HONOR TO WHOM HONOR IS DUE.

BY ALICE CAREY.

Honor him whose hands are sowing
Seeds for harvest in their time—
Reverence those whose thoughts are growing
Up to ultimate sublime.

All the progress of the ages
May be traced back to their hands—
All the illuminated pages
Of the books, into their plans.

Every worm beside you creeping,
Every insect flying well,
Every insect in earth's keeping,
Has a history to tell.

The small, homely flower that's lying
In your pathway, may contain
Some elixir, which the dying
Generations sought in vain.

In the stone that waits the turning
Of some curious hand, from sight,
Fiery atoms may be burning,
That would fill the world with light.

Let us then, in reverence bowing,
Honor most of all mankind,
Such as keep their great thoughts plowing
Deepest in the field of mind.

[From Dicken's Household Words.]

Important Rubbish—Another American Discovery.

We have in one of our former numbers shown how art and science have been brought to bear upon things before thought worthless: how the refuse of the smithy, the gas-works, and the slaughter-house have been made to yield products the most valuable, results the most beautiful. We are now about to relate how another useful step has been made in our Penny Wisdom.

The iron wealth of England is a proverb in the most remote corners of the world. It produces the enormous amount of three millions of tons annually. We export to all parts of the world iron and steel to the yearly value of ten millions sterling, and machinery and tools to the extent of two millions—sums that equal the revenue of more than one kingdom.

In traveling through the iron districts of England it is impossible to avoid being struck with the vastness of the works carried on in those places. A journey through our mining districts—whose undying flames leap forth from hundreds of valcanoes, and around which nothing is discoverable but blackened piles of cinders and unsightly slag—is not easily forgotten. For scores and scores of miles the traveler beholds these apparently interminable heaps of refuse ore. Carts, wagons, and trucks may be seen on all sides, occupied in the endless task of removing this metalic incumbrance of the smelting-works. Hundreds of laborers are engaged in conveying to remote and undisturbed spots the enormous piles of black, friable, clinkery-looking stuff—the slag that day by day and hour by hour is produced by the smelters of iron ore. Some is flung down deep gullies, and hidden in the dark, yawning recesses of ravines, when haply any such are to be found. Some is employed in the hardening of rotten roadways, where it is made to perform a very unsatisfactory sort of duty for stone. Occasionally it is shot into the sea, when near enough for that purpose, which however is not often the case.

Of the actual extent of this rubbish-production some idea may be formed when it is stated, as it has been on very good authority, that in the removal of all this waste slag from the furnace mouths of the United Kingdom not much less than half a million sterling is annually expended. Indeed, it has been calculated that in round numbers there are at the present time fully six millions of tons of this refuse material produced in one year. At this rate it would be easy to imagine the gullies, pits and ravines of the iron districts becoming filled up at no very remote period, when iron masters would have to go further in search of secluded spots whereon rubbish might be shot

The philosopher who by the aid of scientific observation and research can point out to us how to turn all this perplexing mass of unproductive refuse to good and profitable account—how by a simple method we may convert this ugly, useless clinker into a beautiful means of ornamentation, and make it an indestructible and economical agent in the construction of public works and dwelling houses—surely the man who can accomplish this deserves some thanks at our hands.

All this has been accomplished by the patient research of Dr. W. H. Smith, of Philadelphia, United States, who recently delivered a lecture on the subject to the members of our Society of Arts In this interesting discourse the lecturer pointed out the brittle and useless character of the mineral refuse of smelting-furnaces, at present known under the name of slag.

A careful analysis of this hitherto-rejected product of our iron works shows that it is composed, in the main, of lime, silica, alumina, with an occasional admixture of magnesia and sulphur. In all parts of the world the same results are arrived at. The slag of France or Sweden differs in no essentials from that of Britain or the United States.

It is scarcely necessary to remind the reader of the similarity in the process of smelting ores, and the vast operations of Nature beneath the crust of the earth, where, by a like agency of heat, mountainous deposits of igneous rocks are constantly thrown off.

The rocks of this origin are met with in stupendous masses, in most parts of the world. While Nature on the one hand employs her igneous products in the construction of gigantic mountain-palaces, man, well aware of their great value, equally applies those rocks, under the names of granite, feldspar, basalt, greenstone, syenite, porphory, serpentine, &c., in the construction of his most elaborated architectural edifices.

