meteors expected to visit us move in an orbit exactly perpendicular to that of the earth, although Sir John Herschel seems to think that this fact would be contrary to the theory of the nebula. The meteors belong to a formation much more recent than that of our known planets, because the astronomers agree if they were of a more ancient date they would by this time have been transformed into a continuous ring. Our citizens should look out about the 10th of August, and they will then be able to form their own theories in the matter. The exhibition, at all events, promises to be extremely interesting, and the heavenly bodies are apparently now "a show."—*New York Herald.*

EDITORIAL CORRESPONDENCE.

Odds and Ends of Travel—German Art—Economy—Watering Places, and Gambling.

HOMBURG, July 15, 1867.

While in Holland I had fancied to myself a people very quiet, industrious, and above all honest. I thought that the cynical Diogenes would not look a long time about Amsterdam at midday with lantern in hand for an honest man, therefore imagine my surprise when I discovered that a hackman had actually attempted to cheat our party out of an hour's time by running us three times around the same block at snail pace, and when we remonstrated with him that it was hardly the right thing to impose upon innocent and unsuspecting strangers in that way he manifested no emotion whatever. He had evidently fallen from his primeval simplicity, for I have no doubt that he was an honest man before he became a hackman. Such is the lamentable apostasy which seems to attach to this profession.

I stopped for two days at Dusseldorf chiefly to visit the art galleries for which that old city has acquired considerable renown. There are about four hundred artists who reside at Dusseldorf, and some of the finest modern paintings are sent from their *ateliers*, many of which find their way to our country. The *concierge* of the hotel where I stopped, remarked to me that he could always distinguish an American from an English traveler. I asked him how he could do this and he replied that an American always rushed for the picture galleries while the Englishman went knocking about town to see the buildings. I think this observation is in the main true. I have made it my business thus far to visit all the principal picture galleries in the line of my travel, and I have had occasion to notice a very great preponderance of our countrymen among the visitors. This does not arise, however, from the fact that American travelers are more fond of paintings then the English, but simply because our people have much less frequent opportunities to indulge their fondness for the fine arts; beside, many English travelers have a sort of contempt for pictures unless they are painted by an Englishman.

All the chief cities of Europe consider that a picture gallery, a museum and a zoological garden are indispensable to their completeness, and but for these features European travelers would not trouble themselves to visit many places that have now become very common resorts.

The comparatively small city of Cologne which contains about 120,000 inhabitants, has an extensive museum, an art gallery, and a splendid floral garden, beside one of the finest collections of living animals and birds to be found in Europe. New York with its million of people has Barnum's Museum of stuffed elephants and monstrositics, also a few sickly specimens of wolves, monkeys and eagles at the Central Park, beside a tolerable show of good pictures at the National Academy once a year. As a resident of New York I feel ashamed of her record in respect to these matters. I was not very much impressed by the collection of pictures at the Dusseldorf Academy. The chief fault seemed to me to be in the unusual coloring of landscapes. Some of the German and French artists appear to have discovered a new green in nature which I have been vainly looking for ever since I commenced my travels. Some of the most highly finished pictures in the collection were sadly marred by this defect. The most successful scene painters in Germany are the brothers Achenbach who reside in Dusseldorf. In all their works they seem to be endowed with a sort of divine inspiration. Among the few very pleasing pictures on exhibition at the town hall was a large canvas by Oswald Achenbach which represents an old country mill with the usual accessories of hill, wood and water. The artist seems to have made his studies immediately after a shower, when Nature appears "all glowing in Eden's first bloom." I think it the most pleasing picture of the kind that I have ever seen, and if any one of our liberal patrons of the arts desires to possess a splendid work he has only to send forward a bill of exchange for five thousand dollars. Good pictures by first-class artists are very high in Europe, therefore an immense amount of poorly prepared canvas is sent out and sold in our markets.

