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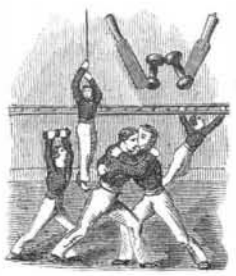
NEW YORK, SATURDAY, OCTOBER 13, 1860.

PHYSICAL TRAINING IN COMMON SCHOOLS.



E see that the Superintendent of the Boston schools recommends the general adoption of gymnastic exercises as a regular part of school training. It seems to us that there is no movement of the day of greater importance to the scholars individually, or which is destined to have a greater influence upon the well-being of the country, than this of systematic physical training of children. For *success in life*, vigorous health is of far greater importance than high intellectual culture. *Energy* is what rules the world. Take two boys, equal in every respect, box one of them up in school from morning till night and from year to year, cultivating his mind at the expense of his body, till his nerves have outgrown his muscles, and his brain has outgrown his stomach; while the other boy receives a fair but equal development of both mind and body—and what is the result in the two cases? The scholar graduates perhaps with the highest honors, but he leaves college a feeble and complaining invalid; intellectual and refined, he shrinks with nervous sensitiveness from the rude shocks of the battle of life. The result is, that he is thrust aside in a corner, or trampled under foot in the race. On the other hand, the man who comes forth upon his career in possession of a vigorous constitution, has the backbone, the nerve, the energy, that enable him to win the great battle that every human life is. His days are filled with healthful and happy activity; his slumbers are sweet at night; his cheerfulness (the natural effect of good digestion) makes his presence a pleasure to all who know him; he becomes the father of healthy offspring, and fills his home with merry voices; in short, fulfills all the purposes of his being, and leads a prosperous, happy, useful and successful life.

But we have conceded too much in yielding the palm of intellectual superiority to the scholar whose brain is overstuffed. John Whipple once asked Daniel Webster to what he attributed his marvelous power of mastering complicated and difficult questions; Webster replied that he attributed it to his habit of never using his brain when it was in the least degree fatigued. The great fact that the time during which the human brain can continue its action is limited, is one of the utmost importance, but it seems to have been generally ignored by those who have had the management of our schools. A New York school commissioner, with leather lungs and a cast iron head, may insist that a child who has been boxed up six hours in school shall spend the next four hours in study, but it is impossible to develope the child's intellect in this way. The laws of nature are inexorable. By dint of great and painful labor, the child may succeed in repeating a lot of words, like a parrot, but, with the power of its brain all exhausted, it is out of the question for it to really master and comprehend its lessons. The effect of the system is to enfeeble the intellect even more than the body. We never see a little girl staggering home under a load of books, or knitting her brow over them at seven or eight o'clock in the evening, without wondering that our citizens do not arm themselves at once with carving knives, pokers, clubs, paving stones or any weapons at hand, and chase out the managers of our common schools, as they would wild beasts, that were devouring their children. Indeed, they are worse than wild beasts, for those destroy only the body, but these fiends consume both body and mind of the helpless innocents who fall into their clutches.

In Boston, the system of studying out of school has been prohibited in relation to the girls, and we should be rejoiced to see this city take the lead in extending this prohibition to all the scholars. We are very glad to see that the time for gymnastic exercises is to be taken from the study hours, and not from those given to play—"Experience having shown," says the Superintendent, "that the scholars learn more when a portion of the time is given to these exercises than when all is devoted to study."

We hail the introduction of physical training into our common schools as being calculated to make the Americans the finest race of men, physically, that the world has ever seen; but we value it more as an important step in carrying to a still higher point the unparalleled intellectual cultivation of our people.

DECOMPOSITION OF STEAM—AN OBSTINATE CRITIC.