High geological authorities tell us that if we examine the composition of the crust of the globe, we shall find that of all the earths and earthly substances therein, three only will be ascertained to constitute its great bulk, namely—silica, alumina, and lime—precisely those which mainly compose the slag of the smelting house.

The worker in ores when he is occupied with his blast-furnace is, in fact, but repeating on a small scale the grandest operations of Nature deep in the bowels of the earth.

Heat is the great first agency employed by Nature and by the Philosopher in the decomposition and recombination which produce some of the most beautiful and useful products with which we are acquainted. Dr. Smith has shown that the rubbish of the smelting-house is identical in character and equally valuable, with most of the igneous rocky substances.

Like many other valuable discoveries, this result was arrived at while searching for something else. It is well to relate how this truth, so interesting in itself apart from commercial results, was seized upon by the American philosopher, since it may tend to encourage such as may be toiling in other fields of research.

Impressed with a conviction of the influence of electricity upon life, health and disease, Dr. Smith, at that time a practitioner in Philadelphia, commenced a series of experiments in electro-agencies on the human frame. Success in that question induced him to carry his researches to vegetable life, and from animate he was led to direct his observations to inanimate objects.

Mineral matter received attention from him, and, weighing well the geological facts alluded to above, Dr. Smith bent the energies of his mind to trace the effects of electricity in all these combinations and reproductions.

Comparing the condition and character of slag with that of the igneous rocks of Nature, he felt that to electric agency must be attributed the cause of the great difference existing between them. In order to test this he took a piece of the vitrified mass of slag hot from the furnace-month, and applied to it a metallic rod. At the point where this electric conductor came in contact with the substance, the vitrified mass assumed a pulverulent character; several rods were employed, and at each point of contact similar changes in the condition of the slag were observable. The electricity rapidly engendered during the smelting process was parted with as quickly on the application of the metal conductors, and hence the sudden and marked change in the condition of the mineral.

In order more fully to test this theory, the experimenter threw a quantity of the molten slag, fresh from the furnace-mouth, into water. Every atom of the liquid being a good conductor of electricity, rapidly absorbed it as it lowered the temperature of the mass; and the immediate consequence was that the mineral matter fell into a coarse powder, entirely deprived of its former cohesion or solidity.

From these trials Dr. Smith felt convinced that his electrical theory was correct, and that it was to the rapid giving forth of its electricity by sudden cooling in contact with conducting media that slag owed its brittle character; in other words its want of cohesion and its tendency to pulverise. He reflected that the great mass of igneous rocks upheaved from the center of heat were in a position for gradually cooling; their gigantic extent would ensure that result—hence their extreme hardness and durability.

With the view of completely testing the accuracy of his electrical theory, Dr. Smith caused a quantity of slag, fresh from the smelting-furnace, to flow upon a non-conducting substance where it was allow to cool much more gradually than was usually the case. To his great delight he found he had obtained a most complete verification of his opinion. The product thus obtained had entirely lost its semi-vitreous and friable character, and assumed a dense, solid, and rocky nature capable of resisting the heaviest blows, and altogether assuming the peculiarities of the igneous rocks.

Having obtained this result, the experimenter proceeded to other trials. By continuing the molten slag when removed from the furnace at a high temperature in an oven, where it was afterward allowed to cool very gradually, and ran into moulds of a non-conducting substance, the material was found to have become altogether devitrified and to have taken a beautifully veined and granulated character of extreme hardness, approaching to the solidity and strength of the finest marble. By varying the heat applied, by the admixture of coloring matters, and by a subsequent polish applied to the surface, the experimenter has succeeded in producing a perfect imitation of cornelian, agate malachite, or any other of the more valuable mineral products.

Here then we see how an inquiry having for its object the elucidation of a purely scientific theory has led the inquirer by imperceptible steps to a most valuable discovery, by means of which many million of tons of hitherto refuse-matter may be converted into really useful and valuable materials for the builder, the architect and decorator.

Already, in America, the slag of iron furnaces, in its new character, is employed for paving purposes with the most complete success—whole thoroughfares having been, for several years, laid down with this material without any perceptible wear of the surface. In the form of building-bricks it is likewise in considerable use; and builders in some of the principal cities of the United States testify to the perfect adaptation of such bricks, and to their great superiority and economy over the common clay brick.

