



PHOSPHORESCENT FISH-SKINS.

In a fearful battle with the Picts, Alpine, King of the Scots, lost his life; and his head, after being carried through the army of the enemy upon a long pole, was set up on the walls of Abernethy, the capital of the Picts. Kenneth, the son of Alpine, who succeeded his father about the year 834, according to the best authorities, could not prevail upon his people to attack the Picts again. All his arguments were of no avail, his soldiers pleaded want of rest and time to recruit their strength and spirits after so dreadful a defeat. So two years elapsed without any hostilities between the two nations, for the Picts had also suffered severely, and dissensions had broken out among them. At length, King Kenneth, impatient of this delay, called an assembly of all the nobility of his kingdom, and when he found his arguments failed to persuade them to declare war, he invited them to an entertainment, which he prolonged till midnight, and then persuaded them to go to rest in his great hall, according to the manners of those times.

Now we have it on no less an authority than the eminent historian, Dr. Henry, that the following extraordinary scene occurred during the night. When the whole company were composed to rest, a person instructed and prepared by the King entered the hall. He was clothed in the skins of a dead fish, which shone in the dark and, speaking through a trumpet, commanded them to obey their King by declaring war against the Picts, and promised them success and victory. Roused from their sleep by these tremendous sounds, and startled by the shining figure which they beheld, they hastened to acquaint King Kenneth with the "supernatural admonition," and expressed the greatest ardor for war.

The report of this wonderful apparition flew like lightning over the whole kingdom; the effect was such that Kenneth soon found himself at the head of a numerous army, and it ended in his routing the Picts, taking possession of their kingdom, which he united to his own dominions, and "thereby became the first monarch of all Scotland about the year 842."

In this little episode we have one of the most ancient recorded cases of phosphorescence with which I am acquainted. Its practical effect shows with what interest men's minds have always fixed upon strange emissions of light in the dark—upon all kinds of mysterious phenomena which, being at the time wholly inexplicable, verge upon the supernatural.—*Dr. Phipson.*

WILL-O'-THE-WISPS.

Dr. Weissborn says: "In the year 1818 I was fortunate enough to get a fine view of the *ignes fatui*. . . I was then at Schepenthal, in the Duchy of Gotha; and one clear November night, between eleven and twelve o'clock, when I had just undressed, the bright moonshine allured me to the window to survey the expanse of boggy meadows, which spread two or three English miles in length, a quarter of a mile from the foot of the hillock on which the house stands. . . My intimate acquaintance with the locality, together with the bright moonlight, enabled me to judge of the position and direction of the luminous phenomenon, the display of which I saw as soon as I had posted myself at the window. I perceived a number of reddish-yellow flames on different parts of the expanse of almost level ground. I desisted, perhaps, no more than six at a time, but dying away and appearing in other places so rapidly that it was impossible to count them. On a rough calculation there were about twenty or twenty-five within a second. Some were small and burned dimly; others flashed with a bright flame in a direction almost parallel to the ground, and coinciding with that of the wind, which was rather brisk. After having looked with amazement at the brilliant scene as a whole, I tried to study its details, and soon found that the flames which were nearest originated in a quagmire by a solitary cluster of willows. The succession of flames lay always in the same straight line, and in the direction of the wind. . . After about an hour a mist began to overspread the meadows; but I saw the lights still glimmering through it, whilst I dressed myself in order to examine the phenomenon in its laboratory. However, when I reached the meadows, the atmospheric conditions which gave rise to the *ignes fatui* had ceased to exist."

Major Blesson has given, in the *Edinburgh New Philosophical Journal* for January, 1833, another interesting account of a Will-o-the-wisp, which he observed, for the first time in

life, in a valley of the forest of Gorbitz, which covers part of Brandenburg. This valley is of an argillaceous and marshy nature; the water of the morass is ferruginous and covered with a film of iridescent matter. During the day bubbles of gas are observed to rise in the water, and at night flames appear to escape from its surface.

