History and Mystery of a Teacup.

[Concluded.]

As all clays are very absorbent of moisture, like a sponge ; when they are heated, this is of course driven off as steam, and consequently the clay shrinks in volume, and could not well be made into any article of regular shape as it would be liable to become distorted in form, and crack ; so that it would be one of those vessels which would "hold no water." To prevent this shrinking, or rather to counteract it, another material is introduced in the manufacture of crockery, and this is pure silica, which is plentifully found in nature in what are known as "flints." These are found rounded, in the chalk rocks, running in parallel lines, and in separate nodules or pieces. It has long been used for gun-flints, its hardness enabling it to strike a spark when struck sharply against steel. Flints will not melt at any heat that can be obtained in the baking furnace, and so when reduced to powder, and mixed with the clay it forms a kind of skeleton on which the clay can shrink without losing its form.

Having got together the materials, let us proceed to see how our teacup was made from them. The clay is first mixed with water in a trough until the mass is like cream, and then passed through a series of seives until the desired fineness is obtained, what remains on the seives being sent back to be, as it is called, "bludged" again. The flints are heated red-hot or calcined and thrown into water where the sudden cooling breaks them into pieces, and they are then ground in a mill, the bottom of which is paved with hornstone (a siliceous stone resembling flint, so that the particles wearing off do not injure the flint), and the rolling stones are made of the same materials. When the flints are ground they form a paste, water being added in the mill. The clay and flint can now be made into "slip," which consists of clay, weighing a pound and a half to the pint measure, and the flint two pounds. This mixture is carefully evaporated during the process, the whole being carefully stirred to the consistence of a tough paste, which the operators work about until it is very perfectly incorporated, and all the air bubbles are expelled. This is left to lay as long as possible, for like many other things it improves with keeping, and is capable of better molding.

Our teacup being now in the chaotic state, an unshapen mass of clay lying in a manufactory, the hand and genius of man have to call forth from that heap of plastic matter articles of beauty, utility, and grand destiny. Wonderful clay! How fit an image of the child, that can be formed and molded in the ways of good or evil, which it will rigidly retain through all its days, according to the molder's hand, skill, and knowledge! Those heaps of different qualities, how different their destinies, and how separate the paths of being of even distinct kinds of clay. That porcelain shall associate with kings and queens ; high lords and rich ladies shall handle it with delicacy, and the fingers of the artist shall decorate it, to suit it for its grand position ; the colors shall be all true, and the pictures good. That common clay, how hard its lot! sold at an auction for sixpence the price of our teacup); it has to battle with misfortune ; to be ornamented with the false and ugly, not the true and beautiful; to be cracked and splintered, and only touched by the hard hand of some heroic son of labor, whose artistic taste it spoils each moment, while it consoles and refreshes by the cheering beverage within. When MM. Delf and Porcelain part company at the maker's gates, what different existences they are fated to lead, what diverse scenes to see, and yet in the end, like rich and poor among men, their equality will be proved by their meeting in the common Crockerydom of earth—the dust-bin, or the contractor's cart.

It is not quite fair, for while we have moralized our teacup has suffered. Let us now describe how it was produced from its heap of clay. The potter is sitting at a table on which is a horizontal wheel, placed on a vertical axis, and revolving very rapidly, and some clay in the proper condition of plasticity. He takes the quantity of clay he thinks he will require, and Experience, that great teacher, gives him such just ideas of quantity, that he seldom takes too much or too little ; having taken up the lump in his hand, he throws it on the center of the wheel, and putting the fingers of one hand in the center, and the palm of the other outside, and pressing both hands together or to one side, as may be necessary, he draws up or "throws" as he calls it, our teacup in an instant. He then improves its shape with a wooden tool, and when he thinks it perfect, a boy cuts it off with a wire and takes it to dry. When it is hard enough to stand a surgical operation, it is placed in a lathe and turned to a finish, and any parts that could not be produced at the wheel are put on, such as the handle and base, a little moist clay serving for cement. Our teacup has now to commence its fiery trials; being first dried in a stove and then baked. In order to be baked, the vessels are placed in cases of fireclay called *seggars*, piled one on top of the other, but there are never two tiers of vessels in the same seggar ; and a layer of sand prevents the bottom of the vessels adhering to the seggars, while the seggars protect the vessels from the unequal action of the fire. These seggars have no tops, the lower part of one forming the top of the other. They are all placed in a kiln which is heated slowly at first, but when the heat is increased to the proper temperature (known by trial pieces of clay), all the apertures are closed, and the kiln allowed to cool as slowly as possible. The ware is now called "biscuit," and is ready to receive the color. The device being first cut in copper, the copper plate has the color mixed with oil when applied, and it is printed on a piece of soaped paper. The paper is applied with the printed side to the cup while the color is still moist, and the "biscuit" absorbs the color. The articles being placed in warm water, the paper peels off. The oil is then driven off in an oven, and the teacup being dipped in a glaze made from white lead and powdered flints, which is distributed evenly over the surface of the cup, it is placed in a kiln again and heated until the glaze "runs" or covers the whole with a vitreous coating, when our teacup is finished and ready to be packed up, and sent away to—anywhere ; this particular one having fallen into our possession.

