The Work of Different Countries.

An English journal of late date has the following:—

"Industry has many curious local attachments, and clings with feline fondness to particular spots. Thus, watches are made cheaply in Switzerland, where the men and women of fifty villages together are all busy on toothed wheels, mainsprings, and jeweled holes. Soap and cheap perfumes, nasty as well as cheap, are best compounded in central Germany. The Tyrol and the Black Forest have three resources for the long winter evenings, when the soil is frozen stiff, and the snow is heavy on the pine boughs—clocks, straw hats, and toys. All over Middle Europe you see the Black Forest clocks, made by peasants round the cottage hearth, as plentiful as Mr. Samuel Slick's lacquered time-pieces in Canada. Baden competes with Italy in straw-plaiting; while for toys, old Deutschland bears the bell.

"It is a curious thing that the toys which English children love so dearly, and which they break, maltreat, and demolish so vivaciously, should all be foreign. Here and there, perhaps, a rocking-horse, or a straight-legged spotted steed with his harness nailed to his body, may be the work of an English artisan, but not often.

"The wooden beasts and birds in the zoological collections, the puzzles, the bricks, the gaudily-dressed Turks and hussars, squeaking lambs, and creaking cards, come from Germany; so do marbles, Dutch dolls, and baby-houses. Paris gives us the superb waxen doll, in her satin and spangles. America sends over the gutta-percha uglinesses and clock-work mice.

"Quite two-thirds of the overshoes that keep our feet from wet bear the French or American eagle boastfully embossed upon their soles. On the other hand, England sells India-rubber tubing, water-proof cloth, and gutta-percha in fifty forms to Continental nations. The French buy more of our brandy than we do of theirs—an exchange of which we wish them joy; while our silks continue the cheapest, and theirs the richest and most tasteful. In all that relates to calico they own our merit; they perfer our broadcloth to their own, but declare, and justly, the superiority of their scarlet-dyed woollens to ours. As for boots, they are cut out by millions of pairs in France, sent to England to be closed, returned for the operation of 'cliching,' and re-exported as of pure Paris make.

"The Americans have great aptitude for the manufacture of small, delicate, labor-saving machines. It has always been an object with them to get through their work with as few hands as possible, and we owe to them all manner of dainty devices for economizing manual power. London is full of elegant little complications of steel rods no bigger than a wine bottle, devised for stitching all stitchable materials, for punching, drilling, and cutting, for metallurgy, and agriculture. Our own machinery is commonly of a grand and solid character—great massive engines that are to be found at work all over the world pumping water out of mines in the Andes, lashing the waves of far-off oceans into foam, crushing quartz in Victoria, and dragging burdens in Brazil.

"We cannot, perhaps, quite beat Prague in turning out stained glass and colored services glowing with the deep pure tints of enormous rubies, emeralds, and topazes; nor are our tubes and alembics so fit to go through fire as the Bohemian. The old ware of China, the old Japanese jars, the finest French and German porcelain, have a fragile beauty beyond our imitations. But our potteries only need the 'open sesame' of free trade to set their good and cheap products—plates that can bear heat, glass fairly cut into sharp facets, and vases modeled on choice shapes from Greece and Etruria—on every middle class table abroad. French housewives who store away their preserves in jars coated with poisonous white lead, and dare not heat the plates lest they should fly into fragments, and whose clumsy coffee-cups are an inch thick, are not slow to appreciate the merits of Mr. Gladstone's treaty of commerce."

Paraffine.

The uses of paraffine are truly astonishing. Several refineries are required to furnish enough to make chewing gum, which is highly recommended for constant use in ladies' sewing circles, and among gossipping neighbors, etc. A story is told of a Cincinnati refiner who had several tuns of paraffine on hand, nicely deodorized, and the demand was light. He sent a man through the towns of Ohio, and bought all the beeswax he could get, paying about forty cents. To one hundred pounds of beeswax he adds five hundred pounds of paraffine, same color and consistence and general appearance, but worth five cents a pound. Now they may detect the odor, he thought; so he put it up in oil barrels, putting the brand "Star Refinery," Cincinnati, Ohio, (the name, of course, is suppressed.) He anoints the barrels outside with petroleum, ships to New York to several merchants a hundred tuns of pure beeswax, with this blinder at one end of each invoice: "Boxes are scarce, and I send the wax in refined oil barrels; you can sell the barrels." The wax opens well—fine lot —very uniform—smells of the barrels a *little*—sells at eighty-eight cents per pound. Imagine the profits—five-sixths paraffine, one-sixth beeswax.

