. Their dwellings are already superior to those of their neighbours; and, if the works increase, through an increased demand, so as to become the absorbing interest of Valencia, the island may become a school of social progress to the whole west of Ireland, where such a school was sorely needed before this establishment arose.

THE END.

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