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SCIENTIFIC AMERICAN SUPPLEMENT

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THE NEED OF EFFICIENT VESSELS FOR THE NAVY.

The recent launch of the American Line steamship St. Louis, from Cramps' yard at Philadelphia, marks, it is to be hoped, the beginning of the creation of a new American mercantile navy. While much has been said and written about our white squadron, and while frequent allusions have been made to the new navy now fairly in being, our feelings of satisfaction might have been properly tempered by the realization of the fact that our work was but half done. The role of America, with her great sea coasts and immense exporting interests, should be the peaceful one of maintaining a fleet of merchant and passenger vessels, rather than an offensive and defensive navy. The latter however is a necessity, and this being granted, the merchant marine should be encouraged as its feeder—as the trainer of recruits and as supplying ships for use in war.

Nothing is more definitely proved than this—a ship can only be kept efficient by constant use. Wearing out befits a steamer far better than rusting out. There is a class of high speed steamers run for their money-earning qualities, and whose powers in this regard depend in great measure on their records. It is found that these ships are capable of making three thousand mile runs in quick succession, year in and year out, with exceedingly few accidents, without leaky boiler tubes and engine breakdowns, and the identical ship seems to grow faster with time, and after months of service is capable of beating her own record. These are the ocean liners.

Can a navy ship which spends much of her life at the docks of a navy yard and the rest in slow cruising about the globe be expected to hold a standing in the class outlined above? The Campania or Lucania relegated to such service would at once lose their rating, and their standard would fall. A speed premium is generally earned by ships built for the navy, and the knots and fractions thereof shown in a two or three hours run are proudly announced. But such a trial is not comparable to the services of the transatlantic liners, each of whose runs across in the face of the competition for records is a virtual speed trial of the most exacting description. In the event of war there are a large number of ships afloat which would play with our fastest commerce destroyers, and would in sustained speed capacity outclass every ship of the white squadron. These are ships which are in constant service transporting passengers, mail and freight, with unfailing regularity and unhampered by any traditions dating from the days of sailing ships.

The United States can build ships of as good quality as those of any other nation. But from the nature of things a war ship pure and simple and used for no other service cannot maintain the same standard of efficiency as that of a vessel in constant service. The naval maneuvers of the different powers, especially those of England, show this. In their squadron practice the members of the fleet never show their full rated speed, and one trouble after another affects the machinery or boilers. The passenger ships of a transatlantic line could never do business on any such basis.

In case of war we shall have to look to the American Line for some of our best naval material. Here we shall find ships whose good qualities are not only of high order, but are proved, and constantly under trial. Their freedom from accident to machinery and boilers is also under constant process of demonstration. It is estimated that with proper arrangements forty-eight hours would suffice to prepare one of these ships for war. When she would leave her moorings she would be in the most perfect order as regards steaming qualities, guaranteed by performances under regular service.

We have repeatedly expressed these views, and it is gratifying to find them in accord with those uttered by Rear Admiral Meade of the United States Navy at the meeting of the Society of Naval Architects at their recent meeting in this city. The admiral went so far as to express his doubts as to whether the Columbia is of higher fighting value than is the American liner New York. Until the Columbia is tried a dozen or more times over the ocean lane, her steaming powers will be largely problematical, and may safely be estimated well below her trial trip figures.

To maintain a war ship in the highest grade of efficiency, it would be necessary to keep her in constant service at high speed. This, too, would be useful for the crew. It would seem practicable to detail some war ships to mail service and to put them in competition with merchant vessels. The Columbia and St. Louis might try conclusions between New York and Southampton, and other ships might run to the Isthmus and to South American ports. Of course, if the mails were delayed by this course, it would not be an advisable one. But any such delay would go to prove the inferiority of our war ships, and none should be accepted as of the highest standard unless able to endure such tests.

THERE are nearly two thousand women practicing medicine in the United States.

Men of Genius.

