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SCIENTIFIC AMERICAN SUPPLEMENT

No. 669.

For the Week Ending October 27, 1888.

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BUNGLING CHEMISTS.

An item from Ithaca, N. Y., has recently appeared in the daily press of this city to the following effect:

In the course of conversation at Cornell University Saturday, October 13, Edward Atkinson, the Boston economist, stated that a New England genius has recently discovered a cheap method of dissolving zinc by combining it with hydrogen and producing a solution called zinc water. This liquid, if applied to certain woods, notably whitewood, makes it absolutely fireproof, at a low cost. Mr. Atkinson regards this discovery one of the most important of the age, and one that will surely revolutionize fire insurance, as well as immensely decrease the loss by fire. The invention is kept secret for the present. Only one foreigner—Sir Lyon Playfair, the English scientist—knows of it. He corroborates all that is claimed for the invention, and says that the inventor is a bungling chemist, but that he has a faculty of blundering into the choicest secrets in Nature's laboratory. As soon as patents are perfected and capital interested, zinc water will become an article of commerce.

If this is true, the above discovery would confer a great benefit—the protection of wood from fire. Independent of this, the remarks about a bungling chemist blundering into Nature's choicest secrets are worthy of notice. The chemist who possesses this faculty may well afford to be called bungling. The great discoveries of experimental philosophers were not deductive—inductive work or feeling in the dark has developed the natural sciences; and the investigators of Nature's laws in the atomic realm, the domain of chemistry, have not yet passed the blundering stage. When the deductive methods that led to the failures of old can safely be indulged in, then only can the chemist give up blundering into discoveries. At present such is his dearest hope.

ELECTRIC SUBWAY EXPLOSIONS.

The people of New York having in due course of time reached the conclusion that the network of overhead telegraph, telephone, and electric light wires were in the nature of a nuisance, have for the last two years been endeavoring to put them underground. Already many miles of conduit have been laid, hundreds of miles of wire have been placed in them, and the system is known as the electric subways. In general terms they consist of a conduit of asphalt or other concrete laid along the sides of the streets, four to six feet under the surface. In section, the conduit would appear a solid block, perforated with a number of circular openings about three inches in diameter, for the introduction of cables. These openings are continuous for the length of a section of the subway. It represents a collection of pipes or tubes. Each tube receives a cable containing a number of wires, so that the total accommodation afforded by a conduit with thirty or fifty openings is very great. At each intersection of streets a manhole is constructed, which marks the end of the abutting sections. This is a square pit about five feet square and six feet deep, built of masonry and provided with double iron covers. The conduits lead into this. It is practically impossible to keep the system, including the many miles of conduit and the numerous manholes, perfectly tight. If there is a leak in the gas mains near the conduit, some of the gas is apt to find its way into the manhole directly, or into the conduit openings and through them to the manhole.

It will be understood that as the conduits open into the sides of the manholes, the cables and wires extend across them, as they leave one section and enter the next.

It yet remains to be seen whether the subways attain the solution of the problem of disposing of the overhead wires. Within a few days the Western Union Telegraph Co. has complained that a series of down-town wires, 400 in number, have been ruined by overheating. The steam pipes of the steam-heating company in some way had heated the conduit nearly up to the temperature of boiling water, and the insulation of the telegraph lines was destroyed. Other companies made similar complaints. The matter is to be investigated.

Unfortunately, it also appears that they can be a source of injury to life and property. An explosion occurred on the morning of October 12 in this city, on Broadway near the Bowling Green, which emphasizes a danger to which we are exposed, due to them. A heavy thunderstorm, in which the display of lightning was remarkably vivid, was in progress. The usual electrical disturbances were observed in the telegraph and telephone offices. A number of persons standing in the shelter of the Field building, No. 1 Broadway, witnessed a more remarkable manifestation. They had just heard a violent thunder clap when a second report, almost simultaneous with it, occurred. It came from the opposite side of the Bowling Green. The iron cover of the subway manhole situated there was blown into the air, and the street pavement was disturbed over an area twenty feet square. A flame, four feet in height, was observed to shoot upward from the place at the same instant.