Immediately upon passing the frontier from Holland into Prussia the traveler notices that he is under another nationality. From a quiet, pastoral country, full of black and white cattle, sheep, canals, windmills and storks, this scene changes into a fortified camp, bristling with guns, bayonets and soldiers, and the long shafts belching forth huge volumes of smoke indicate also an active manufacturing district.

Rhenish Prussia is famous for its extensive iron works, the most noted of which are those of Krupp at Essen, which furnish employment to about ten thousand men, and are kept running day and night. "Murray's Guide Book" with characteristic modesty informs the traveler that the breech-loading cannon of Krupp are not equal to Sir William Armstrong's, while the Englishmen themselves would be very heartily glad if this statement had even a shadow of truth in it. It was my intention to have visited some of these extensive establishments, but I learned from good authority that just at this time American visitors would doubtless meet with a cold reception. It seems that a Pittsburg iron maker recently came to Prussia for the purpose of procuring skilled workmen. He brought with him thirty thousand dollars in money, and two native Prussians, hoping through their influence to induce workmen to emigrate. Witholding the real purposes of his visit, he obtained a courteous admission to the works, which he will doubtless profit by, for it is well known that for some reason apart from the mere price of labor, the manufacture of iron is carried on much more economically here than in the most favored localities of our country. The iron makers were naturally very indignant when they discovered that their guest was secretly at work through his paid emissaries endeavoring to induce workmen to quit their employment. There is no law in Prussia that prevents its subjects from leaving the kingdom, but there is a law which severely punishes any one who induces them to leave. The consequence was that the unfortunate accomplices were thrown into prison where they now linger, while the principal made haste to get out of the way. An effort is being made to procure the release of these men but the impression is that they will be held for two years, which is the full penalty of the law. I believe, however, that nearly two hundred workmen have already emigrated, and the result may be that some of these old workshops may be depleted of practised hands, who will find more comfort and better pay with us than it is possible to obtain in their native land.

Speaking of economy, I am every day reminded of the wasteful extravagance of our people compared with what exists in Europe. I believe that the superfluities of American families would support all the poor people of this kingdom. Nothing in Europe seems to be suffered to go to waste. In the city of Paris soup is made of almost everything in the vegetable kingdom. Even the common sorrel which goes for nothing in our country is regularly sold in the markets and is made up into a delicious condiment for fish, and all the broken victuals of the hotels and restaurants are gathered daily, put into papers and regularly sold in a market for a small price. The ordinary *table d'hote* dinners in Europe do not cost on an average more than one half as much as they do in our country, and yet every one seems to get enough. I do not speak of what travelers pay for their meals, that depends upon circumstances; but I allude to the first cost of the food. An American breakfast at one of our first-class hotels would pass for a splendid banquet in this country. An Englishman remarked to me that he never saw such profusion of food in any other country but ours. Living is reduced to a science in Europe, and I must confess that independent of horse flesh and ass meat it is much more sensible than that which it has attained in our country as a general thing, but as a general thing there is no other such country as our own. The broad fields of the West yielding their abundance induces extravagance in living with us which could not be indulged in here, where poverty among the masses forces upon them the most rigid habits of economy. A laborer does not average more than sixty cents for a day's labor, and out of this he must in some fashion support himself and children, but not his wife, for at almost any sort of work, whether employed to sweep the streets or in field service she can "hoe her own row." I always commiserate the situation of women who are compelled to do manual labor in the field. I also pity a dog when I see one harnessed to the milk and vegetable wagons, both sights being common here, and both to my mind unnatural. I hope the time will speedily come when this degradation of women shall forever cease, and if the dogs are of no other value than to draw about heavy loads and for which they were never designed, then, I advise that their tails be cut off close behind their ears.