It is not easy to limit the application of this valuable rubbish. Wherever durability is required, united with peculiarity of form, there the prepared slag will be found perfectly adapted; for, inasmuch as it can be cast into moulds of any shape, all labor spent in hewing and cutting marble or stone is avoided. It is perfectly compact and impervious, and therefore admirably suited for the construction of aqueducts of any size. It remains unacted on by chemicals of the greatest strength, consequently may be employed for making gas piping, as it will last out many of the ordinary iron pipes.

When wrought in its higher character, run into suitable moulds, and polished more brilliantly than marble or porphyry, it will furnish pillars, facades, slabs, &c., for the ornamentation of mansions, halls, and public buildings, at a price and in a style not hitherto attained.

We have specimens of this beautifully polished material before us, and certainly we can see in it that which is likely to bring about a complete revolution in house architecture. Who will be content with porous bricks, perishable stucco work, or soft, crumbling stone, when such adamantine, cornelian-like material is to be had, that shall defy the action of London smoke and factory vapors?

We can picture in our mind's eye a new Belgravia, a second Tyburnia, rising up at the bidding of some adventurous Cubitt or Peto, built with slag bricks and faced with a polished front of surpassing brilliancy, in the most exquisite forms, and apparently composed of marble, agate, cornelian, porphyry, and malachite. If a shade of dust or smoke settle on it, the first shower of rain restores it to its original brilliancy. Time will have little if any effect on it; and as for repairs or beautifying every third or fourth year, such care would never be needed.

All this we expect to see before many seasons shall have passed over us.

It is impossible to over estimate the advantages likely to arise from this new branch of industry, so simple in its application, yet so widely available in most European countries, not only with the refuse products of iron works, but with those resulting from the smelting of copper, lead, and zinc ores.

The rough slabs or tiles for pavements or roofing can be sold with a large profit at fourpence-halfpenny the foot. When highly polished, at eighteenpence. In its more finished and ornamental forms, for architectural purposes, this material possesses of course a much greater value, dependent on its durability and beauty.

Regarding this important discovery from whatsoever point of view, whether in reference to the vast quantity of now useless refuse that may be made valuable, to the many interests that will be benefited by it—iron-masters, copper-smelters, builders, architects, house-decorators, and water-companies—we cannot but look upon it as one of the most promising results of modern science in an age peculiarly fruitful in marvelous inventions, and rich in its daily Penny Wisdom.

We have in a previous paper shown the marvelous powers of electricity in the production of light. Here we find the same subtle element busily employed in making mere rubbish a beautiful and useful adjunct to the arts How far the same agency may be made subservient to the improving of our smelted metals and other products of the furnace, we dare not venture to predict. We will content ourselves with directing the attention of founders, assayers, and all workers in metal, glass and porcelain to the subject.

[From Blackwood's Magazine.]

REVELATIONS OF RUSSIA.

LIFE IN THE INTERIOR OF RUSSIA.—None but nobles have the right to possess serfs, tho' it does not follow that all nobles possess them, for there is a very large class of poor nobles in Russia who possess nothing, never did possess anything, and are never likely to possess anything, and these are the most miserable of all the others; for they are nothing, neither peasants nor gentlemen.

It will naturally be asked how they became possessed of their nobility? They are for the most part sons of ambitious clerks of churches, &c, whose fathers or friends have taught them to read or write, and through the interest of some great man got them admitted into some government office as copying-clerks, where they receive a rank after a certain number of years, and become noble, and of course their children too, who do as their fathers have done before them, leading a wretched existence, without any prospect of advancement, upon a miserable pittance, unless they have great abilities for plunder, when, by dint of accepting bribes, they get a small sum together.

There is no sum so small that they will not accept. You may even offer them articles of wearing apparel, anything; and this latter is too frequently done when the poor suitor has nothing more to offer. I myself have given such small sums as 4d. and 6d. for trifling services which they have seemed reluctant to perform, which has always had the desired effect of accelerating their movements, and saved me the 'ennui' of waiting half-an-hour for them to perform their duty.

Some, again, of this class, live by going from house to house in the country. They stay at a house till the master gets tired of them; then he sends them to his nearest neighbor, who does the like.

