

upon the health and constitution, it has not half the wearing, ageing power that brain-work has. A manual labourer when his day's toil is finished is a king in many ways compared with the brain-worker—when the tools of the former are laid aside for the day, care and trouble as a rule lie down beside them; but the phantom of his toils follows the latter home, and seats itself on the pillow on which he tries to rest his hot and weary head.

Well, here I am, a medical man, railing and caviling against the evils of life at high pressure, that I see going on everywhere around me, and the very fact of my doing so gives my readers the right to ask me if I have any remedy to suggest for the mischief I deplore. Labour, I reply, is the common lot of all, and more often a blessing than anything else; and ambition, unless carried to the border-land of mania, is a thing to be encouraged rather than condemned; and I have but one word of advice to sound in the ears of those who do not wish to throw away their lives, but to live comfortably and rationally for a reasonable length of time, and that word is "Conserve." Conserve health while we have it, conserve the constitution nature has given us, and we can only do this by obeying nature's laws.

Railways have done an immeasurable amount of good, and they do not a little harm as well. Many business people take advantage of their speed to live in the suburbs, or even the country itself. If they have some twenty or thirty miles, or say a journey of an hour and a half—for the time occupied in going to and from the stations must be considered—every morning and evening, and this for five days of the

week, I doubt whether their country life is very advantageous to the health. At all events, it would be much more so if they had not so often to hurry to catch the train. This hurry entails a considerable degree of anxiety almost every morning, it prevents the discussion of a comfortable breakfast, it would prevent the comfortable assimilation or digestion of that meal, even should it be partaken of. Then there is more hurry at the journey's end, and a man who hurries is never fresh. But if a good substantial meal were enjoyed about midday, the evil effects of a light and hasty breakfast would hardly be felt. Yet business people have seldom time for any such luxury, and so the customary snack of luncheon is swallowed. Indeed their lives are hurry all day long, in order, they will tell you, to keep abreast of the times. Stomach, brain, heart, and liver all suffer from such a method of life. Some few may make up for the wear and tear and toil of the day by rest in the evening and a good dinner, followed by refreshing sleep. It is to be hoped that these men awake in the morning feeling fresh and well-slept, quite ready for the bath and ready for breakfast, and eager to begin the day's work again; if they do not feel so, the "good dinner" of the evening before had something about it of the nature of a delusion.

Too many people now-a-days complain of a feeling of almost constant tiredness. They ought to take this as a warning; if they do not, but pooh-pooh such a symptom and think it only natural, they must not be surprised if a break-up of the system comes before it was expected, and there is no cure for this.

A VISIT TO THE WORCESTER PORCELAIN WORKS.



WHEREVER habits of taste and refinement have found their way, Worcester china has followed in the train. Yet it may be that even some with whom the collection of English porcelain is a passion, are im-

perfectly acquainted with the whole process of its manufacture. It is competent, however, for any visitor to Worcester, who may be interested in the matter, to present himself at the works and inspect them personally. In return for the sum of sixpence he will be provided with a small hand-book, and conducted over the principal workshops by an intelligent guide.

But it is not everybody who can visit the old city, and some may be willing to make the inspection by proxy through the medium of this paper.

In the short walk down from the railway station to the works, we may as well recall one or two facts in connection with the making of porcelain.

The Worcester Works were established in the year 1751, when the productions of Bow and Chelsea had already earned a reputation. At the latter place, porcelain has been made even prior to the year 1698; at Bow its manufacture commenced a few years later. Thus Worcester started chronologically a little way behind its English rivals, and some fifty years after the first European pottery had been turned out at Dresden. At Sèvres, however, another of its great rivals, the work had not yet commenced, for the manufactory was only removed thither from St. Cloud in the year 1756.

Dr. Wall, an accomplished physician of the city, gave Worcester its new industry. To the usual acquirements of his profession he added those of an excellent artist and a skilful chemist. It was no small triumph at that time for him to produce a porcelain of the remarkable beauty he did, for neither soap-rock nor china-clay was then known to lurk within the rocks of Cornwall. By his care and skill he laid the foundation of an enterprise which has become in some measure national in its character.

