

of Edward III a fleet was fitted out at Rotherhithe by order of the Black Prince and John of Gaunt for the invasion of France. And it was off Rotherhithe that Richard III was so alarmed at the shouts and array of the malcontents whom he came to appease, that he hastily returned to the Tower, whilst the infuriate people swept on with their excesses to the Marshalsea and Lambeth. Lambarde states that Henry IV "lodged in an old stone house here while he was cured of leprosie;" and two of Henry's charters are dated here, July, 1412.

St. Mary's Church, close to the Thames Tunnel shaft, was rebuilt in 1736-39, upon the site of the old church, which had stood 400 years. Gataker, the erudite Latin critic, was rector from 1611 to 1654; he was imprisoned in the Fleet by Laud, and is buried in Rotherhithe churchyard. Here also lies Prince Le Boo, a native of the Pelew Islands; over his remains a monument has been erected by the East India Company, in testimony of his father's humane and kind treatment of the crew of the *Antelope*, Captain Wilson, wrecked off Goo-roo-raa, one of the Pelew Islands, on the night of August 9th, 1783. The young Prince Le Boo died in his twentieth year from small-pox, in Captain Wilson's house in Paradise Row, Rotherhithe.

The parish registry, commencing 1556, contains many entries of ages, from ninety to ninety-nine years, some of one hundred and twenty years! Admiral Sir Charles Wager possessed the manor between 1740 and 1750. The brave Admiral Sir John Leake was born here 1756; but Admiral Benbow, stated by Manning and Bray to have been born at Rotherhithe, was a native of Cotton Hill, Shrewsbury.\* Lillo, the dramatist, who wrote "George Barnwell," was a jeweller, living at Rotherhithe in 1745.

A very interesting literary association is Swift's "Captain Gulliver," who, he tells us, was long an inhabitant of Rotherhithe. There is such a reality given to this person by Swift that one seaman is said to have sworn that he knew Captain Gulliver very well, "but he lived at Wapping, not at Rotherhithe." Lord Scarborough was told by the master of a ship that he knew Gulliver very well, but that the printer had made a mistake,— "he lived in Wapping, not at Rotherhithe." "It is as true as if Mr. Gulliver had spoken it," was a sort of proverb among his neighbours at Redriff. Rogers, the poet, remarked in the churchyard at Banbury several inscriptions to persons named Gulliver, which inscriptions he found mentioned in "Gulliver's Travels" as a confirmation of Gulliver's statement that his family "came from Oxfordshire," so completely is the joke kept up.

We have spoken of whitebait. Another little fish, though now neglected, is the *twaitte shad*, which is found in the Thames towards the middle of July; it was caught as high up the river as Putney, but now rarely passes London Bridge, and is taken in the greatest abundance a little below Greenwich. Shad Thames, a narrow water-side street, was named from the quantities of shad taken here, and in the Thames off Horselydown, and cried about the streets as herrings, mackerel, and sprats now are. Strange fish have strayed here. In 1391 a dolphin, ten feet in length, disported himself in the Thames at London to the bridge. Evelyn tells of a whale, fifty-

eight feet in length, killed between Deptford and Greenwich in 1658. Pennant tells of a two-toothed cachalot, twenty-one feet long, taken above London Bridge in 1783. At Grays a whale of the above length was taken in 1809, and another in 1849.

Rotherhithe, like Wapping, has its numerous docks, and a similar population; but the Surrey side has also its flour-mills and manufactories, and the wharfs for the coasting trade of England, which are all to be found between the Tunnel and London Bridge. The oldest portion of the Commercial Docks, according to Stow, occupies the commencement of Canute's Trench, through which the course of the river was diverted when the first stone bridge across the Thames was built, in the reign of King John. The present Commercial Docks originated in the "Howland Great Wet Dock" in 1660; subsequently the Greenland whale-fishery, with the vessels, houses, boilers, and tanks, was located in this dock. Dodd projected a ship canal from Rotherhithe to Vauxhall. After the whaling trade declined it became the Baltic, and then the Commercial Docks; they extend over 150 acres; the ponds will float 50,000 loads of timber, and the yard will take 4,000,000 deals. The cargo of one timber ship would cover thirty-two acres, were the deals placed side by side. Here also are the Grand Surrey Docks, the new works of which, in 1858, cost upwards of £100,000. The docks of the Thames are of surprising extent: they comprise hundreds of acres of water, surrounded by miles of walls, and sheltering thousands of ships; here have been spent millions of money, and all in about half a century.

