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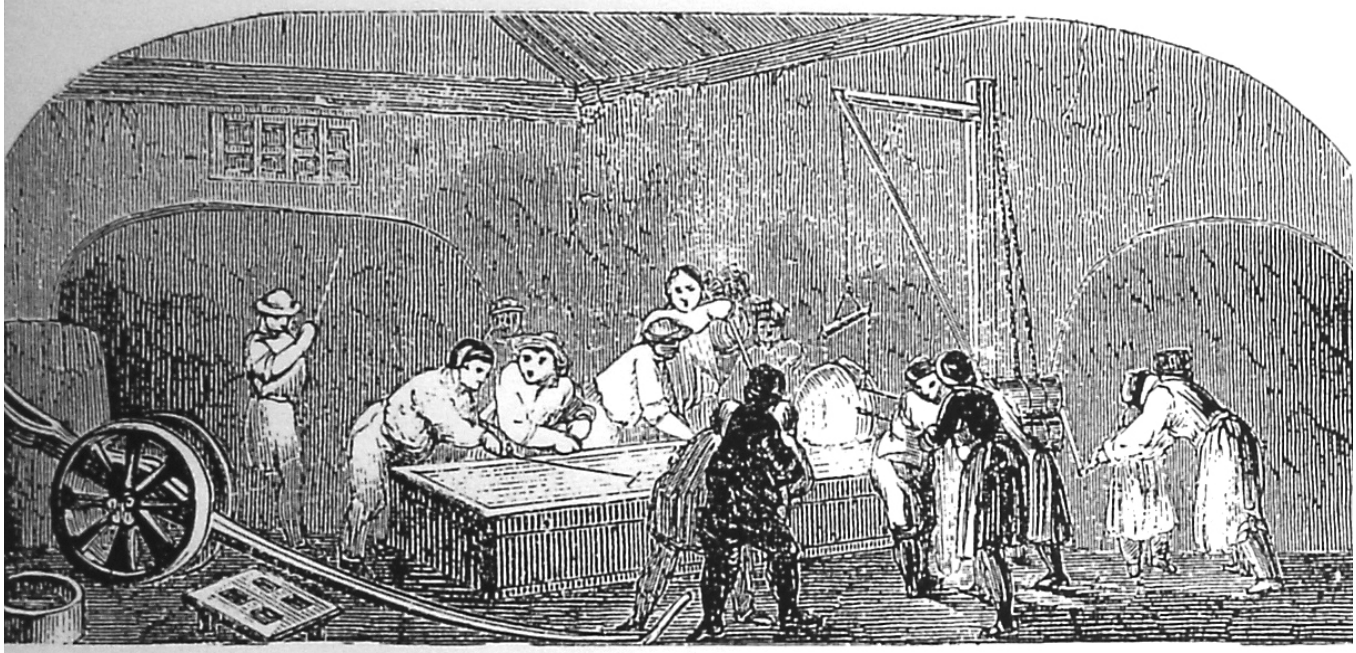

48. Plate-Glass Casting. "A huge basin, white with heat . . . stops at the foot of the iron gallows. . . . The dreadful pot is lifted by the crane. It is poised immediately over the table; a workman tilts it; and out pours a cataract of molten opal which spreads itself, deliberately, like infernal sweet-stuff, over the iron table."

Plate Glass

1 FEBRUARY 1851

with W. H. Wills

Dickens probably wrote the following portions of "Plate Glass": from "Tracking our guide" (p. 207) to "this country" (p. 208); from "Having, by this time" (p. 208) to "so radiant and so strong" (p. 208); from "It was a sight" (p. 210) to "dreamers in the world!" (p. 211); from "The kitchen" (p. 211) to "brought from the furnaces" (p. 211); from "Thanking the courteous gentleman" (p. 214) to the conclusion.

Dickens may also have added substantially to the following sections: from the beginning to "found out by accident?" (p. 207); from "The first ingredient" (p. 208) to "attempted to register" (p. 208); from "Mr. Bossle expressed" (p. 209) to "hall of furnaces" (p. 210); from "This art is practised" (p. 213) to "most gigantic of known Rubrics" (p. 213).

In addition, Dickens seems to have added touches throughout the article. For a discussion of the Dickens-Wills attributions, see headnote to "Valentine's Day at the Post-Office."

