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SCIENTIFIC AMERICAN SUPPLEMENT

No. 872.

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THE NEED OF IMPROVED QUARANTINE STATIONS.

The threatened invasion of our seaports by cholera has rapidly grown into prominence as day after day new ships from the infected ports of Europe have anchored in the mouth of the harbor of New York, which may be said to be the principal gateway of the continent.

The federal government has, by its declaration of quarantine, re-enforced the local authorities. Under the circumstances, the absolute exclusion of cholera should be an easy task. The situation of New York, the great tracts of uninhabited territory near it, the small width of water to be patroled, are factors that facilitate the health officers' work. The pecuniary interests involved in the exclusion of cholera, and the resources of the United States which should be at command for resisting it, are additional factors that should work for its exclusion.

While this state of things obtains, the methods hitherto adopted by the health authorities are open to criticism. The antiquated idea of quarantine, which is the detention of all persons arriving from infected ports, and their confinement on board of the infected vessels, has been carried out to the letter. Instead of promptly removing the passengers to salubrious places and fighting the disease with nature's weapons—fresh air, good food, and pure water—the least possible thought seems to have been given to these great weapons of the sanitarian. Ships from the infected ports are detained. Crowded as they are at this season, they are left at anchor, with all their passengers and crew on board, fit places for the germs to incubate in. If disease breaks out upon them, the sick may sooner or later be removed. Adequate disinfection is impossible under such circumstances, but the best that could be done is not accomplished. The additional incentive to the plague of anxiety of mind is superadded to the other conditions—conditions of man's own creation. Communication with the ships is virtually cut off, and the unfortunate passengers are thrown at once into a quarantine of isolation, in accordance with the traditions of the last century.

The proper course would seem to be the establishment of rational quarantine stations on shore. At Sandy Hook, at the mouth of New York Bay, there is a tract of government property which would be admirably adapted for the purpose. Some miles to the eastward on the sandy shores of Long Island there are isolated beaches which are ideal places for the purpose. Fire Island is a beach or sand spit, separated by a large bay from Long Island proper, and facing on the ocean. Here there is a large hotel which might be appropriated for the well, while special stations could be established for those seriously sick and for the convalescent. Other places equally well adapted for such uses could be named.

At last a better outlook seems at hand. Mr. J. Pierpont Morgan, of this city, has privately chartered the large and commodious steamboat Stonington, and to her the cabin passengers from one of the detained ships, the Normannia, are to be transferred. Very aptly he is the son of a partner of George Peabody, who by similar acts of philanthropy made American generosity famous. Other citizens have made tenders which have facilitated the work.

The lesson of the occasion should not be lost. It has shown that New York is without proper means for resisting the importation of disease. For this port, above all others, a great quarantine station should be permanently established. Instead of two little islands built up on shoals in the bay, Swinburne and Hoffman Islands, there should be a quarantine and detention ground of several hundred acres extent, with the best possible sanitary appliances, water supply and drainage arrangements.

THE SECOND BATTLE OF NEW ORLEANS.

Nearly eighty years have passed since General Andrew Jackson won his fame in the defense of New Orleans against the British army, concentrated on its capture. His defense of the position and the strategy he displayed in it were, to a certain extent, an important step toward the presidential chair which he subsequently occupied. We can well conceive the interest felt all over the United States when the news of the victory was received by the slow processes of mail coach and mounted mail carrier. In many places the news of the battle and of its result must have been simultaneously received. There were then no preliminary details, sent by telegraph all over a continent, no hourly display on bulletin boards of the record of American or English success in the different phases of the battle.

Eighty years later all is changed. Again a battle is fought in New Orleans. It is not a battle of armies, but of two individuals. The railroads have furnished palatial trains to carry the participants to the spot. The telegraph transmits preliminary bulletins as to the exact physical condition of the competitors. When the contest begins, every feature in it is telegraphed far and wide, so that three thousand miles away the results are almost as quickly known as at the ring side. The crowded streets of distant cities, filled with people waiting for bulletins up to midnight of the eventful day, the daily press moralizing over the brutality of the thing in one column and devoting five times the space in other columns to describing it, preach a curious sermon. It is questionable if any event for years past has excited the same widespread interest as the prize fight in New Orleans. The people showed that the old love for a physical contest was alive. The supposed advance in civilization has not cured their love for it—it has only made them a little ashamed of it. The coming presidential contest will hardly prove more exciting than the story of the downfall of the world's pugilistic champion.