Our friend, *The Engineer*, appears to be a stubborn pupil. We made the plain and concise statement that a white hot block of iron weighing 100 pounds, in the presence of steam, would take up 30 pounds of oxygen, and be wholly converted into oxyd of iron. The *Engineer* coutradicted us flatly. We replied to our cotemporary in a friendly and conciliatory spirit, and hinted that if he would bear in mind the porous nature of a film of oxyd of iron, he would be able to take in the truth of our statement. We really hoped the difference between us was happily settled, and that our friend had added an interesting fact to his stock of chemical knowledge. But his issue of the 27th ult. is still perverse, contradicts again, and quotes the professors against us. He says:—"Professor Faraday's authority is against the SCIENTIFIC AMERICAN, and so is that of most chemists of eminence." This very strong expression discloses the fact that instead of pondering on our good-natured hint, he rushes to his library to find what chemists of eminence have said, and in his zeal to confront us forgets the real point at issue.

The *Engineer*, if he is really desirous of becoming posted on such subjects as the oxydation of iron, will do well to take a start from some fundamental and elementary stand point, and thus reach his conclusion by a slow but sure step by step. We furnish a few facts for his careful contemplation. Iron is very easily oxydized in the presence of vapor of water at the ordinary temperatures; it is covered with a film of rust, which thickens in proportion to the exposure, until all the iron may be converted into rust. We commend to our friend the philosophy he may extract from a rusty nail; without searching far, he will find a nail that has been entirely oxydized, so that he can pulverize it in his fingers; when found, let him make a note of it. A few years ago, the newspapers reported that the ax with which Noah hewed out his ark had been found, out West, in the body of a tree into which he had struck it when his work was done. This story, although incredible, was founded on the well attested fact that a mass of iron rust in the form of an ax had been found in a tree, and there can be no doubt that the mass of rust proceeded from a solid iron ax. Now, all these cases of rusting depend upon the decomposition of water. Our perverse friend here might tell us that water is not steam, and that cold iron is not white hot iron; and we are obliged to call his attention to the fundamental fact that chemical reactions of this nature are favored by a high temperature, from which he will possibly conclude that the nail and the ax would have been changed to rust in an immeasurably shorter time had they been white hot.

And as to "most chemists of eminence," they will tell the *Engineer* that steam is very rapidly decomposed in passing over white hot iron, and that the iron, in the shape of turnings, wire, nails, &c., is, in the process, wholly converted into oxyd. In the actual manufacture, it is desirable that the iron be pretty finely divided, for the reason that more surface is offered to the steam, and that the film of oxyd shall not become so thick as to materially retard the contact of the steam. Will not the *Engineer* observe that our 100-pound block of iron is the iron turning, or the bit of wire on a larger scale? Surely he will not tell us that, although the oxyd is porous on the wire, it will be impermeable on the 100-pound block; we shall wholly abandon him as a hopeless case, if he be so inconsistent.

Finally, if, in all the light we have thus above furnished, the *Engineer* is unable to see that we have told only the truth, we recommend him to apply the *experimentum crucis*, get a 100-pound of iron, heat it white hot and pass steam over it, and continue the white heat and the passing steam. If the *Engineer* will be faithful to the experiment, we guarantee the result will be as we have stated. But we warn our friend that he must have patience, for he will not burn up his iron in an hour or a day. Let him prepare himself for a labor, say of six months, for towards the end the operation will go on very slowly, for the little mass of iron in the center will be enveloped in a thick covering of rust, which will act like ashes on a charcoal fire.

Our readers will understand, of course, that the original remark concerning the 100-pound block was simply to illustrate the fact that white hot iron will decompose steam, combine with oxygen, and be increased in weight in the proportion we stated. That this process will be obstructed as the thickness of the film of oxyd increases is manifest, but that it will be entirely stopped, the *Engineer* and any array of professors will not convince us. We respect the professors highly, but we make it a rule not to trust them when they wander from the truth.

A WONDERFUL BILLIARD PLAYER—MONS. BERGER, THE FRENCH CHAMPION IN AMERICA.

A few evenings ago, by the invitation of Michael Phelan, the champion billiard player of New York, we had the pleasure, with a large number of other city editors, of witnessing the wonderful skill exhibited by M. Berger, in the dexterous use of the cue, making the balls obey his will as if by magic. Mons. Berger has brought from Paris his own table, which is quite a novelty by the side of a first-class American table. The French table is not much more than half as large as the American one, is built very heavy, and without pockets.

