

Correspondence.

Dangers of Celluloid.

To the Editor of the Scientific American:

Not long ago the third story of a residence in my neighborhood was burned out. One of the ladies of the family washed some toilet brushes and placed them upon a cushion in front of the hot air register, then left the room. One of the brushes had a celluloid back, and the cause of the fire was the explosion or ignition of this.

I. HARMANUS FISHER.

Baltimore.

Streets in Hamburg.

To the Editor of the Scientific American:

In the SCIENTIFIC AMERICAN of December 17, 1892, you give the pictures of three of the streets of Hamburg, which are incorrect in being called "streets." The streets which you are naming are as wide as any streets can be. For example, the Steinstrasse is as wide as Broadway (and perhaps wider), the Niederstrasse is as wide as any of your other side streets, and the Neustadter Neustrasse is as wide as your Five Points.

The numbers given to your illustrations indicate that they mean not the street itself, but simply the number of a house.

The numbers given your illustrations are the current numbers in the street, and here are the entrances to the back tenements. The front building on the street is generally a brick house. Under this house is the entrance or alleyway leading to this row of tenements, and though this alleyway entrance is often so narrow that only one person can pass, when you pass through the front house, the alley called "Hof" is wider, so that four to six or eight persons or more can walk abreast. That the windows when opened will touch one the other or that the people in this tenement can shake hands is simple nonsense. It is true these tenements are cholera traps, but they are not named streets as given in your illustrations. In the new city streets you will find nothing better. There all is fine and clean.

DR. L. HOLTZ.

Photographing Magnetic Curves.

To the Editor of the Scientific American:

Two articles on the "Photographing of Magnetic Curves" have appeared in recent publications. One, by C. B. Thwing, of the Northwestern University, appeared in the *American Journal of Science* of November, 1892. The other, by E. J. Houston, of the Philadelphia High School, appeared in the *Electrical Engineer* of July 20, 1892. Curiously enough, both investigators independently hit upon the same method.

A gelatine dry plate is placed horizontally over the magnet under investigation. Iron filings are distributed over the plate. These arrange themselves in the direction of the lines of force, reproducing the familiar magnetic curve map. By a short exposure to a source of light the image is impressed on the plate, which after removal of the filings is developed. The negative thus produced is used for making lantern slides or photographs *ad libitum*. What is almost the same method was described a number of years ago. In the *Electrician and Electrical Review* of this city, of June, 1884, on page 131, A. D. Stevens, of Worcester, Mass., describes the use of blue print paper for mapping curves. He emphasizes the importance of having the light rays used for the exposure normal to the surface.

As a variation on the above methods, excellent magnetic curve maps may be produced with bromide paper. A lighted match gives ample light. On development a white map on a black ground is produced.

It is essential in these direct photographic methods to give the exposure without moving the plate. Bromide paper in one way is a little better than glass plates, as it brings the plane of the map nearer to the poles. The use of celluloid or gelatine films would effect the same result, if held in a frame so as to lie flat.

New York, N. Y.

T. O'CONNOR SLOANE.

Frost on Window Panes.

To the Editor of the Scientific American:

Sitting at a window in the second story of the Union depot, in Kansas City, on the evening of December 14, my attention was called to a phenomenon of more than passing interest. Opposite the window was an arc lamp, by the light of which I could see against the window frame what seemed to be currents of heat. The temperature of the room was, I think, about 60°, while outside it was about 25°. I watched these currents for several minutes, but having to take train in a short time, I could not continue the observation sufficiently long to reach a definite conclusion as to what would be the result of their presence, but sufficient time was had to note some interesting points. The currents were mostly upward, often transverse, but never directly downward, except when a miniature cyclone would come, when every direction was taken. The particular point of interest was that the currents moved in threads, and that they crossed one another at every

angle, always following the strictest order in their individual movements. Even when the utmost confusion prevailed, as when a "cyclone" would come, every movement was made under law, and as a result remarkable figures were seen, crystals of all kinds, clouds and trees, yet these were seen but a moment. It occurred to me, however, that their delicate tracings possibly remained and that each succeeding storm added thereto until the figures, by the morning of the following day, were strikingly prominent. I was not there on the following morning, but it is probable that, had I been there, I would have seen a beautifully frosted window.

N. T. ALLISON.

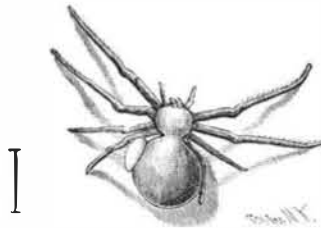
[The phenomenon above described is the usual effect of the reflection or refraction of the intense rays of the arc light from condensing moisture and frost upon glass. The apparent movement or coruscation of light streamers was due to the lachrymal flow over the cornea of the eye, which flows in waves, and under the irritating influence of the situation no doubt produced the apparent cyclones, storms, clouds and trees, flitting across the optic nerves of our correspondent.]

Instinct and Intelligence of Insects.

To the Editor of the Scientific American:

Mr. Mivart, the great naturalist, in an article in the *Cosmopolitan Magazine*, notes that a certain sand wasp of his island, after she had concealed her nest by covering, was able to return to it very directly; but if it were uncovered for her by some one else, she was not able to recognize it at all. She seemed to have no conception of it by sight. *Apropos* of this, a subsequent observation on our common mud wasp may not be uninteresting.