On 14 December 1850, Dickens wrote Wills as follows regarding their plans to visit the Thames Plate Glass Company: "I forgot to tell you yesterday that Egg proposes to meet us at the Blackwall Railway *at 3 on Monday* [16 December] to go down (by appointment with the Proprietors) to those Plate Glass Works. He says the visit will occupy some three hours. Therefore our friend H. W. [*Household Words*] must improvise a city dinner afterwards. I shall be at the office on Monday, between 12 and 1." See Introduction, pp. 45-47; see also Plate 48.

It seems likely that the opening of "Plate Glass" and some of the details contained in the piece were suggested by "A Day at a Flint-Glass Factory," an article in Charles Knight's *Penny Magazine*, New Series (1841). Some of the technical descriptions in "Plate Glass" follow the descriptions in the *Penny Magazine*, and the central feature of the introduction to "Plate Glass"—the long quotation from Dr. Johnson—also forms the opening of the "Flint-Glass Factory." It seems reasonable to suppose that in the course of writing the article, Dickens or Wills consulted the *Penny Magazine*.

Two other gentlemen occupied the railway carriage, which, on a gusty day in December,[1] was conveying us towards Gravesend, *viâ* Blackwall. One wore spectacles, by the aid of which he was perusing a small pocket edition of his favourite author. No sound escaped his lips; yet, his under-jaw and his disengaged hand

1. The day was Monday, 16 December 1850. See headnote.

moved with the solemn regularity of an orator emitting periods of tremendous euphony. Presently, his delight exploded in a loud shutting up of the book and an enthusiastic appeal to us in favour of the writings of Dr. Samuel Johnson.[2] "What, for example, can be finer, gentlemen, than his account of the origin of glass-making; in which, being a drysalter,[3] I take a particular interest. Let me read the passage to you!"

"But the noise of the train——"

"Sir, I can drown that."

The tone in which the Johnsonian "Sir" was let off, left no doubt of it. Though a small man, the reader was what his favourite writer would have denominated a Stentor, and what the modern school would call a Stunner. When he re-opened the book and began to read, the words smote the ear, as if they had been shot out of the mouth of a cannon. To give additional effect to the rounded periods of his author, he waved his arm in the air at each turn of a sentence, as if it had been a circular saw. "Who," he recited, "when he saw the first sand or ashes, by a casual intenseness of heat, melted into a metalline form, rugged with excrescences, and clouded with impurities, would have imagined, that in this shapeless lump lay concealed so many conveniences of life, as would in time constitute a great part of the happiness of the world? Yet by some such fortuitous liquefaction was mankind taught to procure a body at once in a high degree solid and transparent, which might admit the light of the sun, and exclude the violence of the wind: which might extend the sight of the philosopher to new ranges of existence, and charm him at one time with the unbounded extent of the material creation, and at another with the endless subordination of animal life; and, what is yet of more importance, might supply the decays of nature, and succour old age with subsidiary sight. Thus was the first artificer in glass employed, though without his own knowledge or expectation. He was facilitating and prolonging the enjoyment of light, enlarging the avenues of science, and conferring the highest and most lasting pleasures; he was enabling the student to contemplate nature, and the beauty to behold herself. This passion for——"[4]

"Blackwall, gents! Blackwall, ladies! Boat for Gravesend!" We should, unquestionably, have been favoured with the rest of the ninth number of the

2. Samuel Johnson (1709-1784). Dickens knew Johnson's writings well and quoted them frequently; he also delighted—as below—in parodying the Johnsonian manner and style. For another example of a similar parody, see Dickens' letter of 24 May 1861 to Wilkie Collins.

3. A dealer in chemical products used in the arts. Dickens' good friend Augustus Egg (1816-1863), who arranged the visit to the plate-glass factory, and who accompanied Dickens and Wills (see headnote), was a well-known artist.

4. From the penultimate paragraph of the ninth number ("Tuesday, April 17, 1750") of the *Rambler* (1750-1752). See immediately below. Dickens had an edition of the *Rambler* in his library, but the idea for this quotation probably came from Charles Knight's *Penny Magazine*. See headnote.

"Rambler" (in which the foregoing passage occurs) but for these announcements.

"There is one thing, however," said the little man with the loud voice, as we walked from the platform to the pier, "which I can*not* understand. What does the illustrious essayist mean by the 'fortuitous liquefaction' of the sand and ashes. Was glass found out by accident?"