How do you like the story? It is plain and simple, but quite true, so that it has an advantage of the fairy tales of childhood, and the lesson we may learn is, that teacups are not immaculate, and their insensible existences not all peace ; for even after they have passed through the critical periods of their manufacture, they are still liable to be destroyed by accident or carelessness. Therefore, say we, be careful of your teacup !

P. S.—As though to enforce our moral in rising from our seat, we have just shaken the bookcase, causing a suddent descent, and the handle has dissolved partnership with "Our Teacup."

Mail-clad War Ships.

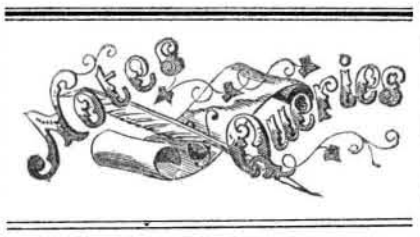
The British Government are about constructing two of the largest class line-of-battle-ships, with steel clad sides—every slab of metal being 4½ inches thick. There are two vessels of the same class now being constructed, for the French navy at Toulon. Uncle John used to boast of "the wooden walls of old England," but in his old days, he is beginning to think that iron sides are better than those of oak.

We are indebted to the Hon. H. F. Clark, M. C. for this city, for a complete set of Patent Office Reports.

A Proposition for Propulsion.

The dynamic force of the waves has been known ever since the sea was first seen, and every mariner or passenger on the "mighty waters" has at some period been uncomfortably impressed with the lifting power of the heaving waves. J. W. Shively, of Washington, D. C., proposes to make good use of this immense amount of power, and by its means propel the ships that ride upon its briny bosom. He proposes to build ships provided with lifeboats, or suitably shaped buoys, at the bow and stern, and along the sides ; these are to be connected by suitable machinery to paddle-wheels or a propeller, which will operate them by the up and down motion caused by the waves. It is true that the ship also rises and falls, but from her great (comparative) weight, she is not affected so much as the buoys, and it is this difference which will move the propeller. He would also erect works upon the coast line, and move the machinery by the force of the breakers or waves elevating and depressing the floats, and this would be conducted by levers and proper mechanical devices into the mill to turn lathes or move planers or any machine tool that may be there.

Mr Shively wants a capitalist to enable him to realize his visions of the cheapest motor known. Who will be the first to speak ?



*** Persons who write to us expecting replies through this column, and those who may desire to make contributions to it of brief interesting facts, must always observe the strict rule, viz., to furnish their names, otherwise we cannot place confidence in their communications.

We are unable to supply several numbers of this volume; therefore, when our subscribers order missing numbers and do not receive them promptly, they may reasonably conclude that we cannot supply them.

J. M. A., of Ill.—Wash your rose-bushes with tobacco water. It will quickly kill the bugs, and the rose will regain its fragrance in a day or two. It should be applied to the bush by means of a syringe.

G. G. D., of Mass.—We prefer a long to a short stroke engine when the cylinder is well protected and the cut-off used ; not otherwise.

A. M'C., of R. I.—It is somewhat difficult to mend torn india-rubber shoes. A warm varnish, made with shreds of india-rubber dissolved in naphtha, is the best remedy that we have tried for this purpose.

P. G. P., of Pa.—If you will read the notice at the head of this column you will understand why we cannot give attention to your inquiries.

J. H. P., of N. Y.—We have not a particle of faith in the "going to bed " nonsense contained in the paragraph you send us. We have reposed with our heads towards every point of the compass, and somehow manage to feel pretty much the same every night.

G. B., of N. J.—We have not seen any of the pressed artificial stone to which you refer. No bricks made without firing have been employed for building in this region, nor would they suit our climate.