The development of personal contests since the days of the classic athletes of Greece and Rome has to an extent brought us back to their methods. No fight of recent time has been conducted in costume more in accordance with the old gymnastic customs. Even the old cestus or armor for the hands, used by the Greeks and Romans to make the blow a more severe one, found its representative in the five ounce gloves of the modern contestants. These, worn to bring the affair ostensibly within the statutes of the law, if anything made the blows more severe than if the bare hands had been used.

The methods of training have been notable in the tendency to light gymnastics. The great effort to attain quickness of action seems in the case of the victor to have been so successful as to win for him the fight. The skipping rope was a favorite with both contestants in their training. The picture presented to the mind's eye of a modern Hercules skipping the rope like a school girl is, to say the least, a curious one.

The contest of Dares and Entellus, described in the Æneid by Virgil, and parodied by Thomas Moore in his matchless verse, has been cited as analogous. In both cases there was a difference in age, but where Virgil gave the victory to the older man, better training, better ability, or some factor or factors, gave the prize in New Orleans to the younger contestant.

In the methods of the fight there is room for a feeling of interest. The general principles of the winner were repeated blows upon the same part of the body and face of his opponent. In the SCIENTIFIC AMERICAN SUPPLEMENT, No. 776, we gave an article descriptive of the points on the human person most susceptible to the effects of a blow. These were given as the gist of the explanations by Dr. Philip E. Donlin, the coroner's physician of this city, who has made coma and shock a special study. In the recent contest, one of these blows were nearly given, which, it is stated, would have ended the contest much earlier, had it been received.

The ethics of the affair take another aspect. By making himself champion of the world the victor has opened for himself a business career which otherwise, even under the auspices of his former millionaire employer, he would never have had. He at once acquires a small fortune in the stakes at issue, He will next travel through the country and exhibit himself, and at the end of a year, with proper management, he can afford to retire as a capitalist and live sumptuously on the returns from his invested capital.

All this shows that the world has not greatly changed from the days when the Roman mobs clamored for "bread and games." The fact that to witness three prize fights over $100,000 in admission fees were paid by the spectators tells a strange story. Railroads, hotels, and the telegraph all reaped immense returns, and the daily press can wish, if not for more worlds, at least for more Sullivans to be conquered.

"Footprints in the Sands of Time."

Quarrymen operating in the Portland sandstone quarries in the Connecticut Valley recently blasted out a block, 130 feet beneath the earth's surface, that was spotted with very interesting and curious marks. The marks, according to scientific men, are footprints of the Anisichnus deweyanus, which was very common in the valley several million years ago, the beast being a combination crocodile-bird.

It is the opinion of Prof. William North Rice, of Wesleyan University, to whom the fossil slab was sold for one hundred dollars, that at the time the deweyanus flourished there was no Connecticut River, but in place of it a bay that was fifteen miles wide, extending from the sound to the border of Massachusetts. In that epoch, a good many million years since, this crocodile-bird used to bathe in the bay, then come out of it, shake himself, and gambol awhile on the plastic micaceous sand, then on top of the earth; and so he left his mark on it. In time the sand became gelid, the world grew over it, and now workmen toiling in the bowels of the earth, 130 feet below its surface, come on the playground of the Anisichnus deweyanus; and a professor studying the tracks imprinted in the sandstone is able to tell just what sort of a creature strode about in the Connecticut Valley when Time was a babe. Wonderful, indeed, is the eye of Science, even when it wears spectacles and follows the humdrum vocation of teaching the modern dude. —*Stone.*

Personal Recollections of Eminent Men.

BY DR. P. H. VANDER WEYDE.

Prof. Kaiser, astronomer, of the University of Leyden, Holland.

Prof. Olmsted, physicist, of Yale College, New Haven.

