this amount. Among those whose names are mentioned as commissioners in the lottery, we find that of Governor Howell, then in office.

From one of the resolutions adopted by the Board, we find that the quarter-acre lot was then offered for sale at $88, or including a small stone house, $250. The workmen were offered long leases of both at a rent of $12.50 per annum.

At the next election, Nicholas Low was chosen Governor, and Elisha Boudinot Deputy-governor. Both continued closely identified with the society for many years, the latter as governor, from 1797 to 1813. A change in the subordinate officers being considered necessary, Peter Colt, then Comptroller of the State of Connecticut, was invited to undertake the principal oversight and manage the works "as if they were his own property;" Major L'Enfant remaining as engineer for some months longer. Mr. Colt entered upon his duties in February following, and continued in the society's service until adversity obliged them to succumb. He was dismissed in 1796, with a vote of thanks declaring that their failure "arose from causes not in his power, nor that of any other man to prevent." Mr. Colt removed to northern New York, and about 1814 returned to Paterson, where he resided until his death, in 1824.

The first cotton yarn spun in the State was produced in a plain wooden building which stood on the site of A. Prall & Co.'s new cotton factory, the machinery being driven by oxen. Yarn was made here during the summer of 1793. The main factory was completed and set going in the spring of the following year. It was fitted up with "four carders, four roving-billies, four stubbing-machines, twenty-five spinning-jennies, and sixty single looms." The bleach works went into operation shortly afterwards. The whole number of employees engaged was about 125. It is noteworthy that to procure a supply of mechanics one of the officers had to visit Europe, while the workhouses of New York had to be searched to find operatives for the cotton mill. "*Tantæ molis erat*," &c.

A number of enterprises received the attention of the Board, most of which have since been carried out by individual enterprise. The superintendent was directed to plant mulberry trees for the production of raw silk. George Parkinson was engaged to construct machines for spinning flax, hemp and wool. Outsiders also began to avail themselves of the water-power then furnished at nominal prices, and several applications were made for mill sites or rooms with power. John Campbell commenced the weaving of stockings, and John Richards that of different fabrics of cotton goods on hand looms. Thomas Marshall spun candle-wick and ginned cotton in partnership with the society.

Their affairs were in the meantime approaching a crisis. Among the adverse occurences was the loss of nearly $50,000, occasioned by the failure of parties to certain bills of exchange purchased by the company, to pay in England plain cloths for printing. Besides, war was raging in Europe, affording our merchants a lucrative business as carriers; consequently capital was more readily employed in that direction than in domestic manufacturing. The expense of transportation was enormous, the workmen mostly unacquainted with their duties, and disorderly at that. It need occasion no surprise, therefore, that in the Fall of 1795 the calico-printers were discharged, and that in July of the following year operations were entirely suspended. The society, however, did not become bankrupt, nor did it dissolve, although proposals to that effect were made. In a short time the population of Paterson, was reduced from 500 to 43 persons.

[To be continued.]

THE EFFECTS OF SMOKING IN FRANCE.

The remarkable research made by M. Bouisson upon the danger of smoking has attracted the notice of the Academy of Sciences in Paris, and has been rewarded with high praise. The horrors hitherto unknown, or unacknowledged, with which smokers are threatened, nay more, convicted by M. Bouisson, are sufficient upon bare anticipation to ruin the revenue and the pipe-makers also. Cancer in the mouth M. Bouisson declares to have grown so frequent from the use of tobacco that it now forms one of the most dreaded diseases in the hospitals; and at Montpelier, where M. Bouisson resides, the operation of its extraction forms the principal practice of the surgeons there. In a short period of time, from 1845 to 1859, M. Bouisson himself performed sixty-eight operations for cancer in the lips, at the Hospital Saint Eloi. The writers on cancer previous to our day mention the rare occurrence of the disease in the lips, and it has therefore become evident that it must have increased of late years in proportion with the smoking of tobacco. M. Bouisson proves this fact by the relative increase in the French duties on tobacco, which, in 1812, brought an annual amount of twenty-five millions, and now give a revenue of one hundred and thirty millions; almost that attained by the duties on wines and spirits, and far beyond that rendered by those on sugar.

The use of tobacco rarely, however, produces lip cancer in youth. Almost all Bouisson's patients had passed the age of forty. In individuals of the humbler classes who smoke short pipes and tobacco of inferior quality, the disease is more frequent than with the rich, who smoke cigars or long pipes. It becomes evident, therefore, that it is owing more to the constant application of heat to the lips than to the inhaling of the nicotine, that the disease is generated. With the Orientals, who are careful to maintain the coolness of the mouthpiece by the transmission of the smoke through perfumed water, the disease is unknown. M. Bouisson, whose earnestness in the cause does him the utmost credit, advises a general crusade to be preached by the doctors of every country against the immoderate use of tobacco, as being the only means of exterminating the habit.

TRAVELING FAST AND SLOW OVER BRIDGES.

