Correspondence.

The Central Park Obelisk.

To the Editor of the Scientific American:

We learn from your last number, through a letter of Mr. Cummins, of Buffalo, that the Egyptian Obelisk in Central Park is not cut out of the granite quarries of that country, as was stated in your SUPPLEMENT of 1881, but has been made from small pieces of granite ranging in size from that of a walnut to a grain of wheat, and all moulded and held together by some durable cement known and in use in the time of its erection. Mr. Cummins states that he could displace some of these pieces of granite lying near the surface of this stupendous amygdaloid with an ordinary steel pick.

This is all new to us, and contrary to our impressions on looking at the Obelisk, as it seemed to us to have been cut out of the native granite, still leaving the impression of the chisel on the face of the work; showing, moreover, that delicate and beautiful mingling of the hornblende, feldspar, and quartz in every part of the face of the Obelisk without the least appearance of any seams or bands of cement holding distinct and severed pieces of granite together, which, at best, would have given the work an appearance like to that of the amygdaloid or bracksea.

In addition to this we have now before us a piece of the Obelisk.

When it was being removed from the vessel to where it now stands, a piece was spalled off of the base of the Obelisk and picked up by two boys, who gave it to a police officer; he gave it to the police judge of his district, and by him it was given to Judge Cady of this city, who gave it to us.

The fragment is about three inches long and two inches broad, and of a wedge like shape. It is a light drab syenite, and contains large black crystals of hornblende, flesh colored feldspar, and limpid quartz.

It is rough and irregular on all sides but one. On this it is level, and shows the impressions made by the tools of the stone cutter.

It appears equally fresh on all sides, including the one showing the work of the chisel. Hence it must have formed a portion of an inside joint, where it has been protected from the weather. The quartz presents in one small spot a friable appearance, but it is supposed to have been caused by the great force that split this fragment out of the body of the Obelisk without any prior weakness in this part of the rock.

There is no cement in this fragment, nor has it been broken from anything to which it had been fastened by any adhesive substance.

Now, if the theory of Mr. C. be true—which is, that the entire Obelisk is moulded out of small pieces of syenite, held together by some durable adhesive matter—then this piece of the Obelisk must have been spalled out of the inside of one of the spalls used in moulding the column. And, moreover, the amygdaloid, after being set with cement, must have been found to be untrue in some particulars, otherwise the marks of the stone cutter's chisel would not appear on the level side of the spall, as they now do. This was evidently done to fit the Obelisk on the foundation that must have been prepared for its reception. If the Obelisk had been moulded on its foundation, then the fragments of granite and the cement would have conformed themselves to the foundation as they were poured into the moulds upon it, and no cutting could have been done at the base, nor would any have been necessary to make the base of the column fit upon the foundation. The syenite of this Obelisk gives great proof of its durability. It will last almost to an indefinite period of time, and as long in this country as any other with an equal amount of moisture and variation of temperature.

Perhaps there is no granite in this country as durable as that of the syenite of the Obelisk, or where the minerals of rock are so well balanced for durability as they are here. The Scotch granite is claimed to be quite as hard and durable, but on a careful analysis is found to be lacking in some important particulars, and would become friable and rot away thousands of years before this Obelisk would show the least impression from time.

There are a few syenite mountains in the Ozak range of Missouri that in appearance and chemical tests prove to be equal to the granites of Egypt, but they are inaccessible and considered too hard to be worked so as to be put into market on a profit or in competition with softer or more friable granites that are being worked and are considered sufficiently durable for all practical purposes. At all events, we are assured that the Obelisk is solid syenite, and will endure almost as long as time will last. This we could not expect if it were a mere amygdaloid.

GEO. W. CHIN.

St. Louis, March 29, 1883.

Flying.

To the Editor of the Scientific American:

I am greatly surprised to learn that my crude paragraphs on "Flying" have attracted the attention of one so well qualified to discuss a difficult question, and to give a clear view from every standpoint surrounding it, as Mr. F. J. Patten, of the U. S Army, in the SCIENTIFIC AMERICAN of March 31. I am induced to say, however, that I think he is a little bit inclined to be sarcastic withal.

Mr. Patten says: "There s no use in being scientific by halves." Why, sir, I do not claim to be scientific, even by a sixteenth. What I did say in regard to the comparative strength of man and bird was more of an offspring of impulse than of due reflection.

