

Scientific Museum.

Manufacture of Black Lead Pencils.

The best pencils of this kind are made from a natural ore, but there are other kinds made of plumbago dust and antimony. The lumps of pure plumbago, when scraped from dirt, are generally of an irregular form, not of a large size. These lumps are cut into thin slices by a circular saw, each slice being sawn by a gauge to its proper thickness. The saw runs vertically and the plumbago is fed below it, the workman gradually raising it, until the slice is cut off, where it falls down slice upon slice of different sizes, upon a table below. One edge is then made straight with a shaving tool, and it is then fit to be inserted into the wood. The wood is cedar, in half squares cut by a circular saw into the lengths of the pencil. A groove is cut by a proper gauge plane into one side of the wood square, and the workman takes a piece of the cut plumbago, with its edge made straight, and dips it into strong glue and then inserts it into the groove, and then with a very sharp instrument makes a slight cut at each end and gives the plumbago a slight snap, when it breaks off with a clean straight edge. This is again dipped in the glue and operated like the other piece until the whole slice is used up or the pencil groove filled, when the whole surface is smoothed along and the two pieces are firmly glued together, forming a rough square pencil.

To make it round, it is first forced through a square hole in a steel puppet, by the workman; and on the other side of this puppet, there is a small planing tool revolving on a centre, with two gauges on it, to turn it round and to the exact size. As soon as the end of the pencil projects from the finishing gauge of the cutters, it is forced into a circular hole in a steel plate, through which it is drawn with a pair of wooden nippers, and it comes out beautifully round polished. It is polished by the outer end of the circular hole being smaller than the inner, which thus compresses and polishes the wood.

EVER POINTED LEAD.

The round pieces of lead for pencil cases are first sawed into small square pieces, and they are then made round by forcing them lengthways through three circular holes of different sizes cut in pieces of ruby. In passing through the first hole, only the four angles of the prism are cut off, and it is then octagonal, the next hole is smaller and it takes off these eight angles and it then becomes a prism of sixteen sides; and in the next passage through the small hole, it is made perfectly round. The plumbago is fed into the ruby by being laid on a groove in a piece of metal, with a steel pin to keep the plumbago from being pressed back.

The Difficulty of Navigating the Air.

No body can float in the air unless it be eight hundred times lighter than water; such a body therefore, must of course carry 800 times less power than might be used in a steamboat. But the utmost power that a steamboat can carry will not enable it to make the least headway against wind blowing 200 miles an hour. How then is it possible for a body of 800 times less power to make any headway against even a gentle wind blowing three miles an hour?

In navigating the air we can obtain no fulcrum but the air itself, and that is yielding, and but a small portion of even the power which can be carried could prove effective.

If a body, so comparatively solid as water, causes a loss of power, the loss must be vastly greater in a body eight hundred times lighter and exceedingly elastic. When to all this we add eight hundred times less power than a steamboat, and at the same time bear in mind the further fact that a steamboat cannot make the least headway against wind blowing two hundred miles an hour. It is no go.

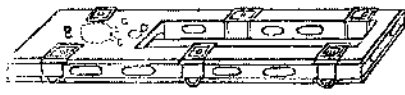
Saturn and Her Ring.

Well, us New Yorkers must be a set of stargazers. No sooner was it announced by one of our papers that the largest opening of the ring of Saturn could be seen during the eve-

nings of last week, than a huge telescope was mounted in Broadway, right on the pavement, and through it, the learned and unlearned beheld wonders. This is a kind of speculation that we commend.

Hollow Iron Moulding.

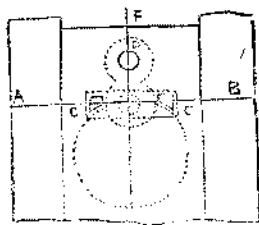
FIG. 1.



For large castings the bed of sand which forms the floor, is used for constructing the moulds. In the accompanying engravings we will illustrate the bed plate of a non-condensing steam engine.

