

Scientific American,

MUNN & COMPANY, Editors and Proprietors.

PUBLISHED WEEKLY AT
NO. 37 PARK ROW (PARK BUILDING), NEW YORK.

C. D. MUNN. S. H. WALES. A. E. BEACH.

"The American News Company," Agents, 121 Nassau street, New York.
"The New York News Company," 8 Spruce street.

Messrs. Sampson, Low, Son & Marston, Crown Building 188 Fleet st.,
Trubner & Co., 60 Paternoster Row, and Gordon & Gotch, 121 Holborn Hill,
London, are the Agents to receive European subscriptions. Orders sent to them
will be promptly attended to.

A. Asher & Co., 20 Unter den Linden, Berlin, are Agents for the Ger-
man States.

VOL. XXII., No. 12 . . [NEW SERIES.] . . Twenty-fifth Year.

NEW YORK, SATURDAY, MARCH 19, 1870.

Contents:

(Illustrated articles are marked with an asterisk.)

*The Pedespeed.....183	*Step Support for Mill Spindles.....190
*Improved Fan Blower.....183	*Improved Form of Ax Blank.....190
Visit to a Steel Manufactory.....184	Natural and Artificial Mechanism.....190
Soft Solder Silver Plating.....184	The Proposed Sale of the Yosemite Valley.....191
Nickel Plating.....184	Co-operation among Inventors.....191
An Interesting Review of the American Patent System.....185	The Use of Salt in Agriculture.....191
*Products of the Fine Forest.....186	Something about Gases.....191
*Woods' Saw-Gumming and Sharp- ening Machine.....187	New Mechanical Movements.....192
*Snyder's Improved Turbine.....187	Proposed Plan for Publishing Pat- ent Office Specifications and Drawings.....192
*Dyer's House Closet.....187	Editorial Summary.....192
*A Final Zotic Catastrophe.....188	Congress Extending Patents.....192
*Chilling Cast Iron.....188	Applications for the Extension of Patents.....193
*Firing under Steam Boilers.....188	Answers to Correspondents.....193
Liquid Fuel for Steam Engines.....188	Recent American and Foreign Pa- tents.....193
Water as a Fulminate.....189	Progress of American Inventions in Europe.....194
Running Locomotives a Mile per minute.....189	List of Patents.....194
Waste of Labor in Building.....189	Rotating and Fixed Turrets.....195
Absorption of Oxygen by Char- coal.....189	New Books and Publications.....195
Hartford Steam Boiler Inspection and Insurance Co.....189	

PROPOSED SALE OF THE YOSEMITE VALLEY.

The proposition to sell a portion of the Yosemite valley to certain persons, as pre-emptors of the land, is again before Congress, and has been reported upon favorably by the committee appointed to consider the subject. As this valley belongs to the people of the United States, the question appears to be between two squatters and all the rest of the inhabitants as to who shall finally obtain control of the grandest scenery on the face of the earth. It is a matter of so much importance that we think proper to devote some attention to it, for the sake of entering an earnest protest against any sale or cession of the territory to private speculators.

The valley of Yosemite was discovered in 1851, by a party of white men hunting for stock which the Indians had stolen. They recovered a portion of the stolen property, and returned with marvelous accounts of the extraordinary scenery of the new region which they had found about midway between the summit and the base of the Sierra Nevada mountains. Notwithstanding the enticing character of these accounts very few persons ventured into the valley, on account of the difficulty of access, and the distance from any base of supplies.

Mr. Hutchings, one of the present claimants was one of the first to explore the place, and, in 1859, J. C. Lamon moved into the valley and settled on the land now claimed by him. According to all accounts Mr. Lamon appears to be a bona fide settler, entitled to compensation in case of removal. He has resided on his claim for more than ten years, and has been engaged in setting out fruit trees and raising vegetables, but has never kept an hotel or house of entertainment.

On the 13th of June, 1864, Congress passed a law by which the United States gave to the State of California the Yosemite Valley and the land within one mile of the walls thereof, and the Mariposa Grove of Big Trees, to be held in trust forever as a pleasure resort for the people of the United States. The State of California accepted the trust in the spirit in which it was given, and at once appointed Commissioners to make surveys and lay out suitable roads for the accommodation of visitors. Two of the Commissioners are well known in the East—they are Professor J. D. Whitney, the eminent geologist, and Mr. Frederick Law Olmsted, of the Central and Prospect Parks. These gentlemen made elaborate reports to the Legislature as to the work to be done and the proper way to begin it. Galen Clark, who lives near the valley, was appointed its guardian by the Commissioners, and all expenses were paid by the State. In 1864, while the bill ceding the valley to California was pending, Mr. Hutchings bought out some parties who had built rude huts, and has since put up a frame hotel, with accommodations for thirty guests. His claim is situated about half way up the valley, and extending entirely across it. The Commissioners tried to compromise with these claimants by giving them leases of the premises for ten years at a merely nominal rent. The offer was rejected, and suits of ejectment were commenced, but they have never been pushed to final judgment, as the parties were anxious to procure legislative interference. The whole question finally came before the California Legislature, and that body, in the most unaccountable manner, passed an act giving each claimant one hundred and sixty acres of land in the valley, providing the Congress of the United States would give its assent—such assent being necessary to a clear title. The Governor of the State, to his credit be it said, vetoed the bill, but the Legislature, renowned in the history of the State for its venality, re-enacted it over his veto; and in this manner the claimants find their way to Washington, and a desperate

struggle will be made to confirm the spoliation so disreputably begun in the West.

