

Scientific American

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To Our Subscribers—End of Volume Six.

This number completes our Sixth Volume, and to you, our subscribers, we return our sincere thanks for the support you have given us, and the kindly feeling manifested in the prosperity of the Scientific American. As friends of American science, and the rights of inventors, many of you have greatly interested yourselves to promote our circulation by soliciting others to become subscribers. From small beginnings, six years ago, the Scientific American has attained to a very honorable position in point of circulation, and consequent influence and usefulness. Our constant readers can give testimony to a great improvement in public taste for useful information within the past few years, and we have received many congratulations for having labored so diligently to cultivate and promote it. Our object and aims have been to spread abroad useful and practical information in clear and simple language. We have always kept free from party influences, and have been always independent, to speak without fear or favor upon every question. Truth has been the object of all our discussions, and we have spoken it, untrammelled with any other influence than the golden value of truth itself. We never stand neutral, and we claim no immunity from criticism, but we do not descend to meet every one who may choose to attack, and never will; we bide our time.

We will still continue to pursue "the even tenor of our way," but with greater diligence, in the dissemination of useful knowledge, for every increase of circulation increases our responsibility. The Scientific American is the best illustrated mechanical paper in the world, and it contains more useful information than any other. We have always added improvement to improvement during the past six years, and we will continue to do so. Our next volume will be printed with new type, and on heavier and more beautiful paper. We will continue to improve in good engravings and the number of them. We have able correspondents, and men of high standing in the scientific world, frequently contribute to our columns.

The articles on Electrotyping and Water Wheels, in this volume, are worth more than the whole price of subscription. We hope for a great addition of new subscribers to next volume, for it will be the best we have ever published. Our paper is the Repository of American inventions, discoveries, and improvements in the useful arts; it is an Encyclopedia of Progressive Science. No man can spend two dollars to better advantage than by subscribing for it, for we are positive that there is no man, no matter what his business or profession is, but will find something in it, which he can find no where else, and which will be of more worth to him than the price of his subscription. We have sources of information of a peculiar character, and we make this statement without hesitation, for we know it to be true. Although our subscription list is very respectable, we have a population which should give us one five times larger, and by doing so, our people and country would certainly be gainers, for our paper is a standard work, and can always be used for reference.

Some Poisons and their Antidotes.

The effect which some metals in an oxidized state, have upon the human body is very singular.

Gold and silver in a pure state may be taken into the stomach without producing any injurious effect, but a single grain of white arsenic will soon curdle the life blood and lay low in death the stoutest of men. Many other substances, as well as arsenic produce as fatal results.

The effect of "animal poisons" upon the human frame, has been known from all ages but the reason why the tiny drop ejected from the fang of the snake, or the bite of the scorpion, produces such tremendous effects upon the whole system is not well known; how true

it is, "man is crushed before the moth." The effect of poisons taken inwardly has also been known from the earliest ages, and a common method of putting victims to death in Greece was by the poisoned bowl. The wise Socrates fell a victim to this kind of death.

At an early age the alchemists devoted as much time to the discovery of antidotes for poisons, as they did to discover the philosopher's stone. All the knowledge derived from them, however, respecting this branch of chemical science is of scarcely any worth whatever. Chemistry is a modern science in every respect, and in no one instance more than the investigations of such men as Christisson into the nature of poisons. The virulence of any poison is known only by experiment. Poisons are soluble, that is, they pass into the blood and injuriously affect the functions of life. The object of the chemist to render poison inert, is to make it insoluble, when it will pass away and escape without producing any deleterious effect.

To do this in the stomach is to administer an antidote which will meet every condition of the human system.

There is an acid used in many houses for removing stains from furniture and clothes, and for cleaning brass, named "oxalic acid," it greatly resembles common salts, and has been oftentimes taken for them by mistake. If this poison is taken into the stomach it will be rendered inert by speedily drinking down a quantity of magnesia or lime water. Another poison is corrosive sublimate which is also used in families for destroying bedbugs; if this is taken by children or others by mistake, the remedy is to swallow as quick as possible, the white of eggs, and if these are not convenient, some pearl ash and dissolved glue. Of these facts every person should be informed. These substances combine with the poison in the stomach and form an insoluble inert compound.

