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## TO INVENTORS.

Commissioner Foote, after a few weeks' rest, has returned to his duties, and inventors may look for a more speedy disposition of their cases. Serious, and well-grounded complaints are coming to us concerning the delay in the examination of cases. The Commissioner is fully advised of the fact, and assures us of his determination to have applications examined, and disposed of without unnecessary delay.

Now is a favorable time to enter applications, and inventors will find the SCIENTIFIC AMERICAN AGENCY ready to attend to the prosecution with the greatest dispatch. By reference to our register, we find that we have made upward of twenty thousand preliminary examinations into the novelty of alleged new inventions. This great experience, together with the fact that a large proportion of all the business with the Patent Office for the past twenty years has been conducted through this Agency, suggests to inventors the surest and best means to secure their rights.

We give opinions free, and all we require is a rough sketch and description of the invention.

Inventions patented through this Agency receive notice in the SCIENTIFIC AMERICAN.

## OVERWORK AND UNDERWORK.

The majority of mankind need no caution against overwork. Where work kills one, the want of work kills ten, the fires of passion consume twenty, sinful indulgence destroys fifty. In cases where work seems to undermine health, it is not so often that the labor is too much, as the faulty way in which it is done, the spirit in which it is performed. Labor, to be permanently endurable, must be healthy; that is, it must be adapted to the mental and physical capacities of the worker, and especially if brain labor, it must be pleasing. It must not be allowed to intrench upon sleep, to interfere with the regular and deliberate taking of food, nor prevent a proper amount of recreation and exercise. Those who write upon this subject rarely look beyond the surface of the matter. Dyspepsia is traced to hasty meals and want of exercise, softening of the brain to excessive thinking, and so on. The why the meals are hasty, or the brain overtaxed, seems to escape notice.

It were easy to get a hint that would lead to the real truth—if the same superficial observation did not prevent it—from the exceptional cases; the men whose brows are sunny and unseamed; whose laugh is hearty and ringing, notwithstanding they perform an amount of work which seems almost incredible to those whose own toils are so onerous that it passes their conception how flesh, and blood, and mind, could possibly endure more. The healthiest men we know are those who do not work the hardest, but do the most work. There is no paradox about this. Every business man sees among his employes examples of men who work hard yet accomplish little, others who easily accomplish much.

How is this to be explained? Much is attributable to the want of system on the part of the inefficient, more to the want of the proper spirit. Nervous irritability is the greatest weakness of American character. It is the sharp grit which aggravates friction and cuts out the bearings of the entire human machine. Nine out of every ten men we meet are in

a chronic state of annoyance. The least untoward thing sets them in a state of ferment. Impatience is the poison that heats the blood and ruins stomachs, more than excess of pepper and mustard. Every machinist knows that when a journal begins to cut, there is no help but to stop and cool it off, if ruin is to be avoided. Let it go on and it cuts faster and faster, till the crash comes. We are less wise as regards ourselves. We allow ourselves to fret, and to acquire the habit of fretting until fretting becomes chronic. We fret while we eat, and while we ought to sleep, and by fretting, rob nature of needful rest.

The machinist, when he finds his machinery squeaking, applies the oil; if the bearings have become so hot as to endanger the works, he stops and allows them to cool. The human machine should be treated in like manner. It should be kept well oiled and cool.

What is the oil that will stop the squeaking—the lubricator that will keep the machinery from heating? Dickens has given us the formula in the words of his inimitable Mark Tapley: “Keep jolly.” Good humor is what will keep digestion perfect and the brain from softening, while it will, at the same time, keep the heart from hardening. We know a man who does, daily, an amount of work, the mere contemplation of which would give some of our nervous friends a fit of hysterics. We have seen his desk loaded down, before his arrival at his office, with a mass of matter which would have made our neighbor Steward fret turn three shades more sallow than is his wont, if it did not bring on an attack of jaundice outright. He did not go into hysterics, nor get bilious he only laughed a good, hearty, rollicking laugh at the good joke of supposing one good-humored pair of hands could get through with such a stack of business in a single day. And then, to turn the joke from himself, he went at it, put it all through in good style, and had his hearty laugh again, at the end of it, and went home self-satisfied and content. No danger of his getting dyspeptic, or his brain softening; he keeps his machinery oiled. He is not one of those described by Hood,

“Morbid, all bile and verjuice and nerves;  
Where other people would make preserves,  
He turns his fruit into pickles.”

He will outlive two such, and do the work of four. His sleep will always be blest with the “Golden dreams that make men awake hungry.”

## SOMETHING WORTH CONSIDERATION.

The recent unparalleled feat of pedestrianism accomplished by Weston, coupled with the fact that he attributes his previous failures to the circumstances under which the unsuccessful attempts were made, opens a question of much interest and practical importance. He states that walking in a circle has proved much more fatiguing than the accomplishment of an equal distance over a diversified road, in spite of the ups and downs, and the inferior qualities of the roadway.

Physiologists will at once refer this phenomenon to the category of reflex nervous influences, the effects of which are so familiar, in the well known occurrences of giddiness, seasickness, etc.; but the fact that the effect in this case has not been determined by sensation merely, but by a general result, is enough to prompt inquiry, whether like effects may not be a matter of every day occurrence, in many departments of labor. How far a continuous monotonous motion may affect the sensorium, and through it prove weakening to physical energy, seems worthy of consideration. A large class of people are called upon to perform labor where wheels and shafting are kept in rapid rotation. Should this be found to be injurious, the extension of the practice of boxing in gears may be found to be a measure of economy as well as of comfort.

## ACCURATE OBSERVATION.

We often receive communications from correspondents informing us of the occurrence of remarkable phenomena, which are of little value, because the observations were neither accurate or intelligent. The fact that an aerolite has fallen here, or that a house has been struck by lightning there, when nothing but the bald fact is stated, is worth nothing. Such a matter may be of local interest but it is of no general importance. Aerolites fall, hurricanes blow, thunder storms prevail, and property is injured by lightning daily somewhere; the particular where is of no consequence except to those immediately interested.

People at large seem not to appreciate the value of observation directed to a fixed purpose. If the time an aerolite is absolutely visible is correctly ascertained, that fact is of value; so is the direction of its motion. The quarter from which a hurricane proceeds in any given locality is a valuable piece of information. A sufficient number of such observations would enable us to chart out its entire course, extent, and duration, and to form some idea of causes and indications. The point is this; it is not the fact that any event occurs that is valuable to science, it is the how it occurs. That can be used to determine the great underlying principle, the why it occurs.

Mere looking on, without a thought of anything but wonder at a phenomenon, is not, and never will be of any profit. The expeditions which were sent at so great an expense to India to observe the recent solar eclipse, went for a purpose. Each individual knew beforehand what he was to look for and either its presence or absence, would, if observed, have been a valuable datum for astronomical science. So any particulars regarding the duration of the passage of aerolites, the direction from which they come, their effects upon magnets, etc., are of value. The rapidity with which such observations can be made is astonishing when the mind is properly trained to observation and strict system is used.

There are, however, a great many things in nature that can be observed at leisure, and from which much valuable instruction can be derived. Ruskin, the celebrated art author, and professor in the Workingmen's College, in London, has said that the greatest difficulty in teaching pupils to draw, is to learn them to see things rightly. We have often astonished old farmers by splitting a pea or a bean, and showing them, snugly and beautifully folded away, the first leaflets of the future plant in the seed. They had never noticed it, and its discovery was a new revelation of the principles of plant growth surprising and interesting. There is not a flower, seed, rock, pebble, or leaf, that will not repay close scrutiny or study. The closer the inspection the more profitable it will be, both as regards the knowledge obtained and the increased power to observe, and the pleasure which always attends the study of God's works.

## SOME SUGGESTIONS ON WORKINGMEN'S COMBINATIONS.

We have always deprecated the arraying of class against class, the combination of employes against employers, and vice versa, simply because the lessons of history, experience, and observation, show that the result is not beneficial to either. In standing aloof from these organizations, and refusing to encourage them, we may have incurred the displeasure of those who believe more in the strong right arm than in the power of the claims of simple justice properly presented.

Still, we believe that associations of workingmen may be made advantageous to them, and beneficial to society. Not, however, in assuming powers, and putting forth claims which are equally inoperative and unfounded in right, but in advancing the arts by contributions to the great sea of knowledge whose tides are always in motion. There is no mechanic but does, in his experience, occasionally, at least, note some fact that may be of benefit to his fellows.

Yet it is unpleasant to know that our working thinkers, our mechanics, should be content, as they usually are, with their own acquirements, and be so slow to impart the knowledge they possess. The columns of the SCIENTIFIC AMERICAN are always open to the statements of new processes of work, new discoveries, and useful suggestions, and it contains much valuable matter, each week, sent by practical men; but there can be no reasonable doubt but that much that would be beneficial to the workers of the country is withheld, not because of a selfish desire to reap all the benefits of an improvement, but simply because of the want of energy and thoughtfulness of our mechanics. The workman ought to keep a written record of his experiences, especially when they arise from trials with new materials, or with new methods, and contribute to the advancement of the arts by their occasional publication. The effort would not be an onerous one, and would greatly assist others who are struggling and stumbling in the same path. The experience of veteran mechanics and engineers is invaluable to the neophyte. Their instructions have the power of authority, and the force of inspiration. A habit of close observation, and of recording facts, should be cultivated by our mechanics. The amount of useful knowledge thus accumulated, by even the humblest mechanic, in a twelvemonth, would surprise him. He might find, occasionally, that he had been forestalled in his notice of a fact by others, but he would also find that others would be compelled to acknowledge themselves his debtors in relation to other facts.

Such a course, especially if the efforts of the workingmen were concentrated by associations, would, in time, make the workers the power, as they are the majority, in the country. By the mutual improvement gained by this mutual instruction they would assert their power by their individual merit, and gain by the sheer force of the value of their attainments and services, the compensation, recognition, and position they now seek, vainly, we think, in combinations calculated if not intended to overawe by numbers where the victory should be gained by actual merit. Then there would be no necessity of forcing upon a reluctant employer the inefficient, when he could easily get the skillful; and the one price system, well enough in the business of the sidewalk merchant, “anything on this board for a shilling,” would give place to the reasonable plan of paying for just what one gets.

The advanced class of workers, civil engineers, etc., seem to be wiser in this respect. The London Institution of Engineers numbers more than a thousand members, all workers; and the value of this society is seen in the beauty and utility of their works all over the world, combining the very latest improvements in the employment of material with the greatest degree of elegance in design, and the shrewdest conception in avoiding and overcoming obstacles. Scarcely any important public or private work is undertaken that has not secured the approbation of this society. It is a power in all the vast possessions of the British Empire. Similar societies of engineers exist in Prussia, France, Belgium, and other countries. Here we have the American Society of Civil Engineers, located in New York city, which offers its rooms and the privileges of its membership to all, in whatever part of the country, who choose to avail themselves of the opportunity. In time, we believe, and hope, this society will dictate to engineers, and suggest to employers the qualifications necessary to success, as those in other countries have.

There is no reason why this system of mutual information should not extend to our ordinary mechanics. Such a society, national, even universal in its scope, may have hundreds of branches, and by the education of its members render unnecessary the bolstering up of inefficient workmen, by assisting them to become worthy of the places they are ambitious to occupy. Such a trades union would commend itself to employers as well as to employes.