The shipping and craft in the river have lost much of their picturesqueness within memory. We miss the tall vessels with their high forecastele, and the gilded state barges of the Sovereign, the Admiralty, and the City Companies. The steam navigation of the Thames exceeds that of any other river in the world. The first steam-boat left the Thames for Richmond in 1814,\* the next for Gravesend in 1815, and in the same year for Margate. The Gravesend steamer soon superseded the sailing-boats with decks, which, in 1737, had displaced tilt-boats mentioned in the reign of Richard II. The Margate steamers in like manner superseded the "hoy." The steam traffic has attained vast numbers; in the year 1861, 3,207,558 passengers landed and embarked at one pier. The numbers have, however, been greatly reduced by railway competition.

Steam ship-building on the Thames dates from about the year 1836. The largest steam-ship of wood was the *President*, 268 feet in length, and 600 horse-power, lost on her voyage from New York. In iron ship-building the greatest achievement has been the *Great Eastern*, by I. K. Brunel and John Scott Russell, built at Millwall in 1857, length 680 feet. The fastest steam-ship is the *Mahroussa*, with a speed of twenty miles an hour: she is said to have cost £166,000, and was built in the Thames. The iron ship-building works are of cyclopean vastness; and not only in the bulk, but in the exquisite finish of machinery, are unrivalled.

#### OUR DUST-BINS.

DURING the hot months of this year's summer, the subject of dust-bins in their sanitary relations was discussed in the newspapers. A writer in the "Builder"

\* Yet the street is named. In Mr. Serjeant Burke's "Celebrated Naval and Military Trials," are given some very interesting particulars of Admiral Benbow's family; showing there to be no authority for depriving the Salopians of the honour of Benbow's birthplace at Cotton Hill. The above collection of trials has the twofold advantage of being adapted for popular reading, at the same time that the legal and technical details are most carefully given.

\* This was the first steam-boat which *plied for hire* on the Thames. Brunel had previously made a voyage to Margate in a boat of his own, propelled by a double-action engine, and met with such opposition and abuse that the landlord of the hotel where he stopped refused him a bed!

offered some useful suggestions on a matter affecting the health not only of households but of the public generally. These receptacles of all kinds of decaying matter are too often complete fever-nests, offensive to neighbourhoods and dangerous to the inmates of houses. To prevent the deposit of vegetable and animal refuse with cinder-ash, it is suggested that the top of the dust-bin should be covered with a padlocked grating, which would at the same time secure the sifting of ashes—a process which servants are in general too lazy to undertake. It would be also well if local officers of health could be empowered occasionally to visit the basements of houses, in order to ascertain the condition of the dust-bins, drain-pipes, and other matters, too often neglected. An article in the "Quarterly Review" discusses the subject with a wider scope, and contains curious facts about the commercial uses of dust-bins, referring especially to those of London.

The refuse of one household seems an insignificant matter in detail, and not worthy of much attention; but, when it is multiplied by the 500,000 houses in the metropolis, it forms an item of no mean importance, and is of no inconsiderable value. Formerly, the dust-yards, or lay-stalls, as they were called, were conspicuous by their hills of refuse, which towered high over the surrounding houses; upon these highlands swine depastured, and we are told that there was no fattening ground like these dust heaps, full as they were of all kinds of perishing animal and vegetable refuse. But the health of the metropolis was of more importance than the fattening of hogs; and for years past the dust contractors have been obliged to separate and disperse their rubbish as soon as the dust carts arrive. A more interesting example of the use of refuse could not well be afforded than we find in the yards of these dust contractors, nor a more pregnant example of the value in the aggregate of that which householders consider a mere nuisance, to be got rid of as quickly as possible. That which we throw away in the dust-bin day by day, because we fancy it is an eyesore and past repair, is, in fact, but arrived at that stage in its existence at which it is destined to reascend in the scale of value, and once more minister to the wants of men. There is not one particle in the heap the scavenger removes from our houses that is not again, and that speedily, put into circulation and profitably employed. No sooner is the dust conveyed to the yard of the contractor, than it is attacked by what are called the "hill women," who, sieve in hand, do mechanically what the savant does chemically in his laboratory, separate the mass, by a rude analysis, into its elements. The most valuable of these items are the waste pieces of coal, and what is termed the "breeze," or coal-dust and half-burnt ashes. The amount of waste that goes on in London households in this item of coal can hardly be conceived, unless the spectator sees the quantity that is daily rescued in these yards. It may be measured by the fact, that after selling the larger pieces to the poor, the refuse "breeze" is sufficient to bake the bricks that are rebuilding London. Most of the dust contractors are builders as well, and the breeze is used by them for the purpose of embedding the newly-made bricks into compact square stacks, which are seen everywhere in the suburbs of London. The breeze having been fired, the mass burns with a slow combustion, aided by the circulation of air, which is kept up by the method of stacking; and in the course of two or three weeks the London clay is converted into good building material. Thus our houses may be said to arise again from the refuse they have cast out, and not

only are the bricks baked by their aid, but they are built in part with mortar made from the road scrapings, which is pounded granite, and combines very well with the lime and ashes of which the mortar is composed. Nay, even the compo, with which some of the smaller houses are faced, is very largely adulterated with this particular refuse.