Luckily, a ray of school-day classics enlightened a corner of our memory, and we mentioned the well-known story, in Pliny, that some Phœnician merchants, carrying saltpetre to the mouth of the river Belus, went ashore; and, placing some lumps of the cargo under their kettles to cook food, the heat of the fire fused the nitre, which ran among the sand of the shore. The cooks finding this union to produce a translucent substance, discovered the art of making glass.

"That," said our other companion, holding his hat to prevent the wind from blowing it aboard the Gravesend steamer (which was not to start for ten minutes), "has been the stock tale of all writers on the subject, from Pliny down to Ure; but, Sir Gardiner Wilkinson has put it out of the power of future authors to repeat it. That indefatigable haunter of Egyptian tombs discovered minute representations of glass-blowing, painted on tombs of the time of Orsirtasin the First, some sixteen hundred years before the date of Pliny's story. Indeed, a glass bead, bearing the name of a king who lived fifteen hundred years before Christ, was found in another tomb by Captain Henvey, the specific gravity of which is precisely that of English crown-glass."

"You seem to know all about it!" exclaimed the loud-voiced man.

"Being a director of a plate-glass company I have made it my business to learn all that books could teach me on the subject."

"I should like to see glass made!" said the vociferous admirer of Dr. Johnson, "especially plate glass."

To this, the other replied, with ready politeness, "If your wish be very strong, and you have an hour to spare, I shall be happy to show you the works, to which I am going,—those of the Thames Plate Glass Company. They are close by."

"The fact is," was the reply, "Mrs. Bossle (I'm sorry to say Mrs. Bossle is an invalid) expects me down to Gravesend to tea; but an hour won't matter much."

"And you, sir?" said the civil gentleman, addressing me.

My desire was equally strong, and the next hour equally my own; for, as the friend, whom a negligent public had driven to emigration, was not to sail until the next morning, it did not much matter whether I took my last farewell of him at Gravesend early or late that evening.

Tracking our guide through dock gates, over narrow drawbridges, along quays; now, dodging the rigging of ships; now, tripping over cables, made "taut" to rings; now, falling foul of warping-posts (for it was getting dusk); one minute, leaping over deserted timber; the next, doubling stray casks; the next, winding among the strangest ruins of dismantled steam-boats, for which a regular Hospital seemed established in that desolate region of mud and water;

then, emerging into dirty lanes, and turning the corners of roofless houses; we finished an exciting game of Follow my Leader, at a pair of tall gates. One of these, admitted us into the precincts of the southernmost of the six manufactories of plate glass existing in this country.

The first ingredient in the making of glass, to which we were introduced, was contained in a goodly row of barrels in full tap, marked with the esteemed brand of "Truman, Hanbury, Buxton, & Co."[5] It is the well-known fermented extract of malt and hops, which is, it seems, nearly as necessary to the production of good plate glass, as flint and soda. To liquefy the latter materials by means of fire, is, in truth, dry work; and our *cicerone* explained, that seven pints per day, per man, of Messrs. Truman, Hanbury, Buxton, and Company's entire, has been found, after years of thirsty experience, to be absolutely necessary to moisten human clay, hourly baked at the mouths of blazing furnaces. These furnaces emit a heat more intense than the most perspiring imagination can conceive, or the staunchest thermometer indicate. An attempt to ascertain the degree of heat was once made: a pyrometer (a thermometer of the superlative degree, or "fire-measurer,") was applied to the throat of a furnace—for every furnace has its mouth, its throat, and its flaming tongues; but, the wretched instrument, after five minutes' scorching, made an expiring effort to mark *thirteen hundred degrees above boiling point,* cracked, was shivered into bits, and was finally swallowed up by the insatiable element whose proceedings it had presumptuously attempted to register.

Having, by this time, crossed a yard, we stood on the edge of a foul creek of the Thames, so horribly slimy that a crocodile, or an alligator, or any scaly monster of the Saurian period, seemed much more likely to be encountered in such a neighbourhood than the beautiful substance that makes our modern rooms so glittering and bright;[6] our streets so dazzling, and our windows at once so radiant and so strong.

"In order to understand our process thoroughly," said the obliging director of the seven acres of factory and the four hundred operatives we had come to see, "we must begin with the beginning. This," picking up from a heap a handful of the finest of fine sand—the glittering pounce, in fact, with which our forefathers spangled their writing,—"is the basis of all glass. It is the whitest, most highly pulverised flint sand that can be procured. This comes from Lynn, on the coast of Norfolk. Its mixture with the other materials is a secret, even to us. We give the man who possesses it a handsome salary for exercising his mystery."

