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(Illustrated articles are marked with an asterisk.)

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THE DEGRADATION OF LABOR.

Labor is honorable, and the laborer worthy of honor in direct proportion to the personal integrity, independence and capacity that go with it. Abject servitude, even when voluntary, is neither honorable to the individual nor profitable to the mass.

This is the American idea: it is the independent laborer that honors labor. Unhappily of late years the majority of our working men have forgotten or failed to learn this basic principle of our social, industrial, and political system. Worse: they have hearkened to demagogues who have taught them contrary doctrines—doctrines subversive of all true manliness in working men, and calculated only to degrade labor by reducing the laborer to practical slavery.

Could there be a bitterer, satire on the manliness of working men than the mainplank in the platform of the "bread winner's league"—bread beggar's league, more properly—to the effect that the government—in other words their fellow citizens—should furnish them with employment and wages? Is government servitude the highest aim of the present generation of working men?

Time was when the American laboring man's boast was that he was, or was bound to be, his own master, asking odds of no one. He felt himself a free man, capable of self-support; a man whose strength and skill need not go a-begging for employment. While this was the rule labor could not be redundant. The laborer was not abjectly dependent on some one to hire him, for he was able and willing to work for himself. However limited the scope of his productive industry, he was, or could be an independent producer; and his work was to be sought for if it was to be hired.

But all this, it would seem, has been changed. As a rule the laborer—tradesman, mechanic, artisan, or what not—is not and no longer aims to be first of all a free man. On the contrary he desires nothing and looks forward to nothing but to be dependent on some one for a job. He must be hired, or he can do nothing; and such employment failing he falls back, not on his own capacity for self support, not upon independent industry, but to the vain demand that government shall make work for him. Then having made himself utterly dependent on wages, he foolishly imagines that he can overturn the fundamental laws of work and wages, and dictate the terms at which he will be employed and the kind of work he will do.

The first lesson that the working men of the country need to learn is that they have no claim upon any one—individual, corporation, or government—for employment. They are not infants, but men: and they must be willing to act a man's part in the great industrial struggle, or go to the wall. Inability to find a master is no excuse for idleness; nor more is any lack of demand for the specific labor they prefer to do. The manliness of the working man is gone, the prosperity of the working class vanishes, the moment men give themselves up to individual helplessness—the first fruit of the fallacy that other men are in duty bound to provide them with the means of making a living. No part of the community, neither "capital" nor government, is in any way bound to furnish work for any one. And it matters little whether men demand or beg that employment be given them as their only resource against starvation, they ask only what would but seal their moral and industrial degradation. To persist in huddling together in increasing helplessness, is simply to rivet the chains of the slavery the working classes are doing most to bind upon their own limbs. The laws of Nature cannot be reversed to relieve men of the consequences of their folly.

Not until the old spirit of manly self respect and individual self-helpfulness is revived; not until the majority of the industrial classes seek first to become, sooner or later, their own employers, will prosperity return to them. Until then the labor market will be glutted; by their very numbers the mob of employment seekers will destroy the chances of all for steady employment; and by their hungry competition with each other they will dissipate the only hope of any for remunerative wages. It is not any absolute redundancy of laborers as much as the misdirection of their efforts that makes or largely helps to make the times so hard for laboring men.

IRON AND STEEL IN RAILWAY CAR CONSTRUCTION.

At the annual meeting of the Master Car Builders' Association, held in New York city, June, 1876, a committee was appointed to whom was referred the subject of iron and steel in railway car construction. The report of this committee, given in the late meeting in Cleveland, Ohio, was that the substitution of steel for iron in car construction was a subject of first-class importance, and merits more attention than it had yet received.

In answer to the question of iron or steel rods in car bodies, the majority preferred iron, but it must be iron of 60,000 pounds textile strength to the square inch. Open hearth steel was admitted to be tougher and denser, but was too expensive. It was thought that steel could be produced, that with less size and weight would give equal strength. Of bolts, all preferred iron, though none seemed to have tried steel bolts. Charcoal iron was specified in the report, and the suggestion was made that good iron was better than poor steel. Of steel nails, the majority admitted to not have used them, while in one instance they were preferred because they were lighter, and as cheap as iron. Another member had received some samples with request to try them, and he reports that he had no difficulty in driving every steel nail

to the head, while he found it impossible to drive a cut nail more than half way before it would break.