On my fifteenth birthday my father said: "I unpacked that box in the attic, about which you asked what there was in it. You can now see." I rushed up stairs and found a middle-sized Gregorian telescope set up before the window, and pointed to the south. I rushed down again to thank him, and he said he wanted that I should begin with seeing for myself, what he had only read in the books, that the sun turns around its axis really in 28 days; and had wondered what this period had to do with the revolution of the moon around the earth, which also takes 28 days, while the distance of the moon from the earth is very nearly the same as the distance of the surface of the sun from its center. This is one of the puzzles which his thoughtful mind occasionally brought forward, and which I never could solve. He told me, further, that this telescope had been offered to him for sale, that he had requested General Krayenhoff to inspect it, that the general pronounced it very old fashioned but good at that, very serviceable for a student in astronomy, and worth far more than the price asked. It was provided with dark glass eye pieces, so as to adapt it for observations of the sun spots. I have for a long time preserved the drawings made from day to day of the continual change of position of the sun spots in the summer of that same year, 1828.

No wonder that I soon became very desirous for the acquaintance of astronomers, among whom in later years Prof. Kaiser, of the Leyden University, was the most eminent. He was one of the pioneers in the enormous improvements made during the succeeding twenty years in the method of mounting telescopes.

Our principal conversation at the last meeting in March, 1849, was about Maedler's new book on astronomy, which I had bought in Germany, where it had just been published, and in which I found for the first time the theory brought forward that the sun's enormous high temperature was simply the result of the mutual gravitation of one million earths united. This suited me, as I never had been able to believe in Herschel's hypothesis that the sun was a dark body surrounded with a luminous atmosphere. I held that Herschel was deluded to follow the then prevailing fashion to make all heavenly bodies inhabitable, not even excluding the sun and moon; and, therefore, he held that the sun was a dark, comfortably cool body, on the surface of which human beings or perhaps angels lived, in a perpetual day, produced by a stratum of luminous clouds in the upper regions of their atmosphere. The novelty of this idea made it popular, especially in France, where Fontenelle published a book entitled "*Sur la Pluralité des Mondes*," which, being written in the most elegant language, was soon in the hands of almost every French scholar, and was then as much talked about as is now the case with Tyndall's book, "Heat as a Mode of Motion."

Maedler's book interested Prof. Kaiser so much that I left it with him, as I had read it all, and I rejoiced that my belief, which was originally that of Newton, was akin to that of Prof. Kaiser, one of the most eminent astronomers of the time.

Prof. Kaiser soon after published a book on astronomy, similar to that which was published on the sun by Father A. Secchi, of Rome, in 1870, and recently by Prof. Langley, of Washington, each of them fully up to the standard of knowledge at the time of their publication.

After arriving in New York in May, 1869, I saw to my joy the announcement that Prof. Olmsted, of Yale College, New Haven, would give in the Tabernacle (at that time in Broadway, near Reade Street) a lecture on the nature of the sun. This being exactly the subject which I had been so earnestly discussing before leaving Europe, I was very anxious to hear the opinion of an American savant on it.

I must confess that I was somewhat surprised to find that Prof. Olmsted only explained the idea of Herschel, and went into details about the cool surface with a perpetual day, and that the luminous rays reaching us from the sun carried no heat with them, but that this heat was only developed in our earth when the rays reached its surface, and that the sun spots proved this theory, as they were nothing but holes in the luminous envelope, through which holes we saw the dark, solid and cool body of the solar globe itself.

After the lecture I could not help asking for conversation with the professor, and I brought forward the argument of Maedler, about gravitation as a cause of heat, that a million earths piled together as one mass must necessarily become heated by immense pressure, which the interior parts had to endure by the weight of the superincumbent masses, not to speak of the heat developed at the moment of their collision when uniting. Prof. Olmsted, however, denied that gravitation had anything to do with their holding together, that they might hold together by simple cohesion, "the same *as is the case with a lump of sugar*." These were his own words.

I could scarcely believe my own ears, when I heard this out of the mouth of a college professor, and would surely have disbelieved that he made such a statement if it had been told me by somebody else. But when I saw that he ignored gravitation in such a case, and asserted that a mass like the sun was held together by cohesion alone, it was overwhelming for me, and I concluded that further talk would have to be postponed to a more suitable time and place.