C. R., of Mo.—We have stated in former numbers that it agreed with our own practical experience that water-wheels did more work at night than during the day. We never made any critical experiments, however, to test the question. Your improvements in the conical burr mill appear to be patentable.

W. R. L., of N. Y.—Common writing ink is not indelible. Resin in solution is used for sizing writing paper in France and America. In England gelatine is used in many instances. Halvor Halverson's indelible pencil is the best we have seen. It would take up too much time and space to describe it for you.

H. D. W., of Mich.—You have not hit upon the method of moving the "perpetual motion" in Barnum's Museum. Rotary engines have been built with two, three and four steam ports, but no advantage can be obtained from such arrangements.

H. M. S., of Mich.—If you write to Professor Henry at Washington he may forward you a report of the Smithsonian Institution. All sounds travel with the same velocity, but their intensity is greatest in a straight line from the object which causes them. A steel spring will break sooner while running under water, on account of the greater resistance which it has to meet and overcome.

J. W. H., of Ill.—Several devices have been invented for consuming the smoke of bituminous coal under boilers and in furnaces, but none are in use for common grates and stoves. You should try to invent some smoke-burner for dwelling-houses, as it would be a valuable improvement for your region, where bituminous coal is exclusively employed for fuel.

W. R. S., of Pa.—We never heard before of a railroad car wheel having its cohesive qualities uniformly destroyed by running 10,000 miles. We do not believe that this is the case.

P. L. H., of Pa.—Your best way to polish mold boards is to grind them on a rough stone first and then a smoother one, with cold water. Acid will not help you.

E. P. P., of C. W.—Your question is rather ambiguous ; but as near as we can answer you, a bushel of corn and cobs ground together are worth fifty-five cents—*i. e.*, if a bushel of the corn alone be worth a dollar.

E. T. M., of S. C.—In some cases it may be expedient for persons living adjacent to cities supplied with gas, to obtain it in strong portable bags or cylinders, and transport it to their houses, but we believe that it would be much cheaper to manufacture the gas on their premises.

G. O. E., of New Orleans.—Any of the turbine wheels placed in "draft-boxes" will run in what is called "back-water." They operate when deeply submerged as long as they have any head at all.

J. G., of C. W.—A certain amount of steam taken direct from a boiler will heat a certain amount of water to the boiling point sooner than a like quantity of steam admitted to, then exhausted from, an engine. A considerable amount of condensation takes place in steam while it is doing mechanical labor; the heat of the steam is thus converted into work.

T. R. F., of N. S.—We really do not understand your views clearly in regard to submarine telegraph cables. If we are right in regard to their meaning, you believe that magnetism is the sole power which telegraphs messages, and that every cable is a magnet. Electricity, and not magnetism, makes the records in a chemical telegraph; but in the Morse telegraph, electro-magnetism makes the records.

J. T., of Ky.—The way to make sulphurized oil is to add the flower of sulphur very slowly and cautiously to the boiling oil. If you plaster your concrete building on the outside, and paint it with boiled linseed oil, in which one pound of the acetate of lead has been added to the gallon, it will answer as well as the sulphur-oil, You may color such oils with any of the common pigments.

W. W. L, of Conn.—It is a very prevalent but erroneous notion that a rifle ball fired over a sheet of water, is more powerfully attracted—and therefore carried to a less distance—then when fired over land. This opinion no doubt originated in the deceptive influence of vision regarding distances on levels, such as lakes and the sea. There is no difference in the amount of attraction exerted on land and water. A rifle ball fired in the vicinity of a mountain, will be attracted to the elevation, because the attraction is in proportion to the mass.

G. M., of Pa.—An excellent whitewash is make by slacking lime in a barrel or other vessel, then thinning it down to the proper consistency and adding a pound of salt to every five gallons. When cool, add about half a gallon of sweet milk, which will render it less liable to be washed off with rain. Now is the season, for putting in execution good whitewashing receipts. For louthouses and fences, if a pound of copper is added to every five gallons of the above whitewash, a very durable buff-colored wash will be produced.

W. D, J., of N. Y. —About from thirty to fifty gallons of crude oil are obtained from a ton of Breckenridge or cannel coal. There is a coal called Liverpool cannel. The Torbane Hill Scotch coal is the richest for making oil in Europe. From 60 to 70 gallons are obtained from a tun. Retorts six feet in diameter are now used for distilling oil : they are said to be better than small ones. They residue left in the retort after distillation is coke.