In order to further test the economy of steel nails, the returning board gave the following table of the weight of iron and steel nails as one of the results of their labor:

Table comparing iron nails (260 to 1 lb.) and steel nails (208 to 1 lb.) across various sizes (6d., 8d., 10d., 12d., 20d., 40d., 6d. finish'g iron nails, 192 to 1 lb., 8d., 10d.).

The price of these nails was quoted as 50 cents per keg more than iron.

Steel screws were admitted by one or two persons to be fifty per cent stronger than iron, yet the majority preferred iron. Another recommendation of the steel screw was that there were no imperfect ones found; yet this must be admitted to be a recommendation for the manufacturer of said screws. The roughness of annealed steel screws was complained of, as well as their tendency to twist. It was admitted that where iron screw heads touched iron, they were better in that condition than steel screws.

It was thought that the carlines of passenger cars, if made of steel, would be more rigid than iron. It was suggested that body bolsters, if made of steel, would be lighter, and in the end might be as cheap as iron. It was thought that a sudden shock would be liable to break the steel bolster, yet the experiment had not been tried.

Of axles, the majority preferred steel, and open hearth steel was recommended as being more likely to be free from cracks. Some claimed that iron axles run with the coolest journals, while others advocated for steel the same advantage. It was admitted that the low price of iron axles hindered making them as good as they should be. The recommendation for the steel axle was that it could be lighter, and its stiffness prevented crystallization. Steel axles do not bend as iron, though they showed in some instances a tendency to crack in the inside of the wheel hub. Lubrication was more perfect upon steel surfaces than upon iron, and they worked with a much finer surface than iron axles, and would wear longer. One member had commenced a series of microscopic experiments to get at the cause of the iron axles heating, and found that the fibres of the iron stuck up, as he said, like knife blades.

The majority preferred cast iron wheels, though steel was thought to be safer. One fault of the steel wheel was that it would split in the tread. Brake shoes of steel showed less percentage of loss by wear than the iron, and no percentage of difference was found in the wheel to which they were applied. Upon a car that had run nearly ten thousand nine hundred miles, the wrought iron shoes weighed, when applied, thirty-four and a quarter pounds; when removed, weighed thirty one and a quarter. A pair of steel shoes weighed thirty pounds, and when removed weighed twenty-eight and a half pounds, having lost one half pound. Showing one and a half pound of loss in favor of steel.

A conservative character appeared in the reports upon the distinctive merits of steel over iron, and the majority did not seem inclined to make a change from iron to steel, unless convinced that decided advantages were to be gained. Indications seem to show that, with them, steel and strength were not synonymous.

ABOUT SPARROWS.

Any European conversant with the habits and color of the sparrow in his original home on the other side of the water, and who closely watches the sparrows in and around New York city, cannot fail to observe that the latter are undergoing a change of habit as well as color. Probably no part of England, if even of Europe, is more infested with this impertinent little fellow than is the county of Kent where the barnyards and fields abound with them. It is, however, necessary to draw a distinction, for there are two kinds of sparrows, the house sparrow and hedge sparrow. The former builds a ragged, clumsy-looking nest, notable for its size and external looseness; even the feathers with which it is lined are placed in no kind of order, but appear to be put together in a spirit of "that is good enough for me." The eggs are a dull white color, speckled with reddish brown spots, and number from four to six; rarely less than the former, and never exceeding the latter. The house sparrows rarely gather in large flocks, or indeed flock at all, save in winter. They build their nests in colonies if the conditions are favorable, otherwise they will build in nooks about cornices, under waterspouts, and sometimes in trees. Over the main entrance door to Trinity church in New York city are several house sparrow nests built in the ornamental stonework. In the ornamental cornice work of many brown stone front residences the same will be observed. The hedge sparrow is similar in appearance to his confrere save that he is a trifle smaller. He is much more tidy, however, in his household affairs. He builds a snug little nest, neat and compact outside, and carefully lined, with horsehair and feathers inside, made round and with a full open top. The fibers of which it is mainly composed neatly interwoven, and it is as cosy withal as a linnet's nest. They build separately and usually in small hedgerows, leaving the holes in trees and similar places to their city brethren, the house sparrows. They lay five small eggs of a beautifully clear blue color. The hedge sparrow it is against which the European farmer wages relentless warfare in the grain and seed fields; while the house sparrow is attacked in the barn-