MESSRS. EDITORS:—On page 222 of the present volume of the SCIENTIFIC AMERICAN, in reference to the stability of bridges under trains moving at different rates of speed, a correspondent assumes the position that the higher the speed the more safe the train. To illustrate his views, he compares a thin sheet of ice on a pond to a bridge; but I hold this to be a defective comparison, inapplicable to the conditions of the case. Ice is, to a certain extent, elastic, and is supported by the water over its whole extent; a bridge, on the other hand, is a solid structure, supporting itself from abutments. A sheet of ice 100 feet long, placed on abutments like a bridge, would tumble to pieces from its own weight. As the water supports fields of ice, there is a necessity for moving rapidly over it (when the sheet is thin) before the inertia of the water is overcome. This is the whole secret of safety in moving with a high velocity over a field of thin ice, and also over some bridges. If the rails on a bridge were allowed a springing action sufficient to compensate for the concussion, so that the places of support might not receive sudden shocks, it would be a safe structure to travel over at almost any rate of speed; while the reverse would be the case with a bridge of solidity, possessing no elasticity, and the parts of which were devoid of cohesion. Supposing a bridge was erected on pillars of sand, and a railroad train set gently, and perfectly balanced, upon it, the train would be supported with perfect safety while standing still. But if we take the same train and run it on to such a bridge at the speed of only a few miles per hour, the whole structure will topple down, span after span, like pins struck down by a rolling ball.

In passing over bridges, different kinds of motion have different effects upon the structure, and the same fabric that is adapted for rolling motion is not suitable for vibrating motion. A bridge which may be allowed to spring to permit a railroad train to pass over it in perfect safety, would tumble to pieces by an elephant running over it. The multiplied vibrations of the steps of the animal accumulate and concentrate to tear the structure to pieces; the rolling motion of the train, on the other hand, distributes the force and prevents their concentration.

It may be taken as a perfectly safe rule that a bridge which cannot stand under the weight of a train at rest, can under no circumstances bear a train when in motion. Railroad bridges should be of sufficient strength to sustain a load five times greater than that of any train which may pass over them; and if they are composed of wood, they should be renewed every five years. Were it practicable for trains to run on rails having a springing motion to compensate for concussions, such rails might be laid on a solid bridge and trains run over it at any velocity whatever with safety. T. S.

Philadelphia, Pa., Oct. 24, 1859.

COAL AND HEALTH.

During the season of summer, when the atmosphere is warm and balmy, the cheerful breezes have free scope to dance through all our apartments, and ventilation is effected upon natural and conclusive principles. The time, however, is at hand, with the approach of cold weather, when doors and windows must be closed to shut out the piercing wind, and when fires must be maintained in all dwellings to heat our sensitive frames. This is the season when means should be adopted for securing the requisite amount of the pure air of heaven, under all the circumstances of artificial heating, in every dwelling—public and private.

The importance of ventilation is generally recognized, as the evils that have been caused by dwelling in ill ventilated apartments have been set forth in various publications. There are some facts, however, connected with this question, which are not so well understood. Thus, many persons mistake warm for impure air; hence they do not make a distinction between the two, and do not seem satisfied that a room is habitable until they have expelled all the warm air from it. There can be no question, we believe, about the salubrity of warm dwellings in cold weather, if the air in them is only maintained in a pure condition. The circulation of air in a room is dependent upon the heat which is generated in fires, grates, stoves or heaters. The hot air expands, rises and seeks vent, and the cold air rushes in to supply its place. The grand secret of good ventilation, therefore, is a plentiful supply of fuel—an important fact too generally overlooked. The houses of the poor are kept close and ill-conditioned in cold weather, because the inmates cannot provide sufficient fuel for their wants. Coal is as much an article of life and health, in the winter season, as food, and yet how few think of this! In those churches, schools and other public buildings, where fuel is saved at the expense of an inefficient supply of fresh air, a cent-wise and dollar-foolish economy prevails; and this is the principle idea we wish to impress upon the public mind at this time. Arrangements for ventilation may be made in endless variety; but without an abundant supply of fuel, neither comfort nor proper ventilation will be secured. Fuel is to ventilation, in cold weather, what steam is to an engine—its governing power.

REMOVING MILDEW FROM CLOTHES.

When clothes are rolled up in a damp state for a few days, they become spotted with mildew, consisting of minute *fungi*. These are very difficult to remove, and they injure both the texture and color of the clothes. The only effectual method known to us for removing such spots from linen is by steeping the latter in a weak liquor of chloride of lime. It is made by obtaining some chloride of lime from the druggist's (say one pound), then stirring it into about four gallons of cold water. It is now allowed to settle for one hour and the clear liquor is ready for the clothes, which should be steeped in it for about two hours, then washed thoroughly in cold water, and exposed on the grass to the sun.

We have had several inquiries regarding the best method of removing mildew from clothes, and perhaps some of our lady readers (of which we have quite a respectable number) may be able to give us a more efficient and simple method than the one we have described. Much fine linen is often laid aside from use on account of becoming mildewed and discolored. A renovating remedy for this evil would be a great favor to many persons.

INDIA-RUBBER SOLVENT.

MESSRS. EDITORS.—I was somewhat amused by reading an article on the above-named subject, in your paper of Oct. 8th. Mr. S. W. Ells cannot be posted, though he would have been if he had had my experience, which is this:—About 12 years ago I undertook to dissolve some india-rubber in some turpentine, and succeeded very well. The rubber which I tried was a pair of old-fashioned overshoes, and I pretty effectually spoiled them by reducing them to a liquid form. My next operation was to daub the solution with a brush over a pair of fine calf boots, and the consequence was I spoiled them also; for it took them so long to dry, that the dust collected on them and could not be removed. To pay me for my trouble, I received a "most glorious thrashing" from my father, and thus ended my experiments in the india-rubber line. J. T. MIDDLETON.

Chicago, Ill., Oct. 18, 1859.