And now we are at the gates of the extensive works.

Our object is soon made known, our sixpence paid, and then, guide-book in hand, and our minds duly prepared for the wonders before us, we enter upon the tour of inspection.

It is clearly intended that we should follow the process of manufacture in the proper sequence of its several stages. Accordingly our first visit is to the regions of motive-power, where the engines toil on night and day. Thence we pass to the mills, where the raw material begins that course of treatment which fits it for the workman's hand.

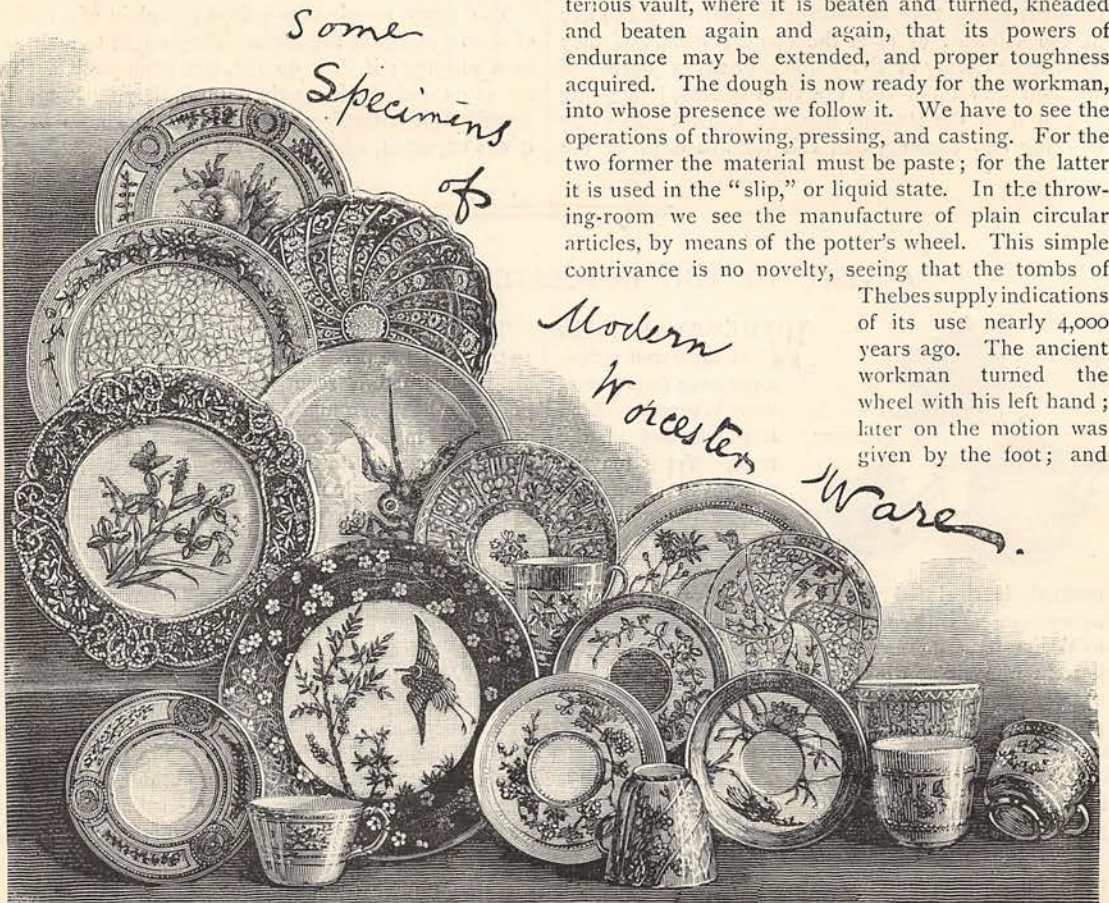
What the materials are it may not be amiss to say. Here is kaolin, or china-clay, from Cornwall, an important constituent, not found in England until the Worcester works had been eighteen years in operation; china-stone from the quarries of St. Stephen's, Cornwall; felspar from Sweden; fire-clay from Stourbridge and Broseley; flint from Gravesend and Dieppe; lastly, calcined bones, an element which enters only into the composition of English porcelain. Ox-bones alone can be used for this purpose, and the home supply is augmented by importations from South America. Some more familiar materials, such as borax and lead, unite with others to form the glaze.