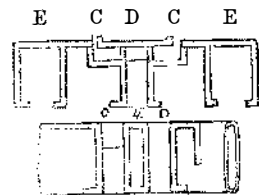
Figure 1 is a narrowed outside view of the plate, showing the upper surface. It is made to support six columns, surmounted by an entablature; B is a platform for supporting the cylinder. It is stiffened with a deep flange at the edge. The position of the cylinder is indicated by the dotted lines; C C are the apertures for the steam passages, and they are joined into one short branch pipe below the platform; D is a circular passage for the steam into the valve chest—it projects downwards to the level of the mouth of the steam education

FIG. 2.



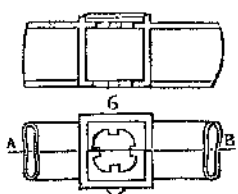
passages, both terminating in a large flange connecting the respective pipes leading to them. Fig. 2 is a plan of part of the sole plate, including the steam ways. Fig. 3 is a vertical section of the sole and the education passage at the line A B, fig. 2. The steam passage is dotted in behind it. Fig. 4 is another vertical section of the same, at the line E, fig. 2, showing the section of both the passages, C D. Fig. 5, is a vertical section of fig. 6, which is another portion of the sole, showing the foundation for a column, fig. 5, being the section at the line A B, fig. 6. The sole is hollow within, and possesses the form of the section shown in fig. 3, all round, interrupted only by the sockets for the feet of the columns. In casting, the general plan is to dispose of the moulding so as to have the

FIG. 3.



heaviest parts undermost. The sole plate is for the most part entirely open on the under side, as shown in fig. 3. Externally the sole plate is net open like the under surface. Nor are the oblong blank spaces shown in the sides executed in the pattern, its cross section is a complete four sided figure. This form of pattern leaves in the sand a plain open space of the same breadth as itself. Cores of sand of the same internal void, must therefore be introduced into the moulding to complete the figure of the casting, but this we will explain in next number.

FIG. 5.



For heavy casting a greater quantity of coal dust is required, but the exact amount, must be determined by an experienced hand. Too much coal prevents a sharp outline of the pattern. This is caused by the repelling power of the gas evolved during the liquidity of the metal. On the other hand, if there is too little coal dust, the molten metal burns through it combines with the sand and produces a rough surface.

To make Tea Lead into White Lead.

Take tea lead, place it in a suitable cast iron pan and expose it in a melted state to a slow current of heated air. This has the effect of separating the tin that is in it which then floats upon the surface of the melted lead, from whence it is removed by the workman from time to time. When the lead has been operated upon sufficiently long to extract the whole of the tin, it is then to be removed by running it out, or by other convenient means, and then cast into moulds. The workman can with facility tell when the lead has been sufficiently operated upon by being, when cold, easily scratched with the finger-nail. The tin in this process will be found to have mixed with it a small quantity of oxide of lead. In the manufacture of white lead from the tea lead thus treated, and which is now particularly pure for the purpose, the lead is reduced (in a metallic state) into a very fine state of division, by dropping it when melted into a tub of cold water, and in this state operated upon by either acetic or nitric acid, either mixed or alone, and diluted with an equal weight of water, or by a solution of acetate or nitrate of lead, either mixed or alone, but containing an equal quantity of acid as the preceding, and used with steam, hot air, and carbonic acid gas. By constructing a tight frame or brick chamber with a number of shelves covered with sheet lead, another plan may be used, viz., to spread the granulated lead upon the shelves to be submitted to the action of carbonic acid, which is admitted to the space between the shelves by suitable pipes; other pipes convey steam or hot air for maintaining the apparatus during the process of a high temperature.—Steam is occasionally admitted to the lead during the operation, for the purpose of keeping it in a proper state of moisture. At the expiration of about fourteen days the lead will be found sufficiently carbonated.

The sulphate of copper (blue vitriol) is said to be a good preparation for seed wheat. It should be used in a strong solution, like the salt solution, strong enough to support an egg.

In threshing, the best wheat is thrown farthest by the machine.

The Queen's Dictionary.

