

GENTLEMEN GLASS-MAKERS.

According to the testimony of several authors, the general opinion admitted even in the present day is that formerly the mere trade of a glass-maker carried nobility with it; in a word, that every common glass-maker was ennobled by the mere fact of the nature of his trade.

Since such a prerogative—however impolitic it must have been, by doing the most flagrant and unmerited injustice to other important branches of industry—has been, and is still admitted as an historical fact, let us examine for a moment, as briefly as possible, on what ground this nobility rests, if it ever existed, and what could have been the origin of the error.

The two principal offenders, in our opinion, are a poet and a celebrated potter; the first (François Maynard, French poet, born at Toulouse in 1582, and died 1646), by saying in his epigram against the poet Saint Amand, "Your nobility is puny, for you are not descended from a prince, Daphnis; gentleman of glass, should you fall to the ground, then farewell to your dignity;" and the second (Bernard Palissy, born in the diocese of Agen, about 1510, died in Paris, 1589), by employing this phrase in his immortal work, "Glass-making is a noble art, and those engaged in it are noble."

First, we undertake to establish that we are far from believing that a common glass-maker, more than any other manufacturer, ever merited or even ever obtained letters of nobility. Passing over these very rare exceptions, we are concerned here only with the corporation as a whole; in short, we shall endeavor to prove that, in France, the condition, the art even, if you like, of the glass-maker did never of necessity confer nobility on every one practicing it.

As regards the two authorities antagonistic to our opinion, we give the text of one of numerous decrees which were issued against the plebeians on all occasions when they attempted to lay claim to nobility.

Here is the text of a decree of the *Cour des Aides*, at Paris, in September, 1597.

"... from the mere fact of working and trading in glass-ware, the glass-makers could not claim to have acquired nobility or right of exemption; nor, on the other hand, could the inhabitants of the locality assert that a nobleman was doing anything derogatory to his title by being a glass-maker."

From this enactment, repeated on each new attempt at usurpation, the natural consequence is, that the ordinary glass-maker did not acquire nobility, and that the nobleman did not forfeit his by devoting himself to the glass trade. A still more recent proof is found in Article 2 of the privilege granted to Du Noyer, by Louis XIV., 1665, to found the manufactory at St. Gobain, "Du Noyer may take as co-partners, even nobles and ecclesiastics, without it being derogatory to their nobility."

In support of our assertions, let us further cite an article of a decree issued by the Venetian senate, which certainly of all past governments is that which has accorded the greatest number of prerogatives to glass-makers.

"The Senate decides that the marriage of a nobleman with the daughter of a glass-maker is contracted with the condition that the title of nobility be transmitted to their issue."

Nobility then is for the son of a noble; but as is seen, plebeian rank is still for the father-in-law.

The question of plebeians not having a right to nobility, as well as that of non-forfeiture for the noblemen being thus clearly settled, let us see what advantages accompanied the privileges generally conferred on noblemen, a favor of which we will shortly mention the cause.

These privileges are all mentioned in the letters patent of November 24, 1598, conferring on Balthasar de Belleville, applying equally to him and his brother nobles, the permission to establish a glass-house in Normandy, and declaring them exempt from all excise, subsidies, imposts, customs, taxes on land, barriers, highways, tolls, commissions, *bandage, rovinage*, district, passage, and bridge and river dues.

In a word, the gentlemen glass-makers were then released from all existing imposts, which it is evident were rather numerous.

Was this favor—monopoly even, if you like—granted to nobility, prejudicial to plebeian glass-makers, as several writers have affirmed? We believe the contrary. While allowing even that the nobles profited by the labor of the plebeian, it is to the nobleman alone that the common glass-makers owed their establishment and afterwards their fortune.

In order to discover the origin of this association, we must go back to that remote period when the nobleman readily sold his castle in order to support the dignity of his escutcheon in a tournament; or even to those warlike times when every subject hastened to place at his king's service the vassals on his domain, both great and small, armed and equipped at his own expense. We shall then see many of them returning to these domains covered equally with glory and debt, that is, ruined.