I do not pretend to know but very little about the question, anyway. I am very careful not to state a thing as a fact unless I know it to be true. I simply know that I can bear my weight, 190 pounds, and 25 pounds extra, on the balls of my toes without the slightest indication of pain. I can hang my weight on a bar by my chin; I can put my feet under one bar and my legs over another, and from a horizontal position raise myself upright by the strength of my knee joints; I can hang my whole weight by two of my fingers, while an equal amount of weight would crush an albatross to death. From these facts I conclude that the muscular strength of man is distributed all over his body, while that of the bird is concentrated in its wing joints.

It was distinctly stated by the *Engineer* that the bird had as much muscular strength as a man, but Mr. Patten says: "It only means that they have greater proportional strength." Then again: "The bird can use a far greater proportional part in the exercise of those particular muscles adapted to locomotion than man or any vertebrate animal can do." That may be true, if ninety per cent of its strength is located there. But even that remains to be proved.

As to its "burning of carbon," that is a lantern that he has hung altogether too high for my short literary stature. I'll not meddle with it.

But for his "largest approximation to a flying machine that nature has given us," I will just simply cite this paragraph from Wells' Geology:

"The size of the pterodactyl may be inferred from the circumstance that the wings of one specimen which has been found must have had a spread of not less than twenty-seven feet, while the spread of the wings of the great condor of the Andes—the largest of flying birds—does not exceed twelve feet.

SAMUEL B. GOODSELL.

Brooklyn, April, 1883.

Bronze Powder and Bronzing.

Bronze powder is finely pulverized metal or powder having a metallic base, applied to the surface of various articles for the purpose of imparting a metallic color or luster.

Gold powder for bronzing is made by grinding leaf gold with honey, dissolving the mixture to obtain the gold by deposition, the honey water being decanted. German gold is a yellow alloy leaf similarly treated.

Mosaic gold is prepared by incorporating and grinding: tin, 16; flower of sulphur, 7; mercury, 8; and salammoniac, 8; then subliming the amalgam. A flaky gold colored powder remains in the matrass.

Copper powder is obtained by saturating nitrous acid with copper, and then precipitating the copper by exposing iron bars in the solution.

Bisulphide of tin has a golden luster, flaky texture, and is used for ornamental work, such as paper hangings, and as a substitute for gold leaf.

Dutch foil, reduced to a powder by grinding, is also used, and powdered plumbago gives an iron colored shade.

Another kind is made from verdigris, 8; putty powder, 4; borax, 2; niter, 2; bichloride of mercury, ¼; grind into a paste with oil and fuse them together.

Another (red): sulph. copper, 100; carb. soda, 60; mix and incorporate by heat; cool, powder, and add copper filings, 15; mix; keep at a white heat for twenty minutes; cool, powder, wash, and dry.

Bronzing is the process of giving a bronze like or antique metallic appearance to the surface of metals.

The processes vary; they may be classed as coating with a metal alloy, coating with a metal in paste, solution, or vapor, corrosion, coating with a gum, applying bronze powder, and painting.

The modes vary with the material. The methods as to copper (some of them applicable to brass) are as follows:

1. The surface is cleaned, polished, and a paste of crocus powder and water applied to it. Apply heat to develop the color required.

2. Plumbago applied in the same manner. By applying mixtures of plumbago and crocus different shades are obtained.

3. The copper is exposed at a high heat to the fumes of zinc.

4. The copper vessel is filled with water acidulated with hydrochloric acid, an amalgam of zinc and cream of tartar being added. Boil for a while. The two latter processes are more properly brassing.

Corrosion processes are as follows:

Wash the cleaned copper with a dilute solution of sulphuret of potassium, or hydrosulphuret of ammonia is applied with a brush.

Apply a solution of verdigris, 2; sal ammoniac, 1; and vinegar, 16. Or, verdigris, 2; vermilion, 2; alum, 5; sal ammoniac, 5; vinegar sufficient to form a thick paste. Blue vitriol inclines to dark brown, borax to yellow brown. Or, sal ammoniac, 1; cream tartar, 3; common salt, 3; hot water, 16; dissolve, and add nitrate of copper, 3; dissolved in water, 8; apply repeatedly with a brush. Or, salt of sorrel, 1; sal ammoniac, 3; distilled vinegar, 32; apply as above.

For iron: Clean the metal, and wash it or immerse it in a solution of sulphate of copper, or verdigris, when it will acquire a coating of copper.