The following are some of the most wonderful exploits by Mons. Berger, whose weight, we should judge, could not be less than 300 lbs. His most astonishing performance consists in holding the cue perpendicular over the ball and striking it with such skill as to cause it to twist to any desired part of the table, to jump, carom and perform all kinds of fantastic freaks, quite marvelous to the beholder. The following are some of the most surprising shots we witnessed:—

Placing a ball in a hat, and making a carom by causing a ball to jump into the hat.

Making a carom by causing a ball to travel a portion of the distance on the cushion.

Making *massé* shots from various portions of the table, causing the player's ball to twist to any point previously marked.

Jumping the player's ball over a cue held over the table horizontally, and causing it to draw back, caroming on a ball under the cue.

Jumping the player's ball from the table into a gentleman's hat.

Admirers of the game of billiards will find Mons. Berger at the extensive rooms of Mr. Phelan, corner of Broadway and Tenth-street, where he proposes to give a series of artistic entertainments in this art.

THE TRUTH OF SPIRITUALISM DEMONSTRATED.

A short time since, Mr. Campbell, a photographer in this city, while engaged in some experiments, after cleaning a glass in the usual manner and covering it with the collodion film, took the picture of a chair standing in the room. On developing the picture, the image of the chair was seen perfectly portrayed, but, miraculous to relate, portrayed with equal distinctness, a boy was seen sitting in the chair! An account of the circumstance, headed "The Photograph of a Ghost," was published in the *American Journal of Photography*, with a technical explanation, perfectly clear to photographers, but not so intelligible to ordinary people. At a recent meeting of the Spiritualists in the upper part of the city, the occurrence was described and excited a great deal of interest, as affording the most direct and tangible proof that the departed do revisit the earth in bodily form. The office of the *Journal* was visited to

learn the particulars, and the question was asked, in triumphant tones, whether science would attempt to explain away this evidence, also, as it has all the other evidence of that which it ignorantly and presumptuously calls the stupendous delusion of spiritualism.

We suppose we hardly need to inform our readers that the miracle is no more a miracle than is the taking of any photographic picture, or than any of the mysterious and wonderful operations of nature. The glass had been previously used to take a picture of the same chair with the boy sitting in it, and had been so imperfectly cleaned that, in the developing process, the old picture came out with surprising distinctness.

OUR SPECIAL CORRESPONDENCE.

THE UNITED STATES AGRICULTURAL SOCIETY'S FAIR.

CINCINNATI, Ohio, Sept. 18, 1860.

Generally speaking, the managers of great agricultural fairs, forget the ordinary wants and necessities of their visitors, and thus too frequently create discontent. People, I imagine, are no less thirsty on a fair ground than elsewhere, and no less tired and hungry; they do not forget weariness of limb, however attractive may be the show around them; and they need, especially ladies do, certain opportunities for rest and privacy, quite as much, and even more, than when about their usual avocations. Absorbed in the grand end and aim of their annual display, managers forget that in proportion as they make the public physically comfortable, they will incur blessings or maledictions. I have been to a great many fairs first and last, but do not recollect one where the same liberal provisions were made to quench the thirst of the multitude, as we find at this national show; and it certainly reflects great credit upon Mr. Fee, Secretary Poore, and Professor Cary, that no improvement in this respect can be suggested. To supply the water necessary for feeding the boilers and for the use of stock, eight wells were sunk, in various parts of the grounds, and thus a superabundant supply of excellent water was obtained. That all visitors might have an opportunity to quench their thirst, pipes were laid from suitable tanks at the diffierent wells, and these being attached to frames at proper hights from the ground, and pierced for numerous faucets from each of which a tin cup dangled by a string, some two hundred persons could refresh themselves at once. True this plan militates somewhat against the sale of spiritous liquors, but many a hundred thirsty soul has been the gainer by it.