Production of Ammonia.

Shall we ever be able to produce ammonia on the great scale artificially? In the nitrogen of the atmosphere and the hydrogen of water, its elements are everywhere at hand; who will teach us how to compound them into volatile alkali, by a method practicable as a manufacturing process? Cheap ammonia would be a great boon to the agriculturist, and by no means to him only. Could this body be had for a few pounds per tun it would entirely revolutionize one of the chemical industries, and by far the most important of them all. There is a saying that the degree of civilization of a country may be judged of by the quantity of sulphuric acid which it consumes. This is because sulphuric acid has hitherto been the chief agent in the alkali manufacture, and has so lain at the base of the whole edifice of applied chemistry. With ammonia, at the price suggested, however, we should no longer use sulphuric acid in the manufacture of soda; instead of converting chloride of sodium into sulphate of soda by heating it with oil of vitriol, and then transforming this sulphate, first into sulphide and then into carbonate, by calcining it in contact with lime and coal, we should obtain bicarbonate of soda at one operation by adding ammonia to chloride of sodium, in solution, and passing carbonic acid gas through the mixture; and the saying just quoted would thus cease to be valid. What is of more importance, soda would be cheapened, and cheaper soda would mean cheaper soap, cheaper glass, and many other less tangible advantages. And this is only one of many results which would accrue from the command of cheap ammonia.

Well, some little fresh light has lately been thrown on the question of the synthesis of ammonia, which will never be obtainable cheaply enough for use in the soda manufacture unless it can be produced synthetically. In the first place, M. Decharme has published the results of a series of experiments on "the production of ammonia from air and water under the sole influence of the porosity of the soil." In these experiments he carefully deprived soil of whatever ammonia it might already contain, then moistened it, and then passed through it currents of air, also carefully deprived of its natural ammonia. After the air had passed for a longer or a shorter period, he tested the soil, and invariably found ammonia in it, proving that porous soil has the property of causing the nitrogen of air to combine with the hydrogen of water to form one of the most important elements of the food of plants. Hence "the good effect of airy drainage and plowing, the improvement of land by fallowing, the practicability of cultivation without manure, and the presence of nitrogen in plants grown in an artificial soil, in an atmosphere entirely freed from ammonia, and watered with chemically pure water." Second, At a recent meeting of the Chemical Society, Mr. Buckton, in exhibiting a specimen of the mineral *boussingaulite*, found in the neighborhood of the Soffioni of Tuscany, and containing eighty per cent of sulphate of ammonia, explained, by way of suggesting how this mineral was formed, that he had obtained sulphate of ammonia artificially by passing a mixture of sulphuretted hydrogen, air and steam through a heated earthenware tube. Under these circumstances, both the sulphuretted hydrogen and the steam are decomposed; the sulphur of the sulphuretted hydrogen uniting with the oxygen of the steam and of the air to form sulphuric acid, and the hydrogen both of the sulphuretted hydrogen and of the steam uniting with the nitrogen of the air to form ammonia. Lastly, this statement of Mr. Buckton's has led Mr. Wentworth L. Scott to publish the fact that he has found that ammonia is always produced when "deammoniated air is passed over small nodules of pumice stone, about 0·1 to 0·2 inch in diameter, and moistened with either pure water or dilute solutions of certain salts." Mr. Scott states that he has been engaged in researches in this direction for several years past, and promises to publish by-and-bye a full account of his experiments and their results. We are clearly making progress toward an end, the accomplishment of which would be as great an achievement as any of this age.—*Mechanics' Magazine.*

Rebel Abatis at Petersburg.