This condition, sad for any one, was disastrous to the nobility, for it is known that the law formally excluded them, and that under pain of forfeiture of title, from commerce, by which alone they could have retrieved their fortune.

However ardently the kings of France might wish to abolish a law which pressed heavily on those alone who had sacrificed everything in the service of their country, this desire was paralyzed by the pride of the other nobles, who, still rich, compelled them to maintain in all its rigor a law in which, for fear of a subterfuge or oversight being found, all the trades then known were mentioned. At last this law shared the fate of everything not adapted to the times; and if it did not at once fall into disuse, a new importation, and

consequently one not specified in the list of prohibited trades, glass-making, appeared, which allowed the kings, while still adhering to the ancient law, to profit by its silence relating to glass-making, and thus to open a resource as indispensable to the rising trade as to the re-establishment of the nobleman's fortune.

Such, in our opinion, is the real origin of the "gentlemen glass-makers," who, being nobles by birth, and no longer in dread of the law of forfeiture, in consideration of certain dues, delivered up their forests to the plebeian glass-makers. The latter, thanks to the nobles, found therein everything which they required, that is, space adapted to their trade, wood, without which they could not work, and still further, all the profits accruing from the exemptions, which being accorded to the lord alone, formed what in the present day would be known under the name of common capital.

From the preceding then, we conclude that, with some very rare exceptions, the title of "gentlemen glass-makers" was granted only to nobles who had the monopoly worked on their estate.—*Wonders of Glass-making.*

The Private Life of Galileo.

The account of the private life of Galileo, unlike many such accounts, does not give us much insight into the manners and customs and conditions of society at the time of which it treats, both because Galileo had so little real domestic life, and because the main correspondence which furnishes these private details took place between a nun (who of all persons can know least of the external world) and Galileo himself, and her letters to him have been preserved, while his answers to them have perished. Your great philosopher as a rule is exceedingly undomestic, and the proofs of this are so common that we need not quote a single example; the petty details of home weary them, and prevent the abstraction requisite for their labors: so the ancient Brahmins, who reasoned as profoundly as any light of Western civilization, lived in the solitudes of the forests of Ancient India; so Descartes withdrew himself from the world, and remained buried in the quiet of his country house while he produced his "Meditations."

Galileo also was by no means domestic. Of his three natural children, his son Vincenzo was a constant thorn in his side. He was a lazy fellow, who was always writing to his father for money, and who, Italian like, preferred to idle away his life in singing and lute-playing, to adopting any profession or attempting to get his own livelihood. We cannot find one good quality in Vincenzo Galileo; he was mean, selfish, inconsiderate, and unnatural in his behavior towards his father. One example of this is sufficient. He had quartered himself on his father, together with his wife and children, when the plague broke out in the neighborhood; whereupon Vincenzo deserted the old man, and went to a more healthy locality, leaving his father to take his chance with the other inhabitants of the district. Galileo's daughters Polissena and Virginia were placed in the Convent of St. Matthew, at Arcetri, in 1614, when the eldest was only thirteen years old; henceforth they became Sister Maria Celeste and Sister Arcangela. Of the latter we hear but little, but Sister Maria Celeste constantly corresponded with her father, and the greater number of her letters have been preserved, and are now in the Palatine Library at Florence. These letters contain some interesting details of convent life of the period, but of necessity they do not bear upon many of the doings of the outside world; their general tenor is the same throughout; they are full of her love for Heaven and for her "dear lord and father," as she was wont to call Galileo, and they almost invariably pass to an opposite extreme of matters exceedingly of the earth, earthy—the baking of cakes, the mending of linen, the getting up of his collars and so on. She tells her father all the minute details of her work, as: "I have been extremely busy at the dinner-napkins. They are near finished; but now I come to putting on the fringe, I find that of the sort I send as a pattern, a piece is wanting for two dinner-napkins: that will be four *braccia*." The last paragraph of this desultory letter begins, "These few cakes I send are some I made a few days ago, intending to give them to you when you come to bid us adieu;" and ends, "I thank Him for everything, and pray that He will give you the highest and best felicity;" and a postscript immediately follows this—"You can send us any collars that want getting up."