Medicine is ill adapted to men of genius. One-sided brains find their vocation best in other callings. This is what we infer from the meaning now understood by the term genius, that is, where special intellectual faculties are developed to a phenomenal degree. Genius is said to be synonymous with degeneracy, i. e., to compensate for the exceptional qualtities of certain parts of the brain there is necessarily a deficiency of others. A genius excels in certain attainments and is exceptionally dull in other respects. Talent has a very different meaning. It is the quality of a "level headed" brain, and is, to a great extent, acquired, while genius is said to be spontaneous. Galileo, Edison, Darwin, Watts, Pasteur are said to be men of talent, while men of genius are Napoleon, Dr. Johnson, Charles Lamb, Handel, Sallust, Seneca, Byron, Wagner, Luther, and, according to Lombroso, most of the great men of history were not balanced mentally. Thus:

Bacon, philosopher—megalomania, moralanesthesia. Balzac, writer—marked epilepsy, megalomania. Cæsar, soldier, writer—epilepsy. Beethoven, musician—amnesia, melancholia. Cowper, writer—melancholia. Alexander the Great, soldier—alcoholism. Moliere, dramatist—epilepsy. Charles Lamb, writer—alcoholism, acute mania, melancholia. Mozart, musician—epilepsy, hallucination. Heine, writer—melancholia, spinal disease. Dr. Johnson, writer—chorea. Malibran—epilepsy. Newton, philosopher—amnesia. Ampere, mathematician—amnesia. Chopin, musician—melancholia. Coleridge, writer—alcoholism, morphinism. Mahomet, theologian—epilepsy. Handel, musician—epilepsy. Schiller, writer—epilepsy. Richelieu, statesman—epilepsy. Tasso, writer—alcoholism, melancholia. Savonarola, theologian—hallucinations. Luther, theologian—hallucinations. Schopenhauer, philosopher—melancholia, omniphobia. Napoleon, soldier—folie du doute, pseudo-epilepsy. Comte, philosopher—hallucinations. Pascal, philosopher—epilepsy. Renan, philosopher—folie du doute. Swift, writer—paresis. Socrates, philosopher—chorea. Schumann, musician—paresis. Shelley, writer—hallucinations. Bunyan, writer—hallucinations. Swedenborg, theologian—hallucinations. Loyola, theologian—hallucinations. J. S. Mill, writer—suicidal impulse. Linnæus, botanist—paresis.—The Omaha Clinic.

Eat Apples.

The Practitioner says apples have many good medicinal qualities. Chemically they are composed of vegetable fiber, albumen, sugar, gum, chlorophyl, malic acid, gallic acid, lime and much water. Furthermore, the German analysts say that the apple contains a larger percentage of phosphorus than any other fruit or vegetable. The phosphorus is admirably adapted to renewing the essential nervous matter of the brain and the spinal cord. It is perhaps, for the same reason, rudely understood, that old Scandinavian traditions represent the apple as the food of the gods, who, when they felt themselves to be growing feeble and infirm, resorted to this fruit, renewing their powers of mind and body.

The acids of the apple are of singular use for men of sedentary habits, whose livers are sluggish in action, those acids serving to eliminate from the body noxious matters, which, if retained, would make the brain heavy and dull, or bring about jaundice or skin eruptions and other allied troubles. Some such experience must have led to the custom of taking apple sauce with roast pork, rich goose, and other like dishes. The malic acid of ripe apples, either raw or cooked, will neutralize any excess of chalky matter engendered by eating too much meat.

It is also the fact that such fruits as the apple, the pear, and the plum, when taken ripe and without sugar, diminish acidity in the stomach rather than provoke it. Their vegetable sauces and juices are converted into alkaline carbonates by the chemical action of the stomach juices, which tend to counteract acidity.

Value of Coverings for Steam Pipes.

