

and to occupy too much space on board.

He accordingly proceeded to make his second chronometer. It occupied a space of about only half the size of the first. He introduced several improvements. He lessened the number of the wheels, and thereby diminished friction. But the general arrangement remained the same. The second machine was finished in 1789. It was much more simple in its arrangement, and much less cumbersome in its dimensions. It answered even better than the first, and though it was not tried at sea its motions were sufficiently exact for finding the longitude between the nearest limits proposed by parliament.

(To be continued.)

METHOD FOR CLEANING PEARLS.

[Mr. PAUL HIEHLE, in *Journal der Goldschmiedekunst.*]

In order to answer many inquiries desiring us to specify a method by which pearls that have become yellow by age or dirt can be purified and restored to whiteness, we have no hesitation in publishing the following, which, although not by any means new, appears to be unknown by many of our worthy colleagues:

The genuine pearl is a voidance product of several univalves and bivalves of both the ocean and inland waters. Its value depends upon its properties, among which size, shape, color, and luster (the so-called "water") are of chief importance. The pearls most valued are those which possess a pure silver-white luster, of very little iridescence, which is a rare sort. By far the greatest number has a tinge into yellow, and varies through almost all color shades into brown, green and black.

Such natural defective colors cannot be corrected in any manner. Still, even the purest white pearls may become yellow or change their once handsome color by continued wearing in the hair, around the neck, or on the arms, by absorbing perspiration and filth. This defect, produced by natural causes, may be corrected in the following manner.

Boil the pearls for about one-quarter of an hour in fresh cow's milk, in which soap has been dissolved; then take them out, rinse them in clean water, and dry with a clean white cloth. Inspect whether desired results have been obtained; if not, repeat the result several times. Should

they still not become better, try the following:

Ask the baker in your neighborhood at what time he is engaged in baking bread, and go to him at this hour; let him form a small loaf of bread, within which the pearls are laid, either strung upon a silk thread or loosely wrapped in a piece of gauze, then let him bake the bread pretty strong, not too brown, however. When withdrawn from the oven, let it cool, break it and take out the pearls, which will generally be found to satisfaction and handsomely white. But it might occur that also this remedy is insufficient, and the pearls are still yellow; this is a sure sign that the dirt has become old and deeply penetrated into them, or that they appear green and blue, owing to have been strung on silvered copper wire. Forceful agents now become necessary.

Take a teacup full of well heated wine-vinegar, and suspend the pearls, hung upon a silk thread, or wrapped in a piece of gauze, in it for a few minutes. Also sulphuric acid, diluted with its equal quantity of water, may be used. Then remove and rinse them well in clean water, and repeat the operation until they have become white, and that the green spots have disappeared. This remedy will never fail except the pearls were naturally yellow or colored, against which defect, as already said, there is no help.

The causes of these operations are about as follows: The boiling of the pearls in milk and soap simply dissolves the exterior coating of dirt, the baking in bread absorbs it by the steam. These two remedies are perfectly innocuous and may be employed any number of times without ever hurting them. If, however, the last forcible means has to be used, caution is necessary, because the acid of the vinegar, still more the sulphuric acid, attacks them and dissolves the exterior coating, and would dissolve them altogether if not removed in time. Since, however, the dissolving occurs but very slowly, there is no danger of ruining them, if any degree of care is exercised, since they are composed of thin lamina, and it is plain that by exposing them to the vinegar, only the outer pellicle will be dissolved without in the least injuring the water of the others, and with it also the dirt is removed, and the blue and green copper solution which colored them exteriorly, by which they are restored to their original purity.

At this place I would like to append

an observation to those jewelers who are principally engaged with stringing and setting pearls. I stated that the blue and green color originates from the silvered copper wire on which they have been strung. These wires being of copper, and the silver soon rubbing off, perspiration or other humidity will dissolve a little of this metal. This solution is verdigris which penetrates into the pearls, and imparts to them that disagreeable color to be seen in many, especially older articles, and which reduces their value most materially. Pearls should always be strung on fine silver wire, whereby they experience no alteration whatever. The trifling additional cost of the silver will not materially increase the value.

THE AUTOMATONS OF JACQUET-DROZ.

A manufacturer of the Canton of Neuchâtel, by the name of Jaquet-Droz, was famous for his astonishing productions of automatic figures. One day he presented the King of Spain with a clock containing a shepherd, a dog, and a basket filled with apples. At the stroke of the hour the shepherd played his flute, while the dog playfully gambolled around him. The King was astonished at the mechanism.

"This is not all," the skillful artist said, "Your Majesty will please take one of the apples."

The King extended his hand toward the basket, but the dog commenced barking so fiercely that all the dogs of the palace joined in.

"This is not all," Jaquet-Droz again observed. "Will your Majesty have the kindness to ask him what time it is?"

"*Que hora es?*" (What time is it?) the King asked.

"Ah, Sire," answered the horologist, "this good beast is born Switzerland, and does not understand Spanish. I was able only to teach him French."

"*Quelle heure est il?*" (What time is it?) the King asked.

"Fifteen minutes to three," distinctly responded the dog.

"This must be the veritable devil," tremblingly exclaimed a Spanish gentleman who was present at the audience, and tradition adds that Jaquet-Droz was accused of sorcery.