The land was first surveyed in pursuance of the act ceding it to the State. No portion of it was ever declared open to pre-emption; all that the Government promises to squatters is, that, in case the land comes into market, actual settlers shall have the first claim to buy it. This land never was in the market, and it was never intended to sell any portion of it.

There is no doubt that Mr. Lamon, who went to the valley and tilled the soil as an actual settler, is entitled to compensation. All he at one time asked was \$12,000, and \$8,000 more would satisfy the claims of the other parties.

It would be infinitely better to pay the \$20,000 and eject these persons than to give them the best portions of the valley, and thus open it to the entrance of the worst class of speculators, gamblers, and disreputable characters. What would the inhabitants of Europe say if the valley of Chamouni were offered for sale, or if the Zermatt and Monte Rosa were in the market? Doubtless the same that must be said of us if we permit the Yosemite to pass into private hands.

The Yosemite valley is said to afford the finest scenery known to man. It is only accessible at the lower end by two trails that abruptly descend 2,000 feet. The walls for six miles are nearly vertical, and in some places are a mile in height, and are composed of pure white granite. But the crowning glory of the place is the Yosemite Fall, which in three leaps falls 2,634 feet. There is no water-fall in the world to compare with this. Other falls are, the Bridal Veil, 940 feet; Vernal, 350 feet; Nevada, 700 feet; and Royal Arch Fall, 1,300 feet. The valley is only a mile and a half wide at the broadest part, and in most places is less than half a mile. This adds to the apparent height of the perpendicular walls on either side. If private individuals were to obtain control of all these wonders, the inconvenience to the public, and the impositions to which all travelers would be subjected, would be insupportable.

The original law of Congress granting the valley to the people of the United States as a pleasure ground for their use forever, was one of the most enlightened acts of legislation on record, and it would be better to stand by the original bill. If the State of California is weary of the trust, then let Commissioners be appointed by Congress, to whom shall be confided the important responsibility; under no circumstances and on no pretense, ought the property to pass into private hands.

CO-OPERATION AMONG INVENTORS.

We have recently had suggested to us by sanguine correspondents, that a grand coöperative scheme among inventors to establish a central bureau or college of invention would be of great public benefit. This institution would, according to the plan proposed, receive its endowment from contributions of inventors to furnish a building and apparatus, and remunerate a paid court of experts to test and decide upon the merits of inventions.

This scheme might perhaps seem at first sight to have some merit. It has, however, the great drawback that it is wholly impracticable.

The inducement relied upon to obtain contributions, is a future personal benefit to the contributor. This would not be sufficient unless the donor were guaranteed, or supposed himself to be guaranteed the promised benefit. At best, the benefit would be contingent upon his making an invention of such doubtful value that he himself could not decide upon its merits; or that those engaged in the business or department of industry in which the improvement is proposed and to whom he can have access, are unable to decide. An invention, the value of which is so doubtful as this, can be safely said to have no value.

But supposing that every invention may possess more or less merit, and that each inventor could be guaranteed that upon sending a model or drawings and specifications to the "Inventors' Coöperative Central Bureau," an examination would be duly made, and a report with reasons for the decision arrived at duly forwarded to him; how few would accept such a decision as final, provided it was adverse?

In our own practice as Patent Solicitors, we often meet with men who, when we pronounce their devices neither new nor useful, are offended and straightway make application to some one less scrupulous, who encourages them to proceed, takes his fee, and does not get them a patent; or, if they get a patent, it is done by so cutting down claims as to render the patent not worth the paper upon which it is printed.

Commissioner Fisher, in his last report, says most truly, that inventors "are lacking in legal knowledge. They desire a cheap solicitor, and do not know how to choose a good one. They are pleased with the parchment and the seal, and are not themselves able to judge of the value or scope of the grant." Thus they fall into the hands of sharks, who, as Commissioner Fisher again says most forcibly, "are more desirous of obtaining a patent of any kind than one which will be of any value to their clients."