The other constituents of the dust heap are separated by the sifters with the utmost rapidity. Round every hillock, as it is emptied, they congregate with their sieves; and in a very short space of time bones, rags, paper, old iron, glass, and broken crockery are eliminated from the mass and piled in separate heaps. The bones are put to a score of different uses. Several tons are picked weekly out of the metropolitan dust; but, of course, this does not represent the whole of the animal refuse of this kind, but only that taken from cooked meat. After we have discussed the joint at the table, there is still much value remaining in the residual bones. They go immediately to the boiling-houses, where every portion of fat and gelatine they can yield is extracted; the former goes to the soap-maker, the latter is utilised to make the patent gelatine packets now in use for a score of different purposes. The bones that possess any size and substance are used by the turners, and are converted into the hundreds of nic-nacks for which they are suitable; possibly, good reader, the same bone you may have picked at dinner re-enters your mouth after many changes in the shape of a tooth-pick or toothbrush! whilst the smaller pieces are calcined, and form the very toothpowder you use with it. But the grand destination of the smaller fragments is the earth. Ground very fine, and treated with sulphuric acid, they make the celebrated superphosphate manure, one of the best known fertilisers. Thus the old bone goes to form and nourish new bones. The wealth of England has attracted towards herself the old bones of half of the Continent, not only animal but human, for many an ancient battle-field has been searched for their valuable remains,—thereby enabling us to grow such splendid crops by supplementing the resources of our fields. Thus the threat of the Giant to Jack—

"Let him be live,  
Or let him be dead,  
I'll grind his bones to make my bread"—

is no fairy tale after all, but a common verity. Another very important product extracted from bones is phosphorus, a constituent of the brain and nervous system, one of the substances which give us light in the match, and without which we and our households would fare but poorly. The fat that is saved in the process of boiling goes, as we have said, to make the commoner kind of soap, or is useful to the arts in a hundred ways. What diverse forms of new life await the old bone as the rag-picker recovers it from the ash-heap! Its substance, in the form of handles of knives, chessmen, paper-knives, etc., mingles with the everyday concerns of life—its hard work and its enjoyments and intellectual amusements; whilst in its fluid and manurial products yet more astonishing changes attend it the moment it falls into the hands of the manufacturer. Its fatty particles give us cleanliness and purification in the form of the "bar of yellow;" and its phosphorus helps to give us ready illumination. The difficulty we feel in dealing with this seeming rubbish, that we kick out of the way with our foot, is to follow it out into the many diverse forms it assumes upon its resurrection.

But there are other articles in the dust-bin which await us—for instance, there are scraps of paper. These are

all carefully sorted, the white from the coloured and the printed. The soiled pieces, which cannot be profitably re-manufactured as paper, are used to make papier-maché ornaments, or dolls' heads, etc.; the clean paper is returned to the mill, and even the printed paper has the ink discharged from it, and goes again into circulation. Old rags, of course, are valuable to the paper-maker, although the discovery of other materials will possibly render this form of waste not quite so important a matter in his eyes as it was some time ago. But what can be the destination of greasy dish-clouts? Woollen material, if clean, does not descend to the earth in the scale of civilisation; but there is too much grease in the dish-clout to go again to the mill, so it is destined to nourish the noble hop in the Kentish grounds. As the old saying has it, "When things are at their worst they mend." Woollen rags, if they happen to be dyed scarlet, are treated for the recovery of their cochineal, which is very valuable for dyeing purposes, etc.; and other valuable coloured rags are separated to be ground up and make flockpaper. But these are fancy uses: the great market for all old woollen fabrics which are too tattered to be worn, is the town of Batley and its neighbourhood, in Yorkshire, the great Shoddy metropolis. To use the words of a contemporary:—

"Not the least important of the manufacturing towns is Batley, the chief seat of the great latter-day staple of England, Shoddy. This is the famous rag-capital, the tatter-metropolis, whither every beggar in Europe sends his cast-off gentility of moth-eaten coats, frowzy jackets, worn-out linen, offensive cotton, and old worsted stockings—this is their last destination. Reduced to filaments and greasy pulp by mighty-toothed cylinders, the much-vexed fabrics re-enter life in the most brilliant forms—from solid pilot cloths to silky mohairs and glossiest tweed. Thus the tail-coat rejected by the Irish peasant, the gabardine too fine for the Polish beggar, are turned again to shiny uses; reappearing, it may be, in the lustrous paletot of the sporting dandy, the delicate riding-habit of the Belgravian belle, or the sad, sleek garment of the Confessor. Such, oh reader, is shoddy!"