In my trip up the beautifnl Rhine I indulged myself in a short experience at the famous German watering places. Upon reaching Coblentz, which is a very strong military point, I heard that the King of Prussia was expected to arrive the next day at Ems. Wishing to see with my own eyes how a king was to be received by his own people, I took a carriage, and after a ride of nine miles up the lovely valley of the Lahn reached Ems just in time to see his Majesty ride through the town. The houses were finely decorated by flags, wreaths of vines and flowers, and what struck me as a very marked and singular act of devotion was the temporary planting of trees all along the streets of the city at distances not more than ten feet apart. Upon inquiry I learned that the work was done by the soldiers of the garrison and occupied their time for three days. The King, dressed in the fatigue suit of a General, rode in an open barouche unattended except by his adjutant, and was received by every mark of respect. His Majesty is a bluff old gentleman upward of seventy years old, and is excessively fond of his army and delights to wear the military dress.

Ems is delightfully situated under the mountains and affords an agreeable retreat to those who imagine themselves out of sorts, as they can freely imbibe warm dish water, and ride up the hills on donkeys, and try their luck at the *roulette* and *rouge et noir*, which always amuses a gaping crowd and gives general satisfaction to the saintly-looking gentlemen who shuffle the cards, turn the wheel, and rake in the change, the latter operation seeming to keep them quite busily employed. At Wiesbaden the same round of delights are always in store for the visitors, only a little more so. As this fashionable hot watering place is more easy of access, the number of human donkeys who go there is correspondingly increased. I am now at Homburg, which to my mind is by far the most sensible watering place in Germany. The waters here are similar in character to those of Saratoga, and when judiciously taken are wholesome and life giving.

The great feature of all these German watering places are the Kursaals, a most appropriate name for these gilded gambling hells. The building erected for this purpose at Homburg rivals in its extent and magnificent decorations, gardens, etc., an imperial palace. It is supplied with large free reading rooms, dancing and concert halls, also supper and refreshment rooms where meals are furnished cheaply and good, but several of the most splendid apartments are given up to gaming. It is interesting to study the faces that gather about these tables. Old men and old women who seem to stand under the very shadow of the skeleton. Young men and maidens, all alike victims of an infatuation which has ruined thousands, and yet they learn nothing from the experience of others, they must gain it for themselves. A Russian Countess, an old women, an invalid upon crutches, seats herself at the table. Haunted by some superstition, she tells her valet that she will not begin to play for fifteen minutes. She asks the time; answer, "five minutes gone." She sighs "Oh!" Impatient still to begin, she inquires again; answer, "five minutes more;" another sigh; she inquires again; "one minute more," and the face of this old creature, who might pass almost any where for a pious matron, suddenly lights up with unwonted enthusiasm. She throws down her money upon the table, it is raked in, she throws again, it is gone, and in this way with occasional streaks of good luck she squanders annually, it is said, $50,000 to gratify her very morbid passion for gaming, and thus day after day this gilded villainy goes on, but the general impression is that Bismarck and the King will abolish the whole business of gambling in their dominions.

Quitting the healing, gambling springs, the vine-clad mountains, the crumbling fastnesses and romantic valleys of the Rhine, I must journey on toward Berlin and Eastern Germany.

S. H. W.

Special Correspondence of the Scientific American.

TRANSMISSION OF WATER POWER FOR LONG DISTANCES

PARIS, July 16, 1867.

On a recent visit to the Falls of the Rhine at Schaffhausen, I had an opportunity of examining a system of transmission and distribution of power which is in operation there, and which is certainly of sufficient importance to make a description of it interesting to your readers. The problem of perpetual motion, the solution of which so many have so persistently and vainly sought, was long ago solved by Nature in the flowing of never-ceasing rivers. Here is a power which we may make use of for all time with no other expense than the inevitable wear and tear of our gearing. Notwithstanding this, for a variety of reasons water power is only used to a comparatively limited extent where it exists, while in many cases where enormous power is available, it is not utilized at all. Leaving out of consideration altogether those cases in which from the remote situation of a fall it would be commercially impracticable to establish works around it, we know that it is only occasionally that we find large collections of factories driven by water power, and one of the chief reasons of this is the great difficulty and expense of conveying the power to points removed even a short distance from the main fall. If canals and waterways are to be constructed, water wheels in great numbers established with all their accompanying locks and gates, we have at once a system of works requiring enormous capital, the interest on which will go far to neutralize the advantage to be gained from the cheap supply of power.

