

THE EVENING NEWS.

Thursday, September 20, 1900.

IVORY AND ITS SUBSTITUTES.

Ivory is one of those substances which, like gold, have been used from the earliest times for purposes of traffic and in the fabrication of articles of use or ornament. True ivory occurs only in the tusks of the elephant, and is distinguishable from all other varieties of tooth substance by the lozenge shape of its cells when cut transversely. The quantity used in the arts is very great, that imported annually into Great Britain alone being about five hundred tons, worth, say, five thousand dollars a ton in gold. The tusks of the African elephant are said by some writers to be the most valuable, from the greater density and hardness, while others assert that the ivory of Ceylon and of the Island of Achem does not turn yellow by age, which renders it superior to that of all other countries. The teeth of the walrus, narwhal, and hippopotamus are large and dense enough to be used as a substitute for true ivory. Those of the last named animal, before the use of porcelain for the purpose, were especially valued for making false teeth, for which they were well adapted from the purity of their white color and the absence of perceptible grain. In the manufacture of some articles from ivory it is desirable that the material should be made flexible, which is done by soaking it in a solution of phosphoric acid, having a specific gravity of about 1.130. This renders it flexible like leather and also translucent. It hardens on exposure to the air, but may be softened again by immersion in hot water. This is the modern method, but formerly a different one, as follows, was recommended: "Lay twelve hours in aquafortis, and then three days in the juice of beets. To harden again, lay the material in strong vinegar."

An old Greek who lived three thousand years ago says that by boiling ivory for six hours with mandragora root it may be made so soft as to be managed as one pleases. Before passing from ivory to its substitutes, we may mention the means by which the factors are enabled to select the most gelatinous ivory, which having superior elasticity is best adapted for billiard balls. This lies simply in following the selections of the rats, who invariably gnaw the softest and richest samples of a stock within their reach. The marks of the animal's teeth thus constitute a tolerably sure guide to the quality of the substance, and indicate about the only practical purpose for which the rodents have been found useful.

Aside from the teeth of the walrus and other animals previously mentioned, probably the closest imitation of true ivory is found in what is termed vegetable ivory, a substance produced by a tree growing on the plains of Peru and in various other parts of South America. The material is contained in nuts about the size of a hen's egg, and known in commerce as Corozo nuts. The flesh of these nuts when ripe is so hard and firm as to be frequently mistaken for ivory, even by good judges. It is used in the manufacture of buttons, umbrellas handles, trinkets, etc., to some extent in this country, but more generally in London and Birmingham. England—these cities importing between two and three millions of the nuts annually.

The small size of the Corozo nuts renders them unavailable for many purposes for which ivory is used, and hence numerous attempts have been made from time to time to produce a compound that would possess the whiteness, hardness, and elasticity of the true material, but hitherto without success. Some five years since a French experimenter brought such a substance to the notice of the French Academy. It was made by boiling together sixty parts of the powder of marine plants and fifteen parts each of gelatine and coal-tar. After being intimately mixed by the boiling, the whole was to be dried in an oven at three hundred degrees Fahrenheit. After this the mass was to be treated with a solution of caustic potash, then with dilute oil of vitriol, and afterwards bleached with chlorine. Another similar material has recently been patented in England, composed of ground bone cemented with gum like copal and shellac. The former has not, as far as we know, ever amounted to anything of practical utility, and the latter is manifestly of little worth, but both are no worthy as indicating lines of experiment which, as being the most obvious, will probably be traveled over in succession by a number of different inventors in their efforts to provide a useful substitute for ivory. For the same reason it may not be out of place to indicate that the application of gutta percha to the purpose mentioned has not been overlooked, a patent having been granted some years ago on a method of bleaching the gum by passing a stream of chlorine gas through its solution.

It will be seen that an artificial substitute for ivory is a thing not yet discovered, although such a discovery would possess a money value far beyond that accruing to the great average of patents. Indeed, the monopoly of such a substance for making billiard balls alone would be a fortune in itself, and to those who can bring to bear the combination of chemical knowledge and mechanical skill required in successfully imitating the structure and condition of ivory, the field for investigation and invention possesses peculiar interest.—*American Artisan.*

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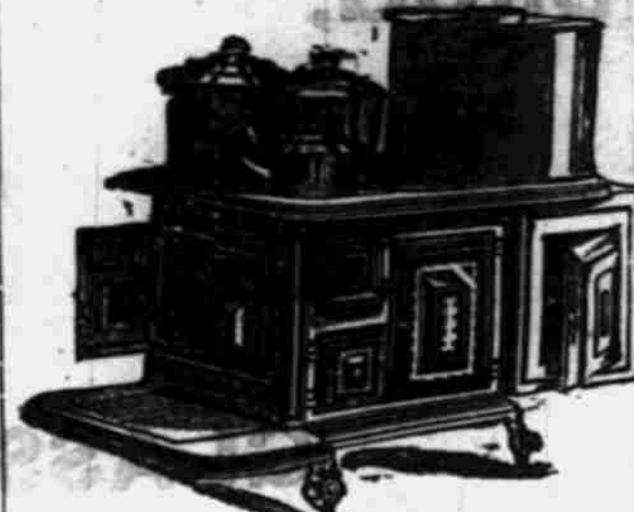
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