The Messrs. Merriam, some time since, transmitted to Queen Victoria, through the hand of Geo. Bancroft, the American Minister, a magnificently bound copy of their unbridged edition of Webster's Dictionary. It was given to the Queen, through her husband, Prince Albert, and its receipt has been acknowledged by the Secretary of His Royal Highness. The acknowledgment is of course directed to His Excellency, the American Minister, and we have the pleasure of presenting it to our readers.

SIR—I have the honor to inform your Excellency that Her Majesty, the Queen, has accepted, with great pleasure, the copy of the last edition of Webster's English Dictionary, which, according to the directions you gave me, was laid by me before His Royal Highness Prince Albert, and was presented afterwards by the Prince to Her Majesty, on the part of the publishers, Messrs. Merriam; and I have been commanded to express to your Excellency, and to beg of you to transmit to Messrs. Merriam, Her Majesty's gracious thanks for this beautiful present, which Her Majesty highly values, not only on account of the great merits of the work itself; but still more so, as a sign of those feelings towards Her Royal Person on the part of a large portion of the Anglo-American nation, which your Excellency informed me it was intended to represent, and which, after the political disunion which has taken place between the United Kingdom, and the United States, could not indeed have found a more appropriate way of expressing themselves than the presentation to her Majesty of a work on the English language, which directly refers to that powerful and indissoluble bond by which the two cognate Nations on the Eastern and Western side of the Atlantic will forever remain united. Your Excellency, as well as Messrs. Merriam, will no doubt feel great pleasure in learning that her Majesty has placed the work presented through your Excellency, amongst the few selected volumes which compose her own private Library.

I have the honor to be, sir, your Excellency's faithful servant,
C. MEYER,
Sec'y to H. R. H. Prince Albert.
Buckingham Palace, June 20th, '49.
His Excellency, the American Minister.

LITERARY NOTICES.

The October number of Godey's Lady's Book has been laid upon our table by Messrs. H. Long & Bro., 43 Ann street, Agents for this city. It is superbly illustrated with 15 original engravings, the most prominent of which are, "The Father's Grave," by Ellis, "Brother and Sister," by Coe; also a portrait of Fredrika Bremer, accompanied by a biography from the pen of Mary Howitt. Among the contributors we notice the names of H. Hastings Weld, W. Gilmore Simms, T. S. Arthur, Grace Greenwood, Mrs. Ellet and Miss Leslie, beside a host of other merited writers. Godey is unrivalled in the literary world.

Sartain's Union Magazine, for October, comes to us through Messrs. Dewitt & Davenport, Tribune Buildings. The principal engravings are executed by the proprietor, Mr. Sartain, who stands without a rival in this art. This number is a splendid one, and reflects credit upon its enterprising managers. The contributions are of a high and sterling character.

The October number of Graham's Magazine has been sent us by W. H. Graham, Brick Church Buildings, this city, and is a very beautiful and richly embellished number, the most prominent of which are "Effie Deans," "Rose Carlton," and "The Baggage Wagon," a very striking and effective picture. The contributions are of a very sterling character. This Magazine is not excelled in point of merit by any, and should meet a large sale, it has already reached its seventeenth year.

Peterson's Ladies' National Magazine, for October, is not inferior in point of interest to any previous number. Mr. Gross has done himself credit in the engraving of "The Offer," and the literary character of this Magazine is unexceptionable. Terms \$2 per annum. Published at Philadelphia. Dewitt & Davenport are Agents for New York.

Holden's Dollar Magazine, for October, has made its appearance. The success of this work is established beyond peradventure, and will be continued by the person who has had the control of it in Mr. Holden's absence, he having become the legal proprietor on the death of Mr. Holden. We are assured that no pains or expense will be spared to render it worthy an extensive patronage. The present number indicates an improvement in the literary character of this journal.

The Banker's Magazine, for September, contains much valuable information. Its miscellany of important cases, relating to banker's business, is very valuable. It contains a splendid article on "The Intellectual Occupations of Business Men."



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