A certain test of steam pipe coverings leads to the conclusion that it costs $15.40 to run 100 feet of naked two inch pipe at from 70 to 80 pounds pressure for one year of 3,000 working hours, with coal at $2 per ton. With the least efficient of insulating coverings used in the test this loss could be reduced to $4, with the most efficient to $2.64. Striking as are these figures, they are probably below the cost of actual practice, for a steam pipe is under pressure usually more than ten hours a day, and $2 a ton is below the average cost of coal. Prof. Charles B. Gibson, in some tests for the Manufacturers' Mutual Insurance Company, some years since, reached the conclusion that with coal at $4 per ton and 3,000 working hours per year, the loss from a naked two inch pipe was 64½ cents per linear foot—considerably more than Mr. Dickinson's test would show even with coal at $4 per ton. However, the lowest of the estimates shows the importance of covering the pipes, and it is a good thing to attend to before the present loss is increased by the coming cold weather.—Power.

The Rights of Railways.

In an article on this subject the Railway Review says:

"The fact that railways have somerights which the public are bound to respect is a lesson that is sadly in need of being taught, particularly in this country at the present time. The average American citizen, even those that in every other respect are entitled to the designation of 'law abiding,' appears to think that he has a right to do pretty much as he pleases on the premises or with the property of a railway corporation, and any regulation enforced by the company looking to the assertion of its rights is usually denounced as an outrage, even though it may be for the better protection or convenience of the same complaining public. And yet, strange as it may seem, the same persons who display such an antipathy in this country to the restraint necessary to afford them protection, after visiting other countries, like England, for instance, where a trespasser on a railroad right-of-way is immediately arrested and severely punished, come back filled with admiration for the superior protection afforded in that country. Stranger still is the fact that many newspapers take up this same cry against the railroads and denounce in severest terms those corporations that seek to in anywise abridge the license of the American citizen to do as he pleases. Statistics show that a very large proportion of the personal accidents outside of train men that take place on the railways is chargeable to trespassing upon the right-of-way by persons who had no shadow of right to be there. Some facts in this connection were brought out in a paper read before the Western Railway Club, by Mr. F. A. Delano, in which the point is made that if even the laws we have in this country respecting such trespassers were adequately enforced, the percentage of such accidents would be greatly reduced.

"But more important even than the loss of life immediately resulting from trespassing upon railroad property is the recklessness and disregard of the ignorant and vicious classes in respect to interference with railway property in such a way as to produce train accidents growing out of, or at least greatly encouraged by, this prevailing sentiment. Switches are thrown, obstructions are piled upon the track, bridges are tampered with, trestles are rendered unsafe, and many other things are done which, if no accident happens, are scarcely noticed by the officers of the law, and even when accidents occur are not followed up with any degree of energy. Even in the case of train robberies the average officer of the law seems to consider it the business of the railroad to catch the thief, instead of, as is the case in England, using the whole machinery of the law to that end. As already stated, much of this recklessness and law breaking on the one side and indifference on the other is directly chargeable to the prevailing spirit among the people concerning the railroads. It is not intimated that railways are either beyond blame or exempt from it; but it is claimed that a higher regard for the rights of railroads should be cultivated, particularly in those lines that pertain to the welfare and safety of the community at large."

Mr. Delano said: I have in my individual capacity tried to see if the number of people killed on my own division of railway could not be reduced; and I have met all sorts of obstacles. It seems to be considered the right of every free-born American citizen to walk on the railroad track; and it is a fact that I can vouch for, that if you should arrest a man for walking along the railroad track, and could not prove that he had been robbing you or injuring your property in any way, any justice court in this city, probably in this State, would dismiss the man and lecture the railroad official for being so hard on a poor man. Recently some boys were caught by a watchman in the service of the C., B. & Q. stealing coal from a train of cars in transit. They were taken to a justice court. The justice fined them $50 and costs, then, relenting, he remitted the fine and told the boys not to do it again. After the boys got out of the court room they made gestures of contempt.

Even out in the country it is a well known fact that the railroad right-of-way is used as a short cut, a path from one place to another; and if you wanted to fence it up and then patrol it in such a way that no one could use the right-of-way for that purpose, you would meet a storm of public opinion at your little towns and country stations that you could not stand up against.