Galileo's villa was very near the convent, and a constant interchange of courtesy seems to have taken place; Galileo sent money and presents of meat and wine, while Sister Maria Celeste sent him plums, and baked pears, and candied fruits, and cakes, and mended his linen and kept his wardrobe in order. Her love for him amounted almost to worship, at least to veneration. When at length, worn out by watching in the convent infirmary, by ill health, and by the many privations inseparable from a convent life, she felt her end approaching, Galileo was in confinement at Siena, and she feared she should see him no more; but he was allowed to retire to his own house, and arrived at Arcetri in time to see his daughter before her death. Writing at this time (1634), Galileo says: "Here I lived on very quietly, frequently paying visits to the neighboring convent, where I had two daughters who were nuns, and whom I loved dearly; but the eldest in particular, who was a woman of exquisite mind, singular goodness, and most heartily attached to me."

There is much in this "Private Life of Galileo" of great interest in connection with his scientific work, his books, his persecutions and trial by the Sacred College, and his condemnation; but we have preferred to keep strictly to his more private life, as the theme is so large, that if we once touched upon his scientific work and its results, we should

require far more space than could be placed at our disposal here.

Galileo continued actively employed to within a few years of his death, in January, 1642. During his latter years he was a great sufferer. "I have been in my bed for five weeks," he writes to Diodati, in 1637, "oppressed with weakness and other infirmities, from which my age, seventy-four years, permits me not to hope release. Added to this, *proh dolor!* the sight of my right eye, that eye whose labors (I dare say it) have had such glorious results, is for ever lost. That of the left, which was and is imperfect, is rendered null by a continual weeping." Thus the poor old man complained, until finding that his blindness was incurable, and that his many ills were increasing, he ceased repining, and begged his friends to remember him in their prayers, till his unhappy checkered life was closed by death.—*Nature.*

LANGHORNE'S IMPROVED NUT-LOCK.

The well-recognized importance of locking nuts in all positions where they are liable to be shaken loose, has led to many ingenious devices for the purpose. The one herewith illustrated differs from many claimants to public favor, in that it may be locked and unlocked, as often as required, without injury to the device, other than the ordinary wear resulting from friction.

A is a bolt, differing only from common bolts in having one side of the portion over which the nut and washer pass, forged or filed flat. B is a ratchet washer, having its teeth formed on one side instead of on the edge, and turned toward the nut, C. The hole in the washer is made to fit to the flat portion of the bolt, to prevent turning. The nut, C, has attached to it a spring pawl, D, which is riveted at one end to the nut, and the other end plays freely through a small hole in the nut, as shown by the dotted lines.

When the nut is screwed home to the ratchet washer, the pawl, D, engages with the washer, and prevents the turning of the nut, until D is raised, by thrusting the point of a screwdriver, or some other suitable implement, under that part of the pawl which lies on the top of the nut.

For all situations where it is not convenient to permanently lock nuts, and where it is desirable to have a nut readily-removable, but which cannot shake by itself loose, this invention seems well adapted.

Patented, through the Scientific American Patent Agency, February 15, 1870, by Maurice Langhorne, of Washington, D. C., who may be addressed for the entire right or for State or county rights. Correspondence is solicited from those who have facilities for manufacturing cheaply. Temporary arrangements have been made to fill orders, which may be sent to the above address.

"Feathers" in Mahogany and other Woods.