yard about the stacks. The hedge sparrow, in reasonable numbers, is a valuable insect-destroying aid to the farmer, and so indeed, in a lesser degree, is the house sparrow; but the swarms of hedge sparrows to be seen in the southern counties of England are sometimes as relentless and exacting as the worst case of tax gatherer. Except in nest-building season, the hedge sparrow can be distinguished in the air by his flying in compact and well defined flocks, scorning the careless, disorderly, and irregular flight of the house sparrow. When a flock takes alarm, and two or three birds rise from the ground, the rest rise like a broad and somewhat circular sheet; and if they divide at all, it is done completely; one compact division going one way and one the other, no stragglers being seen. When they settle again, it is with one accord, whether it be in the field or upon the hedge rows. At times a flock will settle upon a tall bush as thick as bees, and chirp away with all their might and main, and at such times so intently are they engaged in their quarrel, confab, or whatever it may be, that one may get almost within arm's length of them, and watch them hop from twig to twig amid a very babel of chirps. When the nearest birds find sufficient time from their noisy conclave to look about them and discover an invader's presence, they rise with a short sharp chirp and fly off without another word, the rest of the flock either dispersing or hieing away to the fields in an irregular and disorderly manner. A dozen examinations of the bushes, in which these unruly conventions had been held, failed, with a single exception, to furnish any intelligible cause, and in that one case there was found a poor escaped and half frightened to death canary bird. The hedge sparrow is destitute of the impudence of the house sparrow, and this is no doubt largely due to the enterprise of that European institution, the crow boy, whose duty it is to perambulate the grain fields to scare away the birds, especially the crows and sparrows, whose earthly happiness appears to be measured by his capability to make unearthly yells produced at the back of the throat and audible a quarter of a mile distant; occasionally a "crow boy" will vary his occupation by inventing an alarm note of his own, the whole sound, however, rarely containing more than four notes.

The English farmer resorts to numerous strategic expedients to rid himself of his superfluous stock of sparrows, one of the most successful of which is to hold a bird net close to a stack of hay or wheat in the winter nights, and placing a lantern near the middle of the net, they beat the stack with sticks, whereupon the sparrows fly to the light and are caught, terminating their tangible existence in the sparrow pie which next day graces the farmer's table.

Returning, however, to the sparrows in the country. They are nearly all house sparrows, and while a sparrow with a white feather or feathers is quite a curiosity in England or France, they are quite common in and about New York city. They form at least five per cent of the whole, while about ten per cent of the female birds have their plumage interspersed with partly white feathers. In the City Hall Park may be seen at any time some sparrows with plumage lighter than others. At Bloomingdale some are seen unusually light. The European sparrow moves with a clean and distinct hop, rising from the ground, and making a perceptible pause between each hop, but the sparrows at Bloomingdale make a succession of quick hops with very little rise, amounting to a short run, and stopping very short, resembling somewhat the movement of the American robin. In fact the result of ten years of observation is that the habits of the American sparrow are undergoing a steady change, and he appears to be entertaining somewhat of disdain for the insectivorousness to which he owes his importation, forgetful that in no other way can he pay his passage money.

SELLING PATENTS BY AUCTION.

A correspondent writes as follows:

To the Editor of the Scientific American:

I notice a sale of patent rights took place in your city on July 16. Can you give me the names and address of the buyers? Or will your paper contain them? L. B. C.

ANSWER.—Our correspondent doubtless alludes to the novel attempt of an auctioneer in this city to establish a regular series of auction sales for patents, similar to the sales of coals and other realized commodities. As might have been expected the attempt has proved a failure, so far as concerns the bona fide sale of patents; but has been a success for the pocket of the auctioneer. The plan is as follows: The auctioneer by extensive advertising requests all who have patents to sell to send the same to him, together with the sum, in advance, of five, ten, or twenty dollars, as the case may be; for which amount the auctioneer promises on a given day, to offer the patent at public auction, and to return the proceeds of the sale to owner less certain additional commissions. Numbers of patent owners have nibbled at this pretty bait, have sent in their patents and money and enjoyed what they paid for—the satisfaction of having their parchments cried out for sale in the rear end of an auction shop; but in the majority of cases there were no genuine bidders. In fact we have not heard of a single example of a bona fide sale. If, however, there have been any real sales, we should be glad to be informed of the exact particulars, in order that we may give our readers the benefit of the facts.