Nancy Hanks' Record Beaten by a Bicycle.

It is but a few days ago that all previous records of fast trotting for the distance of one mile, on a circular track, were beaten by the performance of Nancy Hanks, who trotted a mile in 2 minutes 7 seconds. The trotting of a mile in such quick time, and the fast time which has also been made in other recent records, is now conceded to have been largely aided by the employment of a pneumatic tire upon the wheels of the sulkies, an improvement first introduced in connection with the safety bicycle. But even the wonderful record of Nancy Hanks has now been beaten by a rider upon a safety bicycle. This was achieved by Arthur A. Zimmerman, of the New York Athletic Club, at Hampden Park, Springfield, Sept. 9, the rider covering the distance of a mile in 2 minutes 6⅘ seconds, and thus beating the record established by Nancy Hanks by one-fifth of a second. It is to be noted, however, that Nancy Hanks has a record of trotting a mile on the kite-shaped track in the time of 2 minutes 5¼ seconds. The advantages offered by such a track over the half mile circular track at Springfield are supposed to fully equal the difference made in the time of the trotting record, and the trial of the wheel against the horse upon a kite-shaped track will now be looked for with the greatest interest, as, under equal conditions, the bicycle rider has already beaten the fastest horse trotting record.

There is no telling where future contests will end, either with horses or men. Since July 20, this year, when the first pneumatic sulky was used in a race, there has simply been a revolution in trotting records. One strange thing about the new wheels with these ball bearings is that the horses are not tired a bit after a fast heat, and can repeat again and again. They seem to push the horse along, there is no vibration, and they are from three to five seconds faster at least than the old wheel.

The Rubber Hat Bag Industry.

BY I. A. SHERMAN.

The manufacturers of straw and other hats have adopted for a long time the use of the rubber hat bag in forming the shape of this piece of head covering. In speaking of other hats than straw its use is not so extensive, being limited to a few qualities of felt, but in the straw braid it now is fairly indispensable. It does not altogether fill the bill, however, and its points of unreliability will be noted.

The rubber hat bag is shaped very much like a hat, the crown being more conical and the rim as broad as the Mexican sombrero. The schedule of measurements given by one manufacturer will allow an idea to be formed of their dimensions. In his particular bags the diameter of the crown at the base on the outside is 6¾ inches and at the top 4 to 4¾ inches, with a height of 4, 5, or 6 inches. The rim is from 20½ to 26 inches wide and $\frac{7}{32}$ or ¼ inch thick. The crowns are sometimes made oblong, and again nearly square. It has a peculiar look, but, closely examined, it is a triumph of workmanship. Made of the purest and finest Para, it is very flexible and yielding notwithstanding its thickness, three times that of some mats, or equal to a four-ply packing. It has a very smooth finish, and it brings $2.25 per pound, and when it is considered that these articles range from 3½ to 5$\frac{1}{8}$ pounds in weight each, an idea can be formed of the expense of keeping a factory supplied with them.

The mode of their use varies. Each factory has its manner of using them, and as a rule it is a secret of the workshop. Broadly speaking, the wooden hat block rests in a strong frame, the straw is riveted to the rubber bag at the edge of the rim, and then a hydraulic press comes down on to the inverted hat bag, which is filled with water, with a force of nine hundred pounds. The water evenly fills out the rubber hat bag and its shape is communicated to the straw braid, one hat after another passing through this process as rapidly as they can be fastened and pressed.

Straw men, however, vary largely in some steps in the method. Some use hot steam, others cold water, and others heat the press. Some place a piece of sole leather between the bag and the straw, the idea being that the gum is too yielding and allows the straw to bury itself in the rubber. This is a logical conclusion, an illustration of it being found in the billiard cushion, which must have a wire or some rigid surface at point of contact to prevent the elasticity of the gum doing the opposite of what was intended. Another class of manufacturers use unvulcanized bags, on the theory that the heat of the steam will perform the work of vulcanization. One method is good for a certain class of work, and a second for a different, and so the theories of the different manufacturers cannot be safely criticised.