I do not know that there is one thing on these grounds which is more worthy of the friendly aid of the SCIENTIFIC AMERICAN, than W. R. Fee's cotton seed oil machinery, to which I made a very brief reference in a previous letter. When an apparatus is invented which enables us to utilize some substance otherwise wasted, it takes a rank as a national blessing. When we see how many hundred tuns of cotton seed are thrown into the muddy waters of the Mississippi, the Arkansas and the Red river, merely to rid the planters of the nuisance of their accumulated heaps; and how many thousands more are almost wasted by application as manure to the soil of some of the seaboard States; it seems as if Fee, or any other ingenious man who makes from the seed the finest lubricating oil, and the most nutritious food for stock, becomes a benefactor to the South. The analyses of English and German chemists, as well as the more practical results of actual experiment, have established the rare virtues of both cotton seed oil and cake; and it only needs that enough of the cake should be supplied as required to drive linseed cake actually from the English market. Fee's apparatus is exceedingly simple, but on this account none the less valuable. His huller consists of a grooved cylinder, which being revolved, rapidly strips the hulls from the meats by shaving the seed between the raised edges of the grooves and a semi-circle of iron, grooved like the cylinder. The meats are merely put into bags and pressed by hydraulic power until the oil is all expressed, and a dry cake is left. There are screens and shakers under the huller, which separate hulls from meats, and sort the whole meats from the fragments. The whole meats are shipped direct to England, where they are pressed, while the fragments (which might not pay for transportation) are pressed at home. There are two sizes of apparatus made; one for wholesale operations, and the other for the planter.

It is a curious and instructive study to watch the annual contributions to the department of self-raking harvesters. It seems strange that there should have been devised so many contrivances for doing a very simple thing, and that so many should be hopelessly complicated in their construction. The great object of this invention is to save the labor of one man in removing the grain as fast as cut, as well as to enable the work to be done more speedily. Landed proprietors in England have told me that a good self-raking reaper must be invented before they will be independent of the whims and obstinacy of their ignorant farm-servants; and that, until we are prepared to send them something better than the Burgess & Key machine, we may as well keep our reapers at home. And yet, look how foolishly American inventors rush into the transatlantic speculation! Without knowing the wants of the British farmer, so different from our own, they send harvesters over there which are perfectly worthless for foreign service, however excellent they may be at home. English grain grows, on an average, 5½ to 6 feet high, and very thick at the bottom. The moist climate makes the stalk at maturity much heavier than our own, and, from a desire to save every possible inch of straw, they cut the grain as near the ground as we do grass. Now, it must be evident that our short platforms and high-set machines fare very badly in an ordinary English crop; while the long, heavy gavels make the labor of hand-raking severe in the extreme. These facts, which I know from practical experience and observation, make me the more interested in the department of self-raking reapers at this and other shows, for if the right thing is once invented, and can be furnished at a fair cost, the patent would be a pretty valuable one. What a host of self-rakers have we not here! Wood, Wilson, Atkins, Dutton, Haines, Manny, Seymour & Morgan, and a dozen others, show what they have been able to dig out of their cudgelled brains, and how many of the lot are worth the price of old iron? Some of them, doubtless, are good; but which is just the thing we need, I cannot undertake to say, for I have not seen them all at work. Before I leave this subject, let me say one more word of caution to American inventors who take new things abroad. Suppose that you can get a *bona-fide* offer from a responsible person, of so much cash in hand here, he to take the invention to England and introduce it at his own expense, and you could—or think you could, which is generally the state of the case—get twice or three times as much by going to England yourself, never hesitate one moment in taking the ready cash. The one bird in the hand is worth not only two, but two thousand in the bush; but no one who has not been there and tried his best to make a foothold, and spent his time and all his money, and come back broken-hearted, as nine hundred and sixty out of every thousand have done, will see why this is so. Hobbs, the Yankee who picked all the locks as fast as they could be brought to him, told me two years ago that he was a fool not to have come home as soon as he made his notoriety, for on that capital he might have become rich and retired long ago; whereas, by staying in England he had, after eight years of hard work, just established a fair business. The intolerable prejudice of Englishmen against everything of foreign origin makes them receive the advances of strangers with great caution, and the labor of introducing our inventions is sometimes protracted to a disheartening length. Hence, while it is, of course, desirable, and, as matter of policy, absolutely necessary, that a good invention should be protected in England, France and Belgium, we had better let some good man in either of those countries pay us a fair price and run his own risks.