5. Brewers.

6. In popular usage, the Saurian period was the age of dinosaurs and other large lizard-like animals. Dickens' remark in this passage foreshadows his similar remark in the opening sentences of *Bleak House* (1852-1853). In that novel the London streets are so wet and muddy that "it would not be wonderful to meet a Megalosaurus, forty feet long or so, waddling like an elephantine lizard up Holborn Hill."

"A secret!" cried Mr. Bossle. "Everybody I thought, knew—at least everybody in the drysaltery line understands—what glass is made of. Why, I can repeat the recipe given by Dr. Ure,[7] from memory:—To every hundred parts of materials, there are of pure sand forty-three parts; soda twenty-five and a half (by the bye, we have some capital carbonate coming forward *ex* Mary Anne,[8] that we could let you have at a low figure); quick-lime, four; nitre, one and a half; broken glass, twenty-six. The Doctor calculates, if I remember rightly, that of the whole, thirty parts of this compound run to waste in fusing, so that seventy per cent. becomes, on an average, glass."

"That is all very true," was the answer; "but our glass is, we flatter ourselves, of a much better colour, and stands annealing better, than that made from the ordinary admixture: from which, however, ours differs but little—only, I think, in the relative quantities. In that lies the secret."

Mr. Bossle expressed great anxiety to behold an individual who was possessed of a secret worth several hundreds a-year, paid weekly. Romance invariably associates itself with mystery; and we are not quite sure from the awful way in which Mr. Bossle dropped his voice to a soft whisper, that he did not expect, on entering the chamber of pre-vitrified chemicals, to find an individual clothed like the hermit in "Rasselas,"[9] or mingling his "elements" with the wand of Hermes Trismegistus.[10] He looked as if he could hardly believe his spectacles, when he saw a plain, respectable-looking, indifferent-tempered man, not a whit more awe-inspiring—or more dusty—than a miller on a market-day.[11]

We do not insinuate that Mr. Bossle endeavoured to "pluck out the heart of the mystery,"[12] though nothing seemed to escape the focus of his spectacles. But, although here lay, in separate heaps, the sand and soda and saltpetre and lime and *cullet,* or broken glass; while there, in a huge trough, those ingredients were mixed up (like "broken" in a confectioner's shop) ready to be pushed through a trap to fill the crucible or stomach of the furnace; yet, despite Mr. Bossle's sly investigations, and sonorous enquiries, he left the hall of "elements" as wise as he had entered.

Passing through a variety of places in which the trituration, purification, and

7. Andrew Ure (1778-1857), chemist and writer on science. In 1821 he published the *Dictionary of Chemistry* and in 1839 the *Dictionary of Arts, Manufactures, and Mines.* Both works went through several editions prior to 1851. His pamphlet on *The General Malaria of London* (1850) was in Dickens' library.

8. That is, arriving aboard the ship *Mary Anne.*

9. *Rasselas* (1759), by Samuel Johnson (1709-1784). Since there is no mention in *Rasselas* of what the hermit was wearing, this reference probably recalls an illustration or dramatization. Dickens had a copy of *Rasselas* in his library.

10. Legendary magician and hypothetical founder of the art of alchemy.

11. Possibly another oblique reminiscence of *The Miller and His Men.* See "Valentine's Day at the Post-Office," footnote 1.

12. *Hamlet,* III, ii, 382.

cleaning of the materials were going on, we mounted to an upper story that reminded us of the yard in which the cunning Captain of the Forty Thieves, when he was disguised as an Oil Merchant, stored his pretended merchandise.[13] It was filled with rows and rows of great clay jars, something like barrels with their heads knocked out. Each had, instead of a hoop, an indented band round the middle, for the insertion of the iron gear by which they were, in due time, to be lifted into and out of the raging furnaces. There were two sizes; one about four feet deep, and three feet six inches in diameter, technically called "pots," and destined to receive the materials for their first sweltering. The smaller vessels (*cuvettes*) were of the same shape, but only two feet six inches deep, and two feet in diameter. These were the crucibles in which the vitreous compound was to be fired a second time, ready for casting. These vessels are *built*—for that is really the process; and it requires a twelvemonth to build one, so gradually must it settle and harden, and so slowly must it be pieced together, or the furnace would immediately destroy it—of Stourbridge clay, which is the purest and least silicious yet discovered. (The clay mentioned in our recent article, "The Devonshire Dorado,"*[14] may be worth a trial, for the manufacture of these crucibles.)

