

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 than 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 monstrosities, 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. Withholding 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'hôte* 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 beautiful Rhine I indulged myself in a short experience at the famous German watering places. Upon reaching Coblenz, 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 fake 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 fine 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 woman, 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 anywhere 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. Heilmann, 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 infrequently 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,