Suspecting that there existed some connection between the flames and the bubbles of air, Major Blesson marked the place where they occurred, and, returning in the evening, he perceived their flames of a violet-blue tint, which receded as he approached them, so that he could not get near enough to examine them minutely. Several days of rain followed, which gave him time to reflect upon the phenomenon before he observed it again. He had no doubt, he tells us, that the flames were attributable to an inflammable gas, which burnt in the day-time as well as at night, but could only be seen in the evening when it was dark. As twilight came on, after the rain had ceased, he went again to the spot and awaited the appearance of the will-o'-the-wisp. As night approached, the flames became gradually visible; they appeared somewhat redder than before. When he advanced towards them they receded, as they had done on the previous occasion; but, feeling convinced that they would return to the place where he stood when the agitation of the air caused by his movements had ceased, he kept himself perfectly still, and the giddy lights returned gradually towards him. So close, indeed, were they at a certain moment that it occurred to him to ascertain if he could light a piece of paper by their aid. For some time the attempt was unsuccessful; he supposed that the current of air caused by his breathing was opposed to the experiment; but by turning his face aside, and with his handkerchief before his mouth, the paper soon became brown and covered with damp. At last, by taking a long narrow strip, he had the pleasure of seeing it take fire.

The phenomenon was, then, evidently owing to ignited gas. The author of these remarks completed his observations by driving away some of the flames until they were so far from the source of their combustion that they became extinguished; and he afterwards lit with a torch a number of little bubbles of gas as they escaped through the water in different parts of the morass.—*Dr. Phipson's Familiar Letters.*

How to Cure Fogs.—Peltier's ingenious researches would lead us to believe that the very existence of a fog must depend upon its electrical state, at least as regards the great majority of fogs, and especially those which at certain intervals impede the commerce of large towns, such as London or Glasgow, through which flow considerable rivers. An electrometer plunged into such a fog often shows enough electricity to send a telegraphic despatch round the globe. If, after ascertaining the nature of this electricity, the fog could be supplied with a plentiful amount of opposite electricity, I have no doubt that it would be entirely dispersed in the course of a short time. As already stated, *electro-positive* fogs are the most common; moreover, they are generally wet fogs, whilst *electro-negative* fogs, being repelled by the constant *electro-negative* tension of the earth, do not affect the hydrometer or moisten objects on the earth's surface. In order to disperse the dense *electro-positive* London fogs, it would, therefore, be necessary to supply them with an abundant source of negative electricity, more quickly than the earth usually supplies it. In the present state of electrical science I imagine such a thing to be far from impossible. *Electro-positive* fogs which last for any length of time are not supplied fast enough with negative electricity. A quicker supply would bring them down as rain or dew in the course of a few hours. The London fogs owe much of their disagreeable dark colors and stifling sulphurous odor to their constant attraction of the *electro-negative* smoke of our chimneys. If by an appropriate apparatus adapted to fireplaces we could render this smoke *electro-positive*, like the fog, they would repel each other, and the dense London mists would thereby lose one of their worst qualities. But the same apparatus might serve alternately to render the smoke so highly *electro-negative* that it would very soon condense the fog as dew or rain.—*Dr. Phipson.*

ONE-MAN POWER.—In the "Manufacturer and Builder" we find an account of a mechanical device called "Bozerian's Barometer." It consists of a frame supporting a fly-wheel and pulley on an axis, with a crank between; on this crank a lever works, which is pushed down with one foot, upward with the other, also forward and backward with one or both hands. This lever also helps to steady the workman. The motion of the hands and arms serves to bring the crank over its centre, while the main power is produced by the man's weight, which he has only to lift as if going up-stairs, but with less fatigue. A speed of

30 revolutions per minute can easily be obtained in this way, developing a power of 2,400 to 4,000 foot-pounds. In the accompanying article it is stated that "a man working for eight hours on a crank furnishes very nearly a million foot-pounds, or, on an average, 40 foot-pounds per second, or not much more than 1-14th part of the conventional horse-power of 550 foot-pounds per second. It has also been found that if, instead of using the muscular power of his arms alone, a man uses his weight as on the wheel of a treadmill, he produces in eight hours a work of 1,728,000 foot-pounds, or 60 foot-pounds per second, or 1-9th part of a horse-power. It is therefore advantageous—and in this, mechanical engineers agree—to let the work of a man consist in simply elevating his body in all cases where this is practicable to apply it to the production of the desired effect." It would seem that a "barometer" of this description could be used to great advantage where a small steam-power is needed but cannot be afforded.

