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LEGISLATIVE ATAVISM.

While studying the variations of plants and animals under domestication and also in the state of nature, Darwin observed a tendency more or less persistent and active to revert to earlier and less specialized forms. Instead of exactly reproducing the parent in type and behavior the offspring would more closely resemble some ancestral form, perhaps far remote in time and in the scale of development. This reversion he called "atavism."

The same characteristic appears also among men; and the scientific historian finds in this "atavism" an explanation of those otherwise unaccountable outbursts of wild barbarism among partially civilized communities, as shown in relapses to the bloody rites of ancestral religions and the like; and of those equally unreasoning outbursts of race animosities among more highly civilized peoples; such, for example, as may be witnessed to-day in Russia and on our Pacific Coast.

It is largely through this national or local atavism that history repeats itself; and because of it the experience of one age or generation counts for nothing when a later generation relapses and insists upon repeating the old, it may be fatal experiment.

Under new and widely different conditions, the old phase of thought and feeling revives, and, with the passionate unreason of the earlier day, men repeat the ancient folly and re-enact the ancient injustice.

Compare the recent act of Congress against the immigration of Chinese laborers with the laws against free negroes enacted a few years ago by South Carolina and other States of the south and west. The parallel is discreditably close, and the disgrace of Congress is greater than that of the earlier legislators in that Congress in its unwarranted invasion of the dignity and inherent rights of all honest labor, acted less from conviction than from a contemptible fear of offending a class in the far west, whose votes may be needed on some future election day; a class whose moral and economical thinking exactly reproduces that of the earlier day, as exhibited in this typical provision of the Constitution of Oregon, to wit:

"No free negro or mulatto, not residing in this State at the time of the adoption of this Constitution, shall ever come, reside, or be within this State, or hold any real estate, or make any contract or maintain any suit therein; and the Legislative Assembly shall provide by penal laws for the removal, by public officers, of all such free negroes and mulattoes, and for their effectual exclusion from the State, and for the punishment of persons who shall bring them into the State, or employ or harbor them therein."

The new law which disgraces our statute books makes it unlawful (for the space of ten years from August next) for any Chinese laborer to come within the limits of the United States, or for any person to aid or abet them in coming; the words "Chinese laborer" covering skilled as well as unskilled workers. The law provides:

"(SEC. 2) That the master of any vessel who shall knowingly bring within the United States on such vessel, and land or permit to be landed, any Chinese laborer, from any foreign port or place, shall be deemed guilty of a misdemeanor, and on conviction thereof shall be punished by a fine of not more than five hundred dollars for each and every such Chinese laborer so brought, and may be also imprisoned for a term not exceeding one year."

Section 10 provides "That every vessel whose master shall knowingly violate any provisions of this act shall be deemed forfeited to the United States, and shall be liable to seizure and condemnation in any district of the United States into which such vessel may enter or in which she may be found;" and

Section 11: "That any person who shall knowingly bring into or cause to be brought into the United States by land, or who shall knowingly aid or abet the same, or aid or abet the landing in the United States from any vessel of any Chinese person not lawfully entitled to enter the United States, shall be deemed guilty of a misdemeanor, and shall on conviction thereof, be fined in a sum not exceeding one thousand dollars, and imprisoned for a term not exceeding one year."

This would be an exact echo of the South Carolina law against the introduction of "free negroes or persons of color," if it only had a clause providing for the sale into slavery of the obnoxious Chinaman. The spirit is the same; and the excuses offered for so barbarous and anti-American an invasion of the common rights of humanity are substantially the same to day as they were half a century ago.

The free person of color was of an alien and degraded race, incompetent of citizenship and unfit to blend socially or politically with the Caucasian. At the same time his presence was a source of social peril, in that it threatened the stability of the prevailing industrial system. The same charges are now brought against the Chinese, and with slighter grounds for justification. Southern society survives and thrives with the negro free; before the ten years' limitation of Chinese immigration ends it is safe to predict that the nation, as a whole, will discover that its hazard from Chinese labor is infinitely less than from the wrong done to all laboring men by allowing local clamor to secure the general ostracism of any class of honest laborers.