Over one of my parlor windows the slatted blinds are almost constantly closed. Behind these I heard the industrious hum of one of these creatures, and on opening the left leaf I exposed her to a strong light, which did not seem to disconcert her. In a few minutes she flew away for a new mud ball. But on her return, although her nest was stuck against the red sash, in strong contrast, in plain sight, she seemed unable to recognize it. She had been approaching it at a point



where the movable slats were tilted downward (when closed); but of course, now that the blind was open, these all inclined upward. On the other leaf, however, though much lower down, were some slats tilted much as the others had been, and through these she made repeated entrances, only to crawl out into the open light some distance from her nest, though she always started in the same relative direction that it lay from the other slats when in place. She was evidently much confused and distressed. She would fly out a little further each time, seeming to think that she had not made the right approach, sometimes going out from under the porch and returning. At last she dropped her pellet and began a crawling investigation, passing often within a few inches of the unfinished cell, but appearing to have never seen it. After much of this she went away and came no more that evening, for it was getting dark.

I failed to think of the incident for a few days, and some one closed the blind in the meantime, so that when I again examined it the single cell was completed and sealed. On breaking it open I found within a small greenish-white spider, on the side of which was glued the single egg. I send you a shadow photograph showing, in exact size, the relative positions. Of course, most of your readers know that it was the mother's provision for the young larva when it should hatch out. I might add that the spider showed the usual signs of life in a cataleptic state, showing the wonderful instinct that enabled the wasp to sting it at just the right point and to the proper extent to allow life enough to remain to preserve it fit for food, while it was dead to all efforts at resistance or escape. Mr. Mivart stresses this contrast between the want of *intelligence*, in being unable to approach its nest by any route but one (and exhibiting such a small amount of reasoning power), and the *instinct* that makes it so skillful in its providence and foresight. To his mind it argues a wide breach between intelligence and instinct.

JAMES NEWTON BASKETT.

Mexico, Mo.

Cat-tail Flags.

To the Editor of the Scientific American:

In the inlets and caves on the east shore of the Connecticut River grows a flag or rush that has a high market value, and which is gathered and cured each year by a class of men who have followed the business for many years.

This flag is commonly known as the cat-tail. At the

top of a tall, straight stalk that grows out of the center of the cluster of flags a blossom is found that is dark brown in color, about 2 inches in diameter and 6 inches long. When dry, these blossoms are tied together in bunches with ribbons and fastened to the walls of houses as ornaments.

The flags grow to a height of six feet, and taper to a point at the top. In June the harvest begins and continues until August. They are cut with sickles, about three feet from the ground, and very carefully spread out on the stubble to "cure."

They are allowed to lie on the stubble a week, during the greater part of which time the tops of the flags are covered with hay to prevent them from drying too quickly, in which case they become too brittle for practical purposes. The object of the flagman is to get the moisture out of the rush in such a way as to render it tough and pliable when ready for the market.

At the end of the week the flags are taken off the stubble and stacked on end. The stacks are built on sandy soil, in order that the moisture in them may be slowly drawn downward and absorbed by the earth.

The flags are allowed to stand thus stacked for three weeks and longer, if necessary, to get sufficient sunshine to cure them properly; then they are removed to sheds, where they are allowed to stand, so arranged that the air will circulate among them.

Great care has to be taken that the flags do not mildew or rot. In either case they are useless. To prevent this, they are removed from the sheds as often as every three weeks and carefully assorted. The flags in this operation are handled separately, and much time is consumed by it. It is often the case that flags are not ready for the market until a year after they are cut.

When ready for the market, the flags are tied into small bundles, and in that form are shipped. The flags along the Connecticut River are considered the best that are found, for the reason that they grow in brackish water. If the water is too salt the flag grows rank and brittle. The spring freshets in the Connecticut River are of great benefit to flags.

They are cut but once in two years, and though flags of a first-class quality are taken from a certain marsh this year, they may not be as good there again in ten years, in consequence of the different condition of the water that floods that particular plat.

From ten to fifteen tons of these flags are harvested a year and sold in New York and Boston, at an average of twenty-five cents a bundle.

Years ago the rush was used to lay between the staves of molasses barrels to prevent their leaking; but of late they are employed in the manufacture of hotel chairs and pieces of rush bottom furniture, that has become quite a "fad" in private residences.

In the factory the flags are prepared carefully and by hand. They are rendered pliable by steam, and each rush is drawn between the thumb of the workman and a stick that he holds in his hand, for the purpose of removing the air from it. When ready to be woven it is very pliable and tough.

THOMAS HOLMES.

World's Fair Notes.

The American flag now floats from the Administration Building at Jackson Park to signify that the World's Fair buildings and grounds are in the possession of the United States government. Vice-President Morton accepted them on behalf of the government on dedication day, but actual possession was not taken until Director-General Davis, the chief government World's Fair official, moved into his offices in the Administration Building. The raising of the stars and stripes signaled that event.

All of the World's Fair offices, except two or three, are now removed to Jackson Park, and those will soon follow.

The installation of exhibits has already begun, but has not yet progressed far. Soon, however, the interior of each one of the buildings will be the scene of great activity. The authorities are determined to have all exhibits in place at the opening of the Fair, and manifestly this cannot be accomplished if exhibitors are allowed to be dilatory. It will not do to permit the great mass of exhibitors to defer installing their exhibits until April, and accordingly State and foreign commissions and individual exhibitors will be required to be prompt. Exhibitors who are dilatory beyond a certain point will lose their space and be barred out.

The requirements of the preparation of the official catalogue of exhibits also necessitate promptness on the part of the exhibitors. This catalogue will be an elaborate publication, and, generally speaking, will have a separate volume devoted to each department.

The section from one of the big California redwood trees, which the government will exhibit in its building at the World's Fair, has arrived at the Fair grounds. Eleven freight cars were required to convey it across the continent. It measures 30 feet long by 23 feet in diameter. The section is hollowed out, and when placed on end, divided into two stories and lighted, as it will be, it will form a rustic house large enough for a family to live in.