A war correspondent says:—Passing through our line of earthworks, no longer swarming with their garrison, and crossing the trench just beyond which sheltered our outer pickets, I found myself in the rebel rifle pits. A devious covered way led me to their abatis. Their manner of constructing this defence is very different from that of the Union engineers. Our system is very simple, consisting of stout poles, two inches in diameter and ten or fifteen feet long, planted firmly in the earth and inclining outward at an angle with the ground of about thirty degrees. The outer ends are sharpened, and beneath them, lying on the ground, are placed the bristling boughs and tops of evergreen trees. The poles are set very close together, and it seems as if it must be an impossibility for an enemy to break through them without a long pause and the aid of axes. The abatis on the rebel defences is most unlike this, in appearance and principle. It resembles somewhat a long row of saw-horses, set up together endwise, with the upper ends of the outer limbs sharpened to a point—and I think of no terms in which I can more clearly describe it. Each one of these saw-horses is distinct in itself, and as they are not very deeply imbedded in the ground, and may be easily pushed around by forces inside, they afford no obstacle to the egress of a column on a sortie, although they are formidable interruptions to the advance of an attacking party from without.

The Three Sand Rocks.

In boring for oil, no man expects to find it until he has reached and passed through a whitish sand rock, lying at depths varying from seventy-five to two hundred and seventy-five feet in the valleys. This is called, by way of distinction, the "first sand rock," although the borer may have passed through a dozen different sand rock, alternating with shales, before having reached the "sand rock." Very generally, a well, stopped after having penetrated this rock, yields a heavy, thick oil, considered specially valuable for lubricating purposes, and commanding nearly double the market value of the light oils. From one hundred to two hundred feet below this lies another, very similar, and called the "second sand rock." Having penetrated through this, the borer is usually rewarded with another "show of oil." This, too, is a very heavy oil, though not commonly so heavy as the former. From this rock is produced nearly all the oil along the Allegheny river, while the wells on French creek are nearly all completed in the "first sand rock." But, to reach the great oil fountains, the drill must make another plunge of from one hundred to two hundred feet, when a "third sand rock" is reached. From beneath this rock out gushes the pure, limpid, light oil. Here, too, are reached most, not all, the great "flowing," or rather spouting wells; some of them having deluged the land at first with 3,000 barrels per day—the "Empire well" for instance. The wells of Oil Creek are mostly in this rock.

The English Lock-out.

The Birmingham correspondent of the London *Engineer*, of March 24th, says:—

"The only change in the position of affairs relative to the lock-out, as compared with last week, is that an attempt is to be made to obtain a supply of non-unionists to go from South Staffordshire into the north of that county and start the furnaces which the men on strike refuse to work. A person who is well accredited has come forward and offered to obtain 500 men within a week, if he and his volunteers can be protected from violence. At a meeting of the committee of the Ironmasters' Association held in Wolverhampton on Wednesday, the offer was accepted, and an application was made to the Lord Lieutenant of the county for the needed protection. At the same meeting, the committee expressed themselves as altogether unable to give the Brierley Hill executive credit for their sincerity in their professed discountenancing of the North Staffordshire puddlers, facts having been brought to the knowledge of the committee which led them to conclude that, to say the least, the executive are winking at assistance being rendered. Very little more confidence was expressed in the Gateshead union; but the mill-men were spoken of in terms approaching to confidence in the sincerity of their motives relative to the North Staffordshire men. To show that the masters in South Staffordshire are equally willing with those in the North of England to come to terms with their men, the committee recommended the North Staffordshire masters to see a number of their men, to ascertain of what they complain and why they refuse to go to work. But no great confidence is expressed in the business result of the interview, for it is believed that the men will demand the wages for which they have struck, whilst their masters will certainly refuse to give it. All hope in the termination of the lock-out within a reasonable time is centered in the result of the scheme for introducing non-unionists into North Staffordshird. The masters continue to confine their attention to the question which brought about the lock-out—that of wages—and refuse to entertain any project for breaking up the union. They have no objection to their men having a union, if that union will only confine itself to legitimate business and not make itself intolerable by interference with the management of works."

A New Kind of Electrifying Machine.

The electro-magnetic coil has, in a great measure, superseded the electrifying machine; the latter, however, will never cease to be an object of interest; and, it is probable, will always be preferred for some purposes. The expense and difficulty of managing large plates and cylinders of glass have hitherto been obstacles to the use of large electrifying machines. These obstacles appear now removed—glass being rendered unnecessary by the discovery of a far more convenient and effective material. M. Edmond Bequerel exhibited to the Academy of Sciences on a recent occasion an electrifying machine, the plate of which was made of indurated red sulphur, the invention of a civil engineer. It was eighty centimetres in diameter, and afforded a spark fourteen centimetres in length. No amalgamated cushions were required with it, the skin of a cat being quite sufficient to produce every desired effect. Sulphur undergoes extraordinary changes by successive fusions; becoming extremely hard and tenacious. After the third fusion it no longer acts on metals, or possesses its characteristic odor. The plate used by M. Bequerel was formed by fusing the sulphur three times in a cast-iron vessel, at a temperature between 250° and 300° Cent., and allowing it, after each fusion, to cool thoroughly. After the first and second fusions it was crushed to a coarse powder; and, after the third, it was poured into a plaster mold. Plates four metres in diameter may easily be made in this way; they cost extremely little; and, besides being more efficient, are far less hygrometric than glass.—*Intellectual Observer.*