Another way in which a great many people are killed, and which seems to meet with popular approval, is the way people crowd on the freight trains, stealing rides. It is safe to say that there is not a freight train running that has not ten or a dozen people on, stealing rides; and in the cities in the morning and evening you will see the switching trains and the switching engines and the freight trains simply loaded down with working men and boys going to and from their work. Now it does not seem to be that the casualties arising from these practices ought to be laid at the door of the railroads themselves. It seems to me that there is want of education of the public at large.

During a short visit in England last spring I found that the reputation of American railways was that they were absolutely regardless of human life. In England they think that we do not care any more about killing a person than killing a sheep or a goat, and that seems to me something which this club should resent.

In looking over statistics of the number killed at grade crossings here in Chicago I was astonished to find that of the total number only 30 per cent, or less than one-third, were actually killed on grade crossings. Others were killed when trespassing on the right-of-way, or stealing rides on trains or walking along the tracks, or jumping on or off trains in motion, and yet the newspapers have made a howl about elevating the tracks, and state that all these people are killed on the deadly grade crossing. Personally, I believe thoroughly in separating the street grades from the railroad grades, but I do resent this tendency of saddling on the railroads and railroad managers of this country evils for which they are not responsible.

Quick Printing by the Aid of a Lens or Mirror.

It is only repeating the tritest of trite dicta when we say that the greater the intensity of light the quicker will the printing of a proof be effected. Our earliest experiment with the view of concentrating light was made on lines similar to those pursued with the idea of obtaining concentration of heat by the solar rays, viz., by the interposition of a crossed biconvex lens six inches in diameter. A number of trials were carefully made with two similar negatives, obtained in a stereoscopic camera and cut asunder. These were exposed in a printing frame, one being exposed to the direct beams of the sun without hindrance, while with the other the rays were concentrated by transmission through the lens alluded to, which was held at such a distance from the negative as just to suffice to illuminate the portion required for mounting. Several carte portraits vignetted were also tried at the time, and with a still more marked effect in abbreviating the exposure.

For vignette printing, concentration by a lens offers special advantages. The great artistic sin committed in the production of such prints, as we have so often pointed out, consists in printing the bust with the same or even greater force as the head, and then allowing the figure to merge with suddenness into the white ground; whereas by the lens the condensed circle of light need not be much greater than to embrace the head and neck for the primary or predominant printing, a slight subsidiary exposure being given to more of the figure by the simple expedient of slightly decreasing the distance between the lens and the negative. Very charming results are capable of being secured in this way; in fact, the lens may thus become a powerful artistic tool in the hands of any one possessing taste and art knowledge. Local effects, too, can be produced in a way quite incapable of being otherwise obtained, except by a tedious masking and working upon the negative.

Concerning the reduction in the time of exposure, we find that, when using the six inch lens spoken of, the time of printing is reduced to one-fourth that required without such an adjunct. In practice we obtained four good prints by the aid of the lens during the time one was secured without it.

But this was effected by the agency of what in these days of cheap and good glass must be considered as a lens of really no great diameter after all, viz., six inches. We have just repeated some of these comparative experiments with a fine reflector eighteen inches in diameter, procured for another purpose, and of short focus. Both surfaces are ground and polished, and it is silvered on the back. The amount of light reflected is very great, and when the sun's rays are brought to a focus upon a suitable vessel of water it causes it to boil very rapidly. The area of one is nine times that of the other, and the negative capable of being illuminated is proportionally greater. When we tried the great concentrating power of this reflector upon a small print, the paper was blackened ere we had got the companion printing frame properly placed in the window. The giant's power was there, but it was not properly controlled.

It need scarcely be said that no experienced printer would think of using such a power as that indicated, in season and out of season, as he knows that better prints are invariably obtained when the reduction of the silver in the printing paper is slowly effected; but there are many occasions on which a strong, quick light will be appreciated, and for such occasions we can strongly recommend the aid of a lens or a reflector. The best form of lens is a crossed one, although a plano-convex also answers. A crossed lens, it need scarcely be explained, is one in which both surfaces are convex, one being more so than the other, in the proportion, roughly, of one to six, the most convex side being turned toward the sun.