"We have now," said Mr. Bossle, wiping his spectacles, and gathering himself up for a loud Johnsonian period, "seen the raw materials ready to be submitted to the action of the fire, and we have also beheld the vessels in which the vitrification is to take place. Let us therefore witness the actual liquefaction."

In obedience to this grandiloquent wish, we were shown into the hall of furnaces.

It was a sight indeed. A lofty and enormous hall, with windows in the high walls open to the rainy night. Down the centre, a fearful row of roaring furnaces, white-hot: to look at which, even through the chinks in the iron screens before them, and masked, seemed to scorch and splinter the very breath within one. At right angles with this hall, another, an immense building in itself, with unearthly-looking instruments hanging on the walls, and strewn about, as if for some diabolical cookery. In dark corners, where the furnaces redly glimmered on them, from time to time, knots of swarthy muscular men, with nets drawn over their faces, or hanging from their hats: confusedly grouped, wildly dressed, scarcely heard to mutter amidst the roaring of the fires, and mysteriously coming and going, like picturesque shadows, cast by the terrific glare. Such figures there must have been, once upon a time, in some such scene, ministering to the worship of fire, and feeding the altars of the cruel god with victims. Figures not

13. As a child, Dickens pored over *The Arabian Nights*, and as a man he continued to reread it. He refers to the work many scores of times—one of his favorite literary allusions. For similar references, see "The Old Lady in Threadneedle Street," footnote 12, and "Discovery of a Treasure Near Cheapside," footnote 2. See also footnote 17.

14. The asterisk referred the reader to the following footnote: "See Page 263." The article, primarily by Wills, appeared on 7 December 1850.

dissimilar, alas! there have been, torturing and burning, even in Our Saviour's name. But, happily those bitter days are gone. The senseless world is tortured for the good of man, and made to take new forms in his service. Upon the rack, we stretch the ores and metals of the earth, and not the image of the Creator of all. These fires and figures are the agents of civilisation, and not of deadly persecution and black murder. Burn fires and welcome! making a light in England that shall not be quenched by all the monkish dreamers in the world!

We were aroused by a sensation like the sudden application of a hot mask to the countenance. As we instinctively placed a hand over our face to ascertain how much of the skin was peeling off, our cool informant announced that the furnace over against us had been opened to perform the *trejetage,* or ladling of the liquid *pot à feu* from the large pots into the smaller ones. "I must premise," he said, "that one-third of the raw materials, as put together by our secret friend, are first thrown in; and when that is melted, one-third more; on that being fused, the last third is added. The mouth of the furnace is then closed, and an enormous heat kept up by the *tiseur* or stoker (all our terms are taken from the French), during sixteen hours. That time having now elapsed, in the case of the flaming pot before you, the furnace is opened. The man with the long ladle thrusts it, you perceive, into the pot, takes out a ladleful, and, by the assistance of two companions, throws the vitrified dough upon an iron anvil. The other two men turn it over and over, spread it upon the inverted flat-iron, and twitch out, with pliers, any speck of impurity; it is tossed again into the ladle, and thrown into a cuvette in another furnace. When the cuvettes are full, that furnace is stopped up to maintain a roaring heat for another eight hours; and, in the language of the men, 'the ceremony is performed.' "

At this moment, the noise burst forth from the middle of the enormous shed, of several beats of a gong: so loud, that they even drowned the thundering inquiries with which Mr. Bossle was teasing one of the "teasers." In an instant the men hastened to a focus, like giants in a Christmas pantomime about to perform some wonderful conjuration; and not a whisper was heard.

"Aha!["] exclaimed the director, "they are going to cast. This way, gentlemen!"

The kitchen in which the Ogre threatened to cook Jack and his seven brothers[15] could not have been half so formidable an apartment as the enormous cuisine into which we were led. One end was occupied with a row of awful ovens; in the midst, stood a stupendous iron table; and upon it lay a rolling-pin, so big, that it could only be likened to half-a-dozen garden-rollers joined together at their ends. Above, was an iron crane or gallows to lift the enormous messes of red-hot gruel, thick and slab, which were now to be brought from the furnaces.

