

is nearly as elastic as india-rubber; indeed, as far as I can judge, *Balata* cannot be rivalled by either that material or gutta-percha, possessing, as I before stated, much of the elasticity of the one and the ductility of the other, without the intractability of india-rubber or the brittleness and friability of gutta-percha. Amongst the useful properties possessed by *Balata*, I believe the fresh milk of the bullet-tree to be the best water-proofing material yet discovered, and further that, *Balata*, as prepared by me, will supply the great want of the day, as a good insulating medium for telegraphic purposes.

The bullet-tree is a magnificent timber tree, often squaring 30 to 40 inches, and is much used, especially in Berbice, for building purposes. The milk, when quite fresh, is so bland that it is sometimes used as a substitute for cow's milk, and the fruit is delicious.

The bullet-tree abounds in many districts of the colony; indeed I may say, throughout this part of South America, and I trust that *Balata* may ere long be added as an important item to the exports of the colony, and tend to prove that the International Exhibition of 1862 has, in this instance, also been productive of practically useful results, not only to this community, but to the interests of science and art generally.

I annex a letter from the Honorable William Walker, Government Secretary of the colony, and Chairman of the Corresponding Committee of the Royal Agricultural and Commercial Society of British Guiana, which is affiliated to the Society of Arts, in order to fulfil the conditions specified in the prospectus.

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#### *Substitute for Gutta-Percha.*

From the London Artizan; March, 1864.

At a meeting of the French Academy of Sciences, M. Serres gave an account of the *Valata*, a shrub which abounds in Guiana, and affords a juice which he asserts is superior, for many purposes, to gutta-percha, but especially as an insulating material for enveloping telegraphic wires. The milk or juice is drinkable, and used by the natives with coffee. It coagulates quickly when exposed to the air, and almost immediately when precipitated by alcohol, which also dissolves the resin of the *Valata* juice. All the articles made with gutta-percha can be made with the sap of the *Valata*, and it has no disagreeable smell. When worked up it becomes as supple as cloth, and more flexible than gutta-percha. M. Serres exhibited a number of articles manufactured of *Valata* milk. Up to the present time it seems, from M. Serres' account, not to have become an article of commercial export.

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#### *Method of Making Cast Steel.* By M. GALY CAZALAT.

From the London Practical Mechanic's Journal, Sept., 1863.

This metallurgist has communicated to the Academy of Sciences at Paris, that by passing through fused cast iron at 1400° centigrade, numerous capillary jets of superheated steam, he is enabled rapidly

and fully to remove the carbon which is taken up by the hydrogen of the decomposed water, and also to burn out, by the oxygen liberated from the water, the silicon, while the sulphur, the arsenic, and even the phosphorus are removed in combination with the hydrogen. Should this prove to be so, we may have an auxiliary to Bessemer's method, at least, and possibly even a substitute for it. We await, however, fuller details and confirmations.

*Preservation of Corn from Fermentation.*

From the London Mechanics' Magazine, January, 1864.

An experiment was lately made in Paris for the preservation of corn from fermentation and the attack of insects by enclosing it in a metal vessel and exhausting the air. The experiment was made in the presence of 40 persons, and succeeded perfectly. Ten hectolitres of wheat were placed in a metal vessel, and the air was exhausted. The vessel was opened after 15 days, and the weevils, which were seen quite lively when the wheat was placed in the vessel, had quitted their cells and were dead. They were warmed but did not stir. Being placed on white paper, they were crushed and reduced to powder, without leaving any stain on the paper. From various experiments made on wheat under glass, it was found that the weevil retains life longer than any other insect when deprived of air.

FRANKLIN INSTITUTE.

*Proceedings of the Stated Monthly Meeting, April 21, 1864.*

William Sellers, President, in the chair.

John H. Towne, Vice President, } present.

John F. Frazer, Treasurer, }

Washington Jones, Recording Secretary.

The minutes of the last meeting were read and approved.

Letters were read from the Liverpool Literary and Philosophical Society, Liverpool, England; the Literary and Historical Society of Quebec, Canada; and Hon. John D. Watson, Pennsylvania Legislature, Harrisburg, Pennsylvania.

Donations to the Library were received from the Royal Astronomical Society, and the Chemical Society of London; the Literary and Historical Society, Quebec, and the Canadian Institute of Toronto, Canada; H. A. Wise, Esq., U. S. N., Chief of Bureau of Ordnance, Navy Department, Charles Coloné, Esq., and F. Emmerick, Esq., Washington, D. C; the Executive Committee of the Union Relief Association of Baltimore, Md.; James Hall, Esq., Albany, and H. Whitall, Esq., City of New York; Young Men's Mercantile Library Association, Cincinnati, Ohio; Prof. John C. Cresson, Prof. John F. Frazer, H. P. M. Birkinbine, Esq., Dr. Thomas S. Kirkbride, and the Directors of the Girard College, Philadelphia.

Donation to the Cabinet of Models was received from Philip Griffith, Esq., Philadelphia.