We have been asked by a correspondent, says *The Builder*, for an explanation of the so-called "feathers" in the grain of mahogany, satin-wood, etc.: thinking others of our readers who have to do with woods may be interested in the subject, we offer the following explanation:

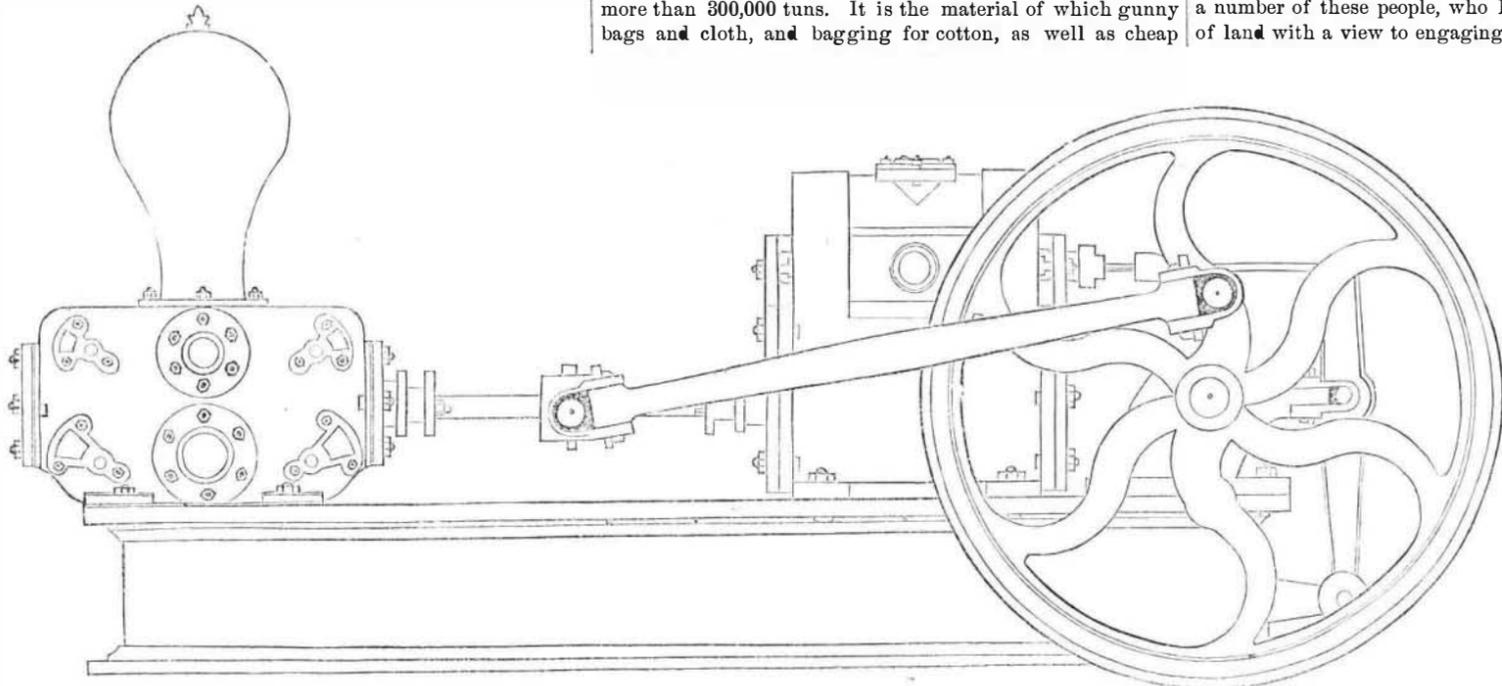
In the structure of all woods used in building, there is, firstly, a series of vessels of woody tissue surrounding the heart of the tree, having a vertical growth, and arranged in annual concentric circles; secondly, there are certain hard growths, called the "medullary rays," radiating from the heart, and consequently more or less horizontal; these vertical and horizontal growths are intimately but regularly plaited and intertwined together to give strength to the trunk, and thus far all is regularity. Now, where the branches burst through the stem, this regular arrangement is upset, and the above-mentioned woody vessels are disarranged, and pushed at different angles. When the tree is cut down and sawn horizontally across amongst these branches, these disrupted horizontal and vertical vessels (of different colors, be it remembered), are seen cut at every conceivable angle, and an ornamental "feather," more or less extensive, is the consequence. These feathers do not exist at the base of the tree, because there are no branches there to disturb the annual growths of the wood (minute feathers do indeed exist at the very heart, and these were caused by the growth of leaves and twigs when the tree was a seedling or little cutting). "Feathers" are not seen in deal because the fir is a straight-growing tree, without branches, in the portion of the trunk used in commerce. "Feathers" are seen most abundantly in "pollards," for the simple reason that after the top of the tree has been sawn off, an immense growth of branches is always induced, disturbing the tissues in every imaginable way: the action of the light on the "feathers" adds greatly to their beauty after the wood is polished.