With a large lens, or a mirror, exceptional care must be taken not to allow anything to approach near to its focal point on account of the great heat engendered. The heating power of the solar rays depends upon the diameter of the lens by which they are condensed. Some idea of this may be had from the statistics of the burning glasses, which at one time were more in use than they are at present. That of Parker, of Fleet Street, e. g., with an aperture of thirty-two and a half inches, when its rays were concentrated by a second lens which reduced the focus to five feet three inches, and the image of the sun to half an inch, could melt twenty grains of silver in three seconds and ten grains of platinum in the same time. Bar iron and cast iron also succumbed after a nearly similar duration in the focus. The effect of such a degree of heat upon the negative paper if brought near to the focus may be conceived.—Br. Jour.

The Salting of Suicides in Old Forensic Medicine.

The embalming of human bodies is at present done by undertakers and there are few physicians, probably, who, if called upon to perform the operation, would be able to do so without consulting their books and reading up upon the subject. In olden times the case was different, and in France especially, before the Revolution, says a writer in the Revue Scientifique, medical men were frequently called upon to embalm cadavers, although the operation was applied almost wholly to one class of subjects, i. e., to suicides. But why were the cadavers of suicides embalmed, and what was the process used?

"Suicide," says Beccaria, "is an offense which it seems can be submitted to no punishment properly so called, since such punishment could be inflicted only upon an insensible or lifeless body, or upon innocent persons. Now, any punishment that might be meted out to the inanimate remains of the culprit would produce no other impression upon the spectators than that which they would experience in seeing a statue flogged."

And yet, according to the custom of Brittany, which was also general in France, if any one killed himself intentionally, he was hanged by the feet and then dragged like a murderer and his personal effects sold to whomsoever wished to purchase them. In some cases, he was tied face downward to a hurdle, dragged through the streets behind a dung cart driven by the public executioner, hanged for three hours by the feet from a gibbet erected in the public place, and then thrown into the sewer. It was also ordered that all remembrance of the deceased should be obliterated and suppressed forever.

But before any such proceeding took place, the cadaver was accorded a fair trial before a judge, whose duty it was to begin by making an official inquiry into the circumstances attending the act of suicide, the place where it occurred, the life and habits of the deceased, etc. This having been submitted to the King's procureur, the nearest of kin and the heirs of the suicide were summoned by trumpet to come forward and provide him with a defender. In case they failed to make their appearance, the judge appointed a counsel for him, whose duty it was to defend his client to the best of his ability by cross questioning the witnesses for the prosecution and offering all the excuses possible in extenuation of the offense. If the accused was found guilty, he was punished in the manner above described; but if he was adjudged innocent, that is to say, if the act of suicide was decided to have been committed in a moment of insanity, he was buried in consecrated ground.

In either case, however, it was necessary to preserve the cadaver for the entire length of the trial, which sometimes lasted for several months, so that in case the accused was found guilty he might not escape punishment. Hence the necessity of embalming, or "salting," as it was called.

It appears from the old records that the operation and materials used were as follows: The viscera of the cranial, thoracic and abdominal cavities were removed and the spaces stuffed with tow that had been soaked in a solution composed of one ounce of camphor, two ounces of Socotrine aloes and one gallon of alcohol. Deep incisions were then made in different parts of the body, and the latter was packed in salt in a wooden box, which, having been covered and nailed, was formally delivered to the jailer for safe keeping.

This method of preserving cadavers seems to have been successful except in a few instances in which the case against the accused, having been put upon the docket, was not reached for several years, and not disposed of until the offensive state of the remains called attention to the necessity of legal action in regard to them.

Professional Models.

The Photographic News proposes to induce a number of people, both male and female, big and little, to form an association of models, and, after sufficient training, to frequent the picturesque and other localities to which photographers are mostly attracted. On a stick over his shoulder the male would carry a bundle and the female a basket on her arm, each containing a number of inexpensive but suitable costumes, and, to prevent misunderstanding, a scale of fees might be arranged, varying, of course, according to the appearance or ability of the model.