WRITER'S CRAMP.—A good deal of suggestion is contained on this somewhat prevalent malady in a paper read by M. Bouilland before a meeting of the French Academy of Sciences, which gives an account of researches relative to lesions of the brain. In his former communications he demonstrated that the loss of speech was due to a malady of the third convolution of the left anterior lobe of that organ. He now goes further, and asserts that the three faculties which essentially distinguish man from other animals—speech, reading, and writing—are each controlled by separate portions of the brain. In his researches he discovered that the paralysis of one of those functions could exist without the others being affected, and he gives as an example a case in which he was called to a consultation on a young man whose avocation compelled him to write continually. At first the patient had felt a slight weakness in writing, then a great difficulty; and finally, an absolute loss of the faculty. The result of the closest examination could not detect any defect in the muscles of the arm or hand, the latter retaining all its sensitiveness and power for every other purpose than that of writing, and all his other functions being normal and in good condition. The conclusion arrived at was that the source of the infirmity must not be sought for in the external organs, but in the centre itself of nervous action—the brain. The young man was advised to learn to write with the left hand which he rapidly succeeded in doing. The defect from which he suffered had long been known as writer's cramp, just as the loss of speech was for centuries termed paralysis of the tongue. Both designations were equally erroneous, both being now attributed to maladies of certain portions of the brain.

—The *Christian World* of London says:—There are some things which are dear at any price. And most certainly amongst such must be reckoned so-called cheap black silks, which, it appears, are made to assume a thick, rich-corded, and lustrous appearance by being heavily weighted with dye. This is effected with so much skill by the Lyons manufacturers that few ladies, as we have reason to know, would be able to distinguish a good article from one thus fraudulently produced. The fibre of the inferior silk is exceedingly flimsy, but it is so loaded with gelatinous dye that it has all the appearance of a rich, strong tissue. The silk thus prepared, however, when subjected to the test of wearing, is almost at once cut and assumes a greasy look. Silk of pure dye which costs 8s per yard can be equalled in appearance by one at 4s. 7d. But the latter is weighted with a 30oz. dye. It is to be hoped that the exposure of this fraud will arrest the injury which must result to the silk trade if it continues. Our lady friends must beware of the puffing advertisers who offer silk dresses at a low figure or they will buy dye instead of silk. It is also well to add that the trade in these silks is not confined to inferior houses. The temptation to make 50 per cent. profit seems to be great for even respectable merchants to withstand.

THE BLUE OF THE SKY.—The color of the sky is said to be due to the transmission of rays of light through a cloud of dust which collects above the earth. Professor Nordenskiöld examined the snow which covered the icebergs as far north as 80 deg., and found it strewn with a multitude of minute black particles, spread over the surface, or situated at the bottom of little pits, a great number of which were seen on the outward layer of snow. Many of such particles were also lodged in the inferior strata. This dust, which became grey on drying, contained a large proportion of metallic particles attracted by the magnet, and capable of decomposing sulphate of copper. An observation made a little later upon other icebergs proved the presence of similar dust in a layer of granular crystalline snow, situated beneath another stratum of light, fresh-hardened snow. Upon analysis, this matter was found to be composed of metallic iron, phosphorus, cobalt, and fragments of

diatomaceæ. It bears the greatest analogy to the dust previously collected by the Professor on the snows of Greenland, and described by him under the name of "kryokonite."