Aluminum Bronze for Coins.

During the past year, says the Director of the U. S. mint, some interesting experiments were made with aluminum as an alloy for coins; not with a view to displace the bronze coinage, but to propose a system of tokens for five and ten cents. More than two years ago experiments were made in aluminum alloys to try their fitness for medals. Information was received from Paris that the introduction of only one per cent of aluminum into fine silver would resist the sulphuretted tarnish which is so apt to attack that metal in certain exposures. The experiments made here did not confirm that statement; on the contrary a slip of this alloy (99 silver to 1 aluminum) suffered more discoloration from the vapor of sulphuretted hydrogen than a slip of fine silver. The alloy was also much harder. An alloy of thirteen parts copper with one of aluminum was then tried, and another of nineteen parts copper to one of aluminum. The former gave a pale gold color, the latter the color of standard gold coin—both beautiful but too nearly resembling that precious metal. Under the press, however, they were both found to be so hard and stubborn, in spite of repeated blows, as to be quite impracticable. The question, however, was still open, whether a different proportion, and the low relief used for coin, would not give a satisfactory result. In fact, we had specimens of aluminum bronze coinage, effected by European manufacturers of aluminum, which proved that the striking was at least practicable, if not easy.

The Cornish Engine Deteriorating.

It appears from a report in the London *Mining Journal*, that the Cornish engine is failing to work as economically as in former years. This deterioration is probably as the authority in question says from want of care and proper attendance. We quote:—

"In the year 1811 Mr. Joel Lean began to report the performances of the Cornish engines, and during that year, it is said, issued his first engine report. In the year 1827 an eminent engineer, Capt. Samuel Grose, commenced to improve the duty of steam engines at Great Wheel Towan. It is believed that practical experience has done more than scientific researches in procuring the high economy of fuel. which has been the result, and that this has been principally effected by the use of high pressure steam expansively employed, and using Mr. Trevithick's boilers, and clothing the steam pipes and cylinders with a non-conducting material, together with great attention of the enginemen to the fires, so as to make the best of every bushel of coals consumed, as some enginemen are now doing on the railways.

"In 1843 the average duty for 94 lbs. of coal was 60,000,000 lbs., while in 1856 it had steadily decreased to 47,000,000 lbs., for the same fuel. It is to be deeply regretted that the duty of our steam engines is decreasing, and that many of the important lessons taught by Capt. Grose appear to be forgotton; whilst we are brought familiar with the rapid improvements of locomotive and marine engines, we have to deplore a retrograde movement of the stationary engines in our Cornish mines. With the present low price of minerals, and reduced dividends, we certainly ought to try to bring up the duty of our steam engines to where it was in 1843. The number of pumping engines reported for January is 37. They have consumed 2846 tuns of coal, and lifted 22·3 million tuns of water ten frames high. The average duty of the whole is, therefore, 52,800,000 lbs. lifted one foot high, by the consumption of 112 lbs. of coal."

Solution of India-rubber.

A solution of caoutchouc or india-rubber, for repairing india-rubber shoes, is prepared in the following manner:—Cut two pounds of caoutchouc into thin, small slices; put them in a vessel of tinned sheet-iron, and pour over twelve to fourteen pounds of sulphide of carbon. For the promotion of solution place the vessel in another containing water previously heated up to about 86° Fahrenheit. The solution will take place promptly; but the fluid will thicken very soon, and thus render the application difficult if not impossible. In order to prevent this thickening and difficulty, a solution of caoutchouc and rosin (colophony) in spirits of turpentine must be added to the solution of caoutchouc in sulphide of carbon, and in such quantity that the mixture obtains the consistency of a thin paste. The solution of caoutchouc and rosin in spirits of turpentine should be prepared as follows:—Cut one pound of caoutchouc into thin, small slices; heat them in a suitable vessel over a moderate coal fire until the caoutchouc becomes fluid, then add one-half pound of powdered rosin, and melt both materials at a moderate heat. When these materials are perfectly fluid, then gradually add three or four pounds of spirits of turpentine in small portions, and stir well. By the addition of this last solution, the rapid thickening and hardening of the compound will be prevented, and a mixture obtained fully answering the purpose of gluing together rubber surfaces, etc.—*American Drug Circular.*

Directions for Making Blacking.