The metal may be dipped in molten metal, copper, or its alloys.

The polished metal—a gun barrel, for instance—may be dipped in a solution of chloride of antimony and sulphate of copper. This is browning.

The ordinary solution consists of aquafortis, 1; sweet spirits of niter, 1; blue vitriol, 4; tincture of the muriate of iron, 2; water, 32.

The iron is cleaned, polished, and lacquered. The lacquer consists of shellac in alcohol, with or without the addition of saffron, annatto, aloes, or other coloring substances.

The iron is cleaned, polished, coated with linseed oil, and heated to develop the tint required.

For tin: Clean the castings, and wash them with a mixture of 1 part each of sulphate of copper and sulphate of iron in 20 parts of water; dry and wash again with a solution of verdigris, 5 parts; in distilled vinegar, 11 parts. When dry, polish with colcothar.

Plaster of Paris statuettes, models, etc., are bronzed in the following manner:

Prepare a soap from linseed oil boiled with caustic soda lye, to which add a solution of common salt, and concentrate it by boiling till it becomes somewhat granular upon the surface; it is then strained through a linen cloth, and what passes through is diluted with boiling water, and again filtered. Dissolve 4 parts blue vitriol and 1 part copperas separately in hot water, and add this solution to the solution of soap as long as it occasions any precipitate. This flocculent precipitate is a combination of the oxides of copper and iron with the margaric acid of the soap, the former giving a green and the latter a reddish brown color, the combination of the two resembling that greenish rust which is characteristic of ancient bronzes. When the precipitate is completely separated, a fresh portion of the vitriol solution is to be poured upon it in a copper pan, and boiled in order to wash it. After some time the liquid is poured off and the soap washed with warm and afterward with cold water, pressed in a linen bag, drained, and dried, when it is ready for use in the following manner:

Three pounds of pure linseed oil are boiled with 12 pounds of finely powdered litharge, and the mixture is strained through a canvas cloth and permitted to stand in a warm place until it becomes clear. Fifteen ounces of this, 12 ounces of the above described soap, and 5 ounces of fine white wax are melted together at a gentle heat in a porcelain basin, by means of a water bath. The mixture must be kept some time in a molten state, to expel any moisture which it may contain. It is then applied by means of a paint brush to the surface of the gypsum, which is heated to the temperature of about 200° F.

After exposure to air for a few days the surface is rubbed with cotton wool or a fine rag, and variegated with a few streaks of metal powder or shell gold. Small objects may be dipped in the melted mixture and then exposed to the heat of the fire until thoroughly penetrated and evenly coated with it.

The *Glassware Reporter*, from which these particulars are derived, says:

The bronze letters and figures upon the bonds and paper currency of the United States—as, for instance, "the faint attempt at a metallic ring," as Secretary Chase called it, on the old twenty-five cent fractional currency—are made by printing in drying oil and applying the metal in fine dust to the damp surface.

Evaporation of Fruit.

The following by Amos Stauffer, of Waynesboro, Pa., was read before the third National Agricultural Convention, Chicago, December, 1882:

The best method of increasing the value of our domestic fruits, as I comprehend it, consists in familiarizing our farming community with the simplicity and cheapness of the evaporating process, and convincing them that it is a legitimate, profitable, and easy adjunct of farm or household labor.

Evaporated fruit is worth from 200 to 400 per cent advance over the same fruit sun or oven dried, the labor of preparing the fruit (which is the greatest item) being the same in both cases. The actual cost per pound of finished product, without regard to quality or value when prepared, is about the same.

Briefly stated, our farmers' wives, sons, and daughters now exchange the product of our orchards, with their labor added, at a discount of from 50 to 400 per cent below the product of the less intelligent colored laborer in the tropics. At the village store or warehouses of the metropolis of the West the unequal exchange is daily made; two or three pounds of dried apples go for one pound of figs, dates, currents, raisins, or prunes, while our dried peach in exchange is scarcely at par. That our domestic fruits in themselves are superior to those of the antipodes needs no further argument than a comparison of daily quotations between our evaporated fruits and those offered by the tropics.

Every pound of evaporated apples offered has a value in Chicago equal to about two pounds of tropical dried fruits, while evaporated peaches readily command from three to four pounds of currents, figs, dates, raisins, or prunes, etc., thus practically reversing old customs and values.

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