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ATHLETIC SPORTS AND COLLEGIATE INSTITUTIONS.

Since Milo of Crotona astonished the ancients by his six victories at the Olympic games, the world has been spasmodically given to getting on its muscle. We are now in the midst of one of these spasms. Base ball, rowing matches, and feats of pedestrianism seem to rival in the public prints the attention which is claimed by political conventions, elections, and—scandal. We have a suspicion that many of those who engage in these matches, and who plead in their favor the old cant about the general promotion of health, and all the rest of it, will find in the end that in their particular cases they have been otherwise than beneficial. Exercise is useful and necessary, but like every thing else it becomes injurious when carried to excess.

No one supposes that a horse driven until he drops, has his strength or powers of endurance increased by such usage, and a man who should, except in emergency, thus use his horse, would justly merit the indignation which, in this humane age, he would receive. Is the constitution of man so vastly superior to that of the horse, or do the laws of physical development, exhibit such variations in his favor that he can violate them with impunity? All the exhibitions of muscular power and skill at the present, seem to have for their chief end the display of the utmost endurance which is possible, and the training which is undergone preparatory to such displays is of a severe and excessive character. By such training men are able to attain to superior power over their fellows, but it is a power which leaves them in middle age with stiffened sinews and rheumatic joints, hobbling about, like broken-down canal horses. The fact is simply that these public matches are exercising no more good influence upon the public health or morals than the races at Saratoga or Fordham. Violent exercise exhausts, it does not permanently strengthen, although perhaps it may give a temporary accession of strength. To use the language of a cotemporary: "We always like to seize the opportunity, or even to make opportunity, to say a word for physical sports, and for all manly rivalry in athletic games. Whether it be shooting, or yachting, or rowing, or riding, or whatever else that gives strength, nerve, grace, address, to our American youth, we support it, believing that this is what they sorely need. For the physical training of the people, we must rely on the popular national sports."

It is the vicious system of matching that we complain of, from its very nature leading to excess. Most of these matches are made at the hottest season of the year, when excesses in anything are most dangerous, and we regret to add that they are too often accompanied by adjuncts of betting and gambling. Their tendency is to lead young men into expensive habits, and to absorb the time which they ought to give to business or study. No false coloring that can be thrown upon this subject can disguise these facts, and the verification of their demoralizing influences is at hand in the reports of the rowdyism, lawlessness, and utter disregard of other people's rights and privileges shown at the recent regatta at Worcester.

The formation of boat clubs in the colleges and seminaries of the United States has, in our opinion, indirectly done more to injure them in public estimation, by their effect upon the morals and habits of the young men who congregate within them, than any other cause. The effect is not confined to the clubs themselves, but extends to those who are outside of their immediate organizations, and leads not only to the pernicious practice of betting, but the other concomitant evils—neglect of study and dissipation. The fact is becoming every day more apparent, that a man who sends a son to one of these institutions is exposing him, to the worst temptations, while he is, at the same time, removing him from the safeguards which parental supervision and the sacred influences of home throw around the critical period of transition from youth to manhood. The chances are vastly against his returning with any acquirements that will be an equivalent for the four years of time and the money expended upon his collegiate career. There is no hope for these institutions except in immediate and thorough reform. If the ends which they were originally intended to subserve are kept constantly and persistently in view in their discipline, and all things calculated to obstruct or defeat their accomplishment rigidly proscribed, they may regain the confidence which (we speak advisedly) they have been of late rapidly losing. But unless the public can see something else in them than mere training schools for physical contests and other results than the riotous conduct which is the pest of almost every town in which one of them chances to be located, they will soon meet with the condemnation of all right-minded citizens.

WATER ON THE PLANETS.

In an article in our last number we stated that hereafter the use of the spectroscope was destined to throw light upon the nature of cometary matter. Prof. Hinrichs, of the Iowa State University, thus describes its application to the determination of water upon the surfaces of the planets.