Some braids are finer than others and the finish must be nicely done, and in that case greater care and finer implements must be used. In cheaper straws less care needs to be used, and the bag may be inferior so far as the efficaciousness of the method at the moment is concerned. Unvulcanized rubber bags are used for felt hats.

Indispensable as the rubber hat bag is considered to be by the largest straw manufacturers, there is a vague idea that it will be some day greatly improved or else superseded. In the first place it is expensive, and capital is consumed at a rapid rate in the outfit. Each manufacturer buys as few as possible, but it can readily be seen that too much economy in this direction would interfere with the rapid handling of labor. The process of riveting the rim to the rubber is a slow one comparatively, and considering the great number of hats that have to be made in a factory, it is not speedy enough. Then the wear and tear of the bag is a discouraging factor. A bag often goes to pieces the first time it is put in the press, while some last a month. The reasons for this are manifold. Steam, when used, is very destructive to rubber, and the bag often gets over-vulcanized. The cement at the junction of the crown and rim is sometimes faulty, and the bag gives out at that point. The rivets tear the rim to pieces if care is not used. The circumferential rim on the press will destroy the edge of the bag, if care is not used. Then workmen are ignorant of the constituents of rubber, and will neglect the care of the bag when not in use, or put it to uses for which it was not intended.

In the unvulcanized bags they will become overcured and rotten, falling to pieces. Some manufacturers line the costly bags with the unvulcanized, which is claimed to be an advantage. The vulcanized bag is thus protected by one which costs one-quarter as much, and the unvulcanized gradually becomes vulcanized where steam is used. Unvulcanized rubber is used also for patching, manufacturers undertaking to repair their bags, which they do with more or less success.

The rubber hat bag industry is not a large one. Few companies care to have anything to do with it, as it is a specialty in which great care and skill have to be exercised with, after all, variable results. Peculiar as it may seem, many rubber men never heard of the rubber bag. A leading manufacturer the other day confessed his ignorance of the subject, except that he had thought they were the covers used by coachmen for their hats in rainy weather. In another place a dozen salesmen guessed at what they might be like, the subject being entirely new. One of the largest concerns in the country made a few, and did well with them, so far as a good article was concerned, but they quickly abandoned the business after the first batch. It is an article which ought to receive the attention of the inventor, for if it could be improved, the principle could be applied to many other manufactures than that of the straw hat industry.—*India Rubber World.*

The Arrow Poison in the New Hebrides.

M. Dantec has examined and experimented with the arrow poison used by the natives of the New Hebrides. He finds that it contains neither vegetable poison nor serpent virus, but consists of earth impregnated with vegetable matter taken from marshy places and containing Pasteur's *vibrion septique*, or bacillus of malignant œdema and also the bacillus of tetanus. If the arrows have been kept a long time, or have been much exposed to the sun, the *vibrion septique* may have been destroyed; the danger then is from tetanus. When the arrrows have been freshly prepared and the *vibrion septique* is still active, a wound from them causes death in a guinea pig from septicæmia in from twelve to fifteen hours; tetanus, which takes longer than that period of time to develop, does not under these circumstances show itself. It is interesting to remark that the horse is unknown in these islands, consequently the theory of the equine origin of tetanus would seem to be negatived by these researches.—*Lancet.*

Detection of Frozen Meat.

The process adopted by the author for distinguishing between fresh meat and that which has been preserved in the frozen state consists in expressing a little blood or meat juice from the sample, and examining it under the microscope. The whole operation must be performed quickly, in order to prevent any drying up of the liquid under examination. When the juice of fresh flesh is thus examined, it is seen to contain numerous red corpuscles, which are normal in color, and float in a clear serum. In the case of blood from frozen flesh, the corpuscles have dissolved in the serum under the influence of the low temperature, and not a single normal red corpuscle can be seen. The hæmoglobin escapes into the serum, and appears as irregular yellow-brown crystals. These may be frequently seen by the naked eye, but, in every case, can be readily detected under the microscope.—*Maljean, in J. Pharm. Chim., Chem. Zeit.*