The system which is in operation at Schaffhausen as well as at a number of other places in Europe, is the invention of a M. Heirn, and the purpose of it is to avoid the necessity for the construction of the costly works alluded to, by the substitution of a single, or a small number of large wheels, in close proximity to the waterfall, and thence to distribute the power in a cheap manner over the entire district occupied by the town. The means employed are remarkable, not so much for their novelty as for the patient thought and experience that have been expended in bringing the system into a practical form, a task which now appears to be successfully accomplished. The power is carried from the water wheels to its points of consumption by wire ropes moving at a very high speed around suitable pulleys of large diameter, and I shall probably be best able to illustrate the system by describing the works at Schaffhausen. The town with its factories is located about two miles above the Falls of the Rhine, so much visited by travelers as being the largest in Europe. The river where it passes through the town is broken into a series of rapids with a depth of water almost equal to that at Niagara, and a width of about 350 feet. In the midst of these, near the left bank of the river, is situated the wheel house, which contains a single turbine wheel of large size and giving sufficient power to drive all the mills in the town. The vertical shaft of this wheel carries a large bevel gear at its upper end by means of which its motion is transmitted to a horizontal one by its side, the gearing being so arranged that the latter makes a little more than two revolutions to one of the wheel, the speed being about 100 revolutions per minute. On this shaft are placed two wheels of cast iron about 14 feet in diameter with a deep groove formed in their face. In this groove are secured segments of hard wood with a slight depression for the wire rope to run in. The grain of the wood in some cases runs lengthwise, and in others across the face of the wheel. These wheels are made in four sections, so that they may be readily taken apart when required, for repairs. They are free to turn on the shaft and are driven by an equalizing coupling placed between them. This part, which has for its object to prevent one wheel from doing a greater proportion of the work than the other, as would be the case if one of the ropes happened to be tighter drawn than the other, has not unfrequently been used for the same purpose in other cases. It consists of a strong sleeve of cast iron secured to the shaft at its center, and having projecting from it on opposite sides,

two stout arbors each carrying a heavy bevel gear. These gears take into similar ones secured to the large pulleys, and transmit the motion of the shaft to them. If the rope on one wheel pulls tighter than that on the other, the intermediate gear on the driving coupling will turn slightly and relieve somewhat the tension on the one wheel, while the other will be revolved in the opposite direction until it comes under the same tension as the first. The ropes that run on these pulleys are a little over an inch in diameter. At the speed above mentioned for the pulleys, it will be seen that the speed of the ropes will be about 4,400 feet per minute, or say 50 miles per hour. The difficulty of providing practically for such a speed will be apparent to every one who has had any experience in similar undertakings, and as a matter of fact, this has been the great difficulty to be met in carrying out this plan of distribution, and it is only after a long series of trials that this has been successfully accomplished.

As already mentioned, the driving and driven pulleys at Schaffhausen are of iron, faced with wood; in other cases, to be mentioned presently, another combination is used which has given the most satisfactory results, To continue, however, our description of the present apparatus. On the opposite bank of the river, or rather a few feet from it, are built some solid stone piers on which is placed a second shaft and pair of wheels, similarly arranged to those in the wheel house, and high enough to keep the ropes in their transit clear of the water The shaft is about twelve inches in diameter in the body and seven inches at the journals, and is supported in iron housings firmly bolted to the piers. By a pair of bevel gears the motion of this shaft is transmitted to another at right angles to it, carrying another exactly similar pair of wheels running in a plane in the direction of the course of the river instead of across it. Coupled to the end of this shaft is a small one which takes off a portion of the power to some factories situated just at this point on the bank. From the large pulleys a second pair of wire ropes carry the power to a third pair of wheels about 400 feet up the stream, and from here again it is transmitted a similar distance to another pair, and again to another, the pulleys being made with double grooves in their faces to accommodate the two ropes that pass around each of the intermediate wheels. At any of these points a portion of the power may be taken off, and this is done in a variety of ways as may be most convenient under the particular circumstances; sometimes by gearing and shafting, or again by small pulleys carrying a smaller size wire rope, say half an inch in diameter. On the last span, but one rope is at present in operation, the coupling between the two wheels being locked to prevent it turning, but new piers and housings are being erected for the purpose of transmitting the power to a still greater distance, and then the second rope will be required. As a rule, the speed of all the successive wheels and branch lines of shafting is kept the same, namely, one hundred revolutions.

