

Correspondence.

The Seedless Apple's Past.

To the Editor of the SCIENTIFIC AMERICAN:

Your paper of the 4th instant, in describing the new seedless apple, says that its origin is quite recent.

Over thirty years ago seedless apples were produced near Phillipsburg, N. J., and, by the same token, hogs were raised there with solid hoofs.

Now the apple has disappeared from there and the hog of the solid hoof is found in Kansas, and at Winsted, Conn., in possession of Mr. Burton E. Moore.

Ossining, N. Y., February 5, 1905.

H.

Panama Canal.

To the Editor of the SCIENTIFIC AMERICAN:

In reading the abstract of the engineers' report in your issue of the 31st ultimo, the following idea has occurred to me. Would it not be possible to construct two parallel tunnels, each say 100 feet in diameter, at sea level—50 feet above and 50 feet under—through a suitable route where there would be the least obstruction from rock?

A proposition of the same nature was made some fifteen years ago by the Messrs. Stevenson, of Edinburgh, in their proposal for a ship canal between the Forth and Clyde *via* Loch Lomond. The length of the tunneling in this case would be only two miles and through rock, but in the case of the Panama Canal it would probably be desirable to avoid that.

The difficulty through the alluvium could probably be got over by lining with iron as fast as constructed this method being now well understood on a small scale from the construction of underground railway "tubes," now so common.

JOHN STRUTHERS.

7 Portsdown Road, London, January 17, 1905.

[The Canal Commission decided that a tunnel canal was impracticable in a region that was liable to seismic disturbances.—Ed.]

The Changing Color of Glass.

To the Editor of the SCIENTIFIC AMERICAN:

Some time ago there appeared in your columns a communication concerning the change in color of common clear glass if left exposed in certain desert regions of the earth. Your correspondent, as he described the phenomenon, explained it as being caused by the alkaline substances in the soils where the glass happened to be lying.

I have observed this discoloration in glass for several years in the course of many trips over the Western deserts as an engineer and surveyor. I cannot think it is because of alkaline influence. I believe it due almost entirely to the great activity of the actinic rays from the sun in those regions where, owing to the extreme transparency of the atmosphere and its freedom from dust and moisture, their effect is much more noticeable.

It is not necessary, for this discoloration to occur, that the glass—bottles, flasks, broken tumblers, or any clear glass—be lying on the ground. I have repeatedly noticed it when the glass was on shelves, porch roofs, and even hung several feet above the ground by a string. It seems probable that it is due to some complex chemical reaction, where the very small quantity of iron—generally a low oxide or other chemical form—is changed to some of the higher oxides, imparting a clear, rich, amethyst or rose-purple color, the intensity varying with the time of exposure.

An ordinary piece of table glass, or the flat flask so often seen in mining and desert towns, will almost equal the color of standard amethyst after six months exposure in summer, while a fortnight is sufficient in most cases to produce a distinct tint. If kept in the shade the same effect is noticeable, but requires a much longer time. I have observed the same phenomenon in localities of Southern California where climatic conditions are similar, but little or no alkali present in the soil.

WILL L. BROWN.

Principal of High School.

San Bernardino, Cal., February 1, 1905.

A Protest Against the Meter and an Appeal for the Yard.

To the Editor of the SCIENTIFIC AMERICAN:

Sixty years ago you commenced writing articles in your journal in favor of introducing the metric system into the country, but every succeeding day has only placed that system, for us, further and further away.

Why? you ask. Well, just consider. Our little Essex County Registry of Deeds in 1840 contained 360 record books, about 8 x 12 inches in size, of 500 pages each, written closely on both sides. To-day we have over 1,900 books filled with deeds and other legal instruments, all written in our measures, rods and links, or rods and feet, or feet and inches. Now multiply by all the counties in the United States and the island of Great Britain, and then remember that

somebody must be able to read anyone of all these deeds for all time to come.

But this is not all, by any means. We buy and sell more of the world's goods, agricultural and manufactured, in the United States than in all the other countries of the world combined; that is, our home market is worth more than all the other markets put together; and all these transactions are in our present heterogeneous measures, but no power on earth can change them.

You remember the effort of the Chicago Board of Trade to substitute the cental for the bushel, and the result. Grain is still bought and sold by the bushel and likely to be.

Now please allow me to suggest that there is one way, and only one, to get a *universal standard* of weights and measures. Let all the countries that use the metric system change the meter to our standard yard.

The metric nomenclature would not be changed at all, only a slight change in the quantities, but with our standard yard for the meter, the two systems could be reduced, each to the other, without that intermediate decimal.

I make this suggestion for your consideration.

Haverhill, Mass., January 16. N. SPOFFONE.

Photography of the Eye.

To the Editor of the SCIENTIFIC AMERICAN:

My attention has been called to an article in your issue of December 17 on "Photography of the Interior of the Eye." In that is described the method which was adopted by Dr. Thorner, and illustrations are given of the results obtained. As the subject is deemed worthy of much space, it may possibly be interesting to know that very much better results than those were obtained nearly twenty years ago, in this country, and by a much simpler process. The description of this was given in a communication by me to the American Ophthalmological Society in 1887, and was published in the Transactions of the Society of that year, the photographs being shown at the same time.

Of the many attempts which have been made to photograph the interior of the human eye, these results were generally considered the best until surpassed by those of Prof. Dimmer, of Gratz. Last September, at the meeting of the International Ophthalmological Congress at Lucerne, I had the pleasure of examining the apparatus used by him and the picture which he obtained. The apparatus used is as large as a small piano, and almost as complicated, the cost being so great as practically to preclude its use as a clinical instrument.