Scattered about the country, there are quite a number of individuals who purport to make themselves useful in selling patents. But like the patent auctioneer, they thrive upon the advance money received from the patentees; the latter seldom or never get any money back from them. If

we are mistaken in this statement, if one in a hundred of those who have paid money to these pretended patent sellers have ever through such agency effected a satisfactory sale, or received back their money, we should be glad to learn the names and particulars. The truth is that, in order to sell a patent advantageously, something more must generally be done than to hold up a mere certificate on paper. The public must be very extensively informed about the merits of the new invention; the intending purchaser must have some sort of ocular and corroborative evidence that he can make money if he buys a right; he must see some actual examples of the device; understand how it is made, and at what cost; truthful information concerning the market for the goods must be furnished, etc. To do all this in a proper and effectual manner requires for each patent the undivided time and attention of one or more active persons for a considerable period; and hence, it appears to us to be almost an impossibility for any one individual or concern to make successful progress in the sale of a multitude of patents. The selling of a single patent frequently employs the time of many persons. If there is any one method or agency more effective than another, whereby a patentee, without going to much expense, can find customers, it is by the dissemination of a handsome picture of the invention. Good engravings representing the invention in its various forms and applications, accompanied by lucid descriptions, are almost equal to models or working machines, in conveying information to the public. Descriptive circulars are good in their way; but no matter how eloquent and strong their array of adjectives in praise of the invention, they have little power, and make little impression as compared with graphic delineations; which, if well executed, are pretty sure to command the attention and convince the judgment of the observer. The distribution of these engravings can be readily arranged for by the patentee himself; he has the satisfaction of knowing that every copy sent out is a good seed sown, a step made in the right direction, and all resulting business comes to him direct; but in nine cases out of ten all advance fees paid to the professional patent seller is so much money thrown away.

THE HOWGATE POLAR COLONY.

The schooner Florence, Captain George E. Tyson Commander, will soon sail from New London, Conn., for a voyage to Cumberland Island or some place near Cumberland Island, when the ship's company will form what is known to the scientific world as the Howgate Polar Colony. At the last session of the forty-fourth Congress an effort was made to procure an appropriation of \$50,000 for purposes of polar explorations; and though the House Committee upon Naval Affairs reported favorably upon the bill, it was impossible to secure favorable action, and the bill was not passed. Contributions have been obtained from private sources, and the expedition is being forwarded as rapidly as possible. Captain Tyson, it will be remembered, was assistant navigator of the ill-fated *Polaris*, and escaped on the ice floe. He is peculiarly fitted for the responsibility confided to him. He has been a seafaring man for over twenty years, and a large portion of his life has been passed in the Arctic regions. He is known as a skillful navigator, good executive officer, firm in purpose, cool in temper, and has a well balanced mind.

The object of the expedition is to collect data in reference to meteorology, geology, natural history, and cognate sciences of the polar regions by a system of observations, which will be favored by a permanent location, provided with necessary facilities. Magnetism, astronomy, atmospheric electricity, mineralogy, the question of ocean streams and currents, the phenomena attending the diurnal rise and fall of the tides, velocity and character of the winds, observations upon the vibrations of the pendulum, etc., will engage the attention of the colony when fully established.

Captain Howgate, the projector of the expedition, is an officer of the regular army and is connected with the Signal Bureau. He was selected as one of the committee of investigation on the loss of the *Polaris*, and during this investigation the present scheme of a polar colony impressed itself on his mind.

CHESS.

The lovers of this interesting and really scientific diversion will be glad to know that one of our valued correspondents, Mr. Samuel Loyd, of Elizabeth, N.J., has undertaken to supply them with a weekly record of chess information, which will be given regularly, until further notice, in the SCIENTIFIC AMERICAN SUPPLEMENT. The first contribution will be found in the current number of the SUPPLEMENT; for particulars, see the table of contents printed in another column.

It is a curious fact, that the most distinguished inventors, mechanics, scientists, lawyers, clergymen, musicians, and statesmen, find recreation in the practice of this superior amusement. There appears to be something about it that both delights the mind and sharpens the understanding. The ablest men are found among its devotees, and confess to its beneficial influences.