T. C., of Me.—The mucilage of commerce is made from dextrine dissolved in water.

Money received at the Scientific American Office on account of Patent Office business, for the week ending Saturday, April 2, 1859 :—

I. K., of Ill., $25 ; W. K., of Pa., $100 ; N. B, of Wis., $30 ; J. C. B., of N. Y., $95 ; H. A., of Fla., $30 ; W. D. B., of Ill., $30 ; G. G. B., of Mass., $30 ; C. C., of Mass., $10 ; J. G. E., of Pa., $30 ; C. L. H., of Vt., $30 ; A. F. G., of Mo., $34 ; C. B. C., of R. I., $25 ; C. H. B., of Pa., $30 ; H. H., of Mass., $300 ; J. S. P., of R. I., $25 ; A. & H., of Ct , $30 ; H. H. E., of Ill., $34 ; W. H. K., of Ill., $25 ; H. H., of Pa., $30 ; S. A. G.. of N. Y., $25 ; T. R., of N. Y., $30 ; O. L., of N. Y., $20 ; H. P. C., of Ill., $30 ; J. E. C., of Mass., $65 ; J. W. H., of Tenn., $25 ; J. A., of Ct., $10 ; G. J., of N. Y., $90 ; D. D., of R. I., $62 ; E. H. W., of La , $48 ; J. K., of O., $30 ; M. DeC., of Ind., $10 ; M. A., of N. Y., $30 ; L. R., of Ind., $5 ; G. R., of N. Y., $30 ; J. R., of Mich., $25 ; E. O. B., of Ill., $30 ; E. D., of Ark., $50 ; W. B., of Ga., $35 ; W. J. B., of Pa., $25 ; L. M., of Mich., $25 ; C. P., of Mass., $30 ; H. & R., of Ind., $30 ; H. K. S., of Mass., $30 ; L. R., of Mass., $27 ; G. K., of N. Y., $20 ; G. W. M., of Pa., $30 ; O. S. Q., of Ct., $30 ; B. A. G., of Ill., $25 ; E. C., of Mass., $50 ; J. D. F., of Iowa, $30 ; E. T., of N. Y., $30 ; H. B. K., of R. I., $30 ; D. H. H., of Ct., $30 ; J. L., of La., $25 ; G. T., of N. Y., $30 ; L. K , of Pa., $25 ; J. S. S., of Ind., $7 ; R. J. W., of N. Y., $30 ; H. W. A., of N. Y., $150 ; S. B., of N. Y., $20 ; N. J. H., of N. Y., $25 ; G. & M., of Pa., $30 ; J. S., of N. Y., $25 ; J. A., of N. J., $25 ; R. M., of N. Y., $55 ; B. P., of Ind., $20.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, April 2, 1859 :—

J. K. of Ill.; W. J. B., of Pa.; C. W. of Mass.; F. & J. S. of Cal.; J. W. H. of Tenn.; T. R. of Mich.; J. L. of La.; B. & D. of Paris; B. & B. of Ill.; H. H. of Pa.; S. A. G. of N. Y.; J. F. & E. P. M. of N. Y.; J. W. G. of Vt.; J. S. of N. Y.; J. C. D. of Ky.; J. A. of N. J.; J. A. of N. Y.; J. S. S. of Ind.; E. D. of Ark.; A. W. P. of N. Y.; A. & O. of Ill.; J. W. R. of Mo.; E. . W. of La.; W. H. G. of Mass.; C. B. C. of R. I.; J. S. P. of R. I.; J, C. B. of N. Y. (2 cases); W, B. of Ga.; W. H. K. of Ill; B. A. G. of Ill.; A. D. of Mass.; S. B. of N. Y.; N. J. H. of N. Y.; L. K. of Pa.; R. M. of N. Y.

IMPORTANT TO INVENTORS.

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The annexed letter from the late Commissioner of Patents we commend to the perusal of all persons interested in obtaining patents:—

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Yours, very truly, CHAS. MASON.

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PATENT HORSE-SHOE MACHINE.—PERsons should be cautious in purchasing patents for Horse-shoe Machines that may be offered for sale. The undersigned has secured the right of the Griffith Patent, and many of the machines now offering are believed to be an infringement on this patent, sold by Robert Griffith to Strickland Knoass, and others, of the city of Philadelphia, Pa. T. SCOTT STEWART. 31 2*

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