The national shame of this enactment arises not so much because it involves a breach of good faith with China, to whose subjects we have just agreed by treaty to accord "all the rights, privileges, immunities, and exemptions which are accorded to the citizens and subjects of the most favored

nation," as because it legalizes a positive and offensive discrimination against certain laborers, skilled and unskilled, as laborers. It is not the Chinaman, but the Chinaman who works, who is to be excluded, and for whose exclusion the law was specially passed.

In the face of this national crime it is trivial to discuss the misrepresentations and specious pretexts which the advocates of the measure have put forth so variously to justify their position. If all that has been said against the Chinese were true, it would not justify Congress in thus nationalizing the temporary lapse of a portion of the Pacific Coast people from the national standard of impartial justice to all honest labor, irrespective of the color of the laborer; a standard which hitherto—at least since slavery was abolished—has been our crowning virtue as a nation.

THE SUMMER SOLSTICE.

On the 21st of June, at 8 o'clock in the morning, the sun enters the sign Cancer, and inaugurates the great physical epoch known as the summer solstice. He has reached his extreme northern declination of twenty-three and a half degrees, and, just grazing the tropic of cancer, pauses for a few days in his course before turning his steps from our northern clime. The familiar terms explain the apparent movement, the word tropic coming from a Greek word meaning to turn, and the word solstice coming from two Latin words meaning the sun stands still.

The days remain of the same length, fifteen hours and sixteen minutes, for nine days, from the 16th to the 25th. On the 26th a change comes, and a decrease of one minute marks the southern course of the sun. In a few days the change will be apparent to careful observers. The sunrise and sunset points will swerve slightly to the south, and the sun will not mount quite so high at noon-day toward the zenith. The movement of the sun to the south and his lessening meridian altitude will go on until the 21st of December, when the winter solstice occurs, and the days have reached their minimum length. The process will then be reversed; the sun will move northward, and his meridian altitude increase until he comes round again to the summer solstice of 1883. Observers can see for themselves the changes in the sun's place in the heavens that mark the change in the seasons, and will readily note that the further south the sun rises and sets the shorter will be the days, and the lower the altitude of the noon-day sun the less will be the intensity of the heat.

This oscillation of the sun to the north and south, and his varying meridian altitude are only apparent, the real cause of the movement being the revolution of the earth around the sun with her pole inclined twenty-three and a half degrees to the plane of her orbit, her seasons varying according to the manner in which her surface is presented to the sun. In the north temperate zone the sun's rays now shine with full force, and summer reigns supreme. The mornings and evenings mark his furthest progress northward, the noons show his highest meridian altitude, the evenings bear witness to the period when his beams linger longest above the western horizon after sunset.

It would seem as if our hottest days should occur about the 21st of June, when the sun's perpendicular rays fall upon this portion of the globe. But such is not the case. As midsummer approaches the quantity of heat received from the sun during the day is greater than the quantity of heat lost during the night, and there is therefore an increase of heat each day. The daily increase reaches its maximum at the summer solstice. But the heat garnered up by the process causes an accession of heat each day until the heat lost during the night is just equal to that received during the day. This happens some time in July or August. Our hottest weather for this reason occurs some time after the summer solstice, just as the hottest part of the day is some time after midday, and the coldest part of the night is toward morning.

There are four great time marks in the annual revolution of the earth, the vernal equinox, the summer solstice, the autumnal equinox, and the winter solstice. The summer solstice is the most interesting and suggestive of them all. It is, in our zone, the culminating point of solar power, the gala-day of the sovereign who holds in his hand the issues of life and death for every member of the human race. The earth rejoicing in verdure, the perfection of foliage, the brilliant flowers, the ripening fruits, bear witness to the fertilizing power of his benignant beams. Out-door life furnishes the conditions of enjoyment, and earth, air, and sky hold out separate allurements to increase the number of those who share in the general holiday. So delightful are the charms of midsummer that one longs to make them immortal, to hold back the sun in his course, and perpetuate the present conditions of his reign. But such are not the conditions of human life. The seasons come and go, swayed by an omnipotent hand; at the culminating point of solar intensity the picture changes, the supreme moment passes. Before the sun that rises on the 21st of June sinks below the horizon, his face will be turned from us, the earth will have traveled thousands of miles toward the regions of cold and darkness. A fraction of light will be lost from the longest day, a fraction of darkness will be added to the shortest night.

No one can help mourning over the loss of the first minute of daylight that follows this summer solstice. No one can help rejoicing over the gain of the first minute of daylight that follows the winter solstice.