The Russians in general are very hospitable; and in the country, where they lead a very solitary, monotonous life, are glad to see any one who can procure them a little variety, as they have no sources of amusement whatever except shooting or coursing. But when a man is not a sportsman, even these fail him, for books are very rare, very expensive, and not very interesting, on account of the extreme severity of the censure that is exercised. A really good work is a great luxury, and seldom to be met with in a Russian country-house; hence they are glad to see anybody who can give them a little news, be it ever so stale.

But I must give the Russians their due: they are from the highest to the lowest, very hospitable; a general invitation there always means, in town, that you are expected to drop in two or three times a-week about dinner-time, and, without being asked, take your seat at table like one of the family.

If you decline staying, they will feel quite hurt; even the very servants will press you to remain and take dinner with the family. When you are asked to go to the country, you are never expected to give any previous notice of your intended visit, but to go at any time you feel inclined; and you are sure to meet with a warm reception, and are expected to remain just as long as it may suit your own convenience.

Some of the smaller proprietors, from leading such a solitary life, get into habits of beastly intoxication, in which they consume days and nights, while their property goes to ruin. I have even known instances where they have kept casks of spirits in their bedrooms, and been in the habit of crawling on all-fours from the bed to the cask, seldom being in a state to walk, drinking out of the tap, and then crawling back again to bed, to sleep till they should be ready to take another slight refreshment in the same manner.

This must seem very much like exaggeration; but I can assure my readers that I advance nothing but the pure truth, and what fell under my own personal observation. Without doubt such are exceptional cases, and are soon brought to a conclusion by death; but some can support this life for two or three years.

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The relation between the peasant and his master, when looked upon on its fairest side, does not present anything very shocking either to the mind or feelings; for with a kind master the position of the serf is anything but pitiable in the southern districts of Russia, where the soil is very thinly peopled.

The serfs are obliged to give half their time to their master, and to do any work he may require of them. Of course, the cultivation of the land is their chief employment, in which the women take their part as well as the men. The general arrangement is that the peasant should work three days a week for his master and three days for himself, during which time he tills his own plot of ground; and as land is very plentiful in those parts, he can always have as much as he chooses to plow; so that an industrious man will always have a great advantage over one that is idle, more so than in any other country.

I have known instances of hard-working, labor-loving serfs, who possessed their 20,000 or 30,000 roubles; but these instances are rare.—Having worked the three days for his master, the serf is quite at liberty to work for wages, either for his richer or more fortunate neighbors, or for his master, which is very frequently done, as it is not every one that possesses oxen, or the means of tilling ground on his own account.

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In case of a failure of the harvest, every proprietor is obliged to feed his own peasants; and to provide against that emergency, there are established in every village what are called provident magazines of corn, in which there is obliged to be kept a certain quantity of rye and barley. (I think it is three quarters for every soul but as only the males are taken in the census, of course it will only give half that quantity per head.)

As it rarely happens that the harvest is a complete failure, these stores are seldom drawn upon more than two or three months in the worst of years, altho' in the years 1848 and 1849, they were completely exhausted, on account of the failure of the crops for two successive years.

In fact, in the spring of 1849, some places were rendered desert by the entire population dying from want, and scurvy produced by bad living

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To give a faint idea of what a Russian road is like in its worst state, I shall just relate what occurred to a friend of mine who was obliged to travel from Ekaterinoslav to Kharkoff in the month of March, 1853; the distance is about 200 versts, or 140 English miles, and is generally done in twenty-four hours or less in the winter or summer.

He was quite alone, without servant or luggage, except a small portmanteau, and traveled in the ordinary postwagon, which will not weigh altogether more than 3 or 4 cwt.; had five post horses to it, the usual number being three; and notwithstanding all this, he was seven days and six nights on the road, traveling day and night as is the custom in Russia, there being no inns on the road where to stop.

Now, if traveling by post is attended with so many difficulties in the spring of the year, what must be the expense and trouble of transporting corn at that time? It is utterly impossible, for its value would be doubled in about twenty-five miles!

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The sufferings of the people during the years 1848 and 1849 were really dreadful. At that time I was in the town of K——; and as there are never any accounts published of the calamities that may befall the people, of course it was only afterwards that I obtained my information from medical men, who were sent by the government to inquire into the state of affairs, and to render such assistance as the state of things required, from the stewards of estates, and from