—It sometimes happens that topical treatment of the throat is required for young children. The little patient cannot gargle, and the brush or spray fills them with terror. It has been suggested to apply the remedy in the form of ice. Although the frozen pellets are not so tasteless as pure ice, the flavor is so much lessened by the low temperature, and probably also through the parched tongue not appreciating anything disagreeable, that the children take them without complaint. The process of freezing the mixture is very simple. A large test-tube, immersed in a mixture of pounded ice and salt, is the only apparatus required, and in this the solution is easily frozen. When quite solid, a momentary dip of the tube in hot water enables one to turn out the cylinder of ice. Any one of the three following formulae may be tried:—1. Sulphurous acid, $\frac{1}{2}$ drachm; water, $7\frac{1}{2}$ drachms—mix and freeze. 2. Chlorate of potash, 1 scruple; water, 1 ounce—dissolve and freeze. 3. Solution of chlorinated soda, $\frac{1}{2}$ drachm; water, 1 ounce—mix and freeze.

—The drinks and tonics so extensively sold as bitters are, as a rule, more pernicious than the more well-known intoxicating beverages. They are generally made of poor liquor with some additional substance to float the product as a medicine. While ale and lager-beer contain but three or four per cent. of alcohol, a careful analysis has shown an average of thirty per cent. of the same in the compounds known as "bitters." A number could be named which approach or exceed fifty per cent. of alcohol. No doubt, as you say, multitudes are in daily use of these so-called medicinal tonics, little realizing how near they are to the verge of the horrible pit of the habitual thirst of the drunkard.

NEW USE OF SOUR MILK.—A new industry has been started in Mansfield, Mass. It is no less than the manufacture of jewellery out of sour milk. This seems a strange anomaly, but it is a fact. The milk comes in the shape of curd from butter and cheese making counties in New York, and looks upon its arrival a good deal like popped corn; but before it leaves the shop it undergoes a wonderful change, and receives the name of American coral. The secret in making it up is carefully guarded, but it is certain that it has to be heated very hot, during which coloring matter is introduced, followed by a very heavy pressure. Some of it is colored black and called jet, while some appears as celluloid. It makes very handsome jewellery, and is made into all kinds and styles known in the trade.

INVISIBLE INK FOR POSTAL CARDS.—The *Deutsche Illustrirte Gewerbezeitung* proposes the use of what may be called "postal card ink" for messages which are sent on such cards or otherwise unsealed. A solution of nitrate or chloride of cobalt, or chloride of copper, mixed with a little gum or sugar, produces a "raagic ink," which is made visible by warming, either by holding against the stove or over a burning match. Potassium ferrocyanide in solution may also be used; but this requires a developer, for which either copper or iron sulphate may be employed. With the former the writing will appear in brown, and with the latter in blue color.

—The *Chemical News*, London, warmly praises the exertions made by the local and general Governments of the United States for the advancement and diffusion of science, and calls especial attention to the fact that the Massachusetts Institute of Technology has provided special laboratories for the instruction of women in chemistry—analytical, industrial, and physiological; in botany, mineralogy, microscopic manipulation, &c. And it gives credit for the work done in this department by the ladies.

—Recent statistics show that the rate of mortality among grocers is 76 to 100 among the general population at equal ages, while the death-rate among drapers is 108 to 100 by the same standard. The difference lies in the mode of living. The grocer lives in a shop, the door of which is open the whole day, and he is very active in business; the draper, on the other hand, lives in a close place, with the doors of his shop closed, and in a dusty, close atmosphere.—Near-sightedness is spreading to an alarming extent among the young people of Germany and America.

—A correspondent in Iowa writes in regard to a hint as to the amount of glass which is contained in straw: "Very often immense straw-stacks are burned hereabout and in the remaining heap of ashes are found masses of a glass of various colors, from milky white, blue and green, to jet black; often it is quite clear. The same is found after the accidental burning of hay and wheat stacks. I have often heard the farmers speak of the finding of such masses, but express at the same time their wonder."