On the 26th the decrease of one minute in the day's length

is recorded on the astronomical calendar. It is only a minute at first, but minutes will be piled upon minutes, as the earth rolls on, until the last of July, the day will be forty-seven minutes shorter than it was under the beams of the solstitial sun.

THE PREVAILING STRIKES.

During the past year the general advance in prices has increased the cost of living very materially; for the plainer food staples the increase will average fully one-third, perhaps more. Primarily this is chargeable to the severe and long continued drought of last summer, by which the products of our farms and gardens were seriously diminished. The advantage taken of the occasion by speculative holders of the leading articles of food—grain, meat, etc.—has played a secondary but not unimportant part in effecting the increase in prices. With the steady and serious lessening of the purchasing power of their wages there has naturally arisen among wage-earners a desire for an increase of pay to enable them to maintain something like their accustomed style of living.

In many of the minor industries the desires of the workmen have been, in part at least, gratified, and wages have been raised. In the larger industries, which had begun to feel more seriously the effects of the general diminution of industrial and financial prosperity, the demands of the laborers have been met by a general closing of doors, with the assurance that the works could better afford to lie idle than to pay the increased wages asked for.

This has been the case particularly in the iron and steel industries. Early in April the men in the iron and steel works of the great centers of these industries proposed a revision of the scale of wages, to take effect June 1. The manufacturers refused to grant it, and also to accept a modification of the first proposition. The amalgamated association of iron and steel workers accordingly ordered a general strike for the scale originally proposed, on the day above named, and the order was generally carried out. The association claims a membership of 80,000, embracing nearly all the skilled iron and steel workers in the country. It may be safe to estimate that when this great body of men stopped working, four or five times as many more workmen, in the same and in related industries, were thrown out of employment.

What the result will be it is impossible at this time to foresee. That the strike will prove wholly or generally advantageous to the strikers and those whose income has been stopped by their action is doubtful, judging from the general results of such conflicts, even when they end in compelling employers to concede the scale of wages demanded. It is the common fate of these great labor wars that they come too late to be largely profitable. The wave of industrial activity—the trade “boom,” as it is popularly called—has usually culminated before the attendant rise in the price of everything but labor drives the wage earners to united action for a corresponding increase in wages. On a declining market, or one soon to decline, the temporarily excessive demand for the special manufacture having been substantially met, the manufacturers have the advantage and are in a better position to bear a suspension of work than the workers are.

It is to be noticed that, with one or two exceptions, the strikers have conducted themselves with commendable sobriety and a proper regard for the rights of others. There have been no riots; and, except at Chicago, no unlawful attempts to prevent the employment of non-union men.

MISREPRESENTATION AS A LEGISLATIVE INFLUENCE.

In urging upon the favor of the House the recently passed bill to encourage the infringement of the rights of patentees, its advocates repeatedly asserted that the bill had been unanimously approved by the patent committee, and had received the cordial sanction of the Commissioner of Patents.

The incorrectness of the latter assertion was sufficiently shown last week. We are now able to state that the former was not less inexact. A member of the committee, Mr. Jones, of New Jersey, writes us that he opposed the measure as strenuously as he could, insisting that it nullified all patents coming under its meaning; that it was retroactive, and that, in his opinion, it was unconstitutional; but the majority of the committee were against him.

The fact that there was one member of the Patent Committee thus opposed to the bill should have been sufficient to prevent its being pressed upon the House as a measure which had received the committee's unanimous approval. In a statement of that sort there was no room for a possible honest misunderstanding.

Diastase in the White of Eggs.

It is well known that malt contains a substance capable of converting starch into sugar, to which the name of diastase has been given. A substance resembling diastase has been discovered in the albumen of the egg, by F. Selmi, the original discoverer of ptomaines, or poisonous alkaloids, in dead bodies. Previous to his death, in August, 1881, he wrote the following letter to Ercolani:

Various considerations have induced me to assume that egg albumen contained a body that would change starch into sugar. In fact, I found that a filtered aqueous solution of albumen, when digested with a solution of soluble starch, induced this change very rapidly. This confirmed my suspicion, and I attempted to isolate this body from ordinary

albumen. This succeeded in doing by treating the albumen with three parts of water and precipitating the solution with a sufficient quantity of concentrated alcohol. The diastatic substance is in the soluble portion of it, as I was able to prove by experiments, by redissolving the albumen that had been precipitated, and making comparative experiments with that and with the substance that remained in solution after expelling the alcohol at a low temperature.