As the beauty of porcelain depends very much upon a thorough grinding of the materials, the mill is no insignificant part of the factory. The huge pans in

which most of the substances are ground we find on the first floor. They resemble small vats, firmly hooped with iron, and paved with blocks of hard stone. The grinding-stones run upon curved arms radiating from an upright shaft. When the appointed material has been thrown in, and water added, the mill goes merrily round until all suspicion of lumps or small cakes is gone, and nothing but a thick cream remains. A very high test awaits its smoothness, for we are invited to remark a fine silk lawn, numbering 4,000 meshes to a square inch, through which this cream must pass. The grinding of bones, and of the colours used in decoration, goes on a storey higher, whilst down-stairs the ground materials are stored until required.

After the grinding comes the mixing, duly carried on in the "slip-house." There are some curious points about this apparently simple process. For example, in the mixing-pots the spectator observes a shaft with arms radiating from it. To these are attached rows of magnets, which, as they work through the mass, detect and draw to themselves any particles of iron lurking therein. From these vats the mixture passes to the sieves, and then experiences the tender mercies of the clay-press, where hydraulic pressure soon causes it to resign its creamy character for that of an unctuous dough. This trial over, it is hurried away to a mysterious vault, where it is beaten and turned, kneaded and beaten again and again, that its powers of endurance may be extended, and proper toughness acquired. The dough is now ready for the workman, into whose presence we follow it. We have to see the operations of throwing, pressing, and casting. For the two former the material must be paste; for the latter it is used in the "slip," or liquid state. In the throwing-room we see the manufacture of plain circular articles, by means of the potter's wheel. This simple contrivance is no novelty, seeing that the tombs of

Thebes supply indications of its use nearly 4,000 years ago. The ancient workman turned the wheel with his left hand; later on the motion was given by the foot; and





WORCESTER WARE.

now, of course, in most large works the use of steam comes in. One cannot help admiring the rapidity with which, under the skilled hand of the workman, a mere ball of the dough rapidly assumes the shape of cup or vase. Fewer articles are now made by the wheel than formerly, because of the advantage offered by a mould in readily permitting raised patterns to be formed on the surface.

Next to the thrower's task comes that of the turner, who in his lathe trims and finishes, where necessary, the surface of the piece. Handles for cups, jugs, and like articles are made in moulds, and affixed to the body by the application of some creamy "slip." The manufacture of plates is effected by a process called "flat-pressing," the nature of which is indicated by its name. "Hollow-ware-pressing" is the title of another process, by which tureens, basins, and articles of this kind are made in moulds. The objects made in these rooms are all those very familiar to our eyes in connection with meal-times.

We now come to a work of more difficulty, and of corresponding interest. In the Figure-making Department we see the process of casting in all its stages.

First comes the work of the modeller, who prepares

the figure of whatever size or shape it may be. The modelling over, the moulder next takes the work in hand. By him it is cut up into a number of separate pieces, as appears to his eye most convenient for casting. The moulds being duly formed, into the orifice of each the liquid slip is poured from a jug, and then left for a little time until it has acquired some solidity. The parts are next skilfully brought together, and joined with more of the creamy slip. Then, when every joint has been made smooth with a camel's-hair pencil, the figure stands perfect as before, and is ready for the oven.

The word "oven" calls up visions of cooking-ranges. In thinking of these "biscuit kilns" we must dismiss such ideas from our minds. The oven we see is a tall erection of fire-brick, in the shape of a gigantic beehive, strongly belted with iron, and with several fire-places disposed around its base. The porcelain is not exposed to its heat in an unprotected state, but carefully arranged inside fire-clay bandboxes, called "seggars." Even a solitary plate has its own particular "seggar," within which it is accommodated with an easy bed of ground flint. When the cases have been disposed, one upon another, within the oven, the firing

begins, and lasts for some forty hours. Then comes a slightly longer period in which it is left to cool down. On removal the pieces are found to be considerably diminished in size, for contraction will sometimes take place to the extent of 25 per cent. But for this, of course, the modeller has made allowance.