One of our correspondents has anticipated such an emergency, and suggests a higher court of experts, to whom appeals can be made, and whose judgment shall be final. But alas for the weakness of human judgment! Those not satisfied by the decision of an inferior court would not be any more satisfied with the opinion of the court of appeal, provided it should also decide adversely; and so discontent and murmuring would arise, and instead of the anticipated coöperation there would be breaking up into factions, each of which in its endeavor to get control of the institution would not hesitate to pull down a stone from its walls, until final ruin would wind up the entire concern. Moreover, this method of testing inventions would be, in the average, far more expensive than

for each inventor to test his own invention in connection with those qualified to pass upon its merits; and it would be attended with such delays and annoyances as would render it at once and permanently unpopular.

The only way in which money can be obtained for a benevolent object without compromising success is as a free gift, with no contingent personal advantage pledged to the donor; and in most cases it is better that even all control over funds thus donated should pass from the givers and become vested in responsible trustees. In this way colleges and universities are endowed, and the great difference between such gifts and those by which the funds for the Inventors' Bureau are proposed to be obtained, is that they are free gifts for the good of others, not gifts contingent on some personal good to be subsequently received.

But while we deem this scheme of coöperation as utterly impracticable, there is a way in which inventors and mechanics may coöperate with universal benefit. This scheme is set forth in an article on page 345, Vol. XIX., in which we advocated the establishment of a national collection of new inventions, to be placed on view so that all who wish may examine and inform himself upon any point by the payment of a small fee. Such an institution would be of present and permanent value, and it might easily be established by a properly organized association of inventors.

THE USE OF SALT IN AGRICULTURE.

Whether common salt is of any value to plants, is still a mooted question, and one that finds advocates on both sides. The luxuriant growth of marsh meadow grass is taken as a proof that salt water must be favorable, and farmers attempt to imitate this state of things by putting salt on the grass without reflecting that all other conditions are omitted in the experiment. They are generally astonished to find that the grass is killed, instead of being promoted in its growth. It is a remarkable fact, that this same salt marsh grass, on analysis, is found to contain very little soda, but to have its full complement of potash. This would seem to indicate that it had grown in spite of the salt, rather than in consequence of it. According to some recent researches, made in France, potash is a hundred times more valuable to plants than soda. It is true, that small quantities of soda have been found in plants, but, generally, under circumstances that seem to point to its accidental rather than essential presence. Direct experiments have shown that salt is injurious to tobacco and to the sugar beet. An examination of the plants growing near salt springs and salt marshes, shows that the vegetation is of a limited and peculiar character. All of these observations point to the conclusion, that the direct use of salt, as an artificial fertilizer, is only applicable to such plants as grow on the sea shore, or near salt springs, and not at all to the usual grass and cereals of our farms. The whole system of manuring farms is based upon the principle to restore to the soil the constituents that are removed by the crops. As the crops carry away no soda, it follows that none is necessary to their growth. There is another objection to the use of common salt, and that is the chlorine contained in it. This element is decidedly injurious, as has been shown by the experiments of Wolf and others. Public opinion in Germany has set so strongly against the use of salt, that, in the famous mines of Stassfurt, where vast quantities of artificial fertilizers are manufactured, the exclusion of chloride of sodium, or common salt, is now considered necessary, and the value of a manure is made to depend upon its percentage of potash.

We have been led to make these observations after perusal of an able lecture on "Salt and its uses in Agriculture," by Professor Gossman, of the Mass. Agricultural College. Dr. Gossman concludes his remarks as follows: "The safest and cheapest way of supplying salt to your farm lands, if at all desirable, is to feed it to your live stock, for natural channels of distribution are always the best."

SOMETHING ABOUT GASES.

The most attenuated condition of matter known to man is that of a gas. It is true that there is supposed to exist a kind of matter pervading not only all the inter-planetary regions, but the inter-molecular spaces of all bodies, whether solid, liquid, or gaseous. The name given to this hypothetical state of matter is ether, and if its existence be granted, its tenuity is so great that it has no sensible weight. Its existence is only a matter of inference.

The satisfactory manner in which the hypothesis of the existence of such an ether accounts for the transmission of light and heat, has led to its very general adoption in modern works on physics; and there seems nothing improbable in the idea that there may be states of matter, the density of which, when compared to the lightest of known gases—hydrogen—should be even less than that of hydrogen, as compared with mercury, the heaviest fluid known to exist at ordinary temperatures.

Admitting this, does not, however, relieve us from the consideration of other difficulties pertaining to the hypothesis of an ethereal inter-planetary medium. If such a medium exists, and if, as has been surmised, this medium be simply ordinary matter attenuated to such a degree as we have above described, it must possess the same physical properties as belong to gases.

Such inquiries are, however, speculative, and the object of the present article being to discuss in a popular manner some of the leading physical characteristics of gaseous bodies, we will turn our attention from hypotheses to demonstrated facts.

Gaseous bodies were formerly supposed to be of two kinds, permanently elastic gases and vapors, or such as were reducible, like steam, to the liquid form, by the loss of heat