This system of transmitting power to a distance has been a subject of great study during the past ten years and is now being applied to much greater distances than those here mentioned. Where longer intervals than, say, 450 feet between the large pulleys occur, it becomes necessary to provide pulley supports to sustain the weight of the rope. These are made six or seven feet in diameter, and it is these in particular that have given so much trouble. With the high speed of cable used it was soon found that the wheels were very rapidly destroyed, or if made of any substance hard enough to resist the action of the cable, they in turn as rapidly destroyed the latter. This has at last been obviated by filling the dovetailed groove in the face of the wheels with gutta percha, driven in hard, and it is stated that wheels so constructed have been in use seven years without injury. The inventor and the constructing engineers, Messrs. Stein & Co., of Alsace, who have introduced the system, estimate that it is possible to transmit 120-horse power twelve miles with a loss of but 21-horse power. The cost is stated at £320 per mile for everything, including cost of erection, and £1 per horse-power for the terminal apparatus, which of course is small in comparison with that of any system of transmission of the water itself for similar distances, and the only question remaining is the relative cost of repairs. If the statement published may be relied on, these are not excessive with the new system. The comparison with the method of transmitting the water bodily, illustrates beautifully the theoretical principle which is involved in this means of working, viz., the reduction of mass and the increase of velocity, the quick running rope carrying in itself all the power of the ponderous mass of water slowly flowing through an ordinary canal. The importance of some system for the transportation of power can hardly be overestimated, and it is a matter of surprise that more serious attention has not been given to it by engineers. It is certain that, looking forward at least to the time when our fuel beds shall be exhausted as they one day will, such immense supplies of power as exist at Niagara will not be permitted to run to waste, and the first steps toward the practical accomplishment of such a utilization of it, are accordingly of peculiar interest. SLADE.

A Valuable Invention.

The attempt to secure an English patent for a plan of "preventing financial crises" was not successful. But a better fortune has smiled upon the application of a certain Mr. Liegher, who has been granted a patent for the manufacture of the vital fluid, as he calls it. This imponderable fluid, is developed when a nitrogenized substance comes in contact with a carbonized one. It is not electricity, as it passes through bodies which do not conduct electricity. Nitrogenized bodies, like silk, are its best conductors. To make it, he takes a bladder full of liquid ammonia, and places this in a vessel containing molasses. At the neck of the bladder is a silk cord attached, and another such cord hangs in the molasses. When the ends of these silk cords are joined, the current of the vital fluid is established, as may be seen by placing animals in the circuit, when they become very lively. The effects are heightened by combining several of those elements as we combine the elements of a galvanic battery.

Correspondence.

The Editors are not responsible for the opinions expressed by their correspondents.

River Embankments---Mississippi Levees.