PROF. J. W. PLYMPTON, Professor of Natural Philosophy, of the Cooper Union, was the recipient of a handsome testimonial of a silver pitcher and cup from the members of his classes, on Monday evening, April 18th, after an appropriate address by J. Pearson, on behalf of the classes, to which the Professor responded in a happy manner.

The Eclipse Steam Pump.

Two questions naturally suggest themselves to any one about to purchase an independent pumping engine, viz., whose is the best, and whose the cheapest?

The best and cheapest is evidently the one that will elevate to a given height the greatest amount of fluid matter, for a series of years, at the least possible expense. The Lowey's patent double-acting pump herewith illustrated, is the invention of a practical hydraulic engineer, of great experience, and the pump in question is the result of his extensive practical knowledge and experience. By reference to the engravings, the reader will see that this pump is simple



THE ECLIPSE STEAM PUMP.

in its construction; and the skillful will notice that the details are arranged to secure permanency, directness of action, ease of examination, and facility in making repairs.

Force and resistance being equal and correlative terms, it follows that if to raise 100,000 lbs. to a given height, in a given time, it requires more than 100,000 lbs. force, the difference must be accounted for as frictional resistance, and with fluids this lost power is absorbed in friction against the walls of the pipes, according to their size, length, angles, size of openings, etc. The judicious application of the motive power, and the mechanical perfection of the working parts, act to reduce friction to its minimum. To reduce the loss of power to a minimum, has been the object sought in the construction of the Eclipse Steam Pump.

By referring to the engravings, it will be seen that the cylinder is mounted on a heavy cast iron horizontal bed, to which is likewise attached the steam cylinder and journal bearings. The work required of the pump governs the size of the steam cylinder, the pistons of which have a direct connection, and are made to work with as little friction as possible, and are likewise arranged with special reference to being kept in unmistakable good order by unskilled attendance. The steam attachments are divested of all complication, requiring but one valve, which is so constructed as to prevent unnecessary waste of steam, and balanced so as to be worked with the same ease with, as without pressure.

The valves of the pump are double, so that when by long and continuous use the first surface becomes defective, they can be turned (which is only the work of a moment), and are then as good and perfect as new valves, with but one wearing surface. All the valves and openings have the same area as the pipes, the size of which is determined by the most approved hydrostatic formula; and as the movement of the piston causes a positive and continuous flow, it would seem that this pump would lift the water as high as it is possible to be lifted by vacuum, and force it as far as it can be forced by any mechanical appliance. Hence its adaptability to the requirements of the trade, including that of stationary fire engines, seems to be such as will enable it to successfully compete with any of the numerous steam pumps in market.

For further information address Phillips and Cluley, proprietors, Monongahela Brass Works, 110 Water street, Pitts burgh, Pa.

THE average depth of the Atlantic Ocean has been found to be twelve thousand feet.

The Jute Plant.