The existence of a diastatic substance in egg albumen is of great physiological importance, which may be stated as follows:

The albumen contains glucose, and the yolk of egg contains starch; the latter is changed into sugar when it reaches the albumen and is thus converted into nourishment.

Artificial Diastatic Ferment.—To make artificial diastase, *i. e.*, a combination of albuminoids with phosphates and other salts, the white of eggs is diluted with two or three parts of water, filtered, and decanted. The albumen is then precipitated by somewhat less than 100 c.c. of alcohol; the precipitate is collected on a filter, washed several times with water, and allowed to drain until gelatinous. It is then taken from the filter and stirred up with water, to which has been added some bibasic or monobasic phosphate of soda, then heated to boiling.

The coagulum formed is then separated from the liquid in case it resulted from treating it with bibasic phosphate it is neutralized with the monobasic phosphate. The solution contains an albuminoid substance which foams greatly when shaken up with air, and which converts starch into sugar at ordinary temperature.

Experiments were also made to ascertain the power which phosphate of soda alone possesses of producing sugar from starch. Comparative experiments with a solution that contained the same amount of phosphate as the albuminoid substance, proved that the saccharifying power of the latter is three times as great as that of the phosphate solution alone. Probably other salts would increase the action of this diastase.—*Chemiker Zeitung.*

Preservation of Rubber.

Every one who uses vulcanized rubber is aware that the articles made of it will, in a longer or shorter space of time, get hard and brittle, so as to be useless. Hempel has been investigating the cause of this hardening, and has come to the conclusion that it is due to the gradual evaporation of the solvents employed when vulcanizing it. He has been trying to find some method of either preventing this evaporation, or of replacing the solvent by some other one. In this he was quite successful. If the india-rubber was put directly into the solvent it always absorbed too much of it, but the object was attained by putting the article in an atmosphere saturated with the vapor of the solvent, rubber stoppers, tubing, etc., which is perfectly elastic, is protected and prevented from spoiling by putting it in a desiccator or large glass box, in which is an open vessel of ordinary kerosene.

Simply sealing hermetically in a glass vessel preserves india-rubber for a long time. It is totally useless to try to keep it in a wooden box. As far as practicable it is to be kept in the dark. Old rubber that has become hard is softened in a very short time by putting it in a vessel with vapors of bisulphide of carbon. The action of bisulphide is, however, too powerful if it lasts too long, hence it must be taken out and put in the vapor of kerosene afterward. This simple regenerative process does good service for hard stoppers; but tubing generally does not get fit to use again, as the little cracks and checks that form when it gets hard cannot be closed again.—*D. I. Z.*

Dangers of Coal Gas.

Some old questions have lately been investigated anew by M. Pobek, of Breslau, with reference to the injurious elements of common coal gas. This investigator has examined gas both before and after combustion, in order to determine the causes of any deleterious effect which it may be found to produce. He finds the chief source of danger in unburnt gas to be carbonic oxide. In some cases where a stream of gas escaping from a leaky pipe traverses ground not previously saturated, it deposits the hydrocarbons which give gas its characteristic odor, and afterward diffuses in dwellings without its presence being perceived. In such a case the danger of explosion is added to that of poisoning; although explosions are seldom caused in this way, because the definite proportions necessary to an explosive mixture are not present. M. Pobek insinuates, however, that poisoning may supervene even when explosion does not take place. When gas is burnt under unfavorable conditions, M. Pobek is of opinion that the most injurious result is the excess of moisture which is thereby produced. There is no analysis given of the particular description of gas that formed the subject of M. Pobek's experiments; they must, therefore, be taken in a very general sense.

Hygiene Among the Chinese.

The “Heathen Chinese” has not a few revilers who are ever ready to point to features in his social character which render him an undesirable neighbor. The medical officer of the State Board of Health of San Francisco has, however, something to say in favor of the Celestials. In his report lately presented to Congress he states that he never knew any disease or pestilence originating or spreading in the Chinese quarters of the city. He admits that they live quite close,

and attributes their healthy condition and immunity from disease to their frugal life. “They eat to live, and do not live to eat. They are clean in their habits, and they drink no whisky. I have never seen a drunken Chinaman in my life. They consequently obtain a better resisting power to the attack of disease. They constantly wash themselves, and keep themselves and their clothes clean. The death-rate is greater among the whites than among the Chinese; greater with adult white people than with adult Chinamen. There have been no epidemics among them; and there has been less smallpox among them than among the whites, the ratio of population being allowed.”

