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THE CENTENNIAL EXPOSITION AS AN ELEMENT IN THE DEVELOPMENT OF OUR MANUFACTURING INTERESTS

There can be reasonable doubt that the United States is about to assume a new and important position as a manufacturing nation. But a few short years ago, we were known as an agricultural country, having vast mineral resources lying idle and unproductive. Our imports of the various metals and of manufactured goods were something enormous; we have just emerged from a war unsurpassed in its expenditure of human life, money, and national substance, a war in which the whole losses of both sides fell upon one nation and people; and yet since the close of that conflict, we have made our *debût* as a manufacturing people and maintained a rate of progress hitherto unparalleled in the history of nations. To this fact more than to any other will the Centennial Exposition point. Of the 60 acres of ground covered by the exhibition buildings, only about 12 acres are devoted to agricultural and horticultural pursuits, while there are 14 acres devoted to the products of machinery alone. Time will probably show that the markets of the world will be opened to American manufacturers, and the Centennial Exposition will do much to bring the demand for our mineral and manufactured products in direct contact with the supply. The more we examine into this view of our subject, the more impressive it becomes.

During the last decade, the prices of our raw material and labor have ruled exceedingly high; and yet we have driven foreign steel from our markets Our imports of cotton and of nearly all other manufactured goods are largely and continuously on the decrease. At the present time, our cost of production is diminishing by cheapness of labor. We are steadily grasping the edge tool trade. Our cast iron is forcing its way as the best yet produced, and the inventive power and intelligence of our mechanics are universally recognized. We are about to repeat the experience of the older nations. During an era of high prices, we developed our mineral resources and learned to manufacture high class goods, and to spin and weave our own products; but the comparatively high price of our labor and other similar causes excluded us from entering the competitive markets of the world. Fortunately for us, there has set in, with every prospect of a continuance, an era of diminution of the values of both material and labor, which will enable us to tender our goods in markets other than our own; and more fortunately still, the Centennial Exposition steps in and brings the purchaser to inspect our goods.

This is the first instance, in the history of the six great international exhibitions of the last 25 years, in which the question of the comparative cost of productions has been largely considered or mooted in an international sense. Never before have the representatives of national industries debated the questions of comparative cost of production, of affixing to exhibited articles their prices, of the propriety of competing unless such prices were affixed, and of the questionable policy of putting on exhibition products of manufacture, lest the nation mainly interested in such should gather information and ideas rendering them still more formidable as competitors in the world's markets. These are the facts which evidence the existence of a feeling that the Centennial will become the means through which new channels of trade are to be opened up, and long established markets are to be closed; and through which, while new customers are to be found, old ones are to be certainly lost.

Among the branches of American trade to be the most largely benefited, we may doubtless mention the iron, steel, machine, edge tool, saw, agricultural implement, woodworking machinery, general and special tool, timber, and cotton manufacturing industries. Nor will the intelligent foreign visitor fail to perceive that our remarkable progress in manufactures is largely due to the comparative liberality of our patent laws, and the encouragement given to inventors through the progressive character of our people. That the number of visitors to the exhibition will be large, the traveling propensities of Americans are probably a sufficient guarantee: that the attendance of the business community will be proportionately larger than at any previous international exhibition, there is every reason to presume, for the reason that competition is here unusually close. Every tradesman considers it his duty to be "posted" as to his competitor's goods and facilities to carry on his business; the "drummer," as our genus of the commercial traveler is facetiously termed, is a profuse American institution; while an American housewife scarcely makes a purchase without having priced the desired article at two or more stores.

We are convinced that the honors in the shape of awards will be eagerly sought, and that their possession will largely influence many branches of trade; while the benefits to be bestowed upon us by this peaceful industrial monument, erected to the Centennial of our national existence, are at present almost incalculable.