"Stand clear!" A huge basin, white with heat, approaches, on a sort of iron

15. In *Jack the Giant Killer.*

hurley; at one end of which sits, triumphant, a salamander, in human form, to balance the Plutonian mass, as it approaches on its wheeled car—playing with it—a game of see-saw. It stops at the foot of the iron gallows. Mr. Bossle approaches to see what it is, and discovers it to be a cuvette filled with molten glass, glowing from the fiery furnace. What is that man doing with a glazed mask before his face? "Why, if you will believe me," exclaims Mr. Bossle, in the tones of a speaking-trumpet, (we are at a prudent distance,) "he is ladling off the scum, as composedly as if it were turtle-soup!" Mr. Bossle grows bold, and ventures a little nearer. Rash man! His nose is assuredly scorched; he darts back, and takes off his spectacles, to ascertain how much of the frames are melted. The dreadful pot is lifted by the crane. It is poised immediately over the table; a workman tilts it; and out pours a cataract of molten opal which spreads itself, deliberately, like infernal sweet-stuff, over the iron table; which is spilled and slopped about, in a crowd of men, and touches nobody. "And has touched nobody since last year, when one poor fellow got the large shoes he wore, filled with white-hot glass." Then the great rolling-pin begins to "roll it out."

But, those two men, narrowly inspecting every inch of the red hot sheet as the roller approaches it—is their skin salamandrine?—are their eyes fire-proof?

"They are looking," we are told, "for any accidental impurity that may be still intruding in the vitrifaction, and, if they can tear it out with their long pincers before the roller has passed over it, they are rewarded. From the shape these specks assume in being torn away, they are called 'tears.' "

When the roller has passed over the table, it leaves a sheet of red-hot glass, measuring some twelve feet by seven.

This translucent confection is pushed upon a flat wooden platform on wheels —sparkling, as it touches the wood, like innumerable diamonds—and is then run rapidly to an oven, there to be baked or annealed. The bed or "sole" of this *carquèse* is heated to a temperature exactly equal to that of the glass; which is now so much cooled that you can stand within a yard or so of it without fear of scorching off your eyelashes. The pot out of the furnace is cooled too, out in the rain, and lies there, burst into a hundred pieces. It has been a good one: for it has withstood the fire, seventy days.

So rapidly are all these casting operations performed, that, from the moment when Mr. Bossle thought his spectacles were melting off his nose, to the moment when the sheet of glass is shut up in the oven, about five minutes have elapsed. The operations are repeated, until the oven is full of glass plates.

When eight plates are put into the *carquèse* it is closed up hermetically; for the tiniest current of cold air would crack the glass. The fire is allowed to go out of its own accord, and the cooling takes place so gradually, that it is not completed until eight days are over. When drawn forth, the glass is that "rough plate" which we see let into the doors of railway stations, and forming half-transparent floors in manufactories. To make it completely transparent for

windows and looking-glasses, elaborate processes of grinding and polishing are requisite. They are three in number:—roughing down, smoothing and polishing.

"I perceive," said Mr. Bossle, when he got to the roughing down room, where steam machinery was violently agitating numerous plates of glass, one upon the other, "that the diamond cut diamond principle is adopted."

"Exactly: the under plate is fastened to a table by plaster of Paris, and the upper one—quite rough—is violently rubbed by machinery upon it, with water, sand, and other grinding powders between. The top plate is then fastened to a table, to rough down another first plate; for the under one is always the smoother."

Then comes the "smoothing." Emery, of graduated degrees of fineness, is used for that purpose. "Until within the last month or so, smoothing could only be done by human labour. The human hand alone was capable of the requisite tenacity, to rub the slippery surfaces over each other; nay, so fine a sense of touch was requisite, that even a man's hand had scarcely sensitiveness enough for the work; hence females were, and still are, employed."

As our pains-taking informant spoke, he pushed open a door, and we beheld a sight that made Mr. Bossle wipe his spectacles, and ourselves imagine for a moment that a scene from an Oriental Story-Book was magically revealed to us; so elegant and graceful were the attitudes into which a bevy of some fifty females—many of them of fine forms and handsome features—were unceasingly throwing themselves. Now, with arms extended, they pushed the plates to one verge of the low tables, stretching their bodies as far as possible; then, drawing back, they stood erect, pulling the plate after them; then, in order to reach the opposite edge of the plane, they stretched themselves out again to an almost horizontal posture. The easy beauty of their movements, the glitter of the glass, the brilliancy of the gaslights, the bright colours of most of the dresses, formed a *coup d'œil* which Mr. Bossle enjoyed a great deal more than Mrs. Bossle, had she been there, might have quite approved.