General Capron, the Commissioner of Agriculture, has imported, through the American Consul at Calcutta, a small quantity of the seed of the jute plant, with a view to introducing its culture into the extreme section of the Union south of the frost line. It is being distributed to planters in Texas and Florida, who will give it a fair trial. It is a fibrous plant, resembling coarse flax; of easy culture and rapid growth, with a comparatively large product. The crop when ripe is cut down to the roots, and after being steeped in water for a week or so the bark slips easily, and the silky fiber is detached, cleaned, assorted, and packed in bales of 300 pounds each. Its annual product in India is estimated at more than 300,000 tons. It is the material of which gunny bags and cloth, and bagging for cotton, as well as cheap

profile bust after Coffee; color, pure purple: thirty cents—Hamilton, profile bust after Cerrachi; color, black: ninety cents—Commodore O. H. Perry, profile bust after Wolcott's statue; color, carmine.

Tea Growing in California.

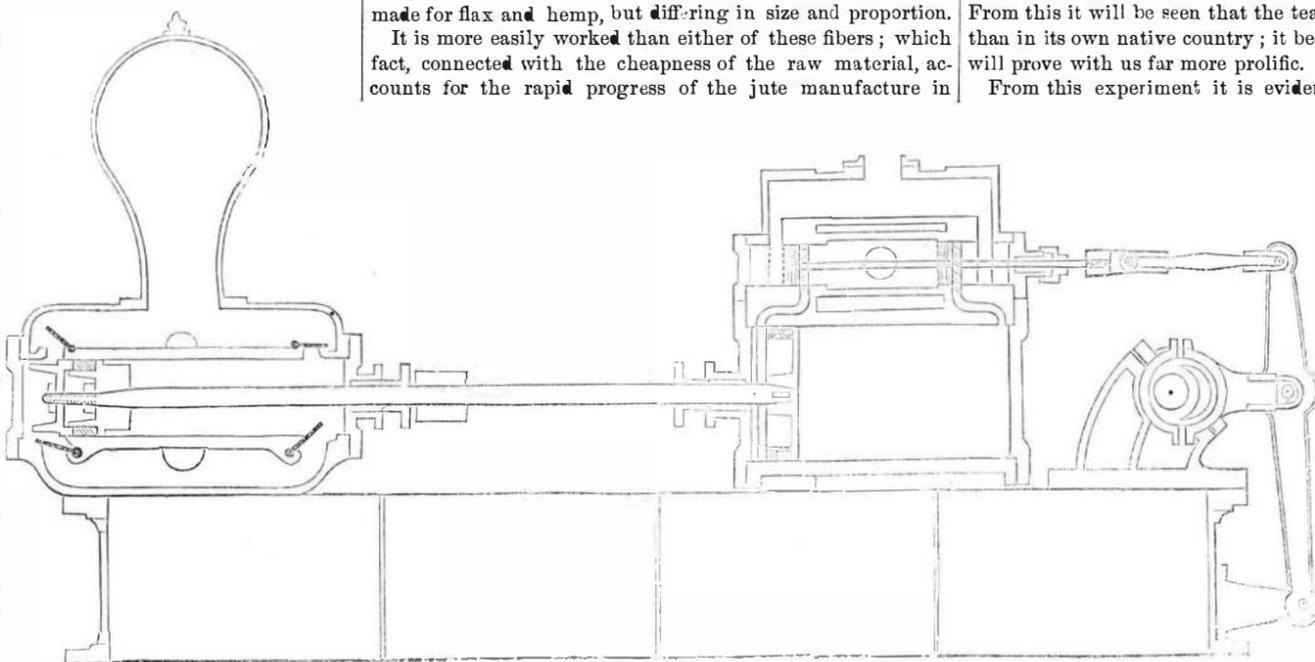
It is unanimously admitted by those most competent to judge, that California is admirably adapted to the culture of the tea plant, the climate being especially favorable to the curing of the leaf. The opinion has even been expressed by highly intelligent Japanese now resident among us, that this State is, in every respect, better suited for growing this shrub than their native country. So confident are they of this, that a number of these people, who have already procured tracts of land with a view to engaging in the cultivation of several