Liquid.—Ivory black, in fine powder, 1 lb.; molasses, 3-4 lb.; sweet oil, 2 oz.; beer and vinegar, of each, 1 pint. Rub together the first three until the oil be perfectly "killed," then add the beer and vinegar. Ivory-black and treacle, of each 1 lb.; sweet oil and oil of vitriol, of each 1-4 lb. Mix the first three as before, then gradually add the vitriol, diluted with thrice its weight of water; mix well, and let it stand for 3 hours, when it may be reduced to a proper consistence with water or sour beer.

Paste.—Molasses, 1 lb.; ivory-black 1 1-4 lbs.; sweet oil, 2 oz.; rub together as before, then add a little lemon juice or strong vinegar. Ivory black, 2 lbs.; molasses, 1 lb.: olive oil and oil of vitriol, of each 1-4 lb.; water q. s., as before.

The manipulations required for paste and liquid blacking are the same, the difference in the two being the quantity of liquid added. Thus, by diluting paste blacking with water or beer bottoms, it may be converted into liquid blacking of a similar quality, and, by using less fluid matter, the ingredients of liquid blacking will produce paste blacking. One thing must, however, be observed, and that is, that the ivory-black used for liquid blacking must be reduced to a much finer powder than for paste blacking, as, if this be not attended to, it will settle to the bottom, and be with difficulty diffused again through the liquid. For those persons who do not like the use of blacking containing oil of vitriol, the first of the above forms, either for paste or liquid, may be adopted. The vitriol, however, greatly contributes to promote the shining properties of the blacking, and in small quantities is not so injurious to the leather as has been falsely represented, as it wholly unites itself to the lime of the phosphate contained in the ivory-black, and is thus partly neutralized. This is the reason why lamp-black should never be employed for blacking, as it has no earthy base to absorb or neutralize the acid, which would then prove very hurtful to the leather. Oil of vitriol is now employed in the manufacture of all the most celebrated shining blackings. The addition of white of eggs, isinglass, gum arabic, and similar articles to blacking, always proves injurious, as they tend to stiffen the leather and to make it crack.—*Cooley.*

A Curious Clock.

A number of Union mechanics from the rebel prisons, now at the hospital of the Union Volunteer Refreshment Saloon, Phil., brought with them from Dixie a piece of their handiwork, well worth special mention. It consists of a clock, made to wile away their we ry hours at Salisbury, N. C., during their imprisonment last winter. The main spring is made from the blade of a saber which once belonged to Stonewall Jackson. The hair-spring and balance-wheel were taken from the telegraph office timepiece, Andersonville, Ga. The hands are made of a toasting-fork from the kitchen of Vice-President Stephens. The wheels are made from the mountings of carriages, &c., of prominent southerners. The pillars which connect the frame are made of a ramrod, and nearly all the parts are taken from something picked up in the confederacy, and have more or less romance attached to them. A saw used in constructing this interesting little piece of mechanism was made of a table-knife; and files, jack-knives, &c., used in making rings, were often called into requisition by the anxious workmen.

Plants From Cuttings.

Peter Henderson, of Jersey City, a noted propagator, gives a simple mode of raising plants from cuttings, such as roses, verbenas, carnations etc., adapted to inexperienced cultivators, although not the mode used on an extended scale. A common flower-pot saucer, or even a common kitchen saucer or other dish, is filled with sand and the cuttings inserted thickly in it. It is then watered until it becomes about as liquid as mud.

The cuttings should, of course, be of green or unripened wood, three or four inches long, placed in a strong light in a room or green house, kept in a temperature of fifty to eighty degrees, best at seventy to seventy-five degrees, allowed to remain from ten to twenty days, till rooted, and the sand kept constantly in this semi-fluid state, for if they become partly dry they are ruined.