The fairy scene is soon, however, to disappear. Mr. Blake, the ingenious manager of the works, has invented an artificial female hand, by means of which, in combination with peculiar machinery, glass smoothing can be done by steam. The last process is "polishing." This art is practised in a spacious room glowing with red. Every corner of the busy interior is as rubicund as a Dutch dairy. The floor is red, the walls are red, the ceiling is red, the pillars are red, the machinery is very red. Red glass is attached, by red plaster of Paris, to red moveable tables; red rubbers of red felt, heavily weighted with red leads, are driven rapidly over the red surface. Little red boys, redder than the reddest of Red Indians, are continually sprinkling on the reddened glass, the rouge (moistened crocus, per oxyde [*sic*] of iron), which converts the scene of their operations into the most gigantic of known Rubrics.

When polished, the glass is taken away to be "examined." A body of vigilant

scrutineers place each sheet between their own eyes and a strong light: wherever a scratch or flaw appears, they make a mark with a piece of wax. If removable, these flaws are polished out by hand. The glass is then ready for the operation, which enables "the beauty to behold herself." The spreading of the quicksilver at the back is, however, a separate process, accomplished elsewhere, and performed by a perfectly distinct body of workmen. It is a very simple art.

The manufacture of plate-glass adds another to the thousand and one instances of the advantages of unrestricted and unfettered trade. The great demand occasioned by the immediate fall in price consequent upon the New Tariff, produced this effect on the Thames Plate Glass Works.—They now manufacture as much plate-glass per week as was turned out in the days of the Excise, in the same time, by all the works in the country put together. The Excise incubi clogged the operations of the workmen, and prevented every sort of improvement in the manufacture. They put their gauges into the "metal" (or mixed materials) before it was put into the pot. They overhauled the paste when it was taken out of the fire, and they applied their foot-rules to the sheets after the glass was annealed. The duty was collected during the various stages of manufacture half-a-dozen times, and amounted to three hundred per cent. No improvement was according to law, and the Exciseman put his veto upon every attempt of the sort. In the old time, the mysterious mixer could not have exercised his secret vocation for the benefit of his employers, and the demand for glass was so small that Mr. Blake's admirable polishing machine would never have been invented. Nor could plate glass ever have been used for transparent flooring, or for door pannels, or for a hundred other purposes, to which it is now advantageously and ornamentally applied.

Thanking the courteous gentleman who had shown us over the works, we left Mr. Bossle in close consultation with the Manager. As, in crossing the yard, we heard the word "soda!" frequently thundered forth, we concluded that the Johnsonian dry-salter was endeavouring to complete some transaction in that commodity, which he had previously opened with the director. But, it is not in our power to report decisively on this head, for our attention was directed to two concluding objects.

First, to a row of workmen—the same we had lately seen among the fires and liquid glass—good-humouredly sitting, with perfect composure, on a log of timber, out in the cold and wet, looking at the muddy creek, and drinking their beer, as if there were no such thing as temperature known. Secondly, and lastly, to the narrow passages or caves underneath the furnaces, into which the glowing cinders drop through gratings. These looked, when we descended into them, like a long Egyptian street on a dark night, with a fiery rain falling. In warm divergent chambers and crevices, the boys employed in the works love to hide and sleep, on cold nights. So slept DE FOE'S hero, COLONEL JACK,[16]

16. In the novel of the same name, published in 1722.

among the ashes of the glass-house where *he* worked. And that, and the river together, made us think of ROBINSON CRUSOE the whole way home, and wonder what all the English boys who have been since his time, and who are yet to be, would have done without him and his desert Island.[17]

17. *Robinson Crusoe* (1719), like *The Arabian Nights*, was one of Dickens' favorite books (see footnote 13). He frequently reread the work as a man, and his writings contain many scores of references to it. The notion expressed here is developed in other *Crusoe* passages elsewhere in Dickens. See, for example, "Where We Stopped Growing" (*Household Words*, 1 January 1853).