Your readers will all recollect the description and illustrations of Colvin's milking machine, recently published in the SCIENTIFIC AMERICAN. It has been out here on exhibition, under the joint auspices of the inventor and Mr. J. B. Kershow, a rich dairyman, who lives near Philadelphia. This old gentleman, seeing a description of the machine in one of your numbers, sent for the inventor, took him to his cow-stables, and told him to go to work and pump himself into a reputation. The machine worked so well that before Mr. Kershow had recovered from his surprise an hour had elapsed, and 24 cows were milked. So he bought an interest in it, and set Colvin fairly on his legs. The thing was tried early this morning, on a cow belonging to Mr. Merryman, of Maryland, one of the leading officers of the National Society. During the day I was looking at the cattle, and meeting with Mr. Merryman's Irish herdsman, asked him how the milker had worked. "Begorra, sur," said he, "it worked so well that before I could fill me pipe wid terbacky, he had her pumped as dhry as a whistle!" H. S. O.

A GREAT PIECE OF WROUGHT IRON.

The Novelty Iron Works, of this city, have lately completed one of the largest and heaviest pieces of wrought iron mechanism ever made in this city, and, if we are not greatly in error, in this country. It consists of a wrought iron center shaft and four cranks (two air pump and two main engine) for the steamer *Golden Gate*, of the Pacific Mail Steamship Company's line. The cranks weigh, in the rough, as they came from the forge, individually, 9,956 lbs.; the air pump cranks are bored from a solid block of metal weighing, each block, 14,336 lbs.; the pin for these cranks (a nice little affair to handle) weighs 6,614 lbs.; the two shafts amount, in the aggregate, to 16,528 lbs. These pieces are all bored out and turned to fit their several places, less the amount necessary for shrinkage; they are then expanded by heat and inserted in their proper positions, the contraction of the metal to its original size and the addition of two keys in each shaft secures the whole fabric beyond the possibility of detachment, whatever the strain it may be submitted to. As now finished, the job is a perfect specimen of workmanship, being without flaw or botch in the various stages of its construction. The forging was also done in this city, and is a handsome piece of smithing. The capacity of the Novelty Works to do heavy work is fully exemplified in this machinery.

A CENSOR AT THE PATENT OFFICE.

We understand that the Commissioner of Patents, in view of the many alleged instances of carelessness, error, and want of ability on the part of the examining corps of the Patent Office, has, or is about to create a new bureau, or official, who is to act as Censor over the Examiners. The new appointee is to be charged with the duty of overhauling the work of the Examiners, with a view to detect any errors in their interpretation of grammar, mechanics, science, and the application of the patent laws. He is to be a sort of literary scavenger or learned owl.

This new creation strikes us as an old fogy idea, and we are not suprised that it gives dissatisfaction among the examining officers. We do not deny that many errors have been and are being committed at the Patent Office. But when the Commissioner finds that such defects originate from the gross carelessness, want of education, or other incompetency of the official, his duty certainly is to purge the Office promptly of all such offending members, and not cast discredit upon the whole body of Examiners by appointing a watch or supervisor over them all.

Mr. W. B. Taylor, an Examiner, is, we learn, to be elevated to the dignity of Censor at the Patent Office. We had not, at the time of going to press, learned of his acceptance.

AMERICAN INVENTIONS IN ENGLAND.—The "universal Yankee nation" is something more than an unmeaning phrase. Our countrymen are everywhere to be found, and their ingenuity is recognized the world over. In a recent issue of the London *American*, we notice that, for the week ending August 18, seventeen English patents were granted for American inventions. Of this number twelve were secured through our European Patent Agency. The journal from which this fact is quoted, is published every week in London, and is an interesting and well-conducted paper.

TO PROTECT A SHINGLE ROOF FROM FIRE.—The editor of the *Albany Knickerbocker* says, that a wash composed of lime, salt and fine sand, or wood ashes, put on in the ordinary way of whitewashing, renders the roof fifty-fold more safe agamst taking fire from cinders, or otherwise in case of fires in the vicinity. It pays the expense a hundred-fold in its preserving influence against the effect of the weather. The older and more weather-beaten the shingles, the more benefit derived.