BAD VENTILATION AT THE CAPITOL

If the dozen or so of Congressmen now sick with throat disease shall serve, even in a moderate degree, to impress upon the people the evils of bad ventilation and of vitiated air, our afflicted legislators will not have suffered in vain. As martyrs, they will perhaps have done the country better service than as law makers. But the wretched ventilation of the House of Representatives is no new thing; neither is the foul atmosphere in the public schools of New York, though the existence of both sources of peril is once more being prominently brought into public notice by the daily papers. Poisoning the innocent pupil on one hand, and smothering the statesman on the other, are standing national abuses which, it might be argued, are only to be remedied by the slow alteration of public sentiment; but as abuses, they are superfluously glaring, and, by such examples as the present being brought into daylight, it is to be hoped that the full extent of their dangers can be rendered so apparent as to show the folly and culpability of neglecting the precautions necessary to avoid them. Carbonic acid is the product of perfect combustion and of the breathing of animals, the oxygen in the latter case uniting with carbon in the system; and the air expired contains about 4½ per cent of carbonic acid gas. This, if confined, contaminates the pure air in the room to such an extent that, if an atmosphere, containing one two-hundredth of it be breathed, headache and lassitude result. This, however, is not fatal, as air mixed with 5 or 6 per cent of the deadly gas may be safely breathed; but an atmosphere of 25 per cent carbonic acid is deadly. Children breathe about 14 cubic feet of air per hour, and this, when exhaled, contains 430 times the normal amount of carbonic acid; and so swift a poison does the air then become that if 100 persons were confined in a room, 18 feet square by 11 feet high, in which there was no ventilation, within two and a half hours every individual would be dead. Therefore, when people of sedentary occupations become afflicted with headaches and sore throats, and it is known that they habitually exist in a foul atmosphere, it is as safe to assert that they are being slowly poisoned as it would be had they contracted the opium or any other injurious habit. But to this source of danger must be added another: It appears that the ventilating arrangement of the House of Representatives is such that the cold air sweeps down upon the floor, and thus forces upon the members the foul atmosphere, generated by the gas burners and by the occupants of the galleries. The fresh air supply is taken in through the basement into the cellar, and is then forced up by fans through iron pipes, which, it is said, are "coated by many years accumulation of rust and particles of decaying animal and vegetable matter." From these the current goes through a series of horizontal air ducts, and finally, at a temperature of 100° or thereabouts, is driven into the chamber through registers, which for years have filled the office of spittoons. It is further reported that the mouth of the sewer which drains the Capitol is submerged, so that from every sink there is an escape of sewer gas into the building. Under this condition of affairs, there is no cause for wonder that those who occupy the House should complain.

AFRICAN RUBBER.

The coast region north and south of the Congo is becoming quite an important source of caoutchouc. It is produced by a giant tree creeper (*landolphia*), which grows principally along the water courses. It covers the highest trees, and frequently considerable extents of forest are festooned down to the ground, from tree to tree, in all directions with its thick stems, like great hawsers. Sometimes its stem is as thick as a man's thigh. Above, the trees are nearly hidden with its large glossy leaves of dark green hue, and studded with beautiful bunches of pure white star-like flowers, most sweetly scented. Its fruit is of the size of a large orange, yellow when ripe, and perfectly round, with a hard brittle shell; inside it is full of a soft reddish pulp of an agreeable acid flavor, much liked by the natives. It is not easy to obtain ripe seeds, as the creeper is a favorite resort of a villanous, semi-transparent, long-legged red ant—with a stinging bite, like the prick of a red hot needle—which is very fond of the pulp and the seeds distributed through it.

Every part of the creeper yields a milky juice when wounded; but, unlike the juice of the American rubber tree, this milky sap will not run into a vessel placed to receive it. It dries so quickly that a ridge is soon formed over a cut, and the flow arrested. When collecting it, the natives make long cuts in the bark with a knife, and as the sap gushes out they wipe it off continually with their fingers and smear it on their arms, shoulders, and breasts, until a thick covering is formed. Then they peel it off and cut it into small squares for transportation.

A COPPER-BEARING BIRD.

One of the most interesting of the West African birds is the plaintain eater, *corythaix paulina*, found abundantly in the thick forests of Angola. By the natives these birds are regarded with superstitious reverence, due apparently to their loud, hoarse, unbirdlike cry, which is of such evil omen that, if uttered within the limits of a town, the place is immediately abandoned. They are sometimes brought from the interior to the coast for sale, but the carriers are not permitted to bring them into towns along the road.

It is a remarkable characteristic of this bird that the gorgeous blood-red color of its wing feathers is soluble, especially in a weak solution of ammonia, and that the soluble coloring matter contains a notable quantity of copper. By burning the smallest portion of a feather in a Bunsen burner, the presence of copper is clearly manifested. By transmitted light, the ammoniacal solution is of a magnificent ruby red color. From a bunch of 300 feathers brought from Sierra Leone by J. J. Monteiro, about 16 grains of turacin was obtained by Mr. Henry Bassett, who reports that two copper determinations gave quantities of oxide of copper corresponding to 7·6 and 8·0 per cent of metallic copper. From an earlier investigation, Professor Church found 6 per cent of copper. Mr. Monteiro reports that the copper is derived from particles of malachite, so universally distributed over Angola, the habits of the birds seeming to favor this, as they are extremely inquisitive in their wild state, and given to picking up bright objects. On the other hand, he has known them to moult regularly and reproduce their splendidly colored feathers when kept in confinement where copper could by no means enter into their diet, except what might be con-