We all remember how "Devil's dust" was denounced some years ago in Parliament. If it were not for this shoddy which created it, the clothes of Englishmen, both rich and poor, would be augmented in price at least five-and-twenty per cent. As it is, a cheaper woollen garment can be purchased now than thirty years ago, notwithstanding that the expenses of living have considerably augmented since that time. Formerly these old woollen rags went to the land; but since they have been brought back to their old uses, an enormous quantity of cloth-making material has been added to the general stock. As long ago as 1858, it was estimated that 38,880,000 lbs. of this rag-wool are annually worked up into cloth, and this quantity was quite irrespective of the importations from abroad, which were very large indeed. In the nine years that have elapsed since that time the quantity must have greatly increased, yielding a quantity of wool equal to many million fleeces annually! Cotton and woollen rags are both valuable commodities when separate, but of late years it has been the custom to weave the cotton and the woollen together. The warp being of the latter material and the weft of the former, thus mixed together they were both spoilt, as they could neither be converted into paper nor cloth. Many endeavours have accordingly been made to separate them. One of these for a time succeeded. The woollen fabric was saved, and the cotton destroyed; but it has, we believe, been found that the felting qualities of the

wool thus rescued were injured by the process adopted. Within these last few years the original process has been reversed. These "Union fabrics" are now placed in a closed receiver, and subjected to steam at a very high temperature. The result is that the cotton comes out pure and fit for the paper-maker; the wool is reduced to a dark brown powder, known as the "ultimate of ammonia," and is employed to enrich manures, which are poor in nitrogen. So much for old rags.

But we are far from having exhausted the contents of the dust-bin yet. There is the old iron, battered saucepans, housemaids' old pails, rusty hoops, horse-shoes, and nails from the road. All soldered articles have the solder extracted from them (as it is more valuable than the iron), and the cheaper metal is then remelted. The horse-shoe nails are not mixed with the common cast-iron, as they are much sought after by gun-makers for the purpose of making Stubb twist barrels. This is a roundabout way to get tough iron it is true, and it remains as an instance of an improved product brought about by accident: it is like the Chinese method of discovering roast pig. Perhaps, following out this idea, some quicker and less laborious method of making cohesive gun-barrels will be discovered than the banging of horses' feet upon the granite pavement.

Scraps of iron, it is found, may be made very useful in securing the copper that runs away in the streams washing veins of copper pyrites. In the Mona Company's mines in North Wales, old pieces of battered iron are placed in tanks into which these streams are collected; the copper quickly incrusts the iron, and in process of time entirely dissolves it, so that a mass of copper takes the place of the iron. The residuum, in the shape of a coloured deposit, is at times taken out, dried, and smelted. Before the adoption of this plan, a great deal of copper escaped as a refuse into the sea. Indeed, this simple laboratory device has become, during the last few years, an expedient on the manufacturing scale: the poorest copper ores, which at one time did not even pay for working, now have the metal extracted from them at a profit, by a process of which this is the penultimate stage.

Glass, so much of which in its manufactured form is destroyed in our households, is carefully collected, and of course goes again to the melting-pot. The most fragile and destructible of materials when manufactured, it is, perhaps, one of the most indestructible of all known substances; and very possibly there is plenty of it which has been melted over and over again for centuries, now doing good service in the world. Glass bottles, especially physic bottles, go to the dust-yards with great regularity, and with the same regularity they find their way back to the druggists' shops, going the same dull round year after year, and no doubt are present at the death of many to whom they have ministered. Old boots and shoes, when not too far gone, find their way to Monmouth Street, Seven Dials, where they are patched up with heelball, and made to look decent, even if they should not prove very serviceable. In any case, good sound pieces of leather are turned to account. India-rubber goloshes, and all articles made of caoutchouc, whether vulcanized or not, are remelted and mixed with the new gum, the refuse being obtainable at from 17*l.* to 18*l.* per ton, and the raw material at not less than 200*l.* a ton.

The dust-heap is now pretty well exhausted; there is the soft core and the hard core, the decaying vegetable matter, and the broken crockery. The former goes to feed the pigs, and the latter makes excellent foundations for roads.