The Mongoose as a Rat Killer.

The introduction of the mongoose into Jamaica as a cure for the once formidable rat pest on the sugar plantations is said to have proved a notable success. The sugar rat is a huge white bellied fellow, measuring ten inches in length of body, his long tail adding ten inches more to his length. Formerly the damage done to the sugar plantations of the island by these rats amounted to something like half a million dollars a year, rising to a quarter of the crop in seasons of special ravages. About five years ago the mongoose, whose zeal as a snake and rat killer is well known, was imported from India. As a result the plague of rats has been greatly diminished, with a saving in sugar of not less than 25 tons of sugar on each estate. There is also saved the expense of rattage, formerly amounting to hundreds of dollars a year.

Iron and Steel Production in 1881.

THE report of the Secretary of the American Iron and Steel Association for 1881, just completed, gives the following summary of the year's work: Production of pig iron in net tons, 4,641,564, including 21,086 tons of spiegeleisen; production of all rolled iron, including nails and excluding rails, 2,155,346 tons; Bessemer steel rails, net tons, 1,330,302; open hearth steel rails, net tons, 25,217; iron and other rails, net tons, 488,581; production of iron and steel street rails included in above, 21,554; crucible steel ingots, net tons, 89,762; open hearth steel ingots, net tons, 146,946; Bessemer steel ingots, net tons, 1,539,157; blister and patent steel, net tons, 3,047. Production of all kinds of steel, net tons, 1,778,912. Production of blooms from ore and pig iron, net tons, 84,606. Imports of iron and steel, \$61,555,078. Imports of iron ore, gross tons, 782,887. Exports of iron and steel, \$15,782,282. Production of Lake Superior iron ore, gross tons, 2,336,335; production of iron ore in Jersey, gross tons, 737,052. Total production of iron ore in census year 1880, net tons, 7,974,705.

Production anthracite coal in census year 1880, net tons, 28,646,995. Production of bituminous coal in census year 1880, net tons, 42,420,581. Production of anthracite coal in 1881, gross tons, 28,500,016. Miles of railway completed in 1881: 9,650 miles of railway track in the United States, December 31, 1881, including double track and siding estimated, 130,000. Iron ships built in the United States in the fiscal year ending June 30, 1881, 42.

Flying Machines for War Uses.

GERMANY and Russia are both pushing forward experiments in flying machines for use in war or otherwise. It appears that the direction in which these are working is the only one likely to be successful. It ignores the ridiculous inflated gas-bag, which is enormous in size, difficult and costly to fill in war, and floats—a gigantic derelict—at the mercy of every current of air, a huge mark for the first gunner who can hit and bring it to the ground. Baumgarten, in Germany, and Baranovski, in Russia, adopt the principle of the inclined plane pressed against the air, and thus capable of making some attempt at least to regulate its own course. In the kite the force that presses the inclined plane is the hand of the boy acting through the string. In the sail of the boat the resistance of the water to sidelong motion keeps the sail pressed against the wind. In flying machines the pressure is given by an engine carried by the machine and acting by means of fans of one sort or the other. The difficulty at present is the weight of engine and fuel; but with the development of electrical practical knowledge we may fairly expect to see accumulators which will supply the maximum of power with the minimum of weight. Then the problem of flying in still air will be solved. Whether we shall ever be able to ride the storm is another matter.—*Pall Mall Gazette.*

For the Preservation of Wood.

A new wood preserving process has been invented in France by M. Jacques. He first impregnates the timber thoroughly with a simple solution of soap, mixed with an acid—preferably phenic acid. This causes the fermentation, in a few days, within the wood, of a fatty acid, which is insoluble in water, and impregnates the remotest fibers. The reaction of the acid on the soap does not take place until a portion of the water has evaporated. It is claimed that more perfect impregnation can be had in this way than with creosote, and there is no danger of the washing out of the preservative from the exposed surfaces, as when sulphate of copper is used. The government commission on technical railroad operation in France is said to favor this process.—*The Metal Worker.*