Two principal difficulties in this problem are to do away with the reflection from the cornea and to obtain a plate sufficiently sensitive to the red rays reflected from the living retina. I would be glad to co-operate with others who might also be interested in the subject; and if a satisfactory photograph can be obtained by a process so simple as to make it of practical value, it would be creditable to the one who succeeds, and certainly would assist in advancing our knowledge of the interior of the eye and its various diseases.

DR. LUCIEN HOWE.

Buffalo, N. Y., December 21, 1904.

Passe-Partout Framing.

By CHARLES E. FACEMAN.

The rapidly increasing number of beautiful prints of various kinds, which in themselves are inexpensive, but of such an artistic quality, that if properly framed form a valuable help to the decorating of the study or den, often causes the owner to wish that framing was less expensive, and that some method could be devised which would permit of the use of these art objects upon the walls in some more attractive and permanent manner, than by fastening with pins or thumb tacks. This can easily be accomplished by the means of the passe-partout, a method which is at the same time not only inexpensive, but serves to give the print a finished appearance, and preserves it fully as satisfactorily as if framed expensively.

In order to make passe-partout frames properly a board should be prepared as follows. Select a smooth board without warp two or three inches longer and wider than the largest frame desired. Finish the two longer sides by nailing on the edge a narrow strip which should project above the working side of the board not more than 1-16 of an inch. This will be found sufficient to prevent the glass used from slipping off the board, and will provide a resting shoulder against which the glass may be pressed during the making of the frame. On one side of the board draw a line at a distance of 1/2 inch from the projecting edge; at the other side of the board a line should be drawn 1/4 inch from the opposite projecting edge. These lines should be marked plainly and accurately, as they form the guide lines upon which the binding strips are placed, and if they vary in distance the

binding strips cannot be accurately placed in position.

The binding strips should be selected from some strong paper or gummed binding cloth that will either harmonize with the print to be framed, or with the paper which may be used as a mat to give the print a sufficient margin. For this purpose I use the lighter grades of cover papers which are cut into strips by the use of the common yard-stick and a very sharp knife. It will be understood that the placing of a smooth sheet of binder's board underneath the cover paper will render the cutting of the binding strips much easier. The strips should be two inches wide if a large size frame (11 x 14) is to be made; for smaller sizes a narrower strip may be used, but the wide strip is much easier to handle and gives added strength to the frame.

For backing the ordinary straw board is all that is required. This can often be found among the waste paste-board boxes in the home. In fact, parts of old boxes are preferable to new stock bought at the paper warehouse for the reason that new stock is rarely thoroughly dried, and I have known instances where the drying of the backing board has caused such a warping tendency that the cover glass has been broken. The backing boards should be cut to the exact size of the glass which is to be used in framing. Any deviation in the measurement of the glass and the backing board will result in an unsightly frame that the most skillful worker cannot avoid.

The hangers for the frame can usually be secured at stores where picture frames are made. If these are not procurable the small brass rings can be purchased at hardware stores, and narrow strips of tin can be used to form the loops on which the rings are fashioned. These strips should be fully two inches in length and should be threaded through the rings, then doubled so that the ring will hang midway between the ends, which are passed through narrow slits in the backing board, and then spread in the manner of a paper fastener and hammered down until they are perfectly flat. To make the frame proceed as follows: Place the glass upon the board so that it will be in perfect register with the projecting edge. The binding strips should have been previously moistened and the surplus water blotted off. With a bristle brush apply Higgins paste or some similar mountant to one of the binding strips and work the paste in thoroughly, so that the strip will be well saturated with the paste so well worked in that it will not ooze out upon the glass. This precaution will not be necessary if a prepared gummed strip is used. The binding strip which should be of the exact length of the side of the glass to be covered should now be laid upon the glass, using the line described above as a guide. Press the strip gently with the fingers until partial adhesion results, and then rub in perfect contact with a soft cloth. The glass should be then turned and the opposite side covered in the same manner.

In binding the last two sides tiny strips of paper should be placed on the edges of the binding strips already in position so that the paste from the remaining strips will not soil the corners which are to be mitered. In finishing the last sides the outer strips should be mitered by the use of a miter pattern made from a thin piece of wood or cardboard. This pattern is laid upon the binding strips after they are firmly placed in position and the outer strip cut with a very sharp knife. The corners, with the underlying protecting paper, can then be removed and the last binding strips rubbed into thorough contact.

The cover glass is now ready for the final binding with the print and the backing board. The glass should be removed from the board, and a clean paper spread upon the board upon which the glass is placed face downward. Upon this lay the print with its mat—if any—face downward, place upon this the backing board, taking care that the hangers are in the right position or the framed print may be found, when finished, to be arranged for hanging in a reversed position. Great care should be taken to see that the print, the mat, and the backing board are in accurate register. Paste should then be liberally applied to the projecting edge of the binding strip on the right-hand side, and when thoroughly pliable the strip should be closely drawn over the edges of the frame, onto the back of the backing board, and then rubbed in contact with the soft cloth. The frame should then be turned so that the left-hand side occupies the place of the right side now completed, and this side and the ends treated in the same manner.

To make passe-partout frames so perfectly that they will have the appearance of frames made by the professional frame maker requires only ordinary mechanical ability, and the care which is required in doing even the simplest things well. If the instructions given are carefully followed, it will be found that choice prints, book covers and posters can be made into attractive ornaments for the home at a minimum cost, with the added satisfaction that the work has about it that personal quality and interest which is never felt when the work has been done by others.