MESSRS. EDITORS:—The article of W. J. B., in your paper of July 5th, though courteous and unexceptionable in its tenor, seems to require of me a reply. He considers that my proposed plan of timber piling, sheet piling, and inclined planking in front of all new large levees, though in its general features good, is yet on the whole, too expensive, and liable to decay. He proposes instead of it a battened plank fence in the middle of the levee, and a front protection of "willows, or any shrub of southern growth, which roots well," or that "the outer slope should be protected with stone." Experience has demonstrated that embankments of Mississippi sand or loam—the only material obtainable—are unreliable. The losses, only to be estimated by millions, resulting year after year, from inundations caused by the breaking or cutting of the levees, have driven the inhabitants of the valley nearly to desperation; they are abandoning lands which, in fertility, can hardly be equalled on the globe, and the present value of these lands is but a fraction of what it was. I maintain, as the result of twenty-one years' study and observation of the lower Mississippi, that every acre in the valley, above the channels required for interior drainage, can be reclaimed permanently without increasing the high-water line of the river, and that levees can be relied upon if properly constructed and maintained. As before remarked, levees of Mississippi earth alone, are unreliable. Stone, for the protection of the river slope of levees, would answer a good purpose, if we could get it. It would have to be transported at enormous cost for hundreds of miles. Neither stone, gravel or even coarse sand is to be found on the alluvial banks of the lower Mississippi. The fine sand mixed with clay found everywhere on the banks of the river becomes mud or silt when saturated with water and disturbed. The placing of "the more open and porous material in the slopes" would be very well, but, like stone, where are we to obtain it? Levees have to be built of the earth obtainable where they are built, and that is, a fine sandy loam more or less mixed with clay. "A front protection of willows" would answer a good purpose, but, willows only grow in water or wet ground, while the levees become as dry as it is possible for earth to be, during low water and the dry season. The first rise, after the new levee is built, is what endangers it most, and willows, even if they could be made to grow on the slopes of levees, would require several years before they would be of much benefit. I have myself proposed a method which I think would answer a better purpose, and this is the thatching or shingling of the outer slope with successive layers of green willows, or bundles of willows—fascines—secured in place by means of transverse poles and stakes of green willows. This, if done just before the rise of the river, or in the winter—the river generally begins to rise in March, and is highest in April and May, though we always expect a partial rise in January—might result in the rooting of the willow stakes, and prevent their giving way. The willows forming the thatching or fascines, where they touch the ground—which would be kept moist for a time even after the decline of the river, by such a covering—might also root well, for the first year. I apprehend, however, that they would die during the low water and dry season in the fall months. However, as the protection of the new or green levee during the first rise of the river after its construction is a matter of the highest importance, for it acquires solidity or cohesion, and grass grows upon its rear slope forming a sod before the next rise, I think that my plan of thatching or fascining in the manner described would be useful. Any quantity of young willows can be obtained, and, so used, they would protect the levee front from the action of the river waves. A fence in the middle of the levee has been proposed years ago by myself and others, and in combination with my system of thatching or fascining it would do very well for small or moderate-sized levees. But for large levees, ten, fifteen or twenty feet in hight—and these, when a crevasse occurs in them, are what occasion our desolating inundations—a simple fence would not be reliable, except as a bar to the crawfish. Crevasses occurring in small or moderate-sized levees can readily be closed, but when they occur in larger ones, owing to the unstable nature of the bottom and sides of the opening, they are seldom, if ever, closed until the river falls. Like an arch, when added to a bridge truss, the woodwork added to a large levee must have strength sufficient to sustain the load or pressure of itself. I recommend wood, because we have an abundance of durable cypress and no stone; brick masonry would be very expensive. Wood can also be rendered durable by creosotizing it, or by adopting the Robbin's process; but only the exposed portions would need it.

As to the question of cost, I think that is a matter of secondary consideration, but of course that plan which will insure safety, at the least expense, is the best. The amount expended for a wall of brick or stone masonry, would be incomparably less than the losses sustained by the failure of a large levee.

Non-residents, or persons unacquainted practically with the difficulties to be surmounted in the construction and maintenance of the Mississippi levees are apt to underrate them. A body of water of the width and depth of that river, flowing with a velocity of nearly five miles per hour, is a different thing from the still-water pond or canal, even if the material or earth we have to use for embankments were as good. The difficulties to be overcome are the following:

1. The washing away of the front—of new levees particularly—by the action of river waves during storms, and the sinking, sliding or sloughing of the rear slope, when saturated with water during the first rise after it is built.

2. The perforation or honeycombing of an old levee by crawfish and perhaps—in some cases—by muskrats. Crawfish most abound where the ground is low and the levee high, where the damage they do is greatest.