When the sunlight passes through a glass prism it is transferred into a beautifully colored band of light, the so-called *solar spectrum.* When observing this by means of a spectroscope, a multitude of dark lines are observed. These lines are called *Fraunhofer's Lines.*

A considerable portion of these dark lines are produced by the light passing through the atmosphere. They are accordingly most prominent when the sun is low, and they are almost invisible when the observations are made on the top of a high mountain. But the greater number of dark lines are always equally prominent. They have, by Bunsen and Kirchhoff, been proved to be produced by the various substances constituting the atmosphere of the sun.

We may at some other time refer to the latter kind of dark lines and the unity of matter in the universe which they prove. Here we only intend to give some of the results obtained by a close study of the former or the atmospheric lines in the spectrum.

Among the lines produced by the earth's atmosphere, some have long ago been ascribed to the presence of watery vapor in the atmosphere.

To identify these lines, Janssen took a large iron tube of somewhat more than one hundred feet in length, and closed at both ends by means of strong glass plates. The whole tube was packed in sawdust and filled with steam under a pressure of seven atmospheres. At the one extremity sixteen gas jets sent their light into the tube. At the other extremity of this tube a proper apparatus for the accurate observation of the spectrum of these gas flames was placed. Janssen found that the spectrum of these gas flames contained all the lines peculiar to the solar spectrum at sunset.

By observations in localities distinguished for a very transparent atmosphere (such as Marseilles, Palermo, Athens), and by observations on the summit of Mount Etna, Janssen has proved the absence of water from the atmosphere of the sun, but its presence in the atmospheres of Mars and Saturn.

This latter result is particularly interesting. It may be remembered, that the planet Mars shows bright areas at its poles, alternately increasing and decreasing, appearing precisely in the same manner as our own earth would look at a great distance; having, during the winter season, its northern polar region covered with snow and ice much farther toward the equator than during our summer season. Hence it has long been concluded that the planet Mars is covered with water, just like our earth. From other observations it has long been known that Mars, Jupiter, and Saturn are surrounded by gaseous atmospheres. By the above observations of Janssen, the presence of water on Mars is now finally proved; as the seasons change on the planet, its polar regions are more or less enveloped in ice, just as here on the earth, and at all times the watery vapor in the atmosphere of Mars is seen in the spectrum of the planet as we notice the vapor of our atmosphere in the spectrum of the setting sun.

Janssen concludes his report with the following remarks: "To the close analogies which already unite the planets of our system, a new and important character has just been added. All these planets form accordingly but one family; they revolve around the same central body giving them heat and light. They have each a year, seasons, an atmosphere, and on many of the planets clouds have been observed in these atmospheres. Finally, *water*, which plays so important a part in all organized beings, is also an element common to the planets. These are powerful reasons to think that *life* is no exclusive privilege of our little earth, the younger sister in the great planetary family.

THE NEW COMMISSIONER OF PATENTS.

Hon. Elisha Foote, of New York, who, for some time past, has filled the important position of Examiner-in-Chief, has been appointed and confirmed Commissioner of Patents. The appointment is an excellent one in every respect. Judge Foote is not only a high-toned gentleman, well qualified to discharge the duties of the Commissionership, but he is in full sympathy with inventors, and will see to it that their interests are well cared for. We speak in this matter from a personal acquaintance with the new Commissioner of many years' standing, and we anticipate an energetic and popular administration of the duties of the office, which need a most prompt and careful revision.

PRESERVATION OF BRICK STRUCTURES.

We are in receipt of several communications desiring information upon the subject of the preservation of brick walls, chimneys, etc.; also, in regard to the use of soluble glass as a protective coating, and its effect upon the strength and durability of different kinds of mortars. It has been supposed that the use of the latter material would confer hydraulic energy upon lime, or upon mortars containing lime deficient in silica. Experiments have, however, proved that it is of little value. Gilmore, in his Practical Treatise on Limes, Cements, and Mortars, says, "It may and probably can be advantageously applied to the reclamation of the intermediate limes (those in which the hydraulic energy is exerted powerfully and rapidly when first mixed, but which soon yield and fall down under the action of the sluggish free lime present), but for fat limes it is unsuitable. When added to the intermediate limes, it appears to exert its influence by giving up its silica to the free lime present, thus neutralizing or perhaps only retarding its action, until the hydraulic principle has time to exert its indurating power." From extensive experiments, the following conclusions have been arrived at:

The addition of soluble glass to common mortar, while it renders it hydraulic, injures its strength and adhesive properties. It is at the same time greatly inferior to cement as an hydraulic agent, in both efficiency and economy. It may, however, be applied to hardening soft and porous stones, and concrete walls or stucco work, after these are well dried, but its utility depends so much upon the peculiar nature of the material to which it is applied, that the utmost care and judgment are needed in its application, not to say some chemical knowledge of the nature of the alkaline silicates, and their reactions upon clays, limes, etc. Most cases in which its use has been attempted for such purposes have secured unsatisfactory results, and it is therefore not to be generally recommended. For walls of concrete brick, a paint made by mixing hydraulic cement with oil is highly recommended, and it is also a good water proof paint for roofs and walls of cisterns. The action of the acids produced by combustion of wood, coal, and other fuels upon the mortar of chimneys, often act as disintegrating agents, and for this we know of no efficient remedy.

Large chimneys may have their interior surfaces painted white which, being a non-radiant surface, tends to promote a draft, while at the same time the mortar or cement is protected from the action of the gases of combustion.

CARE OF GRINDSTONES.

A correspondent, who writes himself a farmer, complains that his grindstone, which for several years has proved of uniform grit, has deteriorated in this necessary quality. He has kept it heretofore under a shed, but lately removed it to an open space in his back yard, and asks whether this exposure has changed the character of the stone. One side is soft, as the whole stone was formerly, but the other side is hard and rigid.

We think the removal of the stone is the cause of its change of character. Exposure to sunlight is always injurious to a grindstone. The substance of the stone is porous, and it contains a considerable amount of water; this being evaporated, the stone becomes granulated, harsh, and hard. It is not altogether for personal comfort that the farmer places his grindstone under the friendly protection of a wide-spreading apple tree or elm. He knows, almost intuitively, that the summer's sun's rays are inimical to the qualities of the stone, and he shelters it from this too fervid light and heat. The stone that in the shop of the mechanic runs in water through all the hours of daylight, will preserve its homogeneity better than one that is used only occasionally, and is exposed to the sunlight.

The red or brown freestone, so much used in New York city, New Jersey, and Connecticut, is a sandstone similar in structure to the ordinary grindstone, differing, mainly, in being of coarser texture and colored with an oxide of iron. It is an aggregation of particles of sand, agglutinated by clay, and compressed. Yet this stone, which is such a resistant to the action of the elements on exposure, may be easily cut with a knife when first removed from the quarry. In fact it is so saturated with water, that, when quarried in the fall, it must be preserved from the action of frost during the winter, by being sunk under water or otherwise protected, else it will burst by the freezing of the water contained in it. Exposure to heat, or to the sun's rays, evaporates the water and leaves it quite hard.

So with the grindstone, and, in a lesser degree, with the oilstone. Notwithstanding the close grain of the best oilstones, they deteriorate by long exposure to the sunlight.

SUB-MARINE EXPLORATION ---- THE WRECK OF THE FRIGATE "HUSSAR."

Nov. 25th, 1780, was a day of rejoicing to American patriots. The French fleet had approached the harbor of New York, and were preparing to enter. The British forces were obliged to evacuate the city. In their haste, the whole of the treasure for their army was placed on board the frigate *Hussar*, which, with its rich freight, a number of British officers, and eighty American prisoners of war, started up the East River, her only avenue of escape. In passing Hell Gate she struck what is commonly known as "Pot Rock," and stove her bottom. The injury was not, at first, considered very serious, and the vessel pursued her course. After proceeding about a mile, however, she was found to be filling, and her head was turned toward Stony Point, upon which, at that time, stood the mansion of Governeur Morris, that being the nearest land, and, as they supposed, a sloping, sandy shore. Upon nearing the point, however, they realized their mistake,