This process over, the porcelain acquires the name of "biscuit," and must now be glazed. In the dipping-room we find workmen standing before tilted tubs, and giving to each piece an equal coat of its particular glaze. Hence they are hurried away to a drying-stove. Then, after any defects have been made good, another baking awaits them. The "glost-oven"—apparently an own brother to our former acquaintance—receives them for another fifty hours, and then they are removed in a white state to the first warehouse.

Here the simple process of manufacture may be said to end. The porcelain is made, but it awaits decoration, and to the rooms in which this is done we naturally look forward with some curiosity. The casual visitor is not, however, shown the rooms in which artists are at work on the highest-class work; our entrance and exit, our exclamations of pleasure, or whispered comments, would be unwelcome interruptions during tasks needing the greatest delicacy and care.

In a long well-lighted room we find a number of artists busied upon pieces of all kinds. We are told that they have been specially trained to the work since boyhood, as only thus can the desired facility of execution be attained. Articles for ornament and use are in hand on all sides, and undergoing all styles of decoration. But to the inexperienced the style seems disappointing, and the colours dull. We do not recognise gold as being in use. What we are told is the precious metal exhibits none of its characteristic

brilliance. In the rooms, however, where gilding is going on we have an opportunity of closely examining its use by the workman. It is said to come down to Worcester in the shape of small grains, resembling ground coffee. After mixture with a proportion of flux and mercury, it is ground for about thirty hours, and is then ready for use. After decoration there is another kiln to be passed through, after which the colours assume more of their proper hue.

We have yet to see the operation of printing on porcelain. Dr. Wall was the first potter able to carry out this idea with any success; and this class of work has been executed at Worcester since 1756. The invention did much to bring decorated pottery within the reach of more humble buyers, but was reprobated by many as being essentially inartistic. Its chief use now at Worcester is to impress an outline, subsequently filled in by female hands.

We have already spoken of the last baking—that in the enamel kiln. If the ware, on being drawn from this, shows finger-marks, specks of dirt, or defects in decoration, it must go back on its path until these are remedied. This done, it may pass with the rest to the burnishing-room. Here again female labour is extensively employed. Under the hands of young women the dull gold, rubbed with bloodstone or agate, assumes its proper brilliancy.

We have now followed the porcelain through the process of its manufacture. It only remains for it to be carried to the show-rooms or warehouse, prior to being packed for all parts of the world.

We have still to see the Museum attached to the works, in which are found specimens of ancient pottery, and a representative collection of Worcester ware. A lingering inspection of its well-filled cases brings our visit to a close.

A. R. BUCKLAND, B.A.

HOW HE FOUND HIS WIFE.

BY THE AUTHOR OF "A HARD CASE," "WAS IT WISE TO CHANGE?" ETC.



A FEW years ago I received a sudden summons to leave my home in a western county and go to London on business.

There was no difficulty in the matter, for my uncle, who had died about three years before, had left his property to me in good order and with an efficient staff of servants—and I was sometimes harassed by a doubt whether in this instance a master was not altogether a superfluous

at any rate there was no reason why I should not obey the urgent request of my cousin, William Ran-

some, when he wrote to ask me to meet him in town on his arrival from Canada, where he had been living for several years.

I had been led to believe that William had some reason for feeling himself aggrieved when my uncle left his property to me, therefore when he asked me to be in town by a certain day and await his arrival, which might possibly be delayed, but would probably be in the last week of November, I felt that I owed it to him to fall in with his wishes, especially as he hinted that he had affairs of importance to communicate to me.

"I have always been accustomed to stay at Joseph's Hotel," he wrote; "and if you do not mind the unfashionable locality, I will ask you to wait for me there, that there may be no delay in our meeting when I get to London." And as I knew little of town, and had rather a leaning towards the City, with its odd corners and ceaseless bustle, I was quite ready to