3. The general neglect of levees after they are built and received from the contractor, and the notoriously imperfect manner in which contract work is done. The earth should be rolled, or rammed, or compacted by building with carts; it is generally only wheeled up in barrows, and, is therefore, as loose as it possibly can be.

4. The cutting of the levee by malicious persons, but principally by "swampees" or "timber getters," who require an overflow to enable them to float out the timber they have "deadened" during the low water season, generally on land which is public, or the property of others than themselves.

The levees built in Louisiana in 1866-7 by the Board of Levee Commissioners—nearly all of which failed—were of much larger dimensions than W. J. B. proposes. These had a river slope of four feet base to one foot rise, a rear slope of two feet base to one foot rise, and a width at the top equal to the hight.

The plan of timber piling, sheet piling or inclined planking proposed by me, is approved by some of the most experienced levee men here. It will meet all the difficulties stated above, and though expensive, perhaps, would prevent all failures of levees, and render practically impossible the occurrence of crevasses. Absolute security must be felt or capital will not again seek investment in the Mississippi Valley.

G. W. R. B.

A Plan for Ventilation.

MESSRS. EDITORS.—I have just read in your issue for July 27th, the article on ventilation taken from the London *Herald*, and will give you the idea which I have of the question: Let there be a trench dug and a pipe or flue built therein along the lines of a street or other public thoroughfare, one end—its mouth or receiving end—being at as low a point as attainable, where it may receive through its funnel-shaped mouth fresh air from off water or from the valley, and then pursue its course along to all the panting inhabitants and dust-covered goods upon its line. Let it be tapped as gas or water pipes are now, or somewhat similar thereto, and let it be under the care of trusty officers to see that it is not wasted in unoccupied buildings or parts of buildings that may once have used it.

There may be many or few of these pipes, as surface of water, or low ground presents itself or necessity requires. If demand is greater than space, the steam force-pump or fan may be employed to meet it.

The air, in passing through these pipes, would be cooled in summer and warmed in winter. Two highly prized conditions, and the latter one, of economy. Cities built upon hills, if of great elevation, would need but little or no assistance from the steam engine. Your city and surrounding cities might be abundantly supplied from your water surfaces. A mouth at the Battery might receive a large amount of pure, cool, fresh, and invigorating air, fresh from the sea. The mouth might be closed against the smoke of passing steamers by an ever-present watchman.

I must modify the terms "pure" and "fresh," so long as we continue in the lazy, filthy, disease-breeding and abominable practice of emptying our privies and sewers into running water, rather than to collect their contents and deodorize and use it in agriculture. They do this, and that too with large profits in England. But as long as this abomination remains the mouth or mouths of large enough flues might be placed, as is the head of the Croton Aqueduct, miles away, and in a section free of stench, smoke and dust. Would not this answer for the purpose of keeping our dwellings and fine goods and wares in a good degree free from dust, as inquired for by a correspondent of your paper a short time ago?

The air tube should be a tube within a tube, an open space being left entirely around it except enough of bearings for its support. T. E. G.

Erie, Pa.

Rotation of Forest Crops---Are Acorns Seeds?

MESSRS. EDITORS:—Are acorns the seed of oak trees? Will acorns sprout and grow into oaks? Wherever a pine forest is cut off, a growth of oak immediately follows, and as regularly as though the seed had been sown, although there was not a oak tree in the forest to produce seed before it was cleared. The question is often asked, do the oaks grow from seeds produced in the acorn, if so, how does this seed get in the clearing so regularly? Some say it is carried there by birds, but the kind of birds are not named that would be likely to distribute acorns; others think the acorn is not a seed but a fruit for the food of the wild animal, that oaks are spontaneous or grow from a certain inherent combination of matter of the earth that will produce, and one of the productions is the oak, the same with the chestnut and the walnut; neither reproduce from the nut. Please give the correct information upon the subject. FANNY.

Philadelphia, Pa.

[The succession of growth of forest trees in the circumstances named is well established, and does not affect the acorn question. There is no doubt that the acorn is a seed and contains the germ of the oak. "Tall oaks from little acorns grow."—EDS.