leading staples of Japan, will include tea in the number; satisfied that they can succeed in growing it, not only as an experiment, but render its culture commercially profitable. Over one year ago, Herr Schnell a German gentleman, who had spent many years in an official capacity in Japan, arrived in California, bringing with him a number of men, natives of that country, skilled in the raising of the tea plant and the manufacture of the leaf. These parties having since purchased an extensive tract of land in El Dorado County, will there engage in the tea culture; at first, on a limited, and, if results warrant, ultimately on a large scale, it being expected that

many more of their countrymen will, from time to time, join them, or purchase separate tracts of land for the purpose of engaging in the same line of production.

Only in the item of labor will they be placed at any disadvantage, as compared with their own country. These colonists have already set out 140,000 tea plants, all of which are in a thrifty condition; and they contemplate having several chests of new tea, grown on this plantation, ready for exhibition at the approaching State Fair. These plants, set out last year, will be picked in June, and will probably afford another crop this fall. They have thus far required but little irrigation, and will probably not need any at all hereafter. From this it will be seen that the tea plant yields earlier here than in its own native country; it being probable, too, that it will prove with us far more prolific.

From this experiment it is evident that this shrub will thrive in almost any part of California, growing readily, as in China and Japan, on the slopes of the highest mountains. That it will pay to grow it here is also quite certain; first, because of the great abundance and cheapness of suitable land for its culture. Then we shall have it fresher, and more likely to be free from adulteration than the imported article. The duty of 25 cents per pound on all foreign teas, will also operate greatly in favor of the domestic grower; freights, exchanges, etc., making this protection equal to



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Great Britain, compared with linen or hemp. After being used up as bagging, etc., it finds its way to the paper mills for the manufacture of coarse papers.

The Commissioner is constantly engaged in introducing new plants for practical purposes, not only improved grains and grasses, but various hardy and exotic plants used in medicine, the arts, dyeing, and manufacturing, that cannot fail to succeed in many parts of the Union.

New Postage Stamps.

Third Assistant Postmaster General Terrell having completed his improvement of the postage stamps to take the place of those now in use, they are ready for issue. He says the gum is guaranteed to stick. The following is a description of the new stamps: One cent—Franklin, profile bust after Rubright; color, ultramarine blue: two cents—Jackson, profile bust after Powers; color, velvet brown: three cents—Washington, profile bust after Houdon; color, milari green: six cents—Lincoln, profile bust after Volk; color, cochineal red: ten cents—Jefferson, profile bust after Power's statue; color, chocolate: twelve cents—Clay, profile bust after Hart; color, neutral tint purple: fifteen cents—Webster, profile bust after Clevenger; color, orange: twenty-four cents—Scott,

about 35 cents on the pound.

The purchaser of tea for export, in Japan, cannot make his purchase directly, even if supplied with Mexican dollars, the favorite foreign currency there, but must, under Government regulations, first convert his dollars into *kiosates*, or Government paper money, paying the banker, also a Government official, a certain discount on the same. These *kiosates* the tea merchant is obliged to accept in payment of his goods, at the peril of losing his head, a condition that, as may well be supposed, secures for them a ready circulation.—*Silk and Tea Culture*, by T. A. Kendo.

THE Ottawa Times, a Canadian authority, boasting that the advantages of Great Britain for manufacturing are superior to those of the United States, says: "Without some protection, the United States could not manufacture for themselves at all. England would supply them with everything they want—ships, houses, planes, saws, and even door knobs—in iron;" and, it adds, what is also true, that "the internal taxation of the United States is counter-balancing even the high protective duties, making the cost of production in England, in spite of the present discriminating tariff, less than in the United States."