Mr. Loyd is well known all over the world as a chess player, and has probably met with as many successes and carried off as many prizes as any other individual. He probably has no superior in chess; a fact that will add interest to the student of the problems that will from time to time be given in our SUPPLEMENT. We may also add that, in addition to the above accomplishment, Mr. Loyd is an in-

ventor and mechanic of superior abilities, a musician of unusual excellence, an artist of peculiar skill, and an engraver of rare talents. The portrait of Dr. Moore is one of his productions—“When do you find time, Mr. Loyd, to execute these art works?” we asked, “I quit work at six o'clock,” he said, “and after supper my wife reads, I listen, and at the same time make my drawings.”

Manufacture of Lead Pipe, Sheet Lead, and Shot.

Our recent series of illustrated articles, in Nos. 3 and 4, present volume, have attracted much attention. Those who still desire to obtain copies may supply themselves at this office or at any of the news stores.

We are indebted to the Colwell Lead Company, No. 63 Centre street, New York city, John Hooper, President, Lewis Colwell, Treasurer, for attentions to our artists who made the sketches illustrating the making of shot, and for the particulars given, as published in our issue of July 28. The Colwell Lead Company is one of the largest and most enterprising establishments of its kind in the world.

American Institute Exhibition.

The managers have added three medals to the list of awards for the coming exhibition. They are “The Special Medal,” “The Medal of Superiority,” and “The Medal of Excellence,” making in all six grades of medals, four grades of diplomas, and the usual money awards for “perishable products,” as flowers, fruits, etc. “The Special Medal” will be offered for certain specified exhibits each year, and each year changed. For the Forty-sixth Exhibition, 1877, which opens September 12th, the following articles only can compete for this award: Pumping machinery, passenger elevators, sewing machines, fire escapes, an approved automatic fire detector, an approved method of preventing alterations of checks, bonds, drafts, and valuable documents, by the use of specially prepared papers or otherwise.

Dangers from Doctors.

Dr. Seaton, medical officer of health, remarks in a late lecture: There are many occasions where the clothes of the medical attendant require disinfection, as, for instance, after visiting a group of small pox or scarlet fever patients. Where the practitioner has been unfortunate enough to have a patient with puerperal fever under his care, the linen requires to be boiled, and the other things baked, before being worn again at a labor. But it is to the hands that he must pay special attention, and it is here that the disinfecting properties of chlorine are particularly useful. The hand should be well soaked three or four times daily in the chlorinated soda (P. B.). If this is done for a week, baths used at the same time frequently, and the clothes disinfected, practice may be resumed without danger. Length of absence will not compensate for a neglect of these precautions, as the practitioner may communicate the disease after many months.

The Rain Tree.

The Consul of the United States of Columbia in the department of Lereto, Peru, has written from Yurimagus to President Prado, informing him that in the woods adjacent to the city of Moyobamba exists a tree called by the natives Tamai-caspi (rain tree) which possesses some remarkable qualities. It is a tree of about fifty feet high when at maturity, and of about three feet in diameter at the base, and has the property of absorbing an immense quantity of humidity from the atmosphere, which it concentrates and subsequently pours forth from its leaves and branches in a shower, and in such abundance that in many cases the ground in its neighborhood is converted into a perfect bog. It possesses this curious property in its greatest degree in the summer, precisely when the rivers are at their lowest, and water most scarce; and the writer proposes that it should be planted in the more arid regions of Peru for the benefit of agriculturists.—*Panama Star and Herald*.

A Two Foot Cheap Railway.

The two feet gauge railroad between Billerica and Bedford is making good progress, and will be soon finished. The passenger cars, now building at Laconia, N. H., will be a decided novelty, as they will have a row of single seats on each side. The road is eight and one half miles long, and will cost about \$50,000, or less than \$6,000 per mile, being only one eighth the cost of the ordinary railways.

The Deepest Well in the World.

The Warren Farm Well, one of the deepest, if not the deepest, dug wells in the world, was commenced on the South Downs above Brighton in 1858, and after four years persistent digging the water was reached at a depth of 1,285 feet, the shaft being 6 feet in diameter down to 400 feet, and 4 feet for the remainder. The operation cost between £6,000 and £7,000, and was watched with the greatest interest by geologists.

Shad in the Iowa River.

Fly fishers on the Iowa river, at Iowa City, have recently taken several shad, weighing about one pound each. Shad were placed in the Mississippi by the United States Fish Commissioners several years ago, and this is believed to be the first catch in any of the tributaries.

MR. AARON VEEDER, the photographer, of Albany, N. Y., has made a series of interior photo views of Howe's Cave, by means of the calcium light. The stalactite and other formations are quite remarkable.