It is said that there is doubt about the cause of the occurrence, but there is little room for surmise. Gas from a leaky main had in all probability found its way into the manhole. As all residents of the city know by experience, the soil is saturated with gas, and every joint in the mains contributes some quota of the ever-present gas. The lighting either caused sparking among the metal work and cables in the manhole or directly inflamed the gas, and the explosion as detailed was the result.

When the steam supply companies began operations in this city, they experienced much trouble from the presence of gas in their manholes. These structures were similar to those of the subway companies. Eventually they were obliged to provide them with ventilating covers, when the trouble ceased.

The subway constructors will probably be forced to adopt some efficient method of dealing with this problem. Perfectly free ventilation of the manholes would involve the admission of water, something the companies owning the cables might protest against. But the wires where they cross the manholes could readily receive some special protection. It appears pretty clear from the accident which we have described that the subways as at present constructed are a distinct source of danger. Where gas accumulates, especially when mixed with air in the explosive proportion, a minute electric spark will light it, and cause a detonation. This principle has been utilized in electric gas lighting; apparently it has here been the actuating cause of a serious explosion.

POSITION OF THE PLANETS IN NOVEMBER.

NEPTUNE

is morning star until the 22d, when he becomes evening star. He stands first on the planetary record of the month, for an event occurs in his history that brings him to his nearest point to the earth. This event is his opposition with the sun on the 22d, at 1 h. P. M. The earth is then between the sun and Neptune. If discoveries are made concerning this far-away planet, they will probably be made when he is in opposition. Neptune rises on the 1st at 5 h. 57 m. P. M. On the 30th, he sets at 6 h. 19 m. A. M. His diameter on the 1st is 2".6, and he is in the constellation Taurus.

SATURN

is morning star. He reaches his quadrature on the western side of the sun on the 11th at 6 h. P. M. He then rises before midnight, and may be found in the northeast, a star of the color of pale gold, shining with a serene light. Saturn rises on the 1st at 11 h. 37 m. P. M. On the 30th, he rises at 9 h. 38 m. P. M. His diameter on the 1st is 16".8, and he is in the constellation Leo.

MERCURY

is morning star. He reaches his greatest elongation or most distant point from the sun on the west on the 17th, and will then be visible to the naked eye as morning star, about 8° north of the sunrise point, rising about an hour and a half before the sun. Mercury rises on the 1st at 6 h. 16 m. A. M. On the 30th, he rises at 5 h. 53 m. A. M. His diameter on the 1st is 9".6, and he is in the constellation Virgo.

VENUS

is evening star, and is fair to see as she approaches the earth, traveling eastward from the sun. The observer will recognize her at a glance in the southwest soon after sunset, about 8° south of the sunset point. She sets on the 1st about an hour and a quarter later than the sun, and on the 30th about two hours and a quarter later than the sun. An interesting event marks her progress. She is in conjunction with Jupiter on the 1st at 4 h. 18 m. P. M., being 1° 27′ south. Both planets make a brilliant appearance in the constellation Scorpio, which is increased by the bright stars in the vicinity. Venus sets on the 1st at 6 h. 11 m. P. M. On the 30th, she sets at 6 h. 45 m. P. M. Her diameter on the 1st is 12".2, and she is in the constellation Scorpio.

JUPITER

is evening star. As has already been referred to, he, moving westward toward the sun, meets Venus moving eastward from the sun, and the two brightest planets in the system are seen side by side. Jupiter sets on the 1st at 6 h. 19 m. P. M. On the 30th, he sets at 4 h. 49 m. P. M. His diameter on the 1st is 30".6, and he is in the constellation Scorpio.

MARS

is evening star, and is moving eastward or retrograding. His lessening size will soon make it difficult to follow the course of the ruddy planet. Mars sets on the 1st at 8 h. 3 m. P. M. On the 30th, he sets at 7 h. 59 m. P. M. His diameter on the 1st is 6".2, and he is in the constellation Sagittarius.

URANUS

is morning star. He rises on the 1st at 4 h. 44 m. A. M. On the 30th, he rises at 2 h. 58 m. A. M. His diameter on the 1st is 3".4, and he is in the constellation Virgo.

Venus, Jupiter, Mars, and Neptune are evening stars at the close of the month. Saturn, Mercury, and Uranus are morning stars.