Hydrated protoxide of iron, which can be purchased at the druggists, if quickly administered is an antidote against white arsenic; and sulphuric acid is an antidote for lead. There are many poisons however, for which no human hand has a remedy, because their action is so rapid upon the well springs of life. But some more ought to be said about "lead poison," as it is a very extensive harm doer. Painters colic is caused by drinking waters impregnated with lead in mines, or by the metal being introduced into the system by inhaling lead dust. The metal is soluble when introduced into the body, and is the cause of many acute pains. Sulphuretted waters, or weak sulphuric acid and water, renders lead insoluble, and has therefore been prescribed as a remedy for this disease. But it has been found that the lead, though rendered inert by being insoluble is still diffused through the body, ready when some favorable condition arises to act injuriously again. It was discovered, not long ago, that the iodide of potassium is capable of dissolving the compounds of lead, or rather in bringing it to a new condition whereby it becomes soluble and can be washed away.

If a person be poisoned with lead, the system struggles to throw it off through his kidneys, and it can be detected in the urine. The remedy is to give sulphuric acid in water, in strength, a little sour, when the pain will disappear, but the lead remains in the system. Then give a dose of iodide of potassium and slight pains return, but the lead will be disappearing in the secretions. By repeated small doses of sulphuric acid and water, and the iodide of potassium in small doses, at some intervals afterwards, the lead is effectually driven from the system.

This iodide of potassium has the same influence in driving mercury from the system, and is one of the grandest discoveries of modern times in medical chemistry. The test for the entire removal of lead from the system is, when a pretty large dose of the iodide causes no acute pains.

Hon. Levi Woodbury expired at his residence in Portsmouth, N. H., on the 5th inst., aged 61 years. At the time of his death he was one of the Judges of the United States Supreme

Court, which position he filled with much ability. From an early period, and until the close of his career, he has occupied high places of public trust—discharging his duty in an able and praiseworthy manner. He was justly esteemed one of the most distinguished of American statesmen.

Short Conversations on Mechanics.—No. 6. (Concluded.)

Q. "I promised last week to present some reasons, why centrifugal force was 'property of matter, an independent law of nature.'"

A. Come to the point at once and tell me what centrifugal force is?

Q. "Well, all I know about it is, that it is said to be a property of matter exhibiting itself under the condition of rotation and not chargeable upon the power applied to cause the rotation."

A. Well you do not know, I see, what centrifugal force is. All the men who have learned the science of mechanics know what it is, you do not know where it comes from, nor whither it goeth. Centrifugal force is not an independent force, it is just a name for a certain action of matter derived from another force, the same as if I said "grain is threshed by a horse power machine," it is true the machine threshes the grain, but there is no independent power in the machine, that independent power is in the horse. There is no law better understood by mathematicians than that "all bodies have a tendency when impressed with dynamic force to move in a straight line, and when bent out of the straight line by another force, their tendency to move in a straight line is not destroyed, but is still exhibited, and is named 'centrifugal force,' not because of its original nature, but its direction from the centre; in other words, it is truly the inertia of the body, that quality by which all bodies, when impressed with a force which sets them in motion, persevere forever in a straight line. Now let me nullify all that you have said about it to the contrary; you say it is a property of matter, an independent law of nature and exhibits itself under the condition of rotation."

Q. "Yes."

A. Well, rotation in plain English, means a body revolving round some centre.

Q. "That is what I mean."

A. Very well. Is it exhibited in a body which does not rotate, and in a body which does not move at all?"

Q. "No."

A. Has a vibratory pendulum a rotation?"

Q. "No."

A. Is centrifugal force exhibited by a pendulum?"

Q. "I believe it is."

A. That is right, hence it is exhibited under more conditions than under rotation.—Does a wheel exhibit rotary motion when standing still?"

Q. "No."

A. Will it move of itself?"

Q. "No."

A. What will set it in motion?"

Q. "An extraneous or applied force."

A. Does it exhibit centrifugal force when it is in motion?"

Q. "Yes."

A. When will the wheel stop?"

Q. "When the applied force is withheld."

A. That is right, hence, as the wheel cannot move without an applied force, and stops when the applied force is withheld, and as centrifugal force is not exhibited but when the wheel is moved by the applied force, it cannot be an independent force, but is in essence and principle dependant on the applied force, for it cannot exist without it; in short, it is the applied force, seeking its right line of direction; centrifugal force then is not an independent force and is exhibited under more conditions than under rotation.

Q. "Well, I see it is, but then it increases with the square of the velocity, and the applied force does not, consequently it must be an independent force and a tremendous force it is, for it often breaks machinery to pieces, yet it is no tax on rotation."

A. It is singular how it can break machinery, and yet be no tax on rotation—the machi-

nery in that case must have cost nothing, like your centrifugal force. So far as it relates to an increase of force according to the square of the velocity it perfectly agrees with the applied force according to the unit of measure applied to falling bodies, as I explained to you last week, and by which centrifugal action is always measured. A body moving with a double velocity has four times the *vis viva*, or living force of one moving with a single velocity, it is measured by $W \times v^2$. The centrifugal force of the cog wheel gearing which meets with an equal resistance at every new point of action is measured by $W \times v$, and this reconciles the whole theory, and it is thus understood by intelligent engineers. I know that there are some men who cannot appreciate this simple and harmonious law, for there are people who are as difficult to teach as grindstones. Many, somewhat smart men too, are quite satisfied with such arguments as "a cheese is round, the moon is round, therefore the moon must be a cheese;" I hope you are not one of these.

Q. "I hope not."

A. You will never go wrong if you make the following axiom the basis of your mechanical reasonings, viz., "action and re-action are equal." It was by the use of this simple base line that D'Alembert resolved some of the most difficult and beautiful geometrical problems in his "Traite d'Dynamique." If it were otherwise, mathematics and geometry would be no better than old wives fables.

Paine's Atmospheric Light Patent.

"The Intelligencer denies, by authority, that any patent is about being issued for Paine's new light, or likely to be, his publication to the contrary notwithstanding."

The above notice appears among the telegraphic items published in the daily papers on the 5th inst. We should really like to know by whose authority such a statement was made—if by any one connected with the Patent Office a vacancy ought to be created instantly, and some one worthy of confidence placed instead. We have learned upon authority, that Mr. Paine's application is still pending before the Office, and that it is his intention not to withdraw.

Now we contend that the officers connected with the Patent Office would be guilty of a gross dereliction of duty by making public any decision where the applicant is unwilling to submit to it, without availing himself of all the privileges of reconsideration of his claims, or an appeal from the Commissioner's decision. The decisions made by the Patent Office Examiners are many times of doubtful character, and we know that Mr. Paine feels dissatisfied with the one rendered in his case. Now the publication "upon authority" of such a statement must necessarily be understood to seal the action of the office against him in this application. Mr. Paine has said a great number of things which were in our opinion erroneous, but that is not to say but he may invent something new and very useful. Give every man fair play say we, and if he can show by experiment that he has discovered a new method—an improvement in gas light, or any art, he is entitled to a patent.

Literary Agency.

M. Boulemet, Esq., for many years proprietor of the Mobile Literary Depot, is about establishing a general local agency, for publishers in the city of New Orleans. He will also continue his agency in Mobile. Mr. Boulemet has for a long time been our sole agent in the latter city, and we take much pleasure in recommending him as a gentleman, prompt and efficient, and in every way worthy the confidence of book and newspaper publishers.

Substitute for Hops in Making Beer.

A communication has been presented to the Paris Academy of Sciences, by M. Dumfulin, relating to the use of picric acid as a substitute for hops in making beer. Four grains of picric acid are sufficient for twenty-two gallons of beer. The fermentation was conducted with great regularity, and a sample of the beer was sent to